

**Identifying the health, wellbeing and social impacts  
in older adults using nature-based projects: a case  
study of care farming and community gardening  
interventions in Greater Manchester.**

**Louise Margaret Mitchell**

Submitted in partial fulfilment of the requirements of the degree of  
Doctor of Philosophy

The University of Salford

A collaboration between the School of Science, Engineering and  
Environment, with the School of Health and Society

2021

## Table of Contents

Table of Figures.....	v
Table of Tables.....	vi
Acknowledgements .....	vii
Abbreviations.....	x
Glossary.....	xi
Abstract.....	xii
<b>Chapter 1: Introduction.....</b>	<b>1</b>
1.1. Weeding out the problem .....	1
1.2 Prescribing access to nature .....	4
1.3 Thesis focus.....	6
1.4 Study aim .....	8
1.5 Objectives .....	8
1.6 Thesis structure .....	10
1.7 Thesis contributions.....	12
<b>Chapter 2: Literature review.....</b>	<b>13</b>
2.1 An introduction to the literature review.....	13
2.2 An introduction to health and populations in the UK .....	14
2.3 Urban Agriculture.....	24
2.4 Prescriptive access to nature .....	28
2.5 What theoretical concepts exist that connect nature to health and wellbeing? .....	31
2.6. What evidence is there that connects nature to health and wellbeing?.....	38
2.7 A scope of current policy basis: how is the field is developing? .....	48
2.8 The impact of a global pandemic on relationships with nature .....	53
2.9 Positioning the review for this thesis.....	58
2.10 Literature review conclusion.....	61
<b>Chapter 3: Growing research through methodology.....</b>	<b>63</b>
3.1 An introduction to the methodology .....	63
3.2. Philosophical reflections.....	64
3.3 Situating research across transdisciplinary .....	68
3.4 Designing research.....	75
3.5 Research methods.....	87
3.6 Data analysis .....	95

3.7 Ethical considerations.....	97
3.8 Introducing the case studies selected.....	99
3.9 Reflective practice .....	104
3.10 Methodological summary .....	108
<b>Chapter 4: Cultivating findings of older adults using gardens and farms .....</b>	<b>109</b>
4.1 Outlining the findings .....	109
4.2 An introduction to the older adult participants .....	109
4.3 Motivations for attending .....	114
4.4 Effects across health and wellbeing.....	116
4.5 Covid-19: Planting in a pandemic .....	131
4.6 The future of sites .....	134
4.7 Conclusion of older adult viewpoints.....	137
<b>Chapter 5: Harvesting findings with group facilitators .....</b>	<b>139</b>
5.1 An introduction to group facilitators.....	139
5.2 Faciliatory relationships and localised power .....	141
5.3 Motivations and current success.....	148
5.4 Physical health changes.....	164
5.5 Mental health and social wellbeing .....	174
5.6 Funding and support mechanisms .....	186
5.7 Development and persistent barriers .....	193
5.8 Reflecting on Covid-19 .....	199
5.9 Conclusion of group facilitator insight .....	204
<b>Chapter 6: Understanding the external stakeholder perceptions .....</b>	<b>205</b>
6.1 Introducing and outlining the findings of external stakeholders .....	205
6.2 Knowledge of key terms .....	207
6.3 Health and wellbeing impact perceptions .....	212
6.4 Other benefits .....	224
6.5 The future of projects.....	228
6.6 Conclusion of the external stakeholders' findings .....	242
<b>Chapter 7: A meta-discussion and conclusion .....</b>	<b>243</b>
7.1 An introduction for a discussion .....	243
7.2 A meta-discussion pulling the findings together .....	247
7.3. Key contributions to knowledge within this thesis .....	266

7.4 Recommendations.....	268
7.5 Implications for policy and practice .....	272
7.6 Limitations .....	273
7.7 Future work .....	274
7.8 Thesis conclusion .....	276
References.....	278

## Table of Figures

Figure 1: Research design .....	9
Figure 2: Thesis structure.....	10
Figure 3: Age friendly cities topic areas.....	18
Figure 4: The determinants of health and well-being in our neighbourhoods .....	19
Figure 5: Mandala of Health.....	20
Figure 6: Indices of Multiple Deprivation across England .....	22
Figure 7: The levels of accessing nature .....	25
Figure 8: Wellbeing related to community gardening.....	45
Figure 9: Transdisciplinary concept .....	69
Figure 10: Foundation of research approach .....	83
Figure 11: Research design forming this thesis .....	84
Figure 12: Physical output of data analysis .....	96
Figure 13: Community Growing Sites .....	102
Figure 14: Care Farming outdoor space.....	103
Figure 15: Thematic map .....	113
Figure 16: Shetland pony at CF site .....	118
Figure 17: Lettuce grown by participants.....	126
Figure 18: Soil and its connection to health and wellbeing .....	130
Figure 19: Raised bed/planter example.....	152
Figure 20: Diversifying example, including visual of change within the care farm ...	153
Figure 21: Crafting quotation and examples of crafting activities .....	156
Figure 22: Seasonality at care farm.....	157
Figure 23: GF impact on participant in photograph.....	158
Figure 24: GF views on success within participants .....	161
Figure 25: Physical movement quote and photographic example of work .....	165
Figure 26: Pain management of older participants.....	167
Figure 27: Gender based roles within activities.....	172
Figure 28: Animal interaction to assist mental health.....	176
Figure 29: Mortality and working with older people .....	178
Figure 30: Intergenerational impact .....	182
Figure 31: Contrasting views on resilience .....	185
Figure 32: Funding issues.....	189
Figure 33: The framework of engaging with external stakeholders.....	205
Figure 34: Demographics of public interviewees at each study site .....	207
Figure 35: Public awareness of SPs.....	209
Figure 36: Perceptions on importance of natural environments .....	213
Figure 37: Perception of the case studies for health and wellbeing purposes .....	215
Figure 38: Perceived impact to the NHS .....	218
Figure 39: Personal benefit from case studies .....	225
Figure 40: Positive impacts from public attendance.....	226
Figure 41: The desire to be more involved in the case study projects .....	228
Figure 42: Motivation to attend related to prospective ageing .....	233

## Table of Tables

Table 1: Theories connecting humans to nature .....	32
Table 2: Theories of influence.....	37
Table 3: Sample of legislation and policy influencing this thesis .....	48
Table 4: Piloting a variety of methods.....	77
Table 5: Rationale for situating grounded theory within case studies .....	86
Table 6: Objectives linked to methods.....	94
Table 7: Thematic coding recipe.....	96
Table 8: Getting to know the participants .....	110
Table 9: GF interview demographics .....	140
Table 10: Overview of physical impacts from GFs .....	166
Table 11: GF perceived persistent barriers to development/success.....	196
Table 12: Key actors interviewed.....	205
Table 13: Public engagement interviews .....	206
Table 14: Average Life Expectancy in wards of case study sites.....	235
Table 15: Main outcomes from the research .....	244

## Acknowledgements

Firstly, I apologise for the length of these acknowledgements, but it really does take a community to get through a PhD.

**The participants.** I would also like to thank the support I have received from members of the case study projects, as this research would not have been possible without the older adults. Unfortunately, they cannot be named, and some not included in the study, while some are no longer here. They were all so welcoming, and I hope I have given their opinions justice. Facilitators provided valuable viewpoints within their interviews but made sure I was comfortable and introduced me to participants. Thanks, also to the members of the public and external stakeholders who provided valuable insight.

**My supervisory team.** I would like to sincerely thank my supervisory team, Dr Michael Hardman, Dr Michelle Howarth and Professor Penny Cook for all their support. Mike, you have been a gem throughout this process, from anxious emails before starting, ethics difficulties, the assessments, lockdown (sorry for all the teams' messages) and in the final edits. Your passion for both the subject and the students shines brightly, the incredibly important and impactful research you do is truly amazing, you are a massive credit to the university. Thank you for keeping me afloat, allowing me to work on different research projects and teaching, while guiding me in the right direction with conferences and voluntary roles. I did keep that excel spreadsheet with the costings of coffee, so you will be repaid. Thanks for being a supervisor, a boss, a tutor, and a friend. Finally, Mike, I hope you always live on the high of being told you look younger than me, even if there is ten years of a difference. Michelle, thank you for being the *ethics queen*, guiding me out of a process, that I never thought I would get through. Your comments on work were so appreciated, but it was your caring nature and truthful experience of learning in different ways that made me persevere. Penny, you have been amazing, and welcomed me to public health. The networking links strengthened my knowledge of the field and got me out the comfort zone, while you really saved me from my anxiety post viva.

**Examiners.** You helped advance this science and made me question my standing. To the viva voice examiners thank you so much for making me feel comfortable, asking questions, engaging in discussion, and dedicating time to in your already overworked schedules to read this thesis. I am continually amazed by the generosity shown by academics through time and dedication to student progression.

**The DTA.** Without my stipend I would never have been able to undertake a PhD. Thanks especially to Jennie, Kai, and Ellie. The DTA dream girls, Dr Emma Cowley, and Dr Molly Brown, you both are such inspiring ladies. I am sure you both will continue to make a big impact in our world. Thanks for being more than DTA colleagues, you are lifelong friends.

**Salford.** Thanks to the Doctoral school for doing all the *'behind the scenes stuff'*. Dr Richard Armitage, you have not just been a personal tutor or line manager, but you have become a friend. Thank you for always making me feel comfortable demonstrating, improving my GIS skills, overcoming imposter syndrome alongside championing me within the department, but mostly thanks for the food and cups of tea. You will also be repaid – another excel spreadsheet in hand. The people I met along the Salford journey have also been invaluable, I would like to give a special mention to Carrie, Siobhan, Mumbi, Lydia, Pauline, and David/Gilbert - your passion for your own research shows what wonderful people you are. The students I was fortunate to be able to teach, thanks for the GIS classes (even the tears), the debates and the field trips in the rain. Fran, thanks for being your amazing self, keeping things running and putting up with my overly cautious brain. Ed, thanks for continuing to live through the stress of academic life with me, the fairy lights, the drinks, and the cinema trips. You feel imposter syndrome as much as me, but sarcasm is the way through.

**Home friends.** A huge thank you to my friends that I met back as a nervous undergraduate: Claire, Christina, Emily, Fergus, Jemma, Murray and Sophie. You have always championed my work, from days presenting in an energy class, a wigwams trip, falling both uphill and downhill. I am sure you will all continue to do amazing things, from crime fighting, revolutionising our wine industries, crying at Disney parades, painting green walls, trying to teach me about plants, and showing love to each other's passions. You might not fully understand all my ramblings about PhD life, but you always listen. So here is to reference classes with Deirdre, GIS with Alistair, pollution with Jenn, economics with Eileen, water with Laura, and planning with Gina, but most importantly, here is to Edinburgh fringes, Boghell, and jumping in bothy windows.

**Life before university.** Thanks to John Blackwood, my high school geography teacher who lit the passion for geography, environment, and sustainability a long time ago. Also, I should say thanks to another teacher who said I *'might just not be capable of*



*getting qualifications because of the dyslexia*'. Your comment stuck with me through my education, empowering me to show that you can't stop someone that wants to achieve something good. I hope by completing this part in my life, you will see that some people's brains work differently, but it doesn't mean that they don't work.

**Family.** My mum, who has provided support through all these years of university life and has had to read numerous edits, even if you fell asleep halfway through chapters. You will not know how grateful I am that you have always been there and helped me get through all the dark days, especially through the anxious stages of moving to a different country and the wobbles in data collection. PC Ewan, the *professional clipe*, your funny and sarcastic stories about daily life has kept me laughing for twenty-four years but has been especially useful in the last couple. Beth, thanks for always being so positive, a wee ray of sunshine, dealing with Ewan, and sharing the love of Jamie Genevieve. Nana, Papa, and Amanda, you have no clue what I have been doing for all these years at university, and yes, it is a real job, and yes, I'm still studying. Gus, (and Robbie) my little best friends, bringing us all happiness, with hugs when I'm crying and walks for the stress. Grandma and Grandpa, thank you for being there at the start of my education, even though you aren't here anymore, hopefully I made you proud.

Finally, thanks to my "*brain, body and blood*", a nickname for this project, but really an integral part to keeping me going. The incredible amount of pressure you put on yourself has got you this far. Even though you don't believe it, you can do it. This has been a rough journey, where there was a lot of darkness, with little light at the end of the tunnel, but you got there. You managed this, moving countries, making it through a pandemic, with people you love struggling with health, an operation in your final year, taking on RA posts, teaching, a full-time academic job in the final months (oh the marking), and your anxious personality giving you OCD (13,31). Remember this point in life, remember the stress, remember the love of teaching students, talking with participants, but also the joy of getting through it.

You have done it. Believe in yourself a little more and try to enjoy it.

## Abbreviations

A&E	Accident and Emergency
ART	Attention Restoration Theory
CF(s)	Care Farm(s)
CG(s)	Community Garden(s)
CHD	Coronary Heart Disease
COPD	Chronic Obstructive Pulmonary Disease
Covid-19	Coronavirus disease/pandemic
EU	European Union
F	Farming group facilitator
G	Gardening group facilitator
GF	Group Facilitators
GI	Green Infrastructure
GM	Greater Manchester
GMCA	Greater Manchester Combined Authority
GP	General Practitioner
GT	Grounded Theory
HT	Horticultural Therapy
IMD	Indices of Multiple Deprivation
NHS	National Health Service
PRS	Perceived Restorative Scale
PUB	Public group
SCT	Social Cognitive Theory
SP(s)	Social Prescription(s)
SPT	Social Presence Theory
STH	Social and Therapeutic Horticulture
UA	Urban Agriculture
UK	United Kingdom
USA	United States of America
WHO	World Health Organisation

## Glossary

**Ageing in place:** the ability to live at home and in the community, independently.

**Animal-assisted-therapy:** activities involving animals for the benefit of health and wellbeing.

**Care (or Social) Farming:** the therapeutic use of farming spaces and activities.

**Community gardening:** spaces of land collectively gardened by a group of people.

**Green Care:** Therapy or treatment provided to those in need, within natural surroundings. To use the connection with nature to facilitate and structure therapy. This is an umbrella term used to cover different therapies including Social and Therapeutic Horticulture, Care Farming, Environmental Conservation, animal-assisted therapy, green exercise and more.

**Green Infrastructure:** a planned network of natural or semi-natural spaces, that bring green and blue spaces to an increasing urban world. Examples include suburban drainage systems, pocket parks, green walls, and roofs.

**Green Social Prescriptions:** This is a type of social prescription that enables people to access 'green' nature-based resources and services to improve health and wellbeing.

**Horticulture therapy:** a process where individuals develop wellbeing through (passive and active) interaction with plants and horticulture.

**Nature-based interventions:** structured promotion of nature-based experiences, these can be activities, programmes or strategies aiming to get people engaging with nature for the benefit of health and wellbeing.

**Older adult:** in the case of this thesis, anyone over the age of fifty.

**Outdoor and nature-based interventions:** activities related to the outdoors and nature, that be indoor or outdoor (e.g., bird watching, walking, gardening and farming).

**Social prescribing:** a way medical professional can prescribe a range of local, non-clinical services to support health and wellbeing.

## Abstract

Urbanisation and the continued increase in global populations has created pressures on resources, including health care and natural ecosystems. Subsequently, longer life expectancies and comorbidities exacerbates pressures on health services. The Global North faces ageing populations and long-term health conditions, illustrating a need for innovation. It is acknowledged that Green Infrastructure (GI), which incorporates nature within built environments, could provide a health solution in the form of nature-based interventions (NBIs). While NBI's have been growing in number and popularity, evaluation about the impact is still needed. Existing geographic literature concentrates on younger populations, abroad and across (semi) rural wealthy locations: while health studies the mentally ill, isolated older people, care settings, or those with chronic long-term conditions. This thesis has explored the use of GI for the benefit and improvement to human health and wellbeing. The thesis aimed '*to critically explore urban NBIs, such as care farms (CF) and community gardens (CG), in Greater Manchester (GM), to ascertain their value for the older populations and its role within the wider green movement*'. Using in-depth semi-structured interviews with ten older adults, based within case studies and other stakeholder interviews provides a comprehensive investigation of benefits. Findings signify these sites make older adults feel '*happier, healthier and connected*', with the motivating factor for attendance being socialisation, while health and wellbeing improved as a byproduct. These include feeling valuable and included, and reduced thoughts of anxiety and isolation. With a pandemic illustrating their resilience and resourcefulness. While impacts were evidenced by outsiders, voicing perspectives of acceptance and sustainability, as they articulated aesthetic improvements and community cohesion. This research provides unique insights into the impact and influence that CFs and CGs have specifically for older adults, and indirect benefits from GI. Thus, enhancing the science base, and facilitating recommendations for future practice and research.

## Chapter 1: Introduction

### 1.1. Weeding out the problem

It is well documented that global populations continue to increase, with the United Nations (UN) suggesting they will reach 8.5 billion by 2030, with a further increase projecting 9.7 billion by 2050, and then 10.9 billion by 2100 (Government Office for Science, 2021). Alongside this growth, additional pressure has been added by ageing populations, as between *'2019 and 2050, the number of persons aged 65 years or over globally is projected to more than double'* (Government Office for Science, 2021). This is particularly evident within the Global North and in turn is increasing pressure on health care systems, due to health being determined by life course and therefore multi-morbidity rising with age, a theme which is explored more in-depth later in the thesis (Guzman-Castillo et al, 2017; Public Health England, 2019). The United Kingdom (UK) is projected to see an additional 7.5 million people aged 65 and over within the next fifty years (ONS, 2021b), providing a challenge for the National Health Service (NHS).

Health is determined by many factors, including genetic inheritance, personal and lifestyle choices, social support, living and environmental conditions (Stewart & Hursthouse, 2018). While inequalities in these factors exacerbate difficulties living with morbidities and increased mortality, while more people in the UK are continually being driven to the poverty line (Dorling, 2019). Further pressure was also applied during the Coronavirus (Covid-19) pandemic, with initial increases in people feeling anxious and distressed around changes to their life (Daly & Robinson, 2021), while those who felt significant repercussions of the virus tended to be vulnerable groups, such as women, young people (18 – 29 years), and those from socially disadvantaged areas (O'Connor, et al, 2021).

Alongside this, older adults in the UK were asked to shield, as *'people who were 80 or older were seventy times more likely to die than those under 40'* (Public Health England, 2020b, pg. 4). Even as restrictions eased, these pressures remain, with a severe impact on the mental health of the population, requiring attention and opportunities to alleviate this concern (De Pue, et al, 2021).

These health care stresses, coupled with the future effects of climate change, resource competition, disparities across inequalities and increasing urbanisation, highlights the need to identify ways in which populations health and environments can be sustainability managed (McKee, et al, 2021; van den Bosch & Sang, 2017; Whitmee,

et al, 2015; Szreter, 2004). With the use of Green Infrastructure (GI) gaining traction as a solution to these concerns. GI is:

*‘a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services... incorporates green spaces...and other physical features.... On land, GI is present in rural and urban settings.’*

(The European Commission, 2013, pg. 3).

These areas can provide ecological, economic, and social benefits through natural solutions, with one focus of research developing to investigate its influence on mental, physical and the general wellbeing of populations. By providing access to nature using GI has the potential to tackle the increasing pressure that populational growth and strained health services will experience in the coming years (De Pue, et al, 2021; Bu et al, 2020; Horton, 2021; Pierce, et al, 2020; Bowen & Lynch, 2017; Cameron et al, 2012; Lee & Maheswaran, 2011). This infrastructure consists of creating nature-based spaces, nature-based interventions (NBIs) or activities that can provide benefits to its users, including maintaining ecosystem services, community cohesion and health benefits for its direct and indirect users (McKinney & VerBerkmoes, 2020; Gianferrara & Boshoff, 2018; Lin, et al, 2017; Coutts & Hahn, 2015; Tzoulas, et al, 2007). GI has therefore been identified as a possible salutogenetic opportunity, enabling wellbeing and subsequent human health to be managed in a way to prevent the onset of long-term conditions, through using personalised approaches (Howarth, Mello & Kershaw, 2021; Howarth & Lister, 2019; Robinson & Breed, 2019; Thompson, 2018; Buck, 2016).

This use of nature for human health and wellbeing can be referred to using terms such as ‘Green Care’, ‘nature-based solutions’, ‘nature-based intervention’, ‘nature-based activities’, ‘nature-based solutions for health’ or ‘nature-based health promotion’, yet these terms attempt to promote the use of natural environments for recipients to garner therapeutic benefits experiencing or interacting with nature (and this will be explored in Chapter 2). One opportunity for creation of personalised NBIs is through more radical approaches in GI, such as community gardens (CGs) and care farms (CFs).

Community gardening (CG) can be defined as:

*'plots of land used for growing food by people from different families, typically urban-dwellers with limited access to their own land'* (Okvat & Zautra, 2011, pg. 374).

In comparison, care farms (CF) can be defined as:

*'the use of commercial farms and agricultural landscapes as a base for promoting mental and physical health, through normal farming activity'* (Hassink, et al, 2007, pg. 22).

Several definitions exist on these approaches (see Bragg & Atkins, 2016). However, those above capture the wide scope of these spaces, with the ability to interact with growing for the benefit of health therefore lending themselves well to the overarching goal of this thesis. With such definitions being favoured in the wider literature base, further justifying their inclusion for this research. These approaches enable unique spaces in which food growth, horticulture and community relationships symbiotically develop, therefore providing these NBI spaces, whilst subsequently impacting on human health and wellbeing (Bragg, & Leck, 2017; Sempik, et al, 2014). Building on asset-based principles that promotes a focus on what matters to the person, rather than *'what is the matter with someone'* (NHSE, 2019; Pokorska-Bocci, et al, 2014). Although NBIs are still a relatively novel area of research within the UK, there are a variety of CGs and CFs in existence across the country. According to recent estimates, there are nearly 300 CFs currently operational across the UK, with a further 90 in the Republic of Ireland, alongside more than 150 prospective social farms currently under development (Mitchell, et al, 2021; Bragg, 2020). With the sector having an estimated: *"10, 210 UK care farming places provided per week, which equates to approximately 469,660 per year"* (Social Farms and Gardens, 2021). This highlights how the sector is continuing to grow, through development of new and the expansion of existing sites, which is further aided by a nascent research and policy base. Yet the number of CGs is more difficult to estimate, with Manchester reporting more than 100 across the district (Sow the City, n.d), yet many go unreported due to the grassroots nature of projects. Nonetheless, increased understanding of the importance of these spaces and nature

in general was seen throughout the Covid-19 pandemic, specifically for food security alongside health and wellbeing (Mercado, 2021), with calls to expand the network of CGs further in the future (McCunn, 2020).

When considering the CG definition, it suggests a grassroots approach to generate fruit and vegetable production within localised areas, but this also extends to flower production. The amalgamation of community members allows leadership and participation from residents to care for these 'socio-ecological spaces' (Tidball & Krasny, 2007), with these sites being specifically popular with older adults. Sites range in size and location, with some CG projects adopting single sites whilst others are multi-locational (Armstrong, 2000). The definition of CFs contrasts with that set for CG, favouring the use of traditional farming models, establishing single sites for personalised approaches (Okvat & Zautra, 2011), and tending to more prescriptive therapeutic programmes facilitated by key professionals. The evolution of CFs has now brought them to urban areas, by transfer of the underlying farming practices to build up settings (Moruzzo, et al, 2019), while restrictions of space causes some to adapt practices. Yet, some also care for small animals and horticulture on limited scales, thus identifying some of the unique challenges due to location. These types of NBIs encourage a multitude of benefits to be realised from accessing/participation within CG or CF groups, in which the literature review will continue to develop (in Chapter 2).

## 1.2 Prescribing access to nature

NBIs are increasingly being used as a green social prescription (SP) opportunity to enable access to non-medical services that can support wellbeing (Howarth, et al, 2020). There are numerous definitions surrounding SPs, for the purposes of this study, the NHS definition is given as it provides clarity, alongside being the guiding standard for those spearheading the development of SPs in England:

*'Social prescribing enables all local agencies to refer people to a link worker. Link workers give people time and focus on what matters to the person as identified through shared decision making or personalised care and support planning. They connect people to community groups and agencies for practical and emotional support'* (National Health Service England, 2019).



This illustrates that SPs provide a personalised and holistic approach for healthcare, away from traditional medical treatments (e.g., pathogenic medication) towards a more therapeutic alternative. While a large variety of 'alternative prescriptions' exist across arts, media, education and the green environment, the pathway to access these non-medical activities is facilitated primarily by the General Practitioner (GP) or other health/social care professional (The Kings Fund, 2019). The health/social care professional refers the patient to a link worker, who meets the individual, and through a wellbeing conversation, refers them to an appropriate asset within the community (South, et al, 2008). SPs are now trying to remove the necessity of conversation with care clinicians (GPs) in favour of the link worker having the fulsome conversation with the individual, therefore enabling greater determination of the most suitable non-medical services available (Husk et al, 2016). Kimberlee (2016) expands upon this holistic SP model and suggests that everyone's needs can be catered for through this expansive '*patchwork of social prescribing initiatives emerging at grassroots*' (pg. 33), providing personalised interventions that will suit all. This pathway provides a formalised approach to accessing these interventions, however not every participant uses this method, with others self-referring onto the programmes – thus instigating the 'informal SP' pathway, which has been highlighted as difficult to control and monitor.

The National Health Service (NHS) has struggled with increasing demands on its services due to increasing older populations, prevalent long-term conditions, and fiscal insecurity, yet SPs could provide a viable opportunity to relieve stresses whilst providing an improved standard for patient care (Woodall et al, 2018). Amidst examples of implementation of SPs across London districts having shown promising reductions in emergency admissions and savings of over 5% on community health expenditure (National Health Service England, 2014). Other evaluations of SP implementation illustrated a variety of benefits including:

- Of those taking part in SP groups 54% were discharged from all mental health services, freeing up services for others (Dayson & Bashir, 2014).
- Reduction in Accident and Emergency (A&E), outpatient and hospital admissions (Polley, et al, 2017ab).
- A social return estimation of between £0.96 and £2.19 on (every £1) investment in SPs from wellbeing benefits (Dayson & Bennett, 2017).

Therefore, identifying SPs as an opportunity for the UK to promote non-medical interventions that assist with the population's health and wellbeing. With support seen for the development of SPs through integration within the NHS Long Term Plan for England, published in January 2019. The plan states that personalised care will become 'business as usual' across the health and care systems (NHSE, 2019). Scotland, Wales and Ireland have also adopted the use of SPs, but in differing formats to best align with their current health systems. Wider comparisons can be drawn from examples such as Scandinavian countries providing SP specific centres, across to the United States enabling holistic therapies across longer periods of time with residential opportunities (Loue, Karges, & Carlton, 2014).

A specific SP sector that has been developing, particularly in the UK, is the use of NBIs, therefore incorporating the ideology of environments linking healthier lifestyles through formalised routes (Howarth, et al, 2020). Subsequently this strengthens the use of a non-medical approach to improve health and wellbeing. Yet, as this field is still emerging there are several gaps, including evidencing the impact that different types of green activities have on the health and wellbeing of those involved, alongside a failure to recognise and discuss the ability for people to attend these spaces without referral (on a voluntary basis). Consequently, this research study investigates case studies situated within CG's or CF settings, to gain an insight to their activities, alongside comparing the health and wellbeing effects derived from these sites.

### 1.3 Thesis focus

As this introduction suggests, the use of NBIs can provide benefits to human health and wellbeing. Therefore, this research focuses on NBIs based at two case study sites in Greater Manchester (GM): a CF with animals and gardening activities, and a CG, an informal group running independently primarily growing produce on the grounds of a community centre, and other public spaces.

GM has experienced major changes in previous decades, and this is expected to continue in future development, and has been advocating and recognising the importance of GI, especially in its Infrastructure Strategy (GMCA, 2019a). Around half of GM is urban, with over half of these urban areas being green or blue spaces, however the majority of the latter relates to private gardens (Ignition, 2020). The GM region has been the recipient of many large GI projects such as Northern Roots, which

received £24.5 million to develop a community asset in the form of an urban farm and eco-park (Northern Roots, 2020), while a £500,000 boost of government funding looks to aid green SP of the local communities (GMHSC, 2021). Attention is being paid to the development of green SPs and the voluntary use of nature to assist with health and wellbeing of the population, yet evidence is still required to substantiate the claims made about NBI impacts. Both research sites for this thesis are classified as urban and within deprived areas (Manchester City Council, 2019), with overall deprivation increasing since 2015 (Manchester City Council, 2019). In basing this research here, it looks specifically at the impacts experienced by older adults, '*ageing in place*', (see Chapter 3: Methodology) using NBIs in deprived urban areas. Those living in deprived areas have been found to have limited access to green space, (de Zylva, Gordon-Smith & Childs, 2020), with other factors, such as safety, impacting on the accessibility of resources and subsequent use (see Williams, et al, 2020). More recently, research carried out in the pandemic also highlighted the need for more 'greenery' in deprived areas (Ugolini, et al, 2021; Hubbard, et al, 2021; Gillis, 2020). Thus, research is required into the nature spaces that are available, such as CFs and CGs, for which populations could value as a safe connection to nature (Jones, Hillsdon & Coombes, 2009). It is also incredibly important to study older adults' perceptions, for the reasons identified above, but also as older people are often seen as vulnerable, therefore leading them to be under or misrepresented within research (McMurdo, et al, 2011; Wenger, 2002), and thus research is required to overturn stereotypes or stigmatisation.

This PhD explicates the impact of these GI interventions for older adults within the volunteer and community contexts (Health Education England, 2016). A comprehensive approach is adopted to build on the knowledge gained from the case studies, by using in-depth interviews with older adults attending the sites, while liaising with group facilitators who are important in establishing activities and enabling groups to come together to grow. Adding to this, gathering opinions from the public provides another perspective from those indirectly benefiting from the existence of these spaces. In this sense, combining with the views of key actors at a national and international level, including policy makers, and third sector representatives, also provides a wider narrative around the benefits and negatives experienced at a wider sector level. Ultimately providing a holistic and rich perspective of the phenomena.

#### 1.4 Study aim

To critically explore urban nature-based health interventions (NBIs), such as care farming (CFs) and community gardening (CGs), in Greater Manchester (GM) and to ascertain their value for the older populations and its role within the wider green movement.

#### 1.5 Objectives

The following objectives will be explored using a case study narrative:

- i) Undertake a desktop analysis of green infrastructure (GI) and its role within the wider green movement and social prescription (SP) agenda
- ii) Engage with stakeholders involved in the GI schemes to understand their perceptions and ambitions for the activities
- iii) Critically evaluate two GI health schemes in Greater Manchester and their impact on participants' health and wellbeing
- iv) Evaluate the development of the wider nature-based health movement across the UK, alongside barriers to the concept
- v) Provide robust and effective recommendations for future research and development within the field.

Figure 1, the Research design, is included to highlight how these aspects interact with each other to create a meaningful output.

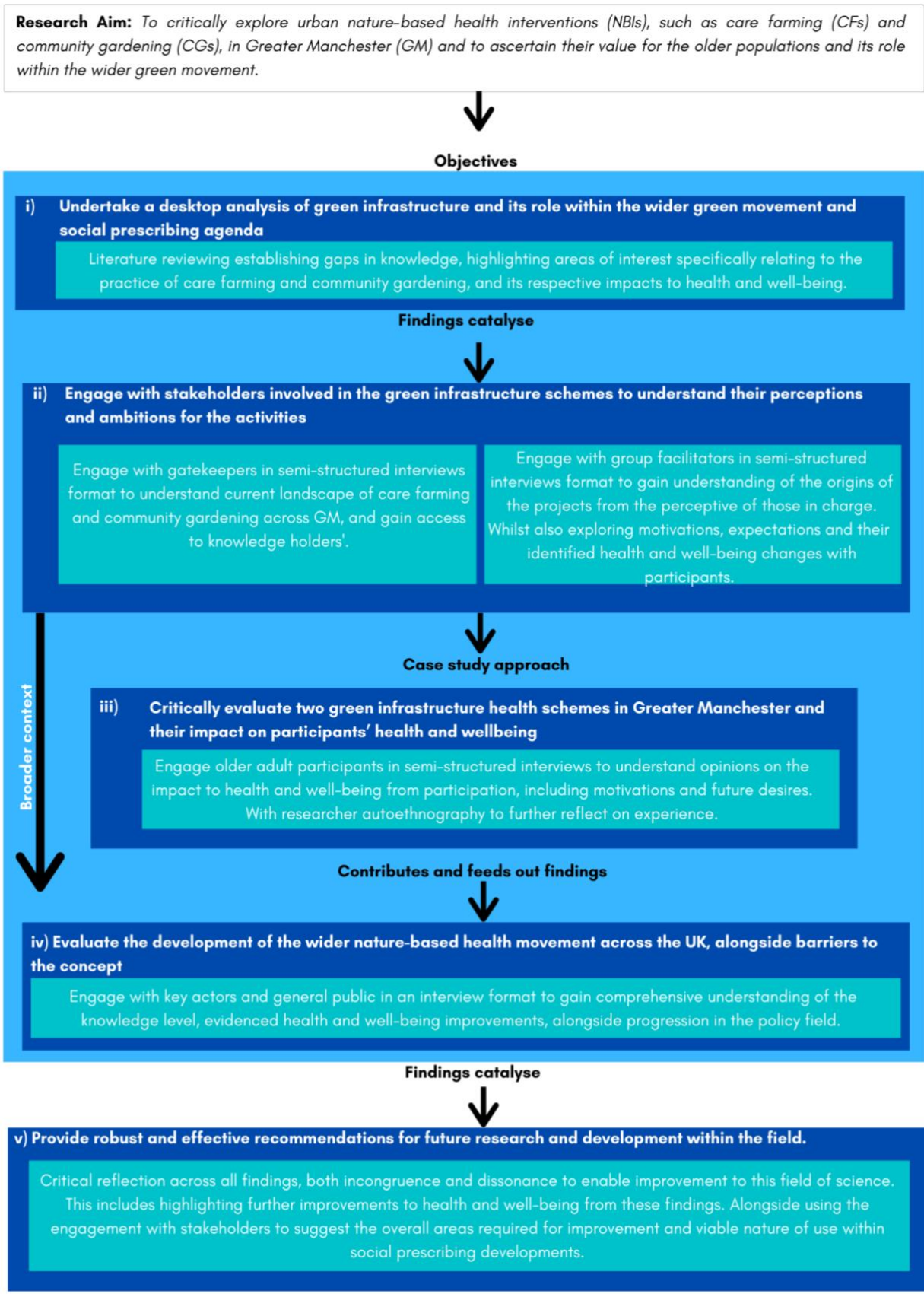


Figure 1: Research design

## 1.6 Thesis structure

The thesis begins by '*Planting the seed*' with an overview of GI for the benefit of health and wellbeing, alongside setting the scene of the existing challenges that are faced by ageing communities. This establishes a desire to investigate the field and provide a unique contribution to the science base' through explicating the benefits of CGs and CFs specifically with older adults living within the community which has, hitherto, received limited empirical investigation.

A qualitative case study approach is used to provide a review of the project's impacts on participants at two contrasting growing sites. This approach enables a significant contribution to the growing body of literature describing the wider impact of GIs influence on health and wellbeing, particularly within a UK context. The thesis is structured as shown in Figure 2:

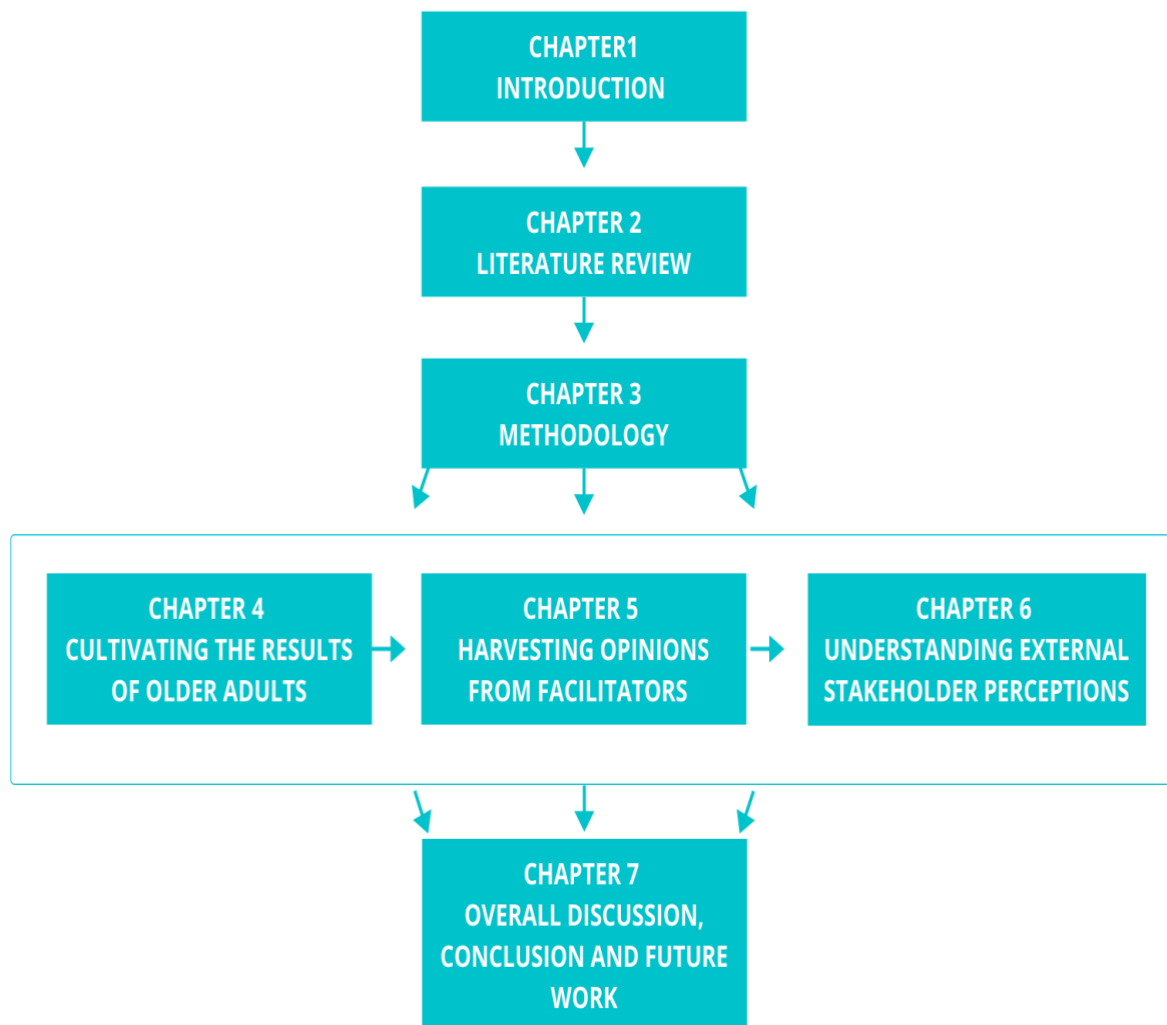


Figure 2: Thesis structure

**Chapter 1** presents an introduction to the thesis and is provided to give a grounding to the study. Alongside introducing the aim and objectives of the research.

A review of relevant literature is given in **Chapter 2**, along with gaps in knowledge being presented, which identifies the current evidence of studies suggesting benefits from green spaces and interventions. While it exposes a population gap, around the inclusion of older healthy adults living independently within the community, using GI projects.

**Chapter 3** *'grows the research project'* by providing an overview of the theoretical underpinnings of this research and the ethical consequences of completing research with older adults, in a pandemic. The rest of this chapter focuses on the research sites, methods used and the process of data collection and analysis.

**Chapter 4** builds on the methodology created for this thesis and moves to *'cultivate findings with older adults'* by drawing on the interview data collected with older adult users of each space. This chapter provides insight to the motivations for attending, the benefits received and the vision of the future of these projects and embeds discussion throughout.

**Chapter 5** extends findings generated from the older adult perspective by taking a holistic approach to engage with others that these projects influence: *'harvesting findings with group facilitators'*. Where there is development of the viewpoints held by those instrumental in setting up groups, evidencing health and wellbeing changes personally and witnessed within the ageing population.

The remainder of findings within this thesis is then presented in **Chapter 6** through *'developing the views held by outsiders'*, including key actors across multiple sectors alongside the public near the case study sites, to explore and offer insight to the challenges and opportunities for improving health and wellbeing in the future.

With **Chapter 7** providing a follow-on discussion of the overarching findings from all participants groups within this PhD study. Drawing this thesis to a close by means of a conclusion and recommendations for future, alongside further work required and a

reflection on the limitations. This chapter ultimately looks to bridge the perspectives of all taking part in this research, to ultimately provide pragmatic recommendations for the future, to ensure that these projects can be sustainable while improving health and wellbeing.

### 1.7 Thesis contributions

This research seeks to advance knowledge and understanding of how green interventions and activities can benefit the health and wellbeing of older adults living in urban deprived locations in GM. It provides practical recommendations to develop and implement outdoor and nature activities that will contribute to effective use of environments for the benefit of human health, specifically of those over the age of fifty. Therefore, this research makes the following contributions to knowledge:

1. An in-depth narrative on the lived experiences of older adults using the case studies, CGs and CFs, in the GM region. While also giving in-depth narratives from others involved, with the lived experience narratives given from group facilitators and external stakeholders – to enable a holistic perspective to be gained.
2. Critical discussion on health-based projects, looking at placement in urban deprived locations and its consequent impact on benefits derived, within a UK context.
3. Generating an evidence base for future development in the wider green movement and the green social prescription development. Evidencing barriers and opportunities to improve in the future.



## Chapter 2: Literature review

### 2.1 An introduction to the literature review

*'The importance of the natural environment shines throughout whether in gardens and green spaces in hospitals and housing estates or in the sheer calming effect of greenery and the countryside on adults and children alike. And similarly, the quality of the built environment and the accompanying sense of place, identity and belonging are important for our health and wellbeing'* (Crisp, 2020, pg. 16)

As this thesis study spans a variety of disciplines, and to be able to answer the criteria above, it was important to conduct a *'traditional or narrative literature review'* to ensure a holistic summarisation of the large body of knowledge (Danson & Arshad, 1993, pg. 37). It is suggested by Baker (2016) that these types of review establish a theoretical framework, whilst providing focus and context for research to be conducted. Onwuegbuzie and Frels (2016) define the traditional review into four types: general, theoretical, methodological, and historical. To frame the research conducted it is important to cover all these aspects, to ground the study due to its novelty and cross-cutting disciplinarily, therefore a scoping review enables a cohesive synthesis of the current evidence to be gathered (Munn, et al, 2018). Search terms such as 'green care', 'community gardening', 'care farming', 'social farming', were used alongside 'older adults', 'later life', 'elderly'. A search of the literature was conducted regularly from October 2018, until November 2021, to keep this review as current as possible.

This chapter starts by introducing topics including the development and understanding of ageing populations and the influence nature has on health (2.2), the use of NBIs and Urban Agriculture (UA) to facilitate access to nature (2.3), and a prescriptive pathway enabling this connection (2.4). A theoretical debate is presented (in 2.5), to reveal the various underpinning theories concerning humanistic connection to nature, while the current evidence base of health and wellbeing impacts follows (2.6). The review is then substantiated by understanding the specific policy and funding opportunities constructed to maximise benefits (2.7). As the research was conducted under the influence of the Covid-19 pandemic, the emerging data basis is developed (2.8), concluded with a summary of evidence that identifies the existing gaps and need to advance knowledge (2.9).

## 2.2 An introduction to health and populations in the UK

This section provides conversation around the involvement of the health care system in the UK, to give insight into how the development of services across the country have contributed to an ageing population. In giving this narrative, it exposes statistics around the growing ageing population, the health conditions experienced and opportunities to enable 'healthy ageing' and 'ageing in place'.

### 2.2.1 The history of health in the UK

Looking back to the 1800s, the health and wellbeing of populations of the UK is completely unrecognisable when compared to today. Most of the country was still rural, with cities generally overcrowded and dirty, with limited or no sanitation (Harris & Helgertz, 2019; Brewer & Pringle, 2015; National Portrait Gallery, n.d). Diseases, such as tuberculosis and smallpox were rife (Science Museum, 2019; Davenport, Satchell & Shaw-Taylor, 2018; Douglas, Strachan, & Maxwell, 1996), with life expectancy around 40 years (Picard, 2009; National Portrait Gallery, n.d). Health care was expensive, and little effective medication was available. Towards the midst of the 1800s, epidemics including cholera, typhoid and influenza had gripped the nation, killing thousands, while mental health was largely unsupported by health care services (Rollin, 2003). By the end of this century credible links had been made between the health of populations and environments people were living, such as Dr John Snows geospatial work on evidencing the spread of the epidemic of cholera in London, being spread by poor sanitation (Walford, 2020; Tulodziecki, 2011). While nurses like Mary Seacole and Florence Nightingale, were transforming care and hospitals from cramp and unsterile places to clean, efficient spaces for healing, incorporating the environment into health through advocating for fresh air, clean water and use of nature for recovery (McDonald, 2016; Jones, 2005). With the Reform Movement of the early nineteenth century established capacity to discuss mental (ill) health, alongside the creation of 'asylums' in pleasant rural environments, where nature and activities such as gardening, and the arts formed part of treatment (Rollin & Reynolds, 2018). At this time profound social changes were afoot, with women gaining the vote, children's education being protected and employment regulations reducing exploitation (National Portrait Gallery, n.d).

The early 20th century was dominated by reform of health services, the first world war, and the suffragette movement (UK Parliament, n.d). William Beveridge, a liberal politician, advised the government on old age pensions and national health insurance, first introduced for those over seventy in 1908, and then in 1911 respectively (Light, 2003). While the Beveridge report of 1942 played a significant factor in the development of the NHS (Powell, 2021), the modern-day population differs significantly. Where a different population structure-imposed concern: *'the worry was not a growing and ageing population. It was rather the reverse. The birth rate had been falling in the 1930s'* (Timmins, n.d).

As outlined in the introduction Chapter (1), it is acknowledged that global populations are continuing to grow rapidly (Erken et al, 2019), which is causing a profound effect on global health and care services, with arguments around equality, equity and sustainability burning (World Health Organisation and World Bank, 2017). The United Nations (2019) predict that *'the global population could grow to around 8.5 billion in 2030, 9.7 billion in 2050 and 11.2 billion by 2100'* (United Nations, 2019, pg.1). While in the UK, one-fifth (19%) of the population is over 65 years old, equating to 12.3 million people, having increased by 23% between 2009 and 2019 (Lewis, Cromarty & Barton, 2021). More people are also moving towards urban areas, through increased urbanisation, with suggestion that:

*'between 2000 and 2015, the number of people aged 60 years or over increased by 68 per cent in urban areas, compared to a 25 per cent increase in rural areas'* (United Nations, 2015, pg.21).

Living in cities presents many environmental health challenges, as identified when guided through the historical landscape presented at the start of this chapter. Today there remains challenges including contamination of air, water and soil, pollution exposure, and poor housing conditions, while climate change is likely to exacerbate health risks and inequalities (Vardoulakis, Dear & Wilkinson, 2016; Heal, et al, 2013). Covid-19 highlighted these social and economic inequalities, especially in the UK, where austerity was seen to contribute to an unequal health picture (Marmot & Allen, 2020). Those in greater depravity experience food poverty (Power, et al, 2020), alongside disparities in the distribution of GI meant that often for communities with higher ethnic diversity, lower income and greater health inequalities had insufficient

access to nature (Mell & Whitten, 2021). Barriers do exist when trying to use natural environments, for example gardening or agriculture, in fear of the health risks, alongside limited space restricting potential expansion of activities (Chenarides, et al, 2021; Hardman, et al, 2018; Cachada, et al, 2012).

Alongside this, people are continuing to live longer, resulting in further stress on health provision worldwide (Hao, et al, 2020; Thorlby, 2013), with those living in rural areas having greater access to natural environments and longer life expectancies (ONS, 2020, in Urban Health, n.d) alongside those on higher incomes also being linked to better health (Ministry of Housing, Communities & Local Government, 2019). It should also be considered that even if it is possible to live longer this doesn't necessarily mean this life is healthier (Jivraj, et al, 2020a). The increased numbers of people living, in urban areas and increasingly unhealthy lifestyles continues to pressurise health provision with the World Health Organisation (WHO) reporting that:

*'In 2018, for the first time in history, persons aged 65 or above outnumbered children under five years of age globally'* (The United Nations, 2019, pg.1)

Some argue that this ageing population will cause greater dependency on health care, with increased reliance on medical support, due to growing susceptibility to illnesses (Scholes, et al, 2008). This ageing population is also strongly linked to morbidity, where conditions have a greater impact on quality of life and ultimately impacts upon mortality rates (Stuckler, 2008). This issue is globalised, with The United Nations, (2019) illustrating increased ageing populations over time, therefore conveying that this could impact inequalities specifically related to health due to economic and social influences, with those in developing countries at the greatest disadvantage. This concept of disadvantage is of great importance to this study; with Age UK suggesting that the *'number of pensioners in poverty has now passed the two million mark'* (2021b). illustrating the need for resources to reduce the inequalities faced.

Yet, to reduce the impact on health, the NHS provides a service that is 'free at the point of delivery' to UK citizens (Delamothe, 2008, pg. 1216). One of the main public health priorities for the UK population is to reduce health-based inequalities and allowing people to live healthier and longer life's resulting:

*'In 15 years, we will have 1.2 million more people aged 85 than today – an increase of nearly 80% between 2018 and 2033'* (The Kings Fund, 2018, pg.1).

Paradoxically, longer life expectancy has created increased pressures on the NHS, which, coupled with budget cuts and staff shortages has led to longer wait times across health and care services (Age UK, 2019ab), as well as inappropriate provision of essentials, planning and development of services (Centre for Ageing Better, 2019; 2018). Still health is invariably linked to environments where individuals are born, live, work, and retire in – so it is important to understand the relationship fully.

### 2.2.2 Ageing in urban places

As van Hoof, et al, (2018) declares an *'ageing of society is a positive yet challenging phenomenon, as population ageing, and urbanisation are the culmination of successful human development'* (pg. 1). Ageing in an urban world, ensures a closer proximity to public services, which in turn influence the quality of life of the population (Skinner & Winterton, 2018; Heathcote, 2011; Sixsmith & Sixsmith, 2008). Moving forward there is a desire to enable older adults to live in the community, with independence, rather than within formal care settings, and this is known as 'ageing in place' (Forsyth & Molinsky, 2021). The term surfaced in the late 1980s, gained momentum in the 90s and is now being promoted widely in both the academic and public world (Byrnes, Lichtenberg & Lysack, 2006). While 'ageing in place' is supported by providing built environments and community-based services/assets with older adults in mind, therefore enabling social support and interactions to be possible through providing *'activities of daily needs: groceries, banks, post offices, pharmacies, health clinics, seniors' centers, public transit systems, and so on'* (Bigonnesse & Chaudhury, 2020, pg. 239).

Consequently, policies at international, European and UK level are now driving strategies to facilitate healthy ageing, to enable older adults to remain at home for longer and in better health (Buffel & Phillipson, 2018). This is supported by the Age Friendly cities initiative, announced by the WHO to promote adapting cities while being mindful of this populations needs. For cities to be age friendly, the WHO set criteria, as shown in Figure 3, to ensure inclusivity for those ageing, with particular attention paid to nature, community, and health.



Figure 3: Age friendly cities topic areas (WHO, 2007, pg. 9)

To progress the focus on older adults further, the UN declared the Decade of Healthy Ageing to run between 2020 to 2030 (WHO, 2020ac). This strategy maps out a framework that is aligned to the last ten years of the Sustainable Development Goals (SDGs), by bringing together governments, professionals, academics, the media, alongside the third and private sectors – yet many suggest more is needed to ensure success (Rudnicka, et al, 2020; Lloyd-Sherlock, et al, 2019). Currently many older adults do not have access to resources needed for a life of meaning or dignity, as multiple barriers prevent them from fully participating in society. Thus, the strategy looks to develop four key areas:

1. change how we think, feel and act towards age and ageing
2. ensure that communities foster the abilities of older people
3. deliver person-centred integrated care and primary health services responsive to older people
4. provide access to long-term care for older people who need it.

The Covid-19 pandemic further highlighted the seriousness of existing gaps in policies, systems, and services, where older adults were often under or misrepresented. This decade of concerted global action on healthy ageing is therefore needed to ensure that older people can fulfil their potential with dignity and equality and in a healthy

environment. While the strategy gives focus, as; *'Research on healthy ageing must address the current needs of older people, anticipate future challenges and link the social, biological, economic and environmental conditions and determinants of healthy ageing in the first and the second halves of life and evaluate interventions to improve healthy ageing trajectories'* (WHO, 2020b, pg. 19).

Engaging with nature, including viewing nature or being active in green spaces, can positively impact on an individuals' health and wellbeing, while assisting with active and healthy ageing (see Marmot, 2020; Zurawik, 2020; Keniger et al, 2013; Barton, Griffen & Pretty, 2010; Weinstein, Brown & Ryan, 2009; Mitchell & Popham, 2007; Corkery, 2004; Takano et al, 2002; Tarrant, 1996; Kaplan & Kaplan, 1989; Ulrich, 1979). However, as Duedahl, Blichfeldt and Liburd (2020) suggest *'So far, little attention has been paid to how different ways of being in and relating to nature can facilitate active healthy ageing'* (pg. 1).

### 2.2.3 Connecting nature and health

Few dispute the important links between the natural environment and human health, however there is much still to learn (Singu, et al, 2020; Ziter 2016; Cameron and Blanus 2016; Sandifer et al, 2015). Advances in the field have identified human health hazards including air pollution causing respiratory disease, heavy metals causing neurotoxicity while climate change is likely to increase the spread of infectious disease (Brusseau, Ramirez-Andreotta & Maximillian, 2019). Many have tried to determine these relationships, into sectors that determine a populations health. For example, Knox (2000) studied the influence of social environments on self-rated health, showing that community cohesion played a role in improved self-rated health, alongside reduced levels of

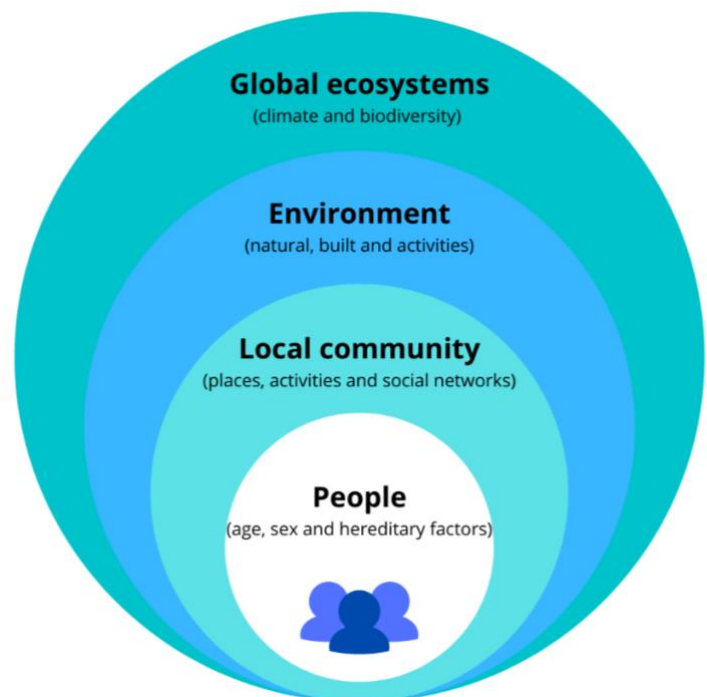


Figure 4: The determinants of health and well-being in our neighbourhoods (adapted from Barton & Grant, 2006, pg. 252, original concept by Whitehead and Dahlgren, 1991)



stress and anxiety. Most popularly, the Barton and Grant Model, shown in Figure 4, has been widely adopted, illustrating that economic, social, and environmental factors all contribute to the level of health experience. With Chapman (2010) going on to use this model and suggest that those on the lower socioeconomic status report poorer health outcomes. This model has been revised, into the development of the Mandala of Health, Figure 5, which looks to put it into practice.

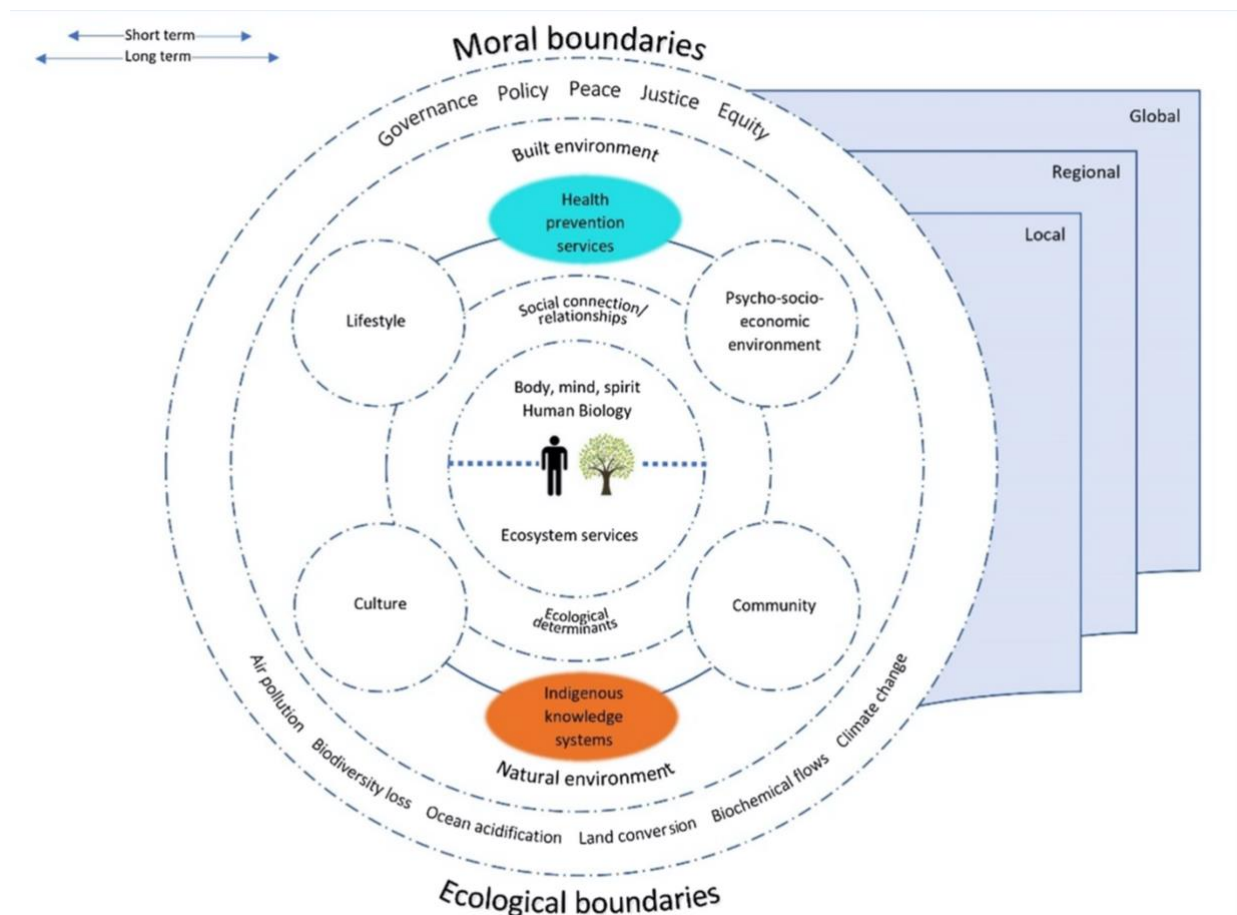


Figure 5: Mandala of Health (Langmaid, et al, 2020, pg. 8)

This uses Barton's and Grants model (Figure 4), in context of the Anthropocene (creating the Mandala: Figure 5), embedding the natural environment and health, and illustrates the paradigm shift towards embedding ecological and cultural determinants of health, across multiple scales. In doing so, it considers wider influences, such as ecological and moral boundaries, such as injustices that might influence the ability to engage with health promotion activities in nature. These environmental injustices and the consequent action-participation to bring about change is not a new concept, with communities working together to improve their local area for centuries (Agyeman,



2002). There are multiple real-life examples, specifically related to how poor environments have affected and continue to effect human health, with examples including Love Canal; where toxic waste impacted severely on human health, yet through community resilience a resolution was found, emphasising the ability for community power to enable change (Gibbs, 2011; Hemingway, 2001; Goldman et al, 1985). Still, this provides a key example of how disadvantaged communities are often suffering poor health because of their living conditions.

While there are multiple definitions of disadvantage, that span from education, family structure, place based, income and housing. The UK is seen as a developed Global North country; however the wealth divide has been increasing between the rich and the poor (Darton & Strelitz, 2003), with the Office for National Statistics reporting that the *'gap between the richest in society and the rest of the population has widened over the 10-year period'* (2021b). More than a decade of austerity contributes to further divides and services being stretched (Powell, 2019), while the pandemic has severely disrupted attempts to implement The NHS Long Term Plan that was meant to be the turning point for healthcare (Patel, Thomas & Quilter-Pinner, 2021). Disadvantage or inequalities are measured separately across the UK through the creation of indices, which examine: (1) income deprivation, (2) employment deprivation, (3) education, skills, and training, (4) health and disability, (5) crime, (6) barriers to housing and services and (7) the living environment. Disproportionately the poorest are concentrated within urban areas (see Figure 6, Ministry of Housing, Communities and Local Government, 2019). Thus, emphasising the importance of research within these localities, to improve their outlook through knowledge and recommendations.

Within the disadvantaged landscape older adults are often missed, through misrepresentation or aspects related to ageism, casting opinions aside primarily due to the individual's age, or considering that *'all old people are the same'* (van den Hoonaard, 2018, pg. 1; also see Morgan, et al, 2021; Davies, et al, 2010). Social gerontology asks a set of important questions concerning the sense of belonging and identify in relation to community placement, around where ageing population environments change around them. This work originated from Carp (1966) and Lawton (1970), who took a geographical approach to consider how physical environments (including access to nature) impact on ageing. They also consider the idea of ageing disadvantage which has become particularly important for the study of gerontology

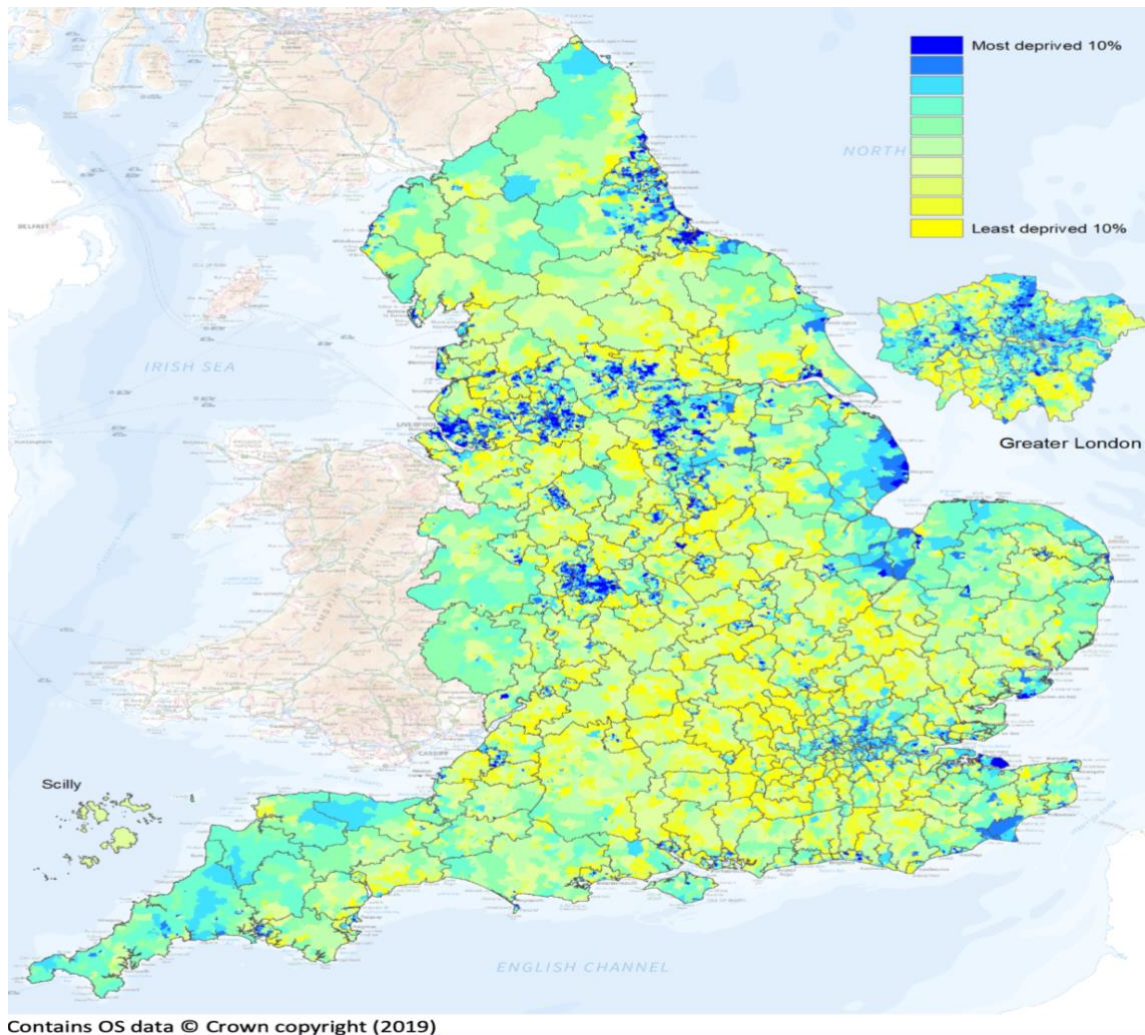


Figure 6: Indices of Multiple Deprivation across England (from the Ministry of Housing, Communities and Local Government, 2019, pg. 35)

across disciplines, with the UK having a strong historical neighbourhood support system. These neighbourhoods relied on the physical proximity of housing and communal green spaces (Ziegler, 2012), yet due to urban planning of high rises, increased awareness of crime and lack of community cohesion – this has removed previous traditions in which the communities would have been benefiting from. This includes the ability for neighbours to interact thus providing social contact and therefore benefitting the health and wellbeing of these individuals. Yet the world has changed urban social relationships, with disconnected populations resulting from slum clearances of the 1950s, which were replaced with housing estates for families providing their own green space (Philipson, 2007). Furthering this, Philipson (2007) suggests that globalisation ‘has fragmented and distorted the experience of community and place for older people’ (pg.323), therefore instigating greater awareness and need for research of this aspect.

There are numerous political stances that are expressed when speaking of disadvantage, therefore signifying the importance to research these areas to motivate and improve health/life trajectories. Booth (2019) explains this through suggestion that individuals residing in these areas *'make the most demands on the welfare state. However, the questioning of what needs deserve state support is intensifying'* (pg. 279). This introduces two aspects, the need for greater resources within these areas, but to the contrary these services are gradually being pulled away from those requiring them. Therefore, this spawns community action to create their resources for themselves (South, et al, 2019), sometimes in the form of CGs or CFs, in attempt to provide provision of services at a localised level. With this comes greater motivation within communities to be involved, participation in decision making and ultimately the potential to improve health and wellbeing through community-based nature interventions.

While Jones, et al, (2019) articulates that health disparities are influenced by the physical, environmental, and socioeconomic circumstances that individuals face, Geronimus (2015) adds to this by arguing that the social structure of communities ultimately changes life experiences, exposures to stressors and access to coping mechanisms, as alluded to through Barton and Grant (2006) and the Mandala of Health. The use of these frameworks helps establish understanding of the burden of disease (such as non-communicable diseases) attributed to environments, and how environmental interventions assist with health and wellbeing, which is particularly important with current global population trends *'as the world population continues to age rapidly, the trend of environmental risks predominantly affecting noncommunicable diseases is expected to become more pronounced'* (Prüss-Ustün, et al, 2017, pg. 469).

The natural environment, as shown on Barton and Grants (2006) model, is particularly important as it encapsulates the human-nature connection which has been evidenced as crucial to determine health, as alluded to earlier, and will be expanded on later in this chapter. Inequalities exist contributing barriers to accessing nature and healthy ageing environments. The literature around using nature for health and wellbeing has grown for decades (Berman, et al, 2012), with evidence of changes from being both passive and active in nature, towards specific NBIs such as horticulture therapies now being designed to assist with populations requiring help, which is elaborated on further in this chapter.

### 2.3 Urban Agriculture

Population growth and the subsequent urbanisation, coupled with the competing demands for land use and budgets, are putting existing local greenspaces under threat, illustrating inequalities (Public Health England, 2020a). Urban Agriculture (UA), the idea of growing crops in cities is rapidly growing across the globe (Hardman & Larkham, 2014), while it also has the potential to contribute to a sustainable and resilient urban community (Ferreira, et al, 2018). UA is an overarching term, promising a path to food security and sovereignty, while contributing to local economies and reduced environmental impacts (Nabulo, et al, 2012). With abilities to contribute to UA across multiple scales within the built environment, from large scale urban farming, vertical farming, and aquaponics to smaller conservative opportunities such as CGs and CFs. These innovative opportunities are needed as The Committee on Climate Change (2019) found that access to urban greenspaces in England had declined by 8% between 2001 and 2018, from 63% to 55%. Therefore, improved access to nature in the urban world is needed, with one viable option being suggested in the form of newer forms of GI.

As suggested in Chapter 1, GI is a network of nature-based areas *‘designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens’ health and quality of life’* (European Commission, 2020, pg. 5). Thus, enabling small scale opportunities, to provide nature-based solutions bringing benefits to the population, bridging community cohesion, and building resilience for economic and environmental shocks induced by climate change (Parker & Simpson, 2020). Yet no single solution has been provided to fund progression, generating a fragmented and approach to integrating these spaces across the county (Mell, 2020). In doing so, the existence of GI has provided a platform to accommodate NBIs as:

*‘an intervention with the aim to treat, hasten recovery, and/or rehabilitate patients with a disease or a condition of ill health, with the fundamental principle that the therapy involves plants, natural materials, and/or outdoor environment, without any therapeutic involvement of extra-human mammals or other living creatures’* (Annerstedt & Währborg, 2011, pg. 372).

Contrastingly, other academics, such as Wright (2011), argue that there should not be a distinct definition set, as this causes detrimental consequences, with some projects being excluded due to the overly narrow interpretation; subsequently having an impact on accessibility to funding opportunities and collaboration. These definitions also have consequences for the use of other related terms such as ‘green-care’ or ‘eco-therapy’, resulting in a complex landscape. This difficulty is exacerbated by the varying levels of such therapies, as shown in Figure 7. Signifying the varying stages of NBIs available: (1) general exposure, (2) health promotion and (3) health therapy, with an increased embedded structure moving from general to intermediate (left – right), and the enhancement for biodiversity seen on the far right.

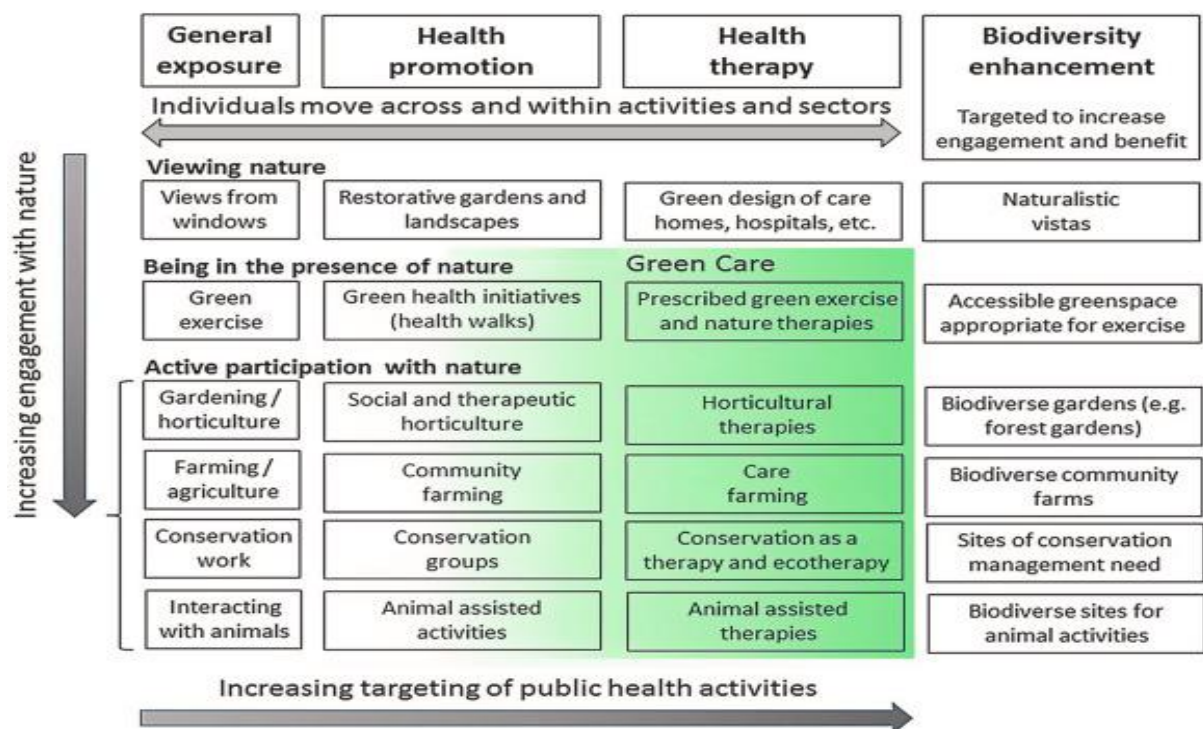


Figure 7: The levels of accessing nature (Howarth, Lawler & da Silva, 2021, pg. 2)

Figure 7 also reflects the complexities of the individuals who access the different services across the three categories, with those requiring greater therapeutic outcomes using the most intermediate levels of green care. The numerous definitions incur difficulty and confusion as there is a lack of clarity, resulting in a desire to move towards consistency to describe this sector (Bragg & Atkins, 2016). The literature reviewed around this issue, illustrated that projects often do not fit into singular terms set out within Figure 7, therefore a fluidity between classifications is needed (Pretty et al, 2016). Pretty (2004), illustrates the numerous definitions and its subsequent involvement within nature, yet simplifies in to three levels of engagement:



1. Viewing nature
2. Being in the presence of nature
3. Active participation and involvement in nature

Accordingly, this contrasts with Bragg and Atkins (2016), stance on NBIs as these activities are often deemed as not concurrent with the green-care definition. Ultimately, illustrating contrasting viewpoints across definitions, and therefore causing confusion and differing adoption of terms within this academic subject. This evolving academic area therefore instigates creation of such CGs and CFs. To reduce confusion and ground this study it is appropriate to fully understand how these specific spaces have developed over time.

### 2.3.1 Growing the idea of Community Gardening (CGs)

The desire to fulfil these stages set by Pretty can be seen historically, as the practice of gardening has existed for centuries, with evidence of the Aztecs using land to cultivate flowers and parkland for the benefit of Chinese and Roman emperors (Hoyles, 1991), alongside Pompeii residents painting walls attempting to elongate gardens (Connolly, 1990), and Egyptians providing ownership and structure to 'their' land by planting trees and flowers in rows (Manniche, 1989). The practice of gardening has continued to develop and evolve over time and continents, with private gardens popularised through the colonial era (Brinkley and Chappell, 1999). Within the British context, gardening on public land can be dated back to the 19<sup>th</sup> century, when the government allocated land for subsistence farming to support survival through the industrial revolution and world wars (Hoyles, 1991). This subsequently led to the '*Dig for Victory*' movement, with communities tasked with generating food during World War 2 (Nettle, 2016; 2014). This provides the underpinnings of community conglomerate gardening, with contemporary movements beginning in the late 1960s. This generated interest in use of green spaces across urban areas, highlighting the division of transgression from individual allotments to community landscapes (Turner, et al, 2011). The modern movement was primarily established in New York, through cohesion of urban residents transforming derelict land into vegetable plots and flower gardens, whilst radical guerrilla gardening has also played a vital role in transformation (Hardman and Larkham, 2014).

Much of the current academic work concerning CG has revolved around community empowerment, subsistence through wartime and struggling land ownership (see Suto, et al, 2021; Milbourne, 2021; Agyeman & McLaren, 2017; Agyeman, Bullard & Evans, 2010). However, there are rising numbers of studies conducted to understand how allotments and community growing projects are now increasing in popularity and providing social action (Cumbers, et al, 2018). As suggested earlier, it is difficult to quantify the current existence of community gardens in the UK, due to the informal nature of their work, however it is estimated that there is currently over 1000, and this is still projected to continue to grow (Good to Grow & Capital Growth, 2020; Work for Good, 2017), therefore showcasing an opportunity to be involved in nature and a need for research to identify its impact.

### 2.3.2 Developing the overview of Care Farms (CFs)

The use of generalised NBIs has been documented as far back as the 13<sup>th</sup> century, at Geels in Flanders, Belgium (Gesler, et al, 2004). Within Geels in Flanders the concept was influenced by Irish legends, where tales of miraculous cures come from residing in this environment. During the renaissance, Geel became a famous place of sanctuary for people with mental illness, provoking locals to open their homes, farms, and stables – for which exposure to countryside benefited health (Calton and Spandler, 2009). As this ideology grew, increasing numbers of people flocked to the area to draw the positives from both the legend and the environment. This therefore generated the concept of CFs, also known as social farms, as people were ‘treated’ by exposure to land and animals, rather than traditional medicines (Gesler, et al, 2004). Today, this town is still known for welcoming people with mental illness and those who are disabled, allowing ‘patients’ to share lives with their host families whilst receiving treatment for their disorder (Salomon, et al, 2018).

The very concept of CF is still relatively innovative and novel to the UK, as Leck, Evans and Upton (2014) argues, “*care farming is often perceived and portrayed as a relatively new form of UK farm-based activity*” (pg.19). Definition of CFs in the UK recover around ‘*the therapeutic use of farming practices*’ (Social Farms and Gardens, 2020), or ‘*the use of commercial farms and agricultural landscapes as a base for promoting mental and physical health, through normal farming activity*’ (Else, et al, 2014, p. 1). This limited progression of CFs conveys that the traditional medication model is still the

default prescription offer and hence limiting the impact of CFs on a wider platform. Currently the main users of these spaces across the UK consists of those with learning difficulties or with diagnosed cognitive decline (e.g., dementia); therefore, limiting the accessibility of studies based within these spaces with general populations (Social Farms & Gardens, 2020; Bragg, et al, 2014). Therefore, stressing the need to explore these spaces and fully comprehend the impacts received by those using the assets, alongside those that could benefit through widening participation. Research is needed to build perceptiveness on its success while identifying those that are underrepresented and give them a platform to be heard.

To do so, there must be understanding of CFs in the UK. In 2020, there was nearly 300 CFs operating in the UK, with a further 90 in the Republic of Ireland, and an additional 150 prospective sites at different stages of development (Social Farms & Gardens, 2020). However, these sites are reported to not be working to capacity, with the average reported to be 63% capacity rate (Bragg, 2020). Thus, the full potential of CFs are not being realised within the UK. With many primarily situated in the South of England, within areas that the most deprived communities, or those with disabilities or mobility issues are unable to attend, due to a lack of transport or other issues (Mitchell, et al, 2021). Therefore, further representation of northern sites is required, alongside a narrative from those from more disadvantaged, often urban localities.

#### 2.4 Prescriptive access to nature

To be able to access nature in a targeted way, SPs were developed (as introduced in the Chapter 1). The positive influence of nature through use of SPs has been widely documented within the emerging literature base, by taking a more than medicinal approach (Kenkre & Howarth, 2018), with benefits identified as being:

- Cost-effective use of NHS and GP resources, and provision of increased range of services (as discussed later in this section)
- Overall health: mental and wellbeing health improvements
- Assisting communities, through cohesion, reduction in social isolation and initiation/funding projects (discussed later in 2.6)

The evidence of health benefits from accessing green SPs are still evolving, with some focusing on individual accounts of accessing or being active in nature (Sempik, Hine and Wilcox, 2010). While other scholars that illustrate the link between socially driven



environmental projects, through NBIs, such as Howarth, et al, (2020; 2018; 2017) and Ura, et al, (2018). Evidence does suggest that nature-based SPs can allow improvements to a far-reaching umbrella of outcomes from general wellbeing, physical and psychological health, welfare, and social impacts to spiritual effects (see Polley, et al, 2020). Some examples include weight maintenance/healthy loss (Moffatt, et al, 2017), improved social connectivity (Howarth, et al, 2020, 2017, 2016a; 2016b; Kellezi, et al, 2019; Skivington, et al, 2018; Kimberlee, 2013), and to a lesser extent high blood pressure and increased asthmatic control (Ulmer et al, 2016). Also improving cognitive function through greater attention control (Leavell, et al, 2019), improving mood, self-esteem and self-confidence (Foster, et al, 2021; Chatterjee, et al, 2018; Barton, Griffin & Pretty, 2011), and reducing stress (Razani, et al, 2018).

Arguably the largest impact that SPs have is on mental health (McEwan, et al, 2021; Thomson, et al, 2020; Moore, et al, 2018; Bragg & Leck, 2017; Martuzzi et al, 2017; Pretty, et al, 2016). Studies such as those carried out by Loue, et al, (2014), highlight that these treatments reduce levels of isolation, depression and can help minimise the likelihood of suicidal thoughts. A study by Hartig, et al, (2003), investigating older adults mobility illustrated the impacts of isolation and were able to show that this resulted in biological alterations to the body's systems – through disturbance in neuroendocrine regulation, autonomic functioning, and allostatic load. While SPs for those caring for older adults can alleviate negative feelings resulting from caregiving (Clements-Cortés & Yip, 2020). Conveying a physical change due to reduction in stress levels Schrempft, et al, (2019) concluded that SPs would help minimise isolation as they would promote physical activity and engagement, therefore benefiting the population. Further to this, Dayson and Bashir (2014), reported a pilot study of SPs within Rotherham, which indicated reductions of twenty-one percent across inpatient and outpatient admissions, alongside a drop across inappropriate attendance at Admissions and Emergency (A&E) departments by twenty percent. Dayson & Bashirs (2014) work highlighted the economic and procedural implications due to the adoption of SPs, therefore improving the affectability of the NHS. This is supported by Carnes, et al, (2017), who suggests that those using SPs have lower return rates to GP surgeries, therefore freeing up clinicians' resources. Bragg and Leck (2017) and Dayson and Bashir (2014), alongside countless others provided in this review have shown benefits from interactions, however, the review by Bickerdike, et al, (2017), highlighted that:

*“Social prescribing is being widely advocated and implemented but current evidence fails to provide sufficient detail to judge either success or value for money”* (Bickerdike, et al, 2017, pg. 16).

Hence, showing the primarily positive outcomes may not be the overall output and further study is required to substantiate (Bickerdike et al, 2017). Within the literature participants advocate use, adoption, and implementation of projects, however there is failure to discuss challenges and long-term effects on a meaningful scale and using mixed methodologies.

Cost effectiveness of SPs is explored further by Bickerdike, et al, (2017), and they emphasise that SPs cannot be suggested to be cost effective as they have: *‘little convincing evidence for either effectiveness or value for money’* (pg. 15), displaying a contrasting argument. However, this is later elaborated upon and explained to be due to the narrow scale of the study. Further to this, funding is highlighted as critical to the success of the intervention’s deployment (Kaplan, 1995; García-Llorente et al, 2018), with the potential to entice or detract value for the participants in attendance. This field is still in its infancy and exposes fundamental gaps including:

- Robust evidence: as there is no approved standard, making it difficult to replicate and generalise as emphasised by Islam (2020); Husk, et al, (2019); Rappe, et al, (2006).
- Uncertainty across definitions causing confusion and interchangeability (Heilmayr & Friedman, 2018; van den Berg, 2017)

The research field concerning nature and SPs is expanding rapidly, trying to fill these gaps, with resources being pushed into the sector to investigate the importance of this alternative pathway. With the NHS Long Term Plan aiming to ensure that 2.5 million people are in receipt of personalised care by 2024 (NHS England, 2019), while The Personalised Care Institute (PCI), looks to support the upskilling of more than 75,000 clinicians in four areas of personalised care by 2023/24: through (1) shared decision making; (2) personalised care and support planning; (3) SPs and community-based support; and (4) supported self-management (Howarth, et al, 2021). Gaps still exist across this research field, with self-referral individuals consequently being missed across data sets, as they are not classified as a SP receiver therefore their health changes are not being measured (i.e., if an older adult joins groups on their own free

will, rather than prescriptively). Brandling, et al, (2011), suggests that there was a lack of referrals to consider in research, with examples such as those attending on voluntary basis within CFs or CGs not counted as part of the SP basis. This provides a great opportunity to engage with these individuals to illustrate changes to health and wellbeing, without the requirement of following pathways through GPs or link workers. Alongside this, it has been reported by Husk, et al, (2020), that SPs are widely accepted by users, yet there is concern over the availability of placements and resources within this realm. Polley, et al, (2020), suggests more support and resources are needed to explain the differences between the outcomes individuals gain from access, alongside establishing holistic approaches to bring stakeholders, including users and decision makers together. This thesis gives an opportunity to discuss these issues with leaders of the case study sites, to understand their opinion on becoming an SP provider in the future and the potential sustainability of doing so.

## 2.5 What theoretical concepts exist that connect nature to health and wellbeing?

There are theoretical concepts underpinning the access and use of environments which set out explanation of the relationship between health and environments, thus these are important to consider. This section looks to take the introduction to the spaces, concepts, and models of interest, such as the Ecological model of Health and the Health Belief Model. While reflecting on various underpinning theories, such as Biophilia hypothesis, that relate to the human-nature connection and exploring key discussions in the field and how they relate to the research conducted for the aim of this thesis.

### 2.5.1 Accessing nature theories

There are many theories that connect human beings with nature, including the Biophilia hypothesis (Fromm, 1973), Attention Restoration Theory (Kaplan, 1995) and Presence Theory (Short, et al, 1976), alongside contemporary opportunities (Parker & Simpson, 2020). These theories, shown in Table 1 have been highlighted as significantly important to this studies foundation as they provide core understanding of why people want to access nature and in turn NBIs, alongside the personal benefit derived from their interactions (physically, mentally, and socially).

Table 1: Theories connecting humans to nature

Theory	Summarised overview of theory
<p><b>Biophilia hypothesis</b></p>	<p>The biophilia hypothesis was a term originally used by Erich Fromm (Gunderson, 2014), in his work published in 1973, where he described the <i>'passionate love of life and all that is alive'</i> (pg. 366), however the term only gained popularity after Edward O. Wilson published his work entitled <i>The Biophilia Hypothesis</i> in 1984 (Wilson, 1993). Wilson's work provided focus and joins nature with humans on a genetic scale. He highlights how human beings are attracted to nature, with its richness in diversity of colour, shape and life which make it universally appreciated. Through the evolvement of human language there is also a symbolic use of nature within phrases, for example 'blind as a bat' or 'eager beaver'. However, human connection is beginning to be reduced and this is suspected to be linked with increased dependency on technology, therefore decreasing the human drive to connect with nature (Kahn, et al, 2009). Consequently, academics such as Wilson have argued that this disconnection could lead to a decline in conservation efforts and incorporation of the environment within design. Creating a desire to re-establish human connections to nature and conservation. Declining conservation desire would ultimately cause further urbanisation, resulting in increased health conditions that are associated with developments (Li, et al, 2012).</p>

<b>Attention Restoration Theory</b>	<p>Another theory that closely relates human psychology and environments are that of Attention Restoration Theory (ART). This term originates from Kaplans (1995) study, where links between green environments and attention were identified. Kaplans work originally targeted the sphere of child psychology, where increased motivation and attention was paid within stimulating physical environments. Through these studies links were made to improved decision making and self-control, which in turn would have been linked to health-related issues such as obesity, increased understanding of neural and behavioural pathways (Fan and Jin, 2013).</p>
<b>Presence theory</b>	<p>The final theory within this section is Social Presence Theory (SPT). This builds upon the two previous theories, as it incorporates the ideology of environmental stimulus, however links to social conduct (Barry, 2007). This includes communication through confidence, motivation, and group structures. This theoretical basis also conveys the complexity surrounding interactions between groups, with Barry (2007) suggesting that greener environments are favourable by the majority – suggesting that projects situated in green areas will benefit more than those with limited exposure to green/blue space. This links to external studies conducted that highlight the importance surrounding proximity to green spaces, for health, whilst focusing on the social values derived (Tyrvaainen et al, 2014; Elsley 2018; 2014; 2004).</p>

### 2.5.2 Grounding theories around health and wellbeing

While Table 1 illustrates the connection between people and nature, there are also underpinning theories that interconnect to improved health and wellbeing through behaviour change and promotion (see Raingruber, 2016; Weinstein, 1993). For the ramifications of this study, it is believed that the Belief model and the Wellbeing Theory are the most applicable, due to their close correlation to evaluating the health and wellbeing because of the intervention/ accessing CGs or CFs spaces. It has also been deemed appropriate to consider and define health and wellbeing, due to their

interlinked relationship with one another, to fully comprehend the impacts felt by individuals to a wider extent; therefore, fulfilling the holistic approach set out.

#### 2.5.2.1 *The concept of health*

*'Health is a complex condition that involves the integration of different levels—biological, psychological and social—the participation of various social actors—individuals, associations, organisations and institutions'* (Capone and Petrillo, 2013, pg. 98)

Under the umbrella of health theories there are numerous concepts; with examples including The Ecological model (Kim and Moen, 2002), the Health Belief Model (Champion and Skinner, 2008) and the Social Cognitive Theory (SCT) (McAlister, et al, 2002). These concepts all relate to the subject and focus of this study; therefore, each is described to provide the basis for data collection and advancement of knowledge. There are a considerable number of theorems related to health change, promotion, and motivation, yet the ones discussed in this section are selected due to their direct relation to the studies outcomes.

##### 2.5.2.1.1 *Ecological model of health*

Due to the project's roots in environment, it is important to consider the theories emerging from this discipline in relation to health. This theory has been borne out of the thinking that humans have a long history of spending time in nature, yet due to urbanised conditions this has now reduced, with environmental psychologists suggest[ing] humans may be *"wired" for a world they no longer inhabit*' (Dustin et al, 2010, pg. 4). Further suggesting that this has led to numerous health problems associated with urban settings and limited accessibility to nature.

This approach led to the creation of the Ecological model of health (also see Mandala), whereby a symbiotic relationship is created between an individual's health and their impact on the planet and the community. This therefore relies on the concept of ecosystem services enabling health promotion, whilst responsible citizenship allows this closed loop manufacturing to occur (Chivian and Bernstein, 2008). This coincides with the Gaia Hypothesis, formulated by James Lovelock, whereby the biosphere and evolution affect the stability of the habitability of earth (Capone and Petrillo, 2013).

Identifying that the impact that individuals have to their community has a great weight, with suggestion that if there is more positive activity then consequently health will improve as a prerequisite. Dunstin, et al, (2010) establishes a requirement for further progression in this field, advocating adoption of this theory when planning health care, whilst highlighting that an *'ongoing challenge is to embrace this ecological reality and reconnect with nature in ways that contribute to the individual and collective health of all living things'* (pg.5). This concept has been taken positively by Santienello (2002) suggesting that this model has advantages including improvements to larger populations, lasting results, and the ability to act on context and the individuals need. Promoting that this biospheric model impacts individual and community health, which can be related to this study, as it tries to investigate the impacts to individuals, groups, and wider members of the sites, whilst providing recommendations for lasting results that are inclusive of all.

#### 2.5.2.1.2 The Health Belief model

The Health Belief model is appropriate to consider within this study due to the ability to explain and predict individuals changes in health behaviours. The model itself looks towards health promotion, in which healthy lifestyles are promoted and nurtured, (Jorvand, et al, 2020). The Health Belief model looks at the risk factors of an individual, against their perception of illness or disease, to enable positive action/changes to limit the onset of unhealthy behaviours over the life course (see Tong, et al, 2020).

This model has been one of the most widely used conceptual frameworks since the 1950s, with its use being able to explain changes and maintenance of behaviours regarding interventions, such as environmental groups (Champion and Skinner, 2008). With academics such as Carico, et al, (2020), suggesting that this model focuses on the beliefs about health conditions to then predict health related behaviours. This is particularly important to investigate within older generations, due to their higher risk of comorbidities. It is thought that by using this model it is possible to predict how people will act for preventing and controlling illnesses, again particularly important in older age. These concepts have been studied by Hochbaum (1958), where trials were conducted on the susceptibility to contracting Tuberculosis (TB), where he was able to suggest that if people feel that they are more susceptible to conditions or ill health then they are likely to seek action to reduce this, both voluntarily and subconsciously. This is of importance for this study, as it could be considered that older adults taking part

are voluntarily attending projects, yet this may be for conscious or subconscious anxieties surrounding morbidities or mortality.

#### 2.5.2.1.3 Social Cognitive Theory

It is also important to consider the Social Cognitive Theory (SCT), as this could be applied to the time that individuals spend within the case study sites for this thesis. The theory describes the influence of individual experiences, the actions of others and the environments that impact on health. McAlistair, Perry and Parcel (2008) propose that *'human behavior is the product of the dynamic interplay of personal, behavioral, and environmental influences'* (pg. 170). Highlighting an inclusive approach to understand how individuals interact with their physical and social environments, whilst also posing the potential to alter these spaces to suit their own needs. The concept of SCT fulfils the nature of the case study spaces, of a community feel as the theory suggests that it *'enables individuals to work together in organizations and social systems to achieve environmental changes that benefit the entire group'* (McAlistair, et al, 2010, pg. 170), therefore providing a resource particularly important for ageing, as it enables *'ageing in place'*. Within the overarching SCT there are multiple concepts including:

- Reciprocal determinism: whereby the environment influences individuals and groups (and vice-versa) to regulate their own behaviours. An example of this is using spaces such as gardens or farms to promote health by changing the environment to improve health and behaviours consequently.
- Collective efficacy: when a group can bring about change; for example, through aesthetic improvements to the local area by planting
- Observational learning, where people learn behaviours from others. An example of this relating to the study could be considered as learning horticultural or animal care by learning from more advanced members.

These all suggest a close relationship with the case study dynamics and core principles, and therefore provide the basis for data collection to be built upon – allowing a deeper understanding of these theories and concepts and their ability to improve the health of older adults. While there are numerous other theories that try to explain the relationship between human and nature, with those most applicable to this field signposted in Table 2. Emerging theories continue to contribute to the debate of the



influence nature plays on health and wellbeing, which contribute to developing and maintaining relationships with the natural world for the benefit of health and wellbeing.

Table 2: Theories of influence

Theory	Summarised overview of theory
<p><b>Psychoevolutionary theory</b> (Ulrich 1984; Kaplan &amp; Kaplan, 1989)</p>	<p>Ulrich researched how natural (nature) spaces could provide a restorative benefit to human life, through positive influences on emotional state (reduced stress) and physiological activity levels. Which resulted in sustained attention. Kaplan and Kaplan (1989) generated the attention-restoration theory from this, by which restorative feelings were derived from this attention on nature.</p>
<p><b>Spiritual Experience Process Funnel</b> (Fox, 1999)</p>	<p>This model suggests that when people feel relaxed (in nature) they are more autonomous and competent, while also opening to the beauty and symbolic meaning of nature. This in turn enables reflection and gives a sense of purpose. With Chenoweth and Gobster (1990) suggesting that urban nature also enables this process to occur.</p>
<p><b>Presence theory</b> (Baart, 2007) &amp; <b>Social Support and Social Interactions</b> (Cobb, 1976)</p>	<p>Revolving around the ideology of intimacy and involvement, this theory correlates to community-based activities. As groups can form to generate health and wellbeing benefits from being present within nature, and present within a group structure. Leading into the Social Support and Social Interactions concept by Cobb (1976), by which these mechanisms reduce/buffer impacts from negative events.</p>
<p><b>Self-efficacy theory</b> (Bandura, 1977)</p>	<p>Seeing others succeed makes others believe they can do so too.</p>
<p><b>Salutogenic theory</b> (Antonovsky, 1979)</p>	<p>This is considered to examine the origins of health, and focuses on supporting health and improving it, rather than focusing on disease. This generated health promotion, where health is improved through interventions, facilitated by activities in nature (Mittelmark &amp; Bull, 2013).</p>

#### 2.5.2.1.4 Drawing these concepts together

The theories presented in section 2.5.1 and 2.5.2 are important to this thesis, each providing its own validation for inclusion, while enabling further research to explore and contrast the findings of these theoretical concepts. These concepts have influenced this research topic, by providing a grounding basis to start and generating an understanding from that there is a subconscious desire to access nature and how social constructs influence the ability to gain benefit from groups/community. Therefore, it can be considered that these theories are important to this study, almost considering the debate between '*nature and nurture*' (Singh, 2012); through considering if people really desire to use/access nature, or if nature is a prerequisite of social interaction, with the latter valued more. This debate ultimately influences the methodological approach, explained in Chapter 3, as appropriate methods must be employed to extrapolate understanding around the health/wellbeing impacts that come from nature or nurture (taking part in the socialisation aspect of community groups).

#### 2.6. What evidence is there that connects nature to health and wellbeing?

It is important to consider what is known about the field, that theories influence, therefore this section is used to highlight key studies displaying health benefits, including physical and psychological impacts due to accessibility to natural environments. There is a nascent literature based around the impacts of general GI on mental wellbeing, however there is a dearth of evidence pertaining to the ways specific types of GI, precisely CFs and CGs in urban deprived localities affects both physical and mental health. From accessing green spaces on mental and physical health (see Rogerson, et al, 2020; Cohen-Cline, Turkeimer & Duncan, 2015), the frequency of access to nature (Cox, et al, 2017; Shanahan, et al, 2016), and specific topics including vegetation density improving the conditions of living with asthma (Donovan, et al, 2018), Additionally, there is sparse knowledge concerning the impacts of GI on older populations, (CGs and CFs in the UK), which can be considered as one of the most vulnerable groups in society, as identified previously. This section will draw on the narrow academic field – by looking at the broad basis of literature concerning accessing nature spaces and the perceived benefits from its approach, while relating to studies with CGs and CFs as a focus where possible.

### 2.6.1 What do the systematic reviews tell us?

Firstly, systematic reviews are: *'a type of research synthesis that are conducted by review groups with specialized skills, who set out to identify and retrieve international evidence that is relevant to a particular question or questions and to appraise and synthesize the results of this search to inform practice, policy and in some cases, further research'* (Munn, et al, 2018, pg. 2). They are useful in engaging with specific topics to narrow focus, with each review targeting a specific research question. This thesis looks to engage with a far-reaching evidence base, however by engaging with existing systematic reviews across multiple disciplines and research questions it is possible to build a matrix of knowledge from the existing work of others.

Haaland, and van den Bosch (2015), released a systematic review of the literature field concerning public access to natural spaces in urban settings, using terms such as 'green space', 'green infrastructure' and 'park', highlighting significant data collection within Asia with 39% of those found, followed by Europe, Australia and New Zealand (Haaland & van den Bosch, 2015). This review was somewhat restrictive as they narrowed the scope of the report to extrapolate publications that link GI and urban densification; therefore, providing a sense of the current academic landscape, but not related to the health sphere. While Kabisch, van den Bosh and Laforezza, carried out a systematic review later (2017) on the availability of nature-based solutions, with children and the elderly in urban spaces. In doing so they were able to identify fifteen papers that targeted older adults, with most papers showing positive correlation between accessing green spaces on mortality and perceived wellbeing, cancers and respiratory diseases. Accessibility to greenspace and healthy ageing was explored by de Keijer, Bauwelinck and Dadvand (2020), who reported on the limited evidence available to substantiate claims of the influence that long-term exposure to greenspaces impacted objective indicators of ageing, however Yuan, et al (2021) were able to associate these spaces with reduced risk of all-cause mortality, specifically stroke mortality.

Focusing more so on the review of CFs and CGs, contemporary studies target the value arising for specific (ill) populations, including those with mental illness (Tracey, et al, 2020; Noone & Jenkins, 2018; Elsey, Murray & Bragg, 2016), adults and children (Lovell, et al, 2014a), dementia patients (Lassell, et al, 2021; Smith-Carrier, et al, 2019; de Bruin, et al, 2017; Jarrot and Gigliotti, 2010), rehabilitation (Murray, Coker & Elsey,

2019), marginalised young people (Norwood, et al, 2019), weight control (Heise, et al, 2017; Zick, et al, 2013), nutrition (Kunpeuk, et al, 2020; Garcia, et al, 2018), a space for processing grief (Thieleman, Cacciatore & Gorman, 2021) and uniquely in the case of CFs as a business opportunity (Nicolosi, et al, 2021; Basset & Giarè, 2021; Moruzzo, et al, 2020; Tulla, et al, 2020).

In comparison to CFs, a larger number of systematic reviews have been conducted on CGs, and this is expected due to the length of time of their existence and the larger number of them in the UK and abroad. The review by Wang and MacMillan (2013) was conducted with a focus on older adults, illustrating positive influences from CGs, they identified a limited focus on those living in the community, and studies considering the socioeconomic background of those accessing spaces. Other systematic reviews highlight that research is siloed, and within the boundaries of traditional discipline areas, portraying the absence of a multi-disciplinary approach resulting in issues of full understanding of the potential spaces such as these play in the role of healthy living and ageing.

When reviewing the wider GI research and its contribution to health, reviews, and studies were concentrated across Scandinavian countries, the Netherlands, and the United States of America (USA). This is thought to be due to these countries' higher prominence of natural environments and adoption of NBIs, within the countries, identifying a gap in the UK sector. This is also said to be influenced by these countries rigorous legislation surrounding the environment – with policies having increased accessibility to green-spaces including progression towards municipalisation of private parks and community co-design (Austin, et al, 2020; Lynch, et al, 2019; City of Amsterdam, 2014), twenty-four hour access to green-spaces and building regulations making it mandatory to include green-space within urban developments (see Zhou, et al, 2021; Khoshkar, et al, 2018; Frumkin, et al, 2017; Littke, 2015). While the UK is beginning to incorporate the importance of green spaces into design, populations are still faced with inequalities in accessing good quality nature in urban spaces (as suggested earlier, and by de Zylva, Gordon-Smith, & Childs, 2020).

The type and methodological practice deployed within this research field also varies across countries, with the majority consisting of qualitative cross-sectional before/after studies (Else et al, 2014). Academics are beginning to turn to health ranking tools,

such as wellbeing questionnaires, with examples including Tharrey et al, (2020) using Warwick-Edinburgh Mental Wellbeing Scale, Tyrväinen, et al, (2014), using the Perceived Restorative Scale and Vujcic et al, (2017) using the Depression Anxiety Stress Scale, all of which use self-perceived scores to track changes to wellbeing over time when accessing nature. Academics in Asia lead the way on physical activity studies related to interaction, primarily using movement trackers, often coupled with the activity diaries or tools such as International Physical Activity Questionnaire (IPAQ) (see examples: Machida, 2019; Benton, et al, 2018; Tomioka, et al, 2011).

This presents a literature field that is expanding regarding benefits reaped due to accessing differing environments. However, the literature often falls into silos, with adoption of a specific focus across continents or conditions. It can also be considered that data collected in other countries is not representative of the populations of the UK, due to cultural, economic, and geographical differences between nations. Through this review there has been limited studies focusing on the field of CGs or CFs, reflecting on the research basis available, with most academics in the health geography field currently focusing on publicly available green and/or blue space, therefore the following section will expand into health benefits studies conducted.

#### [2.6.2 What evidence exists? The physiological impacts from gardening and farming](#)

As identified in the opening of this chapter, nature influences health and wellbeing in several ways. Wichrowski, et al, (2005), initially highlighted a link between Horticulture Therapy (HT) and heart rate stability of patients within cardiac rehabilitation programmes in the USA. Accentuating that patient attending the HT had significantly reduced heart rate variability in comparison to those attending educational classes – and this is furthered by suggestion that participants moods fluctuate less after attendance. Lee, et al, (2019) developed this thoroughly by examination of heart rate variability through accessing forestry bathing exercises. The study has shown to reduce and stabilise pulse rates, after just fifteen minutes of exposure, whilst also showing increased parasympathetic nervous activity (rest and digest system) and significantly reduced sympathetic activity (*'fight or flight response'*) in comparison to other participants exposed to urban environments. This research also expanded into cortisol testing, identifying that stress levels were significantly reduced as an impact of experiencing the woodland, with participants stating that they felt more comfortable,

soothed, and refreshed as a result. Therefore, both agree that stability of heart rate is improved through accessing nature-based spaces, yet they fail to specify an ageing population, and these are not located within the community-based interventions that this thesis project is based.

Through increased global populations, ageing societies and increased susceptibility to long-term conditions, medications are being heavily relied upon (Age UK, 2019a) and in some cases leading to polypharmacy in older age or with adults with intellectual disabilities (Mahr, et al, 2013). Obesity has been highlighted as a major concern for the future of the population, with Park et al, (2017) exploring the concept of reducing weight of older females through independent gardening, this research illustrated that participants felt that they had completed less physical exercise than they did, thereof highlighting a simple remedy to motivation, inactivity, and potential movement towards a healthy heart. Dewi, et al, (2017), reported on the physical changes to hormones and pressure in blood systems due to gardening, their participants consisted of those suffering mental disabilities, and illustrated that a hormone indicating stress (amylase) was reduced because of attending gardening classes alongside reduced high blood pressure readings due to greater levels of physical activity. It was also explored by Dewi, et al, (2017) the significant influence that physical health can contribute to psychological health, with nature reducing feelings of anger and helplessness. Strömmer, et al, (2020) went on to suggest that physical activity decreases with age, this coupled with approximately 8% of all non-communicable diseases and deaths worldwide being attributed to physical inactivity (Katzmarzyk, et al, 2021), thus illustrating a need to get populations active. Moreover, evidence can illustrate the ability for CFs (see examples: Murray, Coker & Elsey, 2019; Murray et al, 2019; de Boer, et al, 2017) and CGs (see Scott, Maser, Pachana, 2020; Machida, 2019) to provide opportunities to be more active.

Much of the physiological basis in the UK across this topic concern public spaces, such as park or garden, or within independent gardening practices with failure to fully explore alternative nature-based spaces, particularly through community approaches of gardens and farms. However, there is hope, with academics beginning to advance into understanding particularly children's relationships with outdoor environments and classrooms to improve physical health attributes (e.g., healthy weight stabilisation and

activity) (Borgogni & Agosti, 2021; Finn, Yan & McInnis, 2018; Becker, et al, 2017; McCurdy, et al, 2010), general populations health impacts through animal interactions within farming settings improving physical activity levels; further impacting on ‘*self-confidence and self-image*’ (Gorman, 2019, pg. 231).

### 2.6.3 Psychological impacts from gardening and farming activities

Psychological impacts of accessing natural environments are more widely discussed within this general research field, with influences such as Howarth, et al, (2021; 2020; 2016), Gorman and Cacciatore (2020), Elsey, et al, (2018), Gibbons, et al (2017), Bragg et al, (2014; 2010), Sempik, Hine and Wilcox (2010), Hine, Peacock and Pretty (2008), alongside others expanding the knowledge across CGs and CFs. Academics in the field such as Milligan, et al, (2004), when looking specifically at northern England, insisted that: ‘*There is little published research, however, that focuses specifically on the health benefits of gardening for older people...and even less on the benefits for their mental wellbeing*’ (pg. 1782), instigating the desire to address this for future adaptation, with limited progress since the time of publication. This missing evidence is set out, with an example of Spano, et al, (2020) who investigated the wellbeing positives derived from gardening interventions through a systematic review, where only one UK study was considered, in which this was an individual allotment.

Yet, implications of accessing the wider green environment and its contribution to mental health has been growing, with Fieldhouse (2003), exploring this opportunity again through traditional allotment gardening. This study used qualitative methods and reported that environments had a direct positive influence on quality of life, physical and social activities and a resurgence in personal lifestyles. Similarly, links made directly to the environmental stimuli and psychological health, were documented by Yamaguchi et al, (2004), who used salivary amylase to highlight links between environment changes in eustress and distress. This primary study was developed by Dewi, et al, (2017) which established a link between the task of gardening directly to amylase and heart rate measurements. The study conveyed how those different tasks (e.g., digging, sowing) impacted on the variability of heart rates after cooling off periods. Further to this, the amylase levels were seen to drop significantly after partaking in gardening, alongside reported reductions in feeling depressed and helpless (Dewi et al, 2017).

Moreover, Lee, et al, (2019) expands the use of '*Forest bathing*', as detailed earlier, showing increased positive feelings in contrast to the negatives expressed in urban areas. Williams (2017) concurs with this view in a holistic manner and links to Louvs theory of '*nature deficit disorder*' (Louv, 2008), which is the process towards understanding the greater impact lifestyles have on accessing environments, with an internal biophilic need to be near nature for the benefit of health, concurring with Wilsons theory. Within Williams (2017) commentary there are links made between the psychological and physical impacts because of accessing environments, suggesting that environmental stimuli play a significant role in the existence of conditions such as myopia, vitamin D deficiency, obesity, depression, loneliness, and anxiety.

The relation between physical and psychological spans across research identifying calmer heart rates, which in turn influences anxiety disorders that participants feel (Richardson & Mitchell, 2010). Along with Mitchell and Popham (2008), illustrating a link between air quality and anxiety. Anxiety disorders have been seen to improve with accessibility to environments, as Gonzalaz, et al, (2010) suggests that approximately half of participants in SP activities would see a clinically significant reduction in depression levels. Depression elevation was also developed through the work by Grabb, et al, (2013), where they linked homeless women's mental wellbeing to gardening.

Looking specifically at CFs and CGs the literature basis is now evolving at incredible pace, with academics across countries suggesting various mental improvements that these spaces make to users (see for example: de Bruin, et al, 2021; Lampert, et al, 2021; Gorman & Cacciatore, 2020; Koay & Dillon, 2020). Across the gardening sphere academics such as Egli, et al, (2016) illustrate that these spaces are multifaceted in their ability to produce positives, as the model of CGs illustrates within Figure 8.





Figure 8: Wellbeing related to community gardening (Egli, et al, 2016, pg. 351)

This successfully highlights that these spaces have a far-reaching impact, from changes to dietary health (body image stress), socialisation and community support - successfully providing positive impacts to mental health and wellbeing for participants taking part. Wood et al, (2016) investigated these claims whilst looking at allotment style gardening, and reported significantly better self-esteem, total mood disturbance and general mood, whilst reducing depression and fatigue, alongside Nova et al, (2020) who showed improvements for local sustainability, and increased consumption of organic fruit and vegetables. However, Tharrey, et al, (2020) contradicts this and suggests within their study there was no change to consumption and illustrates barriers in NBIs success including lack of time, growing knowledge, physical difficulties, health problems and group conflict.

Armstrong (2000), illustrated psychological impacts situated across North American case studies to highlight the educational benefits of growing produce, therefore making

individuals more empowered and confident about their capacity. This is expanded by Tan and Neo (2009), Ruck (2020) and Suto, et al, (2021) who suggest that these spaces breed a 'sense of belonging', giving individuals greater pride in their local area, are important for urban spaces through mitigating the heat island effect, advocate health promotion, whilst reducing stress due to crime statistics. Koay and Dillon (2020) show positive influences on stress, wellbeing, optimism, and resilience through CG practices. However, Melbourne (2021) emphasises *'it is the case that most of the community gardens established on public land contain fences and gates, meaning that they do not remain truly open to the public'* (pg. 10), therefore acknowledging a physical barrier. These projects are designed for the community to benefit, so should be open for all, yet Melbourne (2021) continues within this paper to suggest that communities are left feeling unwelcome by physical barriers (indicated above) or social differences (for example, social classes, and inequalities). Providing an opportunity for research to explore how local communities feel about the existence and perceived inaccessibility of projects, through the case studies of CFs and CGs.

Academic publications concerning CFs is growing with Gorman (2019) highlighting the importance that these sites provide in providing animal care relationships, to build positive mental health as the:

*'relationships with animals inspires an additional level of engagement from visitors and uptake in skill accruement and development processes – an affective encounter with the farm animals that resulted in an augmenting of an individual's capacities'* (pg. 9).

Again, within these settings when focusing on older populations the current trend focusses on dementia related illnesses, or those with learning difficulties, as suggested earlier. These NBI projects, including CFs are also suggested to have a reduction to reoffenders rates through better environmental access, empowerment and structure underpinning this work (Bragg, et al, 2014), while animal-related activities help establish relationships, build trust, and forge skill building (Cacciatore, Gorman and Thieleman, 2020; Yakimicki et al, 2018; Kilmova, Toman and Kuca 2019; Hassink, et al, 2017; 2014; 2010; 2006).

As indicated, when engaging specifically with older adult-based research in academia this area tends to focus on specific age-related conditions, such as cognitive decline, for example dementia (Moran, et al, 2014 and Wu, et al, 2015). With an example of Thompson (2018) investigating the mental health connections to dementia and suggesting that gardening, whether individual allotment or communal, alleviated some agitation contributed by the disease. These studies remain vital for improving environments for older populations, yet the lack of the existence of studies on 'general' healthy older populations also have the potential to provide sustainable developments for all, now and into the future. Scott, Masser and Pachana (2020) compared older adults using community and individual gardening in Australia and were able to show the benefits of leisure time within nature, including feelings of therapy, through restoration and physical movement while providing positive ageing perceptions. Yet, Pitt (2014) highlights the importance of independence across these sites, with the potential to promote *'self-determinacy and therefore affect wellbeing'* (pg.84).

Additionally, Milligan, Gatrell and Bingley (2004), suggests that gardening can also be detrimental to mental health of some, with one example given of a participant that felt disappointed as their plants were not successful, and went on to compare themselves to others in the group – resulting in a negative view of their participation. These negative aspects contradict most of the research field, who identify the major benefits to the population's health. Aitken, et al (2018), looked at community-based health research and identified that the majority voiced opinions that everyone should benefit from projects and not solely the vulnerable groups, or those directly involved. This emphasises public division across health provision and challenges the success of these projects while giving direction for further research in this field. Therefore, evidencing a need to further explore the older adult population, ageing in place, and advance an in-depth narrative on the value that this population place on these projects.

## 2.7 A scope of current policy basis: how is the field is developing?

It is also important to understand what formal strategies are in place to ensure inclusivity of the future older populations when accessing nature. There have been a wide range of policies employed that apply to the subject area considered within this thesis; from implementation of NBIs, SP pathways and general improvement towards quality of ageing, with some examples shown in Table 3.

Table 3: Sample of legislation and policy influencing this thesis

Legislation/policy	Summary
<b>International</b>	
World Health Organisation (WHO) Age Friendly Cities	Creation of a supportive network and plan for countries to improve current environments and to assist ageing populations.
Sustainable Development Goals (SDGs)	The 17 SDGs try to provide a blueprint for improvements; including health and the environment.
WHO Global strategy and action plan on ageing and health	Creation of a plan to improve ageing longevity and healthiness. With reference to improving environments.
One Health Policy	Implementation in 2022, recognising the interconnection between human, animal, and environmental health. Looks to address socio-economic inequalities exacerbated by the pandemic. By doing so, it ensures health is considered throughout all policies (WHO, 2021).
<b>United Kingdom (UK)</b>	
NHS Long Term Plan - Model for Personalised Care and SPs	This 10-year plan looks to move away from standardised care to a personalised model, with one opportunity provided through social prescription.
A Green Future: Our 25 Year Plan to Improve the Environment	Conservation of existing landscapes, whilst trying to connect people to the environment for health and wellbeing purposes.
<b>Greater Manchester (GM)</b>	
Age-Friendly Strategy: Living in Manchester – our age friendly city	Twelve goals set out to increase quality of growing older in Manchester, including anyone over fifty. Links to SPs through trying to build suitable health care models and the environment through improved quality of community settings (e.g., street furniture within greenspaces).
GM Ageing in place (2019)	An ageing in place programme, it was to be initiated in 2020. Focusing developing partnerships to coordinate services and integrate resources to enable this to happen – with attention paid to nature and community groups.

GM Population Health Plan 2017 – 2021 (Locality Plan for Salford: Greater Manchester Health and Social Care Devolution)	Health services closer to home/ pushing for people and organisations outside of health sector to assist in quality of life
5 Year Environment Plan for Greater Manchester (2019 – 2024)	Modelling and trying to plan for challenges that the environment will face over GM in the next five years – with a possible opportunity through community engagement/conservation by gardening projects.

Table 3 highlights some of the main legislation and policy surrounding this research field, as such the following section will draw on those applicable and highlight emerging directions for success.

### 2.7.1 At International and European scale

International level ageing strategies such as the ones in Table 3, have been key in facilitating inclusion of older people, therefore ensuring that spaces are more age friendly. The WHO Age Friendly Cities has been at the forefront of ageing policy planning, with dedicated support for locations adopting its use, alongside best practice to enable the quality development for elderly populations, specifically within urban settings. GM is currently a case study for this development, with other countries adopting this model to suit their city.

The Age Platform Europe also feeds into the WHO goals, through advocating work on the rights of older people, socio-economic policy, and age-friendly environments. This platform highlights the issues that ageing populations face, beside the potential ageism attached. These strategies are reinforced by the Sustainable Development Goals (SDGs), with attention paid to goal 11, which shows a need to provide accessible and inclusive urban green spaces for older persons beside women, children and persons with disabilities (Artmann et al, 2017). Examination of the overarching policies for integration highlight the necessity for natural environments to exist and therefore contribute to health improvements.

### 2.7.2 United Kingdom

At a national level there is a variety of legislation covering environmental protection, health care and ageing. The Natural Environment White Paper set out ambitious strategies, including ‘Reconnecting people and nature’, through evidencing the

influence nature places on health and wellbeing, and promoting their use as a health improvement opportunity by linking individuals and communities with nature to promote wellbeing (DEFRA, 2011). While a key piece of legislation that puts older people at the centre of decision making is the NHS Long Term Plan. This framework sets out the direction for development of the NHS over the next 10 years to ensure that the *'service is fit for the future'* (NHS England, 2019). Within this plan there is a focus paid to supporting people to age well; through providing the *'Comprehensive model of Personalised Care'*, with estimation that within 5 years there will be *'over 2.5 million more people will benefit from social prescribing'* (NHS England, 2019, pg.6). This highlights a movement away from the traditional one-size-fits-all tactic, in favour of asking everyone's opinion on their desired recovery approach. This emphasises the importance placed on the elderly populations within the UK, with a further £4.5 billion funding provided for primary and community care (NHS England, 2019). The plan has been recognised to be successful in pinpointing the vital role of the NHS, however it is suggested to have weakness in:

*'harnessing community resources to tackle health problems but does acknowledge the role of social enterprises, patient involvement in healthcare and health policy, and social prescribing'* (Chapman & Middleton, 2019, pg.2).

Hence, suggesting that the implementation of SPs is beneficial, still the pathway to development has not been carefully planned or researched which could result in future issues (Bickerdike et, al., 2017). These thoughts are furthered by Alderwick and Dixon (2019), who suggest that the plan is ambitious, and highlights potential downfalls including Brexit, staffing problems and investment stalling. Pokorska-Bocci, et al, (2014), pre-empts some of the challenges associated within the personalisation agenda such as a limited evidence base of benefits, facilitating the shift and ensuring quality. While Dickinson and Glasby (2010) also explored the consequence of the agenda and found that third sector bodies could be hit with implications through increased footfall because of being redirected from the NHS – however, through appropriate responses such as nature-based planning and provision of community resources, this could be accommodated.

Benjamin (2020) portrays that planning to incorporate GI into everyday life still falls behind requirements, and illustrates the unique issues with cities, including limited

space and pollution, with further consideration needed to address concerns for those in lower socioeconomic positions and older populations with reduced access to nature. They suggest that greater provisions on community based green resources will benefit these populations and provide motivation for grassroots initiatives to reimagine cities. Environmental legislation also feeds into the health policy as it enables natural spaces to be protected, enhanced, and conserved for enjoyment. The main policy concerning this subject area is 'A Green Future: Our 25 Year Plan to Improve the Environment' (UK Government, 2018c). This sets goals to improve environmental areas whilst working with communities and businesses to do so; and championing development of CGs and CFs. This plan provides a platform for the development of NBIs, through advocating their use to health professionals and charitable bodies. It dedicates a full chapter to the improvement of health and wellbeing through connection with environments, thus displaying advocacy for use of areas for human health. A focus is given to increasing accessibility to green areas, primarily children, however there is also suggestion of improvements to intergenerational use of nature alongside improvements to spaces, enabling access and enjoyment for all, therefore catering for older populations and those with disabilities. Greater attention is given to CFs, within the plan, by providing a target:

*'Supporting a national expansion of care farming by 2022, trebling the number of places to 1.3m per year for children and adults in England'* (UK Government, 2018c, pg.76).

This signifies devotion to the development of NBIs, with concentration on the development of holistic green projects for benefit of larger populations. There is also an underlying connection to planning, as the updated 2019 National Planning Policy Framework is now arguing for *'open spaces that reflect current and future needs and support communities' health, social and cultural well-being'* (Ministry of Housing, 2019, pg. 5), conveying a sense of joined up thinking, where significance is being paid to the health and wellbeing benefits that are derived from nature-based spaces. This is furthered by advocating the use of SPs to enable standardised tools to be developed to ensure best practice. Whilst the 25-year plan also suggests there will be further support given to research NBIs, development of tools and ongoing support for local authorities, commissioners, and professionals – ensuring the targeted approach is



successful. However, it should be said that austerity in the UK has continued to have a major impact on the availability, creation, and maintenance of nature specifically in urban areas, therefore other initiatives have explored new economic models (Cook, et al, 2019). Alongside austerity, the Covid-19 pandemic highlighted environmental inequalities, instigating the creation of a post-covid Green Recovery strategy, that looks to turn attentions towards tackling climate change with a ten-point plan. In doing so, it looks to decarbonise, localise, and adopt nature-based solutions, while protecting landscapes for the benefit of the climate, biodiversity, and population. All of these initiatives suggest greater attention and value is being placed on nature and nature-based environments, with spaces such as CGs and CFs being examples of low-cost initiatives that could assist and provide value to this green movement and populations in need.

### 2.7.3 Greater Manchester

Devolution of powers to the GM region allows greater decision-making capacity to be held at a localised level. This is particularly important in this context as '*Twenty years from now [by 2028] 1.1 million people in Greater Manchester will be over 50 – that's 37% of our city-region population* (GMCA: Greater Manchester Combined Authority, 2018, pg. 2). This therefore highlights that the stresses on the NHS in the surrounding area will continue to be stretched. With health care juggling other demographic health conditions beside an ageing population in this region as suggested: '*Problems with health is known to be worse in Manchester than other areas of the country, with poorer levels of health life expectancy, poorer employment levels, and greater health risks (e.g. due to smoking, attainment levels of education)*' (GMCA: Greater Manchester Combined Authority, 2017b).

To combat this the district has unified the health system across all ten localities and developed the GM Population Health Plan (GMCA: Greater Manchester Combined Authority, 2017a). It tries to establish opportunities for older people to live at home for as long as possible, but also set targets to reduce hospital visits for the elderly and provide a distinct SP pathway for those identified as 'at risk'. Additionally, the GM Strategy for Ageing allows cooperation across over 100 organisations in the development of an age-friendly network. This five-year strategy across GM pledged £650,000 to reduce social isolation, with a focus on use of 'grassroots projects'



including CGs (Manchester City Council, n.d.) to ensure completion of three key priorities set. This highlights attention paid to ageing across the district, with an intrinsic desire to improve health. Reviews conducted on the ageing strategies across GM are largely positive, with a sizeable number of elderly communities being formed consequently (Greater Manchester Age Friendly, 2016; Steels, 2015), and when compared to other 'Age Friendly Cities' Manchester ranks highly (Buffel et al, 2014). However, further progress has been slow, with health care not specifically fulfilling the needs of residents across GM (McGarry & Morris, 2011). While other issues around failure to engage with older people specifically for inclusive planning and external pressures including struggle for space (urban sprawl/retrofitting), alongside financial burdens (Buffel et al, 2014), all suggest that more needs to be done, with further pressures added due to the Covid-19 situation.

Attempts at engaging populations in the region with nature were identified through the five-year environmental plan for GM (2019 – 2024), where the connection between nature and health is explicitly suggested and the area is used as an Urban Pioneer. This allows testing new tools and methods for managing natural environments, and a priority (number 5) looking to increase engagement in natural environments (GMCA, 2019b). Examples of this include, planting one million trees in the region by 2024, alongside strategies to achieve a net gain in biodiversity. Looking towards opportunities such as the use of 'B-lines' which aims to link together rich habitats for increased pollination (connecting to The National Pollinator Strategy for England 2014 - 2024) (Buglife, n.d), therefore building up green corridors across built up environments, allowing biodiversity to improve alongside the health and wellbeing of humans. To be able to achieve the GM plan, it sets out to enable multiple stakeholders (residents, businesses, landowners, etc) to work together and get people interested in gardening (partnering with the Royal Horticultural Society), environmental volunteering (with local businesses) and promoting use of nature programmes with the GM Health and Social Care Partnership (GMCA, 2019b).

## 2.8 The impact of a global pandemic on relationships with nature

These policies are important, yet it is also crucial to reflect on the ongoing situation in which this thesis was written. As in 2020, there has been a global pandemic of coronavirus (Covid-19). Through this unprecedented period the UK government imposed a lockdown to control the virus, with a phased approach to 'a new normal'.

The consequences of such lockdowns have been notable, with some pollution levels dropping; for instance, greenhouse gas emissions, nitrogen dioxide, black carbon and water pollution have decreased drastically (Chakraborty and Maity, 2020; Saadat et al, 2020; Wang and Su, 2020), yet the reliance on personal protective equipment (PPE), has driven other types of pollution up (Zambrano-Monserrate et al, 2020).

Paital (2020) synthesized evidence from different sources around specific changes to the urban environment, with wildlife able to 'rewild' urban areas:

*'Few of the facts that indicate use of human dominated zones by wildlife are, spotting coyotes (that normally timid of traffic) on the Golden Gate Bridge in San Francisco, USA, deer are grazing near Washington homes a few miles from the White House, wild boar are becoming bolder in Barcelona and Bergamo, Italy, peacocks have strutted through Bangor and goats through Llandudno and sheep in Wales' (pg. 6).*

Due to the timing of this thesis, the publications around the influence of the pandemic are continuing to grow, with evidence that the use and appreciation of nature changed, as people used public green spaces, exercised outdoors, and this contributed to supporting wellbeing (ONS, 2021b). This section will discuss how the population was affected, some of the emerging data around using nature for health and wellbeing in these times and the projected future.

Firstly, consideration must be paid to the specific population which this study surrounds, that being older adults, with disparities in this population's contraction of the virus and/or mortality. It is considered that participants within this research, older adults were of the 'vulnerable category' defined by the government, resulting in shielding (UK Government, 2020b). It should be considered that older adults do not appear to be at an increased risk of contracting the virus but do have a risk of serious complications if they do (BGS, 2020).

Within a Public Health England Report (2020b) there was evidence that the largest disparity for Covid-19 related deaths was by age. It went on to suggest that: *'people who were 80 or older were seventy times more likely to die than those under 40' (Public Health England, 2020b, pg. 4) and 'The majority of excess deaths (75%) occurred in*

*those aged 75 and over*' (pg. 10), conveying the inequality across age groups, with those in the older categories providing the largest number of cases.

Again, further disparities were found between sexes, with males at greater risk, alongside deprivation (with the North West being second to highest affected) and ethnicity placing significance in susceptibility. Although this study doesn't directly deal with older adults within care settings, it is also considered important to pay respect to this category as it significantly and disproportionately affected them (Gordon, et al, 2020), while acknowledging the unjust manner of discrediting the value of older adult health (mental and physical) in society. These statistics also effected the older populations living in the community, considering others of similar ages having succumbed to the virus ultimately resulted in increased anxiety and depression (Solomon, 2020). The imposed lockdown also had significant impacts on the older populations; reduced ability for outdoor physical exercise, ability to communicate (face-to-face), potentially resulting in loneliness, depression, and anxiety; (BGS, 2020; Armitage & Nellums, 2020), financial crisis (through inability to reach support; United Nations, 2020) and again being most susceptible to mortality due to complications and comorbidities.

The pandemic exposed the existence of ageism across the globe, with a homogenous view of older adults being vulnerable, stigmatising and enabling a hostile environment (Swift & Chasteen, 2021). Longer term impacts from the virus also look to have considerable effects, including economic downturns, and adverse long-term impacts on health and wellbeing (Morrow-Howell, et al, 2020), with McNeely (2021) stating that *'the economic shocks that have accompanied COVID-19 indicate that some of the fundamentals of the global economy may not be sustainable on environmental, social, and economic grounds'* (pg. 768). Complex issues arose around the impact on the planet, from biodiversity loss and climate change to food insecurity becoming worse (Laborde, et al, 2021). It should also be considered that impacts were felt by nature-based community groups, such as CFs and CGs, primarily through lost income for delivering interventions to groups, with users unable to reap the rewards of using nature. However, these spaces also provided resources to combat food insecurity, by responding to locals' nutritional needs (Meija, et al, 2020), with Mead, et al (2021 ab)

suggesting that these pressures could be alleviated through UA, even after the pandemic. Hanzl (2020) pushes these thoughts and suggests that:

*'we can now observe in many locations globally is the rising awareness of the need for local food production in the form of community and allotment gardens...offer the potential to initiate more permanent transformations in our cities (pg. 2) ...The pandemic has further increased interest in healthy lifestyles and localized food production, practices which are spreading globally. Post-COVID-19 cities have to cater to these needs.'* (pg3).

Thus, showing that grassroots projects such as CFs and CGs is thought to be able to improve food security, and is valued highly for sustainability going forward. There will also be significant and lasting social impacts on the future of these populations, with potential increased domestic abuse/neglect or mistreatment (United Nations, 2020), relationship failures and further comorbidity and mortality issues (reduced NHS/delayed treatments; The Institute of Cancer Research, 2020).

#### [2.8.1 Accessing nature to get through the pandemic tunnel](#)

For some this period of lockdown enabled some of the population to have greater interests in the outdoors and nature, as people across the country became more aware and interested in accessing these types of spaces (ONS, 2021a; Armstrong, et al, 2021; Ma, 2020). This enlightens some to the concept of biophilia (outlined earlier), as this period of imposed time indoors, increased desire to be outside, with Scott (2020) suggesting that *'the crisis has also provided many of us with an opportunity to reflect on our relationships with our local environment'* (pg. 344). With McCunn (2020) explaining the importance of accessing green spaces in this time for urban settings:

*'preserving public access to parks and natural areas in cities can allow people to maintain, at a safe and responsible distance, a sense of community threatened by the loss of other indoor social hubs, such as coffee shops and pubs, and to cope more easily with what is being asked of them with respect to physical restrictions'* (pg. 1).

However, work conducted prior to the pandemic, such as that by Peters et al (2010), shows that small-scale natural spaces, such as private gardens, are vital infrastructure,

but are not always accessible. Many types of dedicated green spaces within cities, such as public parks, and more so CGs and CFs, give space which enables social connection to form, however some were closed over the pandemic. It should also be considered that those in urbanised areas are disadvantaged due to the larger population density impacting on living conditions, influencing access to their private gardens, therefore limiting their ability to get outdoors/garden. Scott (2020) spoke about these injustices:

*'The consequences of the increasing privatisation of open and green spaces, poorly designed neighbourhoods, low quality housing, fast-track planning and a focus on development, rather than on places and the outcomes of development, are sharply experienced during a health crisis emergency.'* (pg. 345).

While McCunn (2020) went on to illustrate that:

*'City parks, community gardens, urban conservation areas, and other types of natural spaces will arguably become even more essential to urban dwellers if the directive to physically distance from one another becomes longstanding or recurrent'* (pg.3).

Some privileged CGs and CFs were able to continue enabling access when rules relaxed in the pandemic, allowing urban populations to gain the benefit of access once again. Others jumped into action across this period, enabling produce to be transported to those in the vulnerable categories (as suggested previously). Yet, for some the financial implications were too much, and those with an elder volunteer basis were unable to cultivate these crops. Many took green environments further, with a growing trend to garden whilst in lockdown, with the RHS suggesting that their website had seen increased traffic and many seed suppliers were overwhelmed from demand (RHS, 2020). The WHO are already recognising the influence nature can have on individual health and wellbeing through the 'Manifesto for a Health Recovery from Covid-19', and as such have been recommending prescriptions to provide stable recovery from the pandemic, with a variety of green options available (WHO, 2020b). The difficulties posed by the pandemic have highlighted that greater evidence is required to understand the magnitude of health and wellbeing influence directed from

nature, while Honey-Rosés, et al, (2020) asks questions around how our spaces and policy will adapt because of Covid-19:

*'Given the pace, scale, and diversity of transformations unfolding around the world, measuring changes in use and perceptions of public spaces in the ensuing months will be critical in order to inform future planning and design'* (pg12).

While others suggest that increased government motivation and focus towards protecting environments could support resilience and progress (Chambers, 2020; Otterson, et al, 2020). Ultimately more evidence is required to fully comprehend the influence nature, and specific GI has on people, to better inform policy of the future and ensure healthy populations.

### 2.9 Positioning the review for this thesis

While there is evidence to support a wide range of benefits of accessing nature, there are still under-explored areas within the growing literature base, while pre-existing theories such as the Biophilia hypothesis and Attention Restoration Theory provide a basis in which more research can advance the field of knowledge through allowing new data to engage and explore new meanings. This thesis adopts these grounding theories simply to engage in developing further understanding around how nature influences health and wellbeing, which concur and contrast the point of the theories. In doing so older adults in urban deprived localities are given an opportunity to express their opinions, with further explanation provided in Chapter 3.

While existing research on these spaces tends to focus on one group of participants, (or those living with significant morbidities, or prescribed access), this thesis engages in a holistic manner to enable the larger picture to be studied, from those using spaces, facilitating access and the wider influences. The current rhetoric is limited to fully comprehend the existence of specific spaces, particularly CGs and CFs, for the benefit of health and wellbeing for older adults. With Lindley, et al, (2019) suggesting that *'Given urban growth and economic imperatives, it will be necessary to explore what sort of configurations can be promoted for multiple beneficial ecosystem functioning in different geographical, temporal and social settings'* (pg. 41) while *'underpinning evidence will need to consider a range of settings and scales...in the urban habitat that*

*now defines the majority of peoples lives’ (pg. 41). Suto, et al, (2021) suggests that ‘Future well-being research is essential to extend the knowledge gained from the present study and use it to enhance clients’ occupational participation...Knowledge about the characteristics of community gardening is limited but is needed to understand its potential as a path to well-being.’ (pg. 150)*

In depth narratives from ‘ageing in place’ older adult perspectives are constrained, with younger populations having been examined, with Scott, Masser & Pachana (2020) suggesting that *‘future research should focus on identifying the benefits supported gardening can bring to older adults’* (pg. 11). Further research is needed to explore how community-based resources, such as CGs and CFs, can benefit older adults, through maintaining social relationships and engagement with nature. With Gorman and Cacciatore (2017) concurring:

*‘There is a growing need for healthcare providers working with individuals experiencing traumatic grief to move beyond a reliance on RCTs [Randomised Control Trials] and embrace more qualitative approaches too, recognizing that “understanding patients’ perspectives on health, illness, and services is crucial to offer appropriate support, plan acceptable services, and understand factors that might prevent or enhance effectiveness’* (pg. 20).

Limited knowledge is known about how these spaces effect indirect users, nor their perceptions of the use of CFs or CGs specifically for health and wellbeing purposes, as research should begin *‘addressing the relationship between green space [projects] and volunteer work with community connectedness is related to one of the previously mentioned limitations of the study...More empirical and qualitative interviews would be recommended to address these very important questions.’* (Hoffman, 2018, pg. 5). While Murray, et al, (2019) extends this to consider the voices of those using spaces and the multiple stakeholders involved in delivering NBIs:

*‘research studies should collate data on single population groups so as to provide answers to health and social care commissioners who tend to commission services for specific client groups.... Evidence on the impact on health is particularly important to the care farming sector as well as health commissioners.... we recommend that a more cohesive approach to care*

*farming research be adopted. This means understanding the needs of commissioners and thinking beyond individual research studies.'* (Murray, et al, 2019, pg.53).

As illustrated previously, another element that is often missed from this sphere and is significantly important is the ability to interact and examine the specific benefits derived from these spaces by those in the most disadvantaged positions, and ageing demographics. With Kingsley, Townsend & Henderson-Wilson (2009) suggesting *'it would be interesting to study the effects of community gardens on different socio-economic groups, cultures and age groups. Emphasis could be placed on identifying the benefits of gardening for members of the community who have a disability.'* (pg. 216).

The progression of studies focusing on specifically CFs is behind those of other European countries, which may not be generalisable to the UK setting due to differences in the governance and health care systems, alongside cultural and societal variations. While the effects of the pandemic have yet to be explored at depth with stakeholders trying to maintain access to nature in these difficult times. Most studies focus on singular sites, such as local parks or allotments, which is advantageous as each site is different, however more findings are required across green intervention spaces for further understanding of how sites impact on health, wellbeing, alongside how they enable progression of the wider development of GI or green SP movement.

#### 2.9.1 Advancing knowledge by filling the gaps

The literature review identifies the gaps currently existing in the research about nature, and specifically how CGs and CFs can contribute to good health and wellbeing outcomes for older adults. Therefore, this thesis seeks to address:

1. *A Holistic insight:* A comprehensive understanding of NBIs, especially CFs and CGs, is needed to extrapolate its impact of health and wellbeing (positive and negative), from those directly and indirectly impacted because of their existence. By conducting this literature review it was concluded that there has been a failure to investigate these spaces comprehensively and holistically. While research with direct and indirect users is needed, therefore this study set to capture data from the individuals directly benefiting from their existence,



those facilitating access, people living in the local community and others with influence in the field such as academics and policy makers in the field.

2. *Population focus*: a focus on local projects is needed to establish how these spaces are valuable for older adults living in the community and evidencing the benefits for future population growth. While engaging with the local community, and those facilitating sessions is required to fully understand how projects can influence the surrounding area – for both health, wellbeing, and the environment.
3. *Socio-economic location*: attention should be paid to the development of sites in urban deprived locations, with austerity having impact to populations across these areas. Examination of the value placed on community NBIs by users is important to understand the sustainability of CFs and CGs, while evidencing barriers for development.
4. *UK focus*: the literature highlighted that many studies are focused on countries outside of the UK. Further research is needed to explore the current GI (NBI) projects, and the benefits provided to older adults from using them, specifically in the UK context.
5. *Evidence for wider green and SP movement*: Increased attention is being given to the development of green spaces, while CFs and CGs are missed. Research is needed to comprehend how sites such as CFs and CGs effect health and wellbeing, therefore providing evidence for the wider green movement, along with the development of green SP. With full excavation of the barriers, expressed by those working the field identified, and recommendations to enable success in the future. With knowledge beginning to emerge around unforeseen circumstances such as the Covid-19 pandemic and the connection between health and nature, more evidence is needed across the different types of GI that can provide benefits to health and wellbeing, to enable recovery from the pandemic.

#### 2.10 Literature review conclusion

This chapter has developed the basis of knowledge around accessing nature, ageing populations and SPs, showing each as areas where research is continuing to grow. The complex set of definitions has been explored, highlighting the various viewpoints held by those advancing the field. The theoretical basis is explained, with continued

scientific research conducted to further a deeper understanding. The current academic field is shown to be emerging and developing, with differing continents taking the lead on specific aspects of research. Both physical and psychological benefits are identified from the interactions with GI, however methodologies do not explicitly target CGs or CFs, nor older adults making use of them, with far fewer in the GM context, preventing the positives that these spaces provide being fully appreciated.

Benefits included, increased positive mood and emotions, increased self-esteem, alongside reduced incidences of feeling depressed or anxiety. More research is needed as there are current disparities involving in depth narratives from all of those benefiting from the existence of sites, so knowledge of the full range of benefits is limited and illustrates a failure to fully encompass all viewpoints. While older populations are often overlooked, preventing identification of opportunities and barriers they are exposed too. The chapter follows with the variety of legislation and policies in place to encourage development of NBIs, with personalisation of health care being highlighted as a major area of development, alongside conservation and development of further natural environments. The influence that the pandemic has had on research and NBI sites is included to illustrate the impact faced by ageing populations.

The research presented in this thesis seeks to address gaps in the existing literature by exploring two case study sites, a CF and CG, used by older adults, in GM. In doing so, the findings encapsulate opinions held by older adults using these sites (Chapter 4), alongside those integral in setting up the sites (Chapter 5), and those with an indirect links to sites such as the public and policy makers (Chapter 6). This was with the aim to develop evidence alongside providing recommendations for the future implementation of these sites and similar, aiding understanding of how the green movement can be successful in protecting human health and the wider ecological world. Now, Chapter (3) will outline the methodological approach adopted to achieve this, while exploring the philosophical and ethical considerations integral for data collection and analysis.

## Chapter 3: Growing research through methodology

### 3.1 An introduction to the methodology

This chapter outlines the philosophical stance that underpins the methodological framework and research approach adopted. It provides a justification for this selected approach and the methods of data collection. Research exploring the health and wellbeing impacts that CGs and CFs have on older adults in the UK is limited, making it difficult to enable evidence-based implementation and funding. As suggested in Chapter 2, this evidence base must be stronger, to enable a narrative to be built around the real-life implications of use and provide effective recommendations to ensure pragmatic and sustainable growth.

Therefore, the aim of this research entails *critically exploring urban nature-based health interventions, such as CFs and CGs, in GM and to ascertain their value for the older populations and its role within the wider green movement.*

The aim was underpinned by several objectives:

- I. Undertake a desktop analysis of GI and its role within the wider green movement and green social prescription agenda
- II. Engage with stakeholders involved in the GI schemes to understand their perceptions and ambitions for the activities
- III. Critically evaluate two GI health schemes in GM and their impact on participants' health and wellbeing
- IV. Evaluate the development of the wider nature-based health movement across the UK, alongside barriers to the concept
- V. Provide robust and effective recommendations for future research and development within the field.

This chapter outlines the blended pragmatic constructivist grounded theory (GT) approach that influenced the qualitative methodology, using semi-structured interviews. This blended concept allows the four dimensions of reality to interact; facts, logic, communication, and value (Nørreklit, Nørreklit, & Israelsen, 2006), to fully understand how perspectives are built both as a direct and indirect user of environments. Pragmatism identifies that reality exists, however is a fluid concept that changes due to human experience, making it impossible to fully determine (Morgan,

2014). While epistemologically illustrates that the knowledge of reality is based on these human experiences and impacts on the views of the world (Kaushik & Walsh, 2019), with methodologies constructed to be practical in gaining the perceptions of human experience (Morgan, 2014). While constructivism adds to this by suggesting *‘that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner’* (Elliot, et al, 2000, pg. 256). Pragmatic constructivism therefore recognises that humanity is *‘a constructed abstraction that needs to be constantly scrutinized’* (Hoover, 2016), one in which Ralph (2018) suggests *‘Voices other than the original norm entrepreneurs should have a say in how it is implemented if the norm is to remain useful in reconciling evolving communities of practice’* (pg. 186).

This thesis adopts the use of pragmatic constructivism, across disciplines to contribute to knowledge by using an in-depth qualitative multi-user perspective, grounded in a case study approach. In doing so it seeks to explore the health, wellbeing and social impacts older adults receive from using NBIs, capturing the lived experience, by employing techniques primarily rooted in social sciences. The philosophical underpinnings concurrent with research of this nature, alongside ethical challenges encountered are discussed, and how the pandemic played a major role in reshaping a resilient project. Finally, the methods used are described fully to enable comprehension of the process.

### 3.2. Philosophical reflections

All research is initially constructed around philosophical viewpoints, most commonly from the viewpoint from those conducting it (Johnston, 2014). To fully understand truth research sets out to question and interpret its findings, as Duschl (2020) puts:

*“Building and refining scientific knowledge involve pathways for asking questions, acquiring evidence, taking measurements, and analyzing data as well as pathways for deploying evidence, identifying patterns, making conjectures, and building models.”* (pg. 187).

However, it should also be considered that a researchers’ intrinsic beliefs and thoughts play an important role in describing and evaluating the ways they observe, collect, analyse, and display it to others (Lalle, 2003). Hanson (1965) identified that the

researchers' observations can influence the phenomenon being investigated. Therefore, suggesting that attention should be paid to the interpretation of research, as assumptions are gathered over the life course, through different experiences, whether that be through education, social environments, cultural differences and even geography (Creswell & Poth, 2017).

This thesis is underpinned by GT, which originates from the early work of Barney Glaser and Anselm Strauss, in their work 'Awareness of Dying' (Glaser & Strauss, 1965). This led to the seminal text 'The Discovery of Grounded Theory; Strategies for Qualitative Research' (Glaser & Strauss, 1967), which spawned a revolution in qualitative research. Glaser & Strauss seminal work brought about change, and advocated for development of realism, objectivity, and isolation of the researcher from the research, however, there have been many interpretations. It is now acknowledged that there are that three main trains of thought that exist around GT: traditional (classical), evolved GT and constructivist GT (Rieger, 2019; Singh & Estefan, 2018; Kenny & Fourie, 2015). The analytical process followed as part of this research closely was influenced by a constructivist GT approach, originally developed by Charmaz (2006). Charmaz's constructivist approach engages and relies on participants to develop "*individual perspectives, to broad patterns, and ultimately to broad understandings*" (Kaushik & Walsh, 2019, pg. 2). Constructivist GT research seeks to qualitatively co-construct the theory, by engaging multiple perspectives, including those undertaking the research, while moving away from the need to be objective, and moving towards real life scenarios of social construction of knowledge. Charmaz, argues this, as there is difficulty in being objective: "*it is very difficult, if not impossible, to totally divorce one's self from the accumulations of knowledge and experience which temper understanding, observation, and interpretation*" (2003, pg. 13).

This in turn enables theory to be constructed through induction, from analysis of the rich narratives gathered by in-depth methods (Cohen, Manion & Morrison, 2007; Hubbard & Lindsay, 2002), and using the researcher as an involved party (Gold, 1958). Moving to understand the underlying concept of social constructivism, that as a society people learn from each other, and then development can occur from this (Hamat & Embi, 2010); in turn embracing the complexity of the real world, without simplifying or trivialising findings. It is also understood that this inclusion within research exposes

potential biases, detailed in depth by Jones and Alony (2011). These biases concern double hermeneutics, where the researcher influences studies, and the 'Hawthorne effect', in which the participants have susceptibility to change behaviours to please those carrying out the research (McCambridge, Winton & Elbourne, 2014; Landsberger, 1958); in this case it is therefore important to identify them as influential within research. Considerable amounts of time were spent with participants for this research, prior to data collection, building rapport and trust. In doing so, this demonstrates awareness that the process does not come from a neutral standpoint, and the use of reflexive strategies (Glaser, 1998) enables engagement, understanding of preconceived experiences and knowledge. However, this design, was seen as positive, by providing a researcher that is welcomed, embedded, and valued, therefore enriching findings, as attention has been paid to show care and attention to what participants suggest.

### 3.2.1 Influences of the pragmatic paradigm

Typically, pragmatism is used across fields of law, education, politics, sociology, psychology, and literary criticism, with a concentration in American research (Spohn, 2018). Moreover, it is being more widely adapted across the globe, for its ability to produce change, as highlighted by Thayer and Rosenthal (2017), who suggest that '*pragmatism is derived from the Greek pragma ("action," or "affair")*' (pg.1), thus suggesting that by doing action-based research the outcome will allow for positive change to occur.

The notion that historical pragmatic contributions within philosophy created a research paradigm was also reported by Kaushikl and Walsh (2019), who suggested that pragmatism is not solely adopted in methodology, but also for the consequences of research, by suggesting that: "*It is often associated with mixed-methods or multiple-methods... where the focus is on the consequences of research and on the research questions rather than on the methods*" (pg. 2). Emphasising that the pragmatic nature of research can still be adopted throughout constructivist GT approaches, as the real-life implications of the study can be informed by the underlying pragmatism.

Traditionally it is considered that pragmatic approaches provide a middle ground between the classical use of objectivism and constructivism, whilst Dewey (1988) aimed to explore truth as to '*gain a kind of understanding which is necessary to deal*

*with problems as they arise*” as opposed to “*to uncover the antecedently real*” (pg. 14). With Baker and Schaltegger (2015) going on to suggest ‘*true propositions are those that have stood up over time to the scrutiny of individual use*’ (pg. 268). In doing so, pragmatism provides a flexible approach, drawing positives from both classical viewpoints to enable the best possible research output for the overarching research question (Teddlie and Tashakkori, 2009), at the same time promoting action to solve real-world issues (Prasad, 2021). Pragmatic research takes a comprehensive understanding of the world, through historical changes, as well as being captivated by motivations of development and communities’ gain (Morgan, 2014). Therefore, enabling research to evaluate real-life situations, such as the impact of NBIs, and the intrinsic benefits/consequences on those involved, whilst providing opportunities to comprehend the ‘action’ and experience of others.

Pragmatic theory includes three main schools of thought, those held by key classical figures: founder Charles Sanders Peirce (1839 - 1914) popularised by William James (1842 – 1910), while more contemporary actors included John Dewey (1859 - 1952) and Herbert Mead (1863 – 1931) (see Campbell’s (2015) history of Pragmatism). Peirce was influenced by the German term ‘Pragmatisch’ which differed from the original meaning in Greek, as he refers to the use through experimental, empirical and purposive thought. This is built upon the ‘absolutist’ imperial works of Hegel, concerning truth and reality (Stern, 2005). This strong approach is reiterated within a letter to Christine Ladd-Franklin, from Peirce, written c.1904:

*‘Pragmatism is one of the results of my study of the formal laws of signs, a study guided by mathematics and the familiar facts of everyday experience and by no other science whatsoever.’* (Quotes in Fitzgerald, 1966, pg. 10).

Fitzgerald’s quotation reveals a restrictive purpose of his theory and its impact to philosophical stances, generating greater fluidity across pragmatism. Yet James, a contemporary of Pierce, presented an opposing ontology that suggested truths are not the same for everyone (James, 1975). With James’ work looking specifically at religion and the existence of god(s), it was suggested that if there isn’t a rational way to evaluate society and its activities, then it may be justified to use non-rational means to work out what individuals believe to be truth (Ayer, 1968).

Finally, Dewey, a British academic, developed the theory of 'cultural naturalism', and suggested that his terms are 'anti-intellectual', where he thought that philosophy should spur societal change, and vice-versa (Alexander, 2014; Sorrell, 2013; Shusterman, 2002). Dewey went on to develop the idea of pragmatic epistemology, to suggest that knowledge enquiry needed to go further, by expanding methodologies from a core problem-solving perspective. Ultimately laying the foundations to understand that research is continually changing, which later became the ideology of scientific enquiry (Bragg, et al, 2015).

According to Kivinen and Ristelä (2003), Dewey's work led to progress towards blending paradigms, leading to crosscutting frameworks such as pragmatic constructivism. This research was influenced by the same paradigms because it enables flexible approaches that can help understand multiple realities, thus enabling rich narratives to be fully engaged with, evidencing participants feelings around the health and wellbeing benefits derived from interactions.

### 3.3 Situating research across transdisciplinary

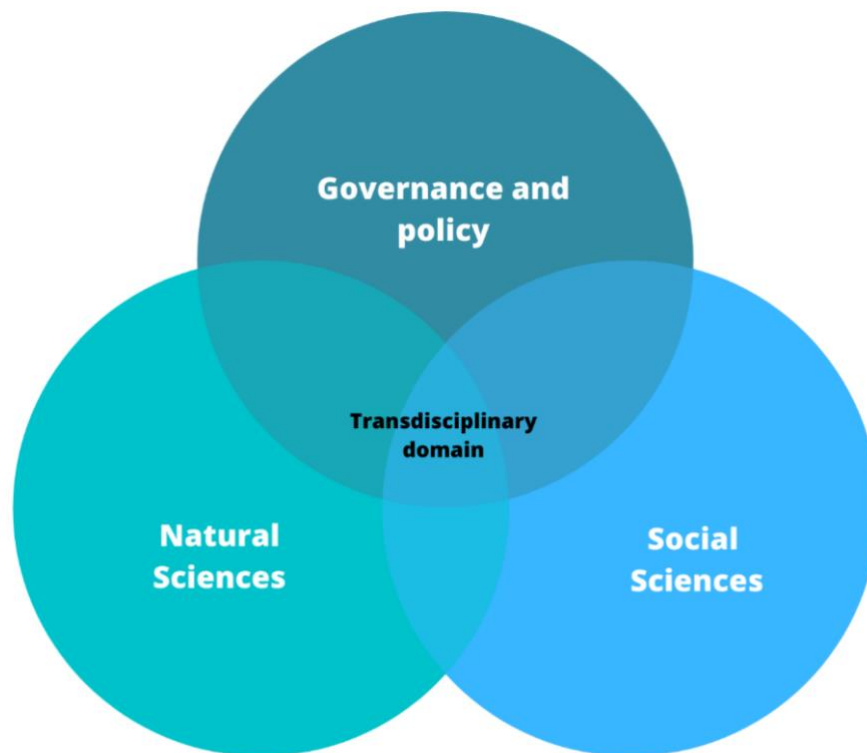
This thesis primarily conforms to the category of '*human geography*', but also includes interdisciplinary attributes, bridging knowledge between environmental sciences, public health, and into social policy. The difference between humanities and social sciences has also been considered, and this thesis considers both, through unique perceptions of individuals (humanities) and general opinions of those involved and how opportunities of development could assist at a wider capacity (social sciences) (McLean, 2018). Therefore, in this section, the constructs set by 'interdisciplinarity' and 'multiple methods' will be discussed to illustrate how this influenced the research focus. Interdisciplinary research is increasingly becoming perceived as a '*norm*', whilst strengthening exploration within singular disciplinary foundations (Timans, et al, 2019; Townsend, et al, 2015). This new '*norm*' pushes a greater desire to illustrate innovative crosscutting studies, preventing silos; alongside promoting engagement with the overlapping fringes of research thus furthering understanding from a variety of academic backgrounds. Developing this concept further is the ideology of transdisciplinary, that develops:

*'sufficient trust and mutual confidence to transcend disciplinary boundaries and adopt a more holistic blended integrated approach so that the disciplinary*



*distinctions become blurred, which may result in the creation of new disciplines, such as biochemistry, bioengineering, and cognitive neuroscience* (Townsend, et al, 2015, pg.660).

This has created the opportunity and discussion of *'health – geographies'* or *'geohealth'*, as it enables fields of research to collaborate around problem-solving opportunities, through a multi-stakeholder society and therefore improve communities as a result. The discipline of health geography spans multiple fields, from theoretical critical-spatial histories, contemporary demography, care and welfare, alongside spatial and big data (see examples such as Philo, 2013; Holdsworth, 2018; Pearce, et al, 2018; Cummins, et al, 2020; Basiri, 2021). This far-reaching discipline could be considered as transdisciplinary, with comparison to its counterparts, in singular, multi and inter, and their complexities shown in the Figure 9.



*Figure 9: Transdisciplinary concept (adapted from Chuenpagdee, et al, 2019)*

The use of transdisciplinary research based within pragmatism allow inclusion of all the complexities of the social world and in turn provide viable recommendations for the future. While using constructivism as a theoretical position, it is possible to study the discourse of these overlapping fields, and truly engage with individuals' beliefs, arguments, and truths (Morales-López, 2019). Although transdisciplinary research is

still growing (see De Costa & Norton, 2017; Max-Neef, 2005), with Figure 9 exhibiting some of the disciplines that a transdisciplinary domain crosses. This research style brings user groups together, alongside adopting of methods from each sector (Cohen & Lloyd, 2014), allowing progression of the field, and meaningful change in real life.

This becomes particularly pertinent when dealing with the concepts of health and wellbeing. At an international level the subject of health and wellbeing is being given priority through interdisciplinary research, with examples including the *Ottawa Charter for Health Promotion* ('Health for All' by 2000 and beyond, followed by the Jakarta Declaration and subsequent Global Health Promotion programmes) conducted by the World Health Organisation (Eriksson and Lindstrom, 2008), and the research framework created by *Horizon 2020*, from The European Commission (2018), highlighting the significance of adoption and ability to engage globally.

The cross-disciplinary approach has also provided opportunity to utilise methodologies between disciplines therefore providing a '*confident collaboration of disciplinary bases in order to understand phenomena such as migration, health and well-being, climate change, or consumption*' (Raento, 2020, pg. 362). Still, the landscape of mixed and in this case, methodologies with different participant groups, is still a relatively uncharted one (Cresswell, 2014; 2009; 2007; 1994). Blending methodologies between disciplines has provided an opportunity to mix methodologies within singular research studies, to provide a multivariate approach to holistic understanding, therefore allowing a greater focus on salutogenic principles enriching problems recognition and questions (Shorten and Smith, 2017, pg. 74). It is acknowledged that there are numerous benefits from working with multiple methods, including complimentary development and expansion of findings (Shorten & Smith, 2017). It should also be reported that by using a variety of methods, a researcher can cater for different individuals' requirements, towards enabling greater value to be derived from participants in a way suitable for them, '*building rapport and establishing comfortable interactions... respondent to provide a rich and detailed account of the experiences at the heart of the study*' (McGrath, Palmgren & Liljedahl, 2019, pg. 1003). This is of importance specifically to those with learning difficulties, across ageing [primarily through physical decline and eyesight] and/or cognitive decline (Kroll, et al, 2005) because they are under or misrepresented (Nind, 2014), calling for adaptation and

flexibility to ensure research is accessible and *'it allows for all voices to be heard rather than some'* (Cluley, 2017, pg.45). There is a lack of published academic work in this area, hence the use of multiple methodologies employed for specific populations, could provide options for participation, and allow the unique contribution of those who are often missed, such as older adults and those with learning disabilities, from traditional research to be captured by this research.

Academics, such as Shorten and Smith (2017), portray that engaging with qualitative methods provide *'better understanding...by triangulating one set of results with another and thereby enhancing the validity of inferences'* (pg. 75). The concept of triangulation is set out by Cohen and Manion (1986) as an: *"attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint"* (p.254). Therefore, it aims towards convergence (Mathison, 1988) or congruence (Thurston, et al, 2008), allowing a conclusion to be gathered from evidence within social settings – enabling greater transparency as it provides complimentary and disparate research outcomes.

Therefore, enlightenment on social phenomena can be discussed and ultimately provides a collective approach for development in the field. Still there are several disadvantages of triangulation, with Guion, Diehl and McDonald (2011) suggesting it is time-consuming, as collection of more data requires more planning and organisation (example: Johnson et al, 2017), for which may not always be available (Thurmond, 2001). While disharmony occurs when combining methodologies or perspectives resulting in conflicting data (Noble & Heale, 2019). It is also suggested that there are multiple ways that triangulation can be achieved, with Turner and Turner (1970) suggesting that *'variance in events, settings and times, and so forth may bring to light revealing atypical data or recurrent patterns both of which may improve the confidence in the findings'* (pg.1). However, it is suggested by Mathison (1988) that not all research will provide complimentary findings that enable triangulation (Nightingale, 2020). Thus, it should be used to construct explanation regarding the social phenomena investigated. This thesis highlights the importance, concerns regarding mixing disciplines, alongside barriers, such as intensive training requirements and the stretched nature of working across such boundaries. While this discipline presents varied methodologies, with opportunities to develop qualitative understanding through

methods of semi-structured interviews both in a face-to-face capacity and using other distanced mediums.

### 3.3.1 Creating 'human geography'

The review of literature, in Chapter 2, helped provide a basis of understanding of the interaction between nature environments with human health and wellbeing. The review highlighted the dearth of information about the spaces of CG and CF, and, in particular, with older adults. Alongside the current field requiring urban evaluation and a holistic approach to engage with outsider perspectives. There is still a limited amount of research exploring older adult perspectives using GI in urban deprived areas, making it difficult for evidence-based practice to be implemented, with research needed to evidence the impact these spaces have on such populations. This research contributes findings that supports the use of GI projects, such as CGs and CFs, through voicing the perspectives held by those directly and indirectly influenced by their presence. Alongside presenting practical recommendations for planning, delivering and upscaling work in the future.

To explore the impacts that CGs and CFs have on older adults, whilst engaging with stakeholders, this thesis utilises a cross-disciplinary approach, bringing traditional geographical sciences and health sciences together to give a 'health-geography' perspective. Geography and health are invariably connected, whether that be from the places people are born, to the places of habitation or working; all of which ultimately impact on health and wellbeing (Hubbard, 2002), while creating a need for research to better understand the role of place, space and geography on health and wellbeing. This subdiscipline was borne out of medical geography (Herrick, 2016; Cutchin, 2007; Kearns & Moon, 2002; Kearns & Gesler, 1998), which moves away from spatial analysis, towards investigating cultural influences, utilising theorisation while not focusing on generalisability. This field continues to evolve and as Dummer (2008) articulates:

*“deals with the interaction between people and the environment. Health geography views health from a holistic perspective encompassing society and space, and it conceptualizes the role of place, location and geography in health, well-being and disease”* (pg. 1177).

With Power et al (2019) suggesting further progression has been made through ‘*efforts to examine more nuanced, personal and experiential accounts of how and where people seek and/or find health and wellbeing*’ (pg.1). Consequently, the pandemic has accelerated interest and change to research in this field (further detailed in section 3.5), resulting in a greater emphasis on human geography and pushing for further understanding to be developed to enable change. The concept of building knowledge is explored by Bhattacharjee (2012) by suggesting that there are three levels concerning the concept of research, as shown below:

*‘(1) to scope out the magnitude or extent of a particular phenomenon, problem, or behavior, (2) to generate some initial ideas (or “hunches”) about that phenomenon, or (3) to test the feasibility of undertaking a more extensive study regarding that phenomenon’* (pg. 5).

This methodological approach gathers knowledge, by employing techniques primarily rooted in the social sciences, as suggested in the chapter’s introduction, yet takes an explorative angle, to enquire about potential topics that have not been researched before (as outlined in Chapter 1). This blended pragmatic constructivist approach enables a qualitative approach to establish understanding of each individual’s opinion, therefore understanding more about the phenomenon, while corroborating the viewpoints expressed by different users, allowing a wide scope, generating ideas and testing the ability for CFs and CGs to influence health. This ultimately enables problems to be identified, explored, and developed for future action (Kelly & Cordeiro, 2020; Hothersall, 2019; Morgan, 2014).

### 3.3.2 Focusing on older adults

This thesis focus is concerned with older adults, and their health and wellbeing benefits derived from accessing NBIs, such as CGs and CFs. As Walker (2007) suggests, there is two main reasons why older people should be included in research:

*“First of all, as a matter of human rights, like any human research subjects, older people have a right to be consulted about research that is being conducted ... Secondly, if researchers want to produce findings that might contribute to the quality of life of older people or the quality of the services or products they use, then it is essential to involve them so that they can contribute their own*

*understandings about ageing and service use which can often be far removed from those of scientists and service professionals” (pg. 482).*

There is a necessity to engage older adults in research, as demonstrated above, as changes to life could ultimately affect the population and therefore, needs to be meaningful. Alongside this, demographic shifts characterised by ageing populations across the globe continue to create profound impacts; generating a need to enable healthy ageing for a sustainable future (The Academy of Medical Science, 2009). The existence of NBIs, that promote inclusivity of all ages and abilities, pushes research to involve those in which effects are felt, therefore putting them at the heart of the research. Additionally, as shielding restrictions were imposed specifically for older adults in the time of Covid-19, leading to increased marginalisation, this adds greater importance to this research post-Covid as it provides opportunities for inclusion once more (Age UK, 2020b).

As there are no definitive legal definition stipulating what age is considered to be ‘old’ or ‘older’, the current national retirement guidelines and consultation with AgeUK enables some justification here, with both stressing that 65 years is ‘*elderly*’ (AgeUK, 2019ab). While The International Longevity Centre UK, a specialist think tank looking at ageing, has started incorporating the ‘*younger old*’ (those over 50) into research they are conducting, preferring to suggest it is the ‘*second half of life, rather than “older age”*’, which provides a ‘*highly diverse population, and multiple life-stages to understand,*’ with ‘*clear evidence of structural age discrimination*’ (International Longevity Centre UK, 2020, pg.10). Going on from reading about this literature, and moving towards accessing potential case studies, in 2019, it became clear that there was a greater need to base this research on those 50 plus, as most groups engaged with were comprised around this demographic.

Furthermore, and adding to Chapter 2, the GM life expectancy of residents is lower than the UK average at 79.6 years for males and 83.2 years for females (Raleigh, 2019) and they are facing greater health risks caused by urbanisation and deprivation (GMCA, 2017ab). The ONS suggests that ‘*the older population is not equally spread across local areas, with older people making up higher proportions of the populations of rural and coastal areas than urban areas*’ (2018). Between 2017 and 2019 it was

estimated that *'healthy life expectancy (HLE) at birth in the UK for males was 62.9 years...females showed a significant decrease from 63.7 years in 2014 to 2016 to 63.3 years in 2017 to 2019'* (ONS, 2021a), reporting that health is declining in the early stages of ageing, consequently impacting on the ability for healthy ageing to be possible. This is central to the health inequalities issues faced by deprived communities and is a matter of grave social injustice, which is also worsening over time (Marmot, 2020). Within the case study localities, the mean life expectancies were significantly lower (mean equalling 66) (Purdam, 2017), therefore setting the age criteria at the traditional 65 would significantly reduce participant numbers alongside subsequently limiting the impact of recommendations to potential older generations of the future, within these deprived locations. This provides justification for lowering the age profile considered and the real-life requirement to study these deprived populations, pragmatically attempting to make a viable change and reduce inequalities faced. To ensure that meaningful data was collected, and in context with the pragmatic constructivist approach, this research focused on 'older adult', rather than 'elderly'.

### 3.4 Designing research

Verschuren, Doorewaard and Mellion (2010) states that *'Designing and carrying out a research project is a complex activity'* (pg. 15), with Leedy and Ormrod, (2001) suggesting it goes beyond gathering and presenting information, towards processing and interpreting findings to understand a phenomenon. While Durling and Niedderer (2007) relates this to the process of conducting doctoral research, suggesting:

*'it must establish prior art through an extensive literature review; detail the research questions; demonstrate the methods used to answer those questions, and their validity; explain what new knowledge was gained; and discuss the limitations of the work... all research should be set within some methodological framework that assures other scholars of the robustness and provenance of the methods employed'* (pg. 8 – 9).

Durling and Niedderer (2007) stresses the importance of a robust methodology when designing research. In this context, Schilling and Gerhardus (2017) argue the importance of actively including older adults within health studies, including being able to incorporate methods with mutualistic proprieties, for which these methods do not detract from the activities participants want to take part in, but naturally blend with

these practices; enabling data collection which does not distract from the needs and desires of the older adults. Schilling and Gerhardus (2017), alongside Hall, Longhurst and Higginson (2009), go on to consider how methodologies must be specifically appropriate for older populations and the unique challenges that this population pose. In this sense, they highlight several, such as stigma, disease, privacy, and the capacity of these populations. Having understood this, several methods were discussed at a round table with older adult growing and farming groups in the region to establish understanding of those which be most appropriate. Having had this discussion, several different methods were then piloted, with those shown in Table 4, allowing the feasibility to each to be tested before the research design was finalised. This allowed for a co-produced approach and fits well with the aforementioned arguments in this section.



Table 4: Piloting a variety of methods

Method piloted	Suitability from piloting older adult population sample groups	Other studies reflecting opinions	Decision (Accept: include/Reject: exclude)
<b>Individual interviews</b>	Participants valued one-to-one interviews, as they remarked it gave them time and space to discuss sensitive topics with trust. This method was also remarked by the older adults as being 'therapeutic', as they were able to express their personal experience while the interviewer remained engaged, asked more questions and they did not need to 'bring anything except themselves', limiting concern over doing enough to take part [as witnessed in other methods].	See Robinson & Hale (2011) who speak of the way interviews gain relevant information from older people, while allowing them to 'tell their stories' (pg. 1).	<b>Accept</b> – older adults value method, appropriate to fill knowledge gap and viable through pandemic.
<b>Participant diaries/logbooks</b>	Participant diaries were also considered with older adults asked to reflect on their feelings related to the environments they found themselves within. However, those taking part in the pilot suggested that this was counterintuitive as they lost time to take part in the activities, as they had to give time filling in diaries. After a considerable amount of time reinforcing that these	While the use of diaries offers participants choice and control over their output, they are also able to discuss difficult thoughts and feelings through this	<b>Reject</b> – overly time consuming for participants

	<p>entries did not have to be long, the participants decided that they no longer wanted to continue with diaries and therefore this data opportunity came to an end.</p>	<p>method. However, as Bartlett and Milligan (2015) suggest this can also lead to respondent fatigue, over-disclosure, and privacy concerns.</p>	
<p><b>Photo/video diaries</b></p>	<p>These were initially considered to be a good option to document the interaction with the environment, with older participants given the opportunity to take photos of what mattered to them in the spaces. However, over time it became apparent that they were concerned over the quality of photos and were not actually taking photos of what '<i>mattered to them</i>' rather what they thought would look be aesthetically pleasing. After a short period to reflect on this methodology, older adults also discussed how this method required a considerable amount of time, learning how to take photos and being able to explain them, while also being concerned over data protection of the other members in the group.</p>	<p>Similarly, to the issues raised with written diaries, the use of photography is perceived to be empowering and gives an intimate reflection on participants daily life (Jones, et al, 2014). However, as Pilcher, Martin, and Williams (2016) suggest it is important to still elicit further knowledge from the photography by</p>	<p>Reject – not gathering targeted information</p>

		follow up interviews, therefore requiring more of the participant's time.	
<b>Focus groups (conducted with groups of 3 – 7)</b>	Older adults felt uncomfortable in discussing truths in front of the rest of the group, as this was the first case for many to speak of the health and wellbeing impacts from taking part in the NBIs. They illustrated that due to the populations age, they were more concerned than others about talking about these matters in a public realm. The use of groups also relies heavily on the relationship with the facilitator between each individual, therefore dictating the capacity for stimulating information and the power dynamic between each contributor.	Leung and Savithiri (2009) illustrate the disadvantages of using focus groups and the concern over the power struggle relationships influencing the data collected. While Sim and Waterfield (2019) reinforce the ethical challenges associated with group dialogues.	Reject – inappropriate method due to potential discussion around sensitive topics
<b>Ethnography and observation work</b>	Again, participants felt uncomfortable being watched, with some suggesting they felt ' <i>like zoo animals</i> '. They were specifically aware of someone watching them, even after building rapport, with many remarking on ' <i>when you get older, people do watch you, there is this weird thing where you become something of concern</i> '.	Morgan-Trimmer and Wood (2016) suggest that building rapport with research subjects is important in ethnography work, with	Reject – influencing behaviour change and impossibility due to pandemic/lockdown

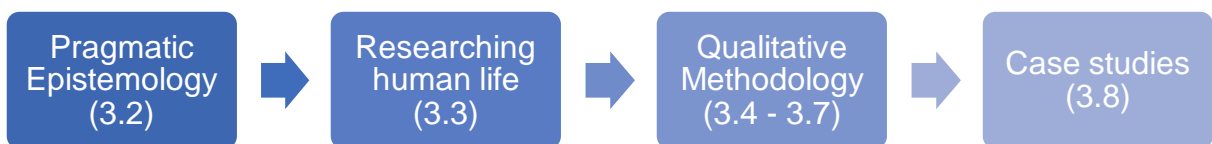
	<p>Their behaviours were likely to have been altered because of this, with them suggesting that they were modifying the activities that they conducted onsite to show how things ‘<i>should actually be done</i>’. Therefore, this was considered to be inappropriate for the study, as it aims to understand the influence of environment rather than the research study itself.</p>	<p>this impact reduced over time.</p>	
<p><b>Wellbeing and physical activity surveys (including The Warwick-Edinburgh Mental Wellbeing Scales (WEMWBS), Positive and Negative Affect Schedule (PANAS), Visual Analogue Scale and The</b></p>	<p>When piloting these ranking tests on wellbeing participants were given a variety of options to submit their answers (including physical handouts, a portable device and via the researcher). Participants spoke of the difficulty in comprehending questions, even after prompting, leading to a point of confusion and frustration by the older adults. Over time they began to avoid taking part in these studies and therefore suggested that the ranking submitted would be skewed due to the frustration of using this method.</p>	<p>These methods provide quantification of the subjective thought, however, these need to be considered cautiously, as they are subjective and cannot be interpreted individually (Fat, et al, 2017). Alongside this, questions posed within these surveys can be difficult to comprehend and require alternation</p>	<p>Reject – comprehension and frustration related to time taken to complete.</p>

<p><b>International Physical Activity Questionnaires (IPAQ))</b></p>		<p>to individual studies, therefore potentially losing quality and the validation attached (Stewart-Brown, et al, 2009), with some of these tools only applicable to younger populations.</p>	
<p><b>Biological marker testing (cholesterol blood testing)</b></p>	<p>Initially cholesterol testing, via finger prick sampling, was received positively by participants, as they valued being able to see the physical change to health. However, due to concerns over locations in which this work was carried out this ultimately ceased, alongside the pandemic inhibiting the ability to monitor due to physical proximity.</p>	<p>There is difficulty in collecting biological markers in the field, from cold environments making it more difficult to gain specimens, with a population that is reported to have lower blood pressure also, to concerns over safety (see Worthman &amp; Stallings, 1997).</p>	<p>Reject – complex nature of sampling and pandemic limiting physical ability.</p>

<p><b>Others (methods not physically piloted but suitability was discussed with older participants included: creativity scales, heart rate monitoring, physical activity monitoring)</b></p>	<p>At the piloting stage several different methods were discussed to gain insight to what could be scoped in/out of the research, including the use of physical activity and heart rate monitors. However, these were quickly disregarded as participants, while example reasons include: not be willing to wear them for the duration of research, feared of misplacing them and concern about tracking software.</p>	<p>Kononova, et al, (2019), expresses similar concerns with older adults in their study expressing scepticism over accuracy and little interest in trying monitors.</p>	<p>Reject – participant desirability</p>
--	--	---	--

Having piloted a variety of methods, engaged with methodology experts, acknowledging the gaps in the field, enjoying conversation with this population and the pandemic meaning that multiple methods were not possible, the research design was able to be finalised.

Therefore, this thesis adopted a case study approach based on a small number (ten) of in-depth participant interviews with older adults over fifty years of age. Whilst benefiting from a comprehensive outlook through interviews with group facilitators, outsiders (key actors, stakeholders, and local public), looking to deepen knowledge surrounding the benefits that these spaces provide and how they can be successful. This therefore relied on adopting a constructivist GT approach to analysis, through pragmatic eyes, as shown in Figure 10, with the sections where they are discussed further.



*Figure 10: Foundation of research approach (author's own, informed by Crotty, 1998)*

The use of case studies adapts well to the use of multiple participant groups, with pragmatism serving as bridge between conflicting paradigms and across the philosophical – methodology – method continuum (Johnson & Onweugbuzie, 2004). The complexity of the social world requires a fluid understanding and relationship between philosophy, methodology and methods, to ensure that application in real life scenarios is possible (Sharp, et al, 2012; Tashakkori & Teddlie, 2003).

The background aims and implementation of these styles of NBIs have been explored through the desk-based study of literature. While research within two case study sites, utilised in-depth semi-structured interviews, with both older adults using the sites and group facilitators, as seen in the conceptual framework in Figure 11. Alongside further interviews carried out with outsiders, those being people with influence on the case studies, including policy makers, funders, and the public in the local area.

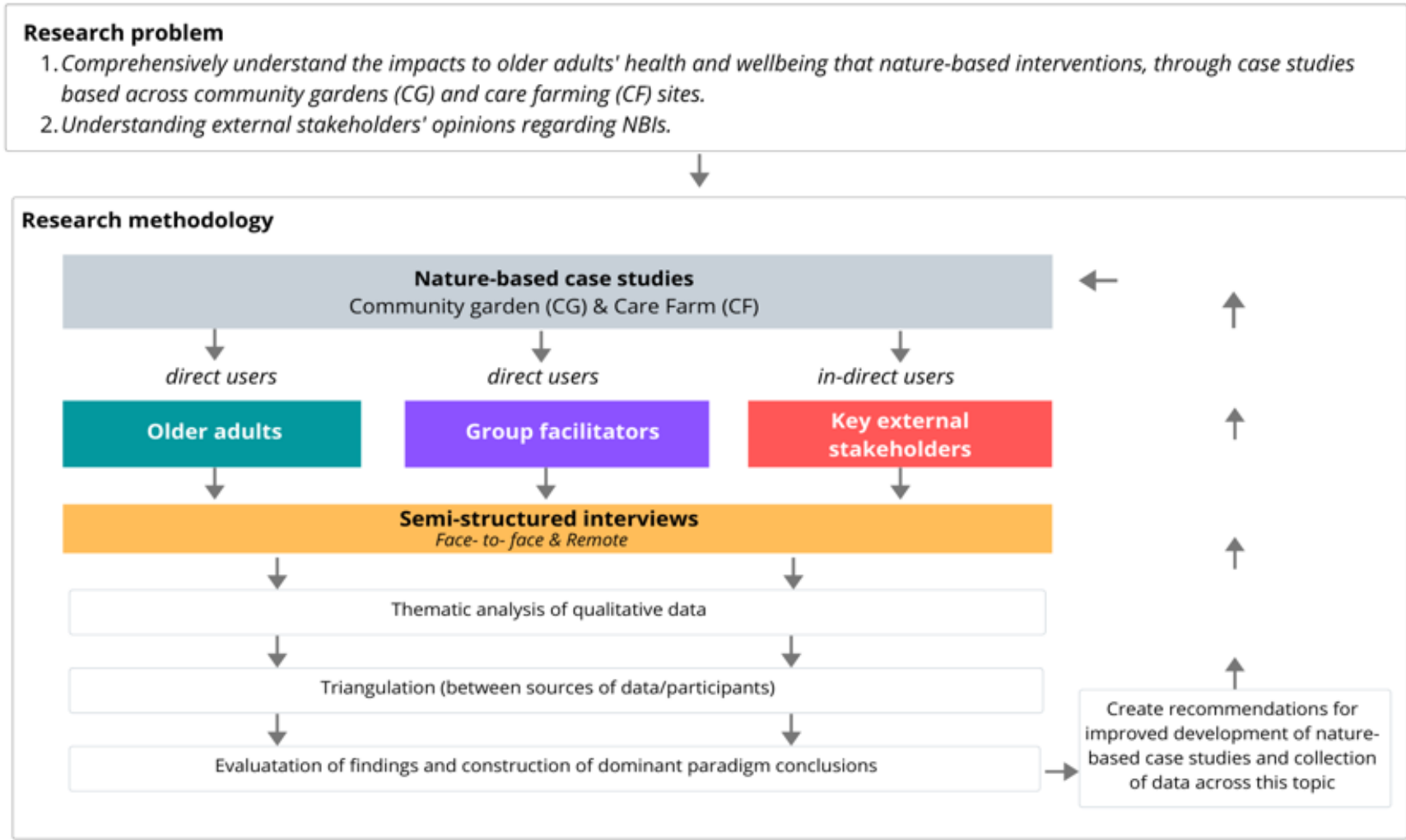


Figure 11: Research design forming this thesis



The research design ultimately highlights the research problem (informed by the literature review) and how this research addresses the problem identified through an appropriate methodology) that was influenced through the GT constructivist, pragmatic approach to understand the impact of NBIs on older adults. The framework illustrates how a qualitative methodology was used across two case study sites selected: a CF and a CG project (in this case termed NBIs), both located in GM.

#### 3.4.1 Outlining qualitative research – where to situate the research?

There are three common approaches to conducting research: quantitative, qualitative, and mixed methods (Williams, 2007), with the selected method used to respond to research aims, objectives and questions. While design must also consider practical constraints of location, time, money, and availability (Hakim, 2000), and reflect on philosophical stances. Therefore, research methods and techniques must be appropriate for the research and those undertaking the study (Asenahabi, 2019). Creswell (2014) explains that the research design outlines the plan for connecting the conceptual research problems with the achievable empirical research, therefore giving specific direction to achieving an understanding of a phenomenon. Qualitative research lends itself to exploring and understanding individuals or groups views on social or human problems, while generating meaning, purpose or reality from these opinions or experiences (Merriam, 2009). Therefore, fitting with the goals of this thesis, as the opinions of stakeholders can be gathered to substantiate claims that NBIs have a health and wellbeing impact on older adults, alongside other stakeholders' views.

The purpose of research is to contribute to a field that exhibits a gap, whether that be in knowledge, practice or to promote behaviour change. Qualitative research is important to express the lived experience of participants, and in this case are often missed from traditional research studies. Creswell's (2014) five qualitative approaches were considered when initially designing this research, and Table 5 gives rationale for combining a GT approach with case studies. It demonstrates the considerations when picking other frameworks such as ethnography and narrative analysis, while also considering suitable methods discussed with older adults in the design phase (see Table 4). Yet, the conceptual research framework, as seen in Figure 11, highlights the research problem, the corresponding method, and the impact that the study hopes to achieve – therefore recognising the link between philosophy determining methodologies.

Table 5: Rationale for situating grounded theory within case studies (adapted from Creswell, 2007, pg. 78 -79)

Approach	Focus	Type of problem: <i>best suited to design</i>	Analysis: <i>how to study</i>	Data collection: <i>primary method</i>	Suitability	Decision
<b>Case study</b>	Exploration of a population or site	In depth understanding of case(s)	Study event or activity with more than one individual	Multiple sources	Data collection is extensive. Possible through access to sites pre pandemic to build rapport.	<b>Accept</b> – explore in depth at small scale
<b>GT</b>	Developing theory from study	Grounding theory from participants views	Study process, action, or interaction	Interviews (usually 20 – 60)	Explicit procedures to generate theory, that is flexible and allows for adaptation, but also appropriate for studying subjects that are under-researched (Charmaz, 2006).	<b>Accept</b> – build theory for further work
<b>Ethnography</b>	Interpret group structures	Display patterns of culture/group	Group sharing same culture	Observation	Observation requiring consent from all, due to sensitivity. Not possible in pandemic.	Reject – not possible due to pandemic restrictions
<b>Phenomenology</b>	Understand experience	Describe essence of lived experience	Several individuals with same lived experience	Interviews	Emphasises understanding but doesn't give evaluation of external factors.	Reject – not engaging with external stakeholders
<b>Narrative</b>	Explore life of an individual	Desire to tell stories about individual experience	Study one or more individuals	Interviews	Powerful when speaking about sensitive in nature, requiring more knowledge on the life course. Better suited for longitudinal studies (Kumar, 2014).	Reject – not engaging with external stakeholders

### 3.5 Research methods

Qualitative research often makes use of interviews, and these are a commonly used tool within social sciences (Alshenqeeti, 2014), while using case studies focuses research attention, for which this thesis also adopts (discussed in 3.7). GT proves integral to the use of qualitative research as it enables opinions to be expressed regarding under-researched fields. For this thesis, GT was used to engage with interviews and explore viewpoints with an interest in the case studies, while eliciting new understanding in the phenomena, therefore selecting a method deemed to be suitable for participation and to answer the research aim. The method of interviews can range from fully structured scripts to an individual facilitating discussion in an improvised manner (semi/non structured). Each have advantages and disadvantages, yet semi-structure interviews create a middle ground, for which a semi-organised question structure is predetermined for use with participants.

This is deemed to be important as it allows participants to; *'speak in their own voice and express their own thoughts and feelings'* (Berg, 2007, pg. 96), enabling insight into people's thoughts, feelings, and beliefs surrounding questions put to them. This is suggested to allow time to gather key information from individuals within natural settings (Weise, 1994), at the same time being able to extrapolate important events that might not have been captured through ethnography (Kvale, 1996) or other methodologies. Kvale (1996) suggests that interviews are: *'a conversation, whose purpose is to gather descriptions of the [life-world] of the interviewee'* (pg. 174), therefore facilitating in-depth discussions around topics, for which phenomena can be interpreted, regarding the perceptions of individuals/behaviours. The use of semi-structured interviews is important in this context, as it is suggested that they should be used *'there is some knowledge about the topics or issues under investigation, but further details are still needed'* (Wilson, 2014, pg. 24). Which allows for the research sphere to expand into a new area previously unexplored.

#### 3.5.1 Older adults

To understand the group's dynamic, case study groups were attended, pre-pandemic, to embed socially. The core aim here was to strengthen relationships with the staff and participants on site, whilst ensuring researcher/participant position remain as equal (Råheim et al, 2016). This relationship building initiated the use of semi-structured interviews to identify their perceived benefits from interaction with the case studies,

therefore providing qualitative information regarding interaction directly with health and wellbeing (Collins & Cooper, 2014). These hidden benefits were then also developed with the facilitators of the case studies.

Semi-structured interviews were used to further understand participants reasoning behind attendance and perceived health benefits derived from the projects (Daly, Gliksman, & Kellehear, 1997), conducted in portions, enabling an informal approach across the period of attendance. A full understanding of the participants' viewpoints was gauged through designed pre-empted questions, which participants had a physical print out of, if they wished, but were delivered in a conversation style format, whilst recording. These were designed to gain a deeper understanding of the personal experiences from the two case study sites selected considering topics including their reported change to health, motivations of attending and future desires.

Originally all interviews were planned for face-to-face interaction, to enable social cues and body language to be witnessed (Lechuga, 2012). Considering the global pandemic (Covid-19), a number of these were altered to telephone interviews, and some participants were sent the questions via an online link to aid comprehension. In doing so, this research was also able to return to some of the original participants to check how the pandemic had affected health and wellbeing, because of not being able to access the case study. However, not all were able to be reconnected with, as the mental health of participants was valued, and some were not able to award time to this study in these difficult times.

Telephone interviews are increasingly popular (Block & Erskine, 2012), especially within the period of lockdown. There are notable drawbacks, including omitting the social context, and inability to access opinions held by the marginalised (those without technology or those with severe learning difficulties or cognitive decline) (Chapple, 1999; Lechuga, 2012). However, within this timeframe they provide cost effectiveness and time efficiency (Taylor, 2002), alongside the ability for research participants to feel at ease, due to already having built trust in a face-to-face capacity, and preference for data collection in this manner (due to comfort with this technology) (Carr & Worth, 2001; Worth & Tierney, 1993). It is thought that if this relationship is already established (providing a sense of safety; see Carr & Worth, 2001) and they are comfortable with

the technology, then they are more likely to open and discuss themes at a greater depth (Novick, 2008).

In designing the methodology in this way, the research collectively gathered opinions from ten older adults across the study sites. Eight of these were held in face-to-face interviews carried out prior to the pandemic, and then two virtual interviews carried initially as sites closed. Further to this, four members originally interviewed in person were reengaged (virtually) when lockdown had been relaxed, however, as suggested earlier, four were unable to be reinterviewed in the pandemic period due to health concerns. Accumulatively gathering approximately 25 hours' worth of material, pre, during and post lockdown.

As the researcher had not conducted work with older adults or in the local area, volunteering alongside GFs was conducted to build up repour and identify suitable groups (also suggested by Bryman, 2012). In doing this, it was possible to become embedded within growing projects across the region, with relationships built and subsequently group members approached to consider taking part in this research after volunteering sessions, enabling connection to gatekeepers and opportunity for a wider sample. Therefore, interviews were made possible using convenience sampling, with participants from these groups, who were willing to be involved and could provide informed consent. This method enabled comprehensive appreciation of groups dynamism and activities, alongside a redundant requirement to conceal the researcher's position within the group. This participant role also provides context to inform prompt questions and therefore inform further topics of discussion (DeWalt & DeWalt, 2002). This approach to data collection facilitates a friendly atmosphere, for which participants will be able to discuss topics freely and behave in a natural manner, therefore demonstrating less concern over presence (Bernard, 2006). Adopting this observational interviewer stance empowers deeper understanding of the participants views, alongside an opportunity for addition of credibility (Bernard, 2006).

### 3.5.2 Case study group facilitators

Traditionally, green care, or NBI groups appoint group facilitators, who are often qualified as occupational therapists or horticultural therapists (see examples such as Joyce & Warren, 2016). In the case of this research study, group facilitators (GFs) were appointed members of staff, volunteers or group members who would lead meetings

at sites but did not hold these qualifications. They often identified what activities would be suitable for the site, educated group members of horticulture/agriculture and identified what (financial and resource) support was required to meet the groups goals.

Targeting sampling of case study GFs was made possible using individual interviews, in a face-to-face format (prior to Covid-19), and then followed up with telephone interviews with the main leaders after the pandemic had set in. A standardised semi-structured interview approach was adopted from works such as Bryman (2012) and Silverman (2010), illustrating versatility between the two extremes: fully structured/unstructured. Further inclusion of themes pulled from GT methodology suggested by Charmaz (2014), facilitated capture of the GFs expert opinions, allowing opportunities for conversation to change direction, whilst facilitating analysis and comparison between projects. As suggested, these interviews were informed from volunteering at case studies – watching the facilitators interact with different growing and farming groups, alongside academic literature, and interactions with the older participants. Using this method, they highlighted how each persona beliefs about how older participants health has been affected by the nature-based activity (almost through a '*historical account of ethnography*'), alongside presenting their opinions regarding development of these projects and any barriers to their success.

As indicated before, follow-up interviews were also conducted with the head group facilitator of each study site, when the pandemic had gripped the UK. Further ethical clearance was gained from the university to enable this. These interviews took place via telephone, to enable mutual safety of those taking part. With interview topics developed considering the objectives of the research, the initial analysis of the interviews with themselves and comparison to the older adult findings. This enabled interviews to readdress the core concern of the research, while being tailored to the circumstances. Questions were put to the leaders around the effect that the pandemic had on their specific site, the perceived impact to older participants they work with and their feelings around looking forward, past the pandemic.

### 3.5.3 Key external stakeholders

To gauge how other indirect users perceive the study sites, and the wider use of NBIs, another section of this research study was carried out using targeted semi-structured interviews, with experts, such as:

- Other nature-based project group leaders (current and previous)
- Academics and industry partners in the field
- Funding representatives
- Policy makers

These also followed a mixed interview approach, via a combination of face-to-face and telephone formats, using an expert sampling technique, whilst also ensuring that the structure remains relatively open to allow for full conversation of views and new themes to emerge. There is a limited knowledge base surrounding the difference across these interviewing techniques (Lechuga, 2012), however this enabled a variety of stakeholders to engage with this research across continents with ease. The expert sampling approach instigates understanding of views held by those invested in the subject and enabled an introductory insight into the wider field. Thus, embedding a holistic approach, whilst ensuring a multitude of viewpoints are heard across this topic.

To further enhance the holistic reach of this study, the thesis also engaged with local members of the community indirectly benefiting from the study sites. Academics such as Guitart, Pickering, and Byrne, (2012) and Diaz, et al, (2018), suggest that greater understanding of the wider social context of these environmental projects is required, with limited current knowledge on public opinions surrounding deployment, existence and use as an alternative intervention. This was also highlighted as potential issue by one gatekeeper of the involved case study projects, where they were unsure if the public surrounding projects knew of their reasoning for existence (see other examples including Cole, et al, 2017 on unwelcoming nature spaces and Agyeman's 2002 work on injustice). Therefore, to fulfil a literature gap and a stakeholder's desire, there was the deployment of semi-structured interviews with those living near the case study projects, to gauge perceptions from those not directly involved in the projects (Bowling, 2014; 2001). This was completed onsite, within the case studies in 2019, alongside using a purposive sampling approach (as participants had to identify as local) – therefore giving viability to a small visibility sample size to gauge opinions. To ascertain public opinions regarding the case study projects and their general understanding of GI, this study recruited people making use of sites for other activities (for example using the onsite cafés, taking part in other groups on site, or attending to their own personal allotment) – and invited to take part in a brief structured interview with a

predetermined set of questions. Therefore, fulfilling the objective of investigating the public's perceptions of NBIs, and providing qualitative evidence of support for these sites.

#### 3.5.4 A reflection on Covid-19 and its impact to pre-designed research methods

The literature review (Chapter 2) highlighted how Covid-19 significantly affected everyday life. However, when research activities globally were affected, there was a push for projects to adjust and remain on course. Covid-19 impacted on this study as older people were asked to shield by the UK government. Moreover, the study sites closed resulting in the cessation of recruitment and data collection. All these confounding factors influenced a redesign of the research based on ethical ramifications, collection, and subsequent reporting of findings - ultimately, shaping the final study design.

The pandemic hit at the start of natural growing season April 2020, when an intensive data collection phase was planned to follow older adults across the growing season. The initial project included the use of quantitative health measures across physical activity levels, mental wellbeing questionnaires and blood tests; this was to evaluate the change to health at a deeper quantitative level and the feasibility of using specific methods, across settings and with an ageing population to evaluate their potential wider and future use. However, facing the reality of confusing changes to lockdown legislation, continued shielding guidance and the desire to keep participants safe, the research was realigned. Prior to the pandemic, sites had been identified and research had begun, alongside establishing connection to those determined to be external stakeholders. Combined with this, face-to-face research had already been carried out to gauge the opinion of the group facilitators and members of public indirectly interacting with the projects.

Initially, as described above, a mixed methods approach was designed at the start of this research, to give quantifiable evidence of changes to health and wellbeing. When reflecting on this, even if these quantitative variables were able to be conducted, they still would have been on a small sample size, and subsequently impacted on the time and effort paid to qualitative research. At the time of the pandemic, some qualitative research had already been conducted using face-to-face semi-structured interviews. In doing this, there was enjoyment and understanding in the value of collecting rich



conversation-based data about the influence that nature had on this population, with ontological and epistemological assumptions enabling adjustments to the research methodology (Ellis & Levy, 2009). Conforming to the view that *'the purpose of qualitative research is always to gain understanding at the individual or group level... to allow the reader to share in the world of research participants'* (Donalek & Soldwisch, 2004, pg. 354).

The adjusted project accommodated remote qualitative alternatives, including telephone interviews, allowing for subjective narratives to be built around the participants of this project and enabling voices to be heard. A constructivist and pragmatic stance recognised that unforeseen circumstances could alter research, with Kelly and Cordeiro (2020) suggesting that *'Pragmatic inquiry recognizes that individuals within social settings (including organizations) can experience action and change differently, and this encourages them to be flexible in their investigative techniques... pragmatism encourages researchers to base choices on the relevance of these methods and methodologies'* (pg. 1-2). While opinions disseminated by Kelemen, and Rumens (2012) suggest that pragmatic methodology should be developed *'in terms of carrying us from the world of practice to the world of theory and vice-versa'* (pg. 1). With the use of GT being described by Charmaz (2003) as *'a method consisting of flexible methodological strategies'* (pg. 440), while simultaneous data collection and analysis enables research to proceed into coding (Charmaz & Belgrave, 2013; Urqhart, 2013).

At first the removal of quantitative elements was seen as a loss to the project, but now, the value of fully understanding the truth held by participants is completely appreciated, enabling gathering of rich data from multiple actor perspectives. Therefore, adjusting for an exclusively qualitative thesis was an ideal fit for both the researcher and the research environment (which was uncertain due to Covid-19 restrictions). In doing so, triangulation is still possible, as collection from different sources build up perspectives on the phenomena (Webb, & Schwartz, 2012), with Abdalla, et al (2018) articulating that *'triangulation means being able to look at the same phenomenon, or research topic, through more than one source of data'* (pg. 71).

### 3.5.6 Summarising research methods

This section has highlighted the use of semi-structured interviews, to engage with ten older adults using the study sites, on matters relating to health and wellbeing therefore from taking part in NBIs. This is then furthered by gathering opinions held by a small number of group leaders of the projects, stakeholders in the field and the public in direct contact with projects. The methods selected allow research objectives to be met, as shown in Table 6.

Table 6: Objectives linked to methods

Objectives	Methods to fulfil objective
i) Undertake a desktop analysis of GI and its role within the wider green movement and social prescribing agenda	Desk based <i>literature review</i> of currently available materials
ii) Engage with stakeholders involved in the GI schemes to understand their perceptions and ambitions for the activities	<i>Semi-structured interviews</i> ; with group facilitators, key actors in the GM field and public near case studies)
iii) Critically evaluate two GI health schemes in GM and their impact on participants' health and wellbeing	<i>Semi-structured interviews</i> ; with group participants, over 50 years of age.
iv) Evaluate the development of the wider nature-based health movement across the UK, alongside barriers to the concept	<i>Reviewing literature and undertaking semi-structured interviews</i> ; with group facilitators, key actors in the GM field and public near case studies)
v) Provide robust and effective recommendations for future research and development within the field.	Generated from the methods used within this project, whilst providing <i>triangulation</i> between participant groups and case study sites.

Highlighting the interaction with case studies' participants whilst also building on current literature and engaging with the opinions of stakeholders. The integrated approach allows for viewpoints to be gathered from the multiple stakeholders across the study, whilst engaging with the most pertinent subjects. This provides a small sample population from the older participants, yet at great depth and richness, with triangulation possible through understanding wider opinions held at local, national, and international levels. The methodology selected improves triangulation, as each method integrated and informed aspects of each other with interviews being a flexible tool to inform the next. This is also the case between participant groups, as the methods conducted with the older adult group, also integrates others as they suggest outsider

opinions regarding the projects themselves and the perceived impacts to health and wellbeing of those attending. This comprehensive approach enables data collection on a meaningful level, analysis through GT, furthering this area of study and providing opportunity to discuss recommendations for future implementation.

### 3.6 Data analysis

Interviews were recorded using a Dictaphone (if face-to-face) or using dictaphone software on Microsoft OneNote (on a university PC). Transcripts were manually generated, alongside reflecting on fieldnotes gathered across the full span of the research journey. With the use of Charmaz's fluidity in constructing themes, where everything is coded, and then all data is grouped around predominant themes (Sebastian, 2019). The use of thematic analysis is a systematic process of identifying, organising, analysing, and then describing themes (Boyatzis, 1998), with some academics, such as Braun and Clarke (2006), proposing that the use of this analysis could be considered a methodology in its own right. In the case of this research, this systematic process was used as guidance to provide an organised yet flexible approach to coding. Coding was completed by hand, and then transcripts were also added to the data storage software, NVivo, to allow for reconsideration of the key themes (Thomas & Harden, 2008).

In doing this, the analysis was an ongoing process, from the initial stages generating relationships with participants, constructing methods that they would be willing to take part in, realigning the methods for data collection to accommodate this and the pandemic. While also being influenced in the analysis stages by the constant comparative analysis expressed as part of GT (Birks & Mills, 2015). To ensure a higher degree of content credibility, trustworthiness and dependability in the research, coding was initially paper based, as described above, with Figure 12 as an example. Then after stepping away from the transcripts, allowing time, then coming back to reread transcripts, and performing coding again using the computer-based software (in this case: NVivo), enabling cross-comparison to occur while ensuring the key themes were identified (Belotto, 2018). Both techniques took the process of theme extrapolation, which can be seen through Vaismoradi, et al, (2016), exploration of phases and stages of coding, with the process outline followed by Table 7, to generate an output visualised in Figure 12.

Table 7: Thematic coding recipe (adapted from Vaismoradi, et., al. 2016)

Phase(s)	Stages
1. Initialisation	Reading and highlighting transcripts Coding and looking for participant accounts. Writing reflections
2. Construction	Classing, comparing, and labelling
3. Rectification	Immersion and distancing, relationship building and stabilising
4. Finalisation	Developing story lines

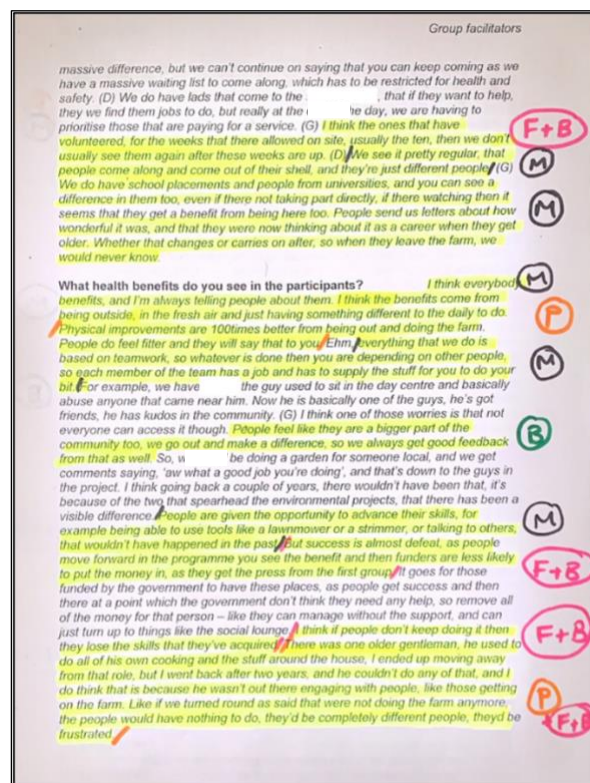


Figure 12: Physical output of data analysis (Author's own)

Figure 12 portrays illustrations of a page of interview transcript to show how transcripts were initially coded, followed by adding codes to NVivo, to aid storage and allow for further reflection on the codes constructed. Continual re-analysis of the paper and electronic version ensures a higher degree of quality assurance and to establish trust and confidence in findings (Thomas & Magilvy, 2011). It was not possible, due to time and economic restrictions to employ other interrater reliability mechanisms, such as those discussed by Campbell et al, (2013) and Barbour (2001). The themes identified revealed an understanding of viewpoints, enabling a holistic understanding to be developed across the multitude of participants involved (Braun & Clark 2019; Braun et al, 2019).

### 3.7 Ethical considerations

Ethics in research is important as they ‘*prevent and offer protection mechanisms*’ (Aguinis & Henle, 2004, pg. 34). Kole and de Ruyter (2009) states that science communities have existed with self-imposed ethical regulations in respect of societal norms and morality. To ignite the process of ethical consideration, the development of ethical including application and certification, alongside amendments was granted by the University of Salford Ethics Approval Committee. In doing so there was extensive research around inclusivity and keeping participants safe (see Nind, 2017; Stalker, 1998). The complex nature of combining real life research with the population group, older adults, and those with mild learning disabilities, that are often seen as vulnerable, resulted in a much lengthier ethical process than usual, with great care and respect towards those involved. Ryen (2010) suggests the three main issues most frequently raised in the Western research are: consent, confidentiality, and trust.

#### 3.7.1 Consent

Dilemmas exist around the ability to gather consent, whether verbal or written (Punch, 1994; Dingwall, 1980). Crow et al (2006) sets out that informed consent ensures:

*‘prospective participants in research are provided with information about the project in which they are being invited to participate that is sufficiently full and accessible for their decision about whether to take part to be considered informed. It also requires that people in possession of this information consent freely to participation and have the opportunity to decline to take part or to withdraw from the study without such decisions triggering adverse consequences for them’* (pg. 83 – 84).

To ensure this was the case for this research, each participant was provided with information and consent documents prior to data collection, whether physically in the form of a printout or electronically (if virtual methods were used). Before taking part, all participants, irrespective of how they were classified within this thesis, were required to signed informed consent forms. The ways in which participants data were collected, processed, and stored was made clear on the information forms, however this was also verbally reiterated to each participant, whilst reiterating when recording had started. Participants were asked to read the information sheets prior to data collection, giving time for questions to be asked. As an opportunity to check comprehension

questions were asked of participants to ensure awareness of the study. Minor modification on an individual level was also undertaken, for any individual who required further assistance to fully understand questions, to limit harm whilst also gaining data (with interview questions elaborated on if needed). This was particularly effective when working with those with minor learning difficulties within case studies, as informed consent could still be given (being able to ask and answer reasoning behind undertaking research), as this was double-checked with the hosting case study site, who suggested participants lived at home and took ownership of their own affairs, with other studies conducted without further consent required. Further ethical comfort was also taken through discussions about the research with experts in the field – who suggested that all possible risks had been prevented. Best efforts were employed to cater for inclusion of their viewpoints, with this study seeking the use of a GF being present, to ensure clarity and ease anxieties of those taking part by creating a familiar and welcoming environment.

Further to this participants comfort was continually monitored, consistently asking if they were happy to continue, and reiterating the ability to withdraw. Even though the study was not seen as sensitive, with a debrief sheet available. Further to this there was strict compliance with the overarching ethical dimensions set by the University of Salford, The British Sociological Association (BSA) guidelines and the guidance set by the World Medical Declaration of Helsinki – Ethical Principles for Medical Research involving Human Subjects.

### 3.7.2 Confidentiality

Data protection was also made explicitly clear throughout as it marks a major ethical consideration for this project, as participants give personal views. With this thesis study adhering to the University of Salford's data protection guidelines and the overarching principles set out within The Data Protection Act 1998.

Anonymity was awarded to taking part and the ability to withdraw from the research at any stage was reiterated verbally. When participants gestured that they did not want to keep a form, they tried to be persuaded, if insistent they were informed that a copy was left with study sites. Therefore, through the information form there is discussion of where and how data will be stored, both securely (physical copies in locked cabinet, while electronic copies on the secure university server) and in an anonymous manner.



All recordings of transcripts were deleted immediately after transcription, with no identifying codes, alongside transcripts having now been deleted on submission of the thesis. Anonymity was used as a standard for all participants within this research, with pseudonyms used to prevent identification of anyone in this study, in the thesis write up, alongside other forms of dissemination. While descriptors of individuals were constructed to give enough background to reader to understand justification of inclusion and the value in each point of view.

### 3.7.3 Trust

Trust refers to the relationships between those studying the phenomena and those being studied (Ryen, 2010). Dawson et al, (2020) widens this to question:

*‘whether we are talking about trust in providing a truthful answer to a question (e.g. is it raining?), we entrust someone with confidential information (e.g. in a medical consultation) or we entrust something of value (e.g. looking after my young child, whilst I take the dog to the vet)’* (pg. 131).

Steps were taken to build trust with interviewees, by being present within the case study spaces, while offering to have informal conversations with external stakeholders prior to interview. The concept of trust is significantly important to assist engagement, improve quality of study and make the process more efficient (Khodyakov, Mikesell & Bromley, 2017). Further strategies to reduce possible harm to participants, included extensive risk assessments, and further adapted in the light of Covid-19 (considering factors such as sensitivity and security of interview environments).

### 3.8 Introducing the case studies selected

The use of case studies allows an *‘intensive, systematic investigation of a single individual, group, community or some other unit in which the researcher examines in-depth data relating to several variables’* (Heale & Twycross, 2018, pg. 7). This is furthered by Crowe, et al, (2011) who suggests that a case study *‘approach is particularly useful to employ when there is a need to obtain an in-depth appreciation of an issue, event or phenomenon of interest, in its natural real-life context’* (pg. 1).

This thesis adopted a case study approach, with multiple participant groups, to explore the use of urban CGs and CFs sites fully and explicitly for the benefit of older adult health. Further holistic understanding of these spaces and impacts were gained through involving multiple stakeholders outside of the case studies, whilst referring to

their work. Both case study projects selected for this study are located within some of the most deprived locations across GM according to Purdam (2017). This empowers further research into NBIs located in deprived areas, and therefore evaluating the effectiveness of their use for health and wellbeing improvement.

Spatial inequalities are particularly important for this study, as those in deprived locations and specific demographics such as older people suffer worsened health (Hatzenbuehler, Phelan, & Link, 2013). Recent advances in this field reported by Dennis, et al, (2020ab) suggest that GI is associated with socio-demographic contexts when overall green cover is not significant. This proved important for older populations through better health outcomes, specifically linked with land-cover diversity and greenery, with greater access proving vital in lower income areas, with this concept having been discussed within Chapter 2, while findings of this thesis expand on this in Chapter 4.

### 3.8.1 Approaching case study research

This study employed a case study approach, (as briefly indicated in 3.4.1, and will be discussed further in 3.8.2 and 3.8.3), influenced by pragmatism and constructivism, to investigate the health and wellbeing changes to older adults due to attending either a CGs or CFs site in GM. There have been numerous studies conducted that highlight the significance of nature on health, yet there is limited research focused on:

- the older adult demographic,
- the utilisation of a joined-up and holistic approach,
- examining the consequent benefits for those directly and in-directly involved in NBIs.

Recent studies such as those conducted by Howarth, et al, (2018) and Bragg (2013) have illustrated the applicability of using qualitative techniques to understand opinions regarding those using nature spaces, however these use medically vulnerable populations, often prescribed access to NBIs. The use of further qualitative techniques with indirect users of the spaces enables a holistic deeper understanding regarding individuals psychological and/or physiological health and wellbeing has changes because of using GI, while reflecting on outsiders' perspectives. Therefore, to gain a deeper understanding of older human interactions with NBIs, this research adopts a case study approach with two research sites acting as the core focus of this study: one



CF site and a CG, with methods deemed suitable through conducting piloting discussions with older adults as discussed in 3.4.

Case studies are ideal for explorative research, as it is allowing '*researchers to construct cases out of naturally occurring social situations*' (Gillham, 2000, pg. 3). This is appropriate for this research, as it enables collection of viewpoints from multiple actors within the sites, allowing the phenomenon to be explored, whilst being interpreted through multiple lenses (geographical and health, alongside participants own truth). The use of case studies and smaller sample populations allows greater depth to be drawn from beliefs – therefore allowing comprehensive examination of the sample and greater understanding of the phenomena (social facts and participants perspective) (Wolgemuth et al, 2015; Van't Riet, et al, 2001; Gomm & Hammersley, 2000), whilst fulfilling the pragmatic epistemological viewpoint.

The use of case studies allows multiple perspectives to be drawn for deeper understanding of those individual's truth, with Gillham (2000) illustrating that using: '*case study research is not exclusively concerned with qualitative methods: all evidence is pulled into the case study researcher's data collection. However, qualitative methods (and what they enable you to do) are primary.*' (pg10). Therefore, a case study approach prioritises the use of qualitative data, with quantification not a priority. Accordingly, qualitative data collection might provide less validity and empirical generalisability, however it provides a '*conceptualised provision of vicarious experience, as a basis for 'naturalistic generalization' or 'transferability'*' (Hammersley, et al, 2000, pg. 4). It is suggested within Johnstone's (2004) work that case study research is confirmed by one of the following paradigms: "*qualitative research, naturalistic inquiry, the constructivist approach, postpositivist or postmodern perspective, or the interpretative approach*" (Cresswell, 1994, cited by Johnstone, 2004). This research study favours the approaches of naturalistic inquiry and flexible constructivism, in a similar manner to Johnstone, as data is collected in natural settings (away from laboratories or controlled settings) (Erlandson, et al, 1993).

Firstly, to implement the research design and to investigate the phenomenon under investigation, it must be possible to gain access to the people or site of interest. Due to pre-existing links with the case studies, access was initially simple. When introduced to gatekeepers of both sites, early in the research journey, relationships were

established, however due to ethical considerations, work could not be undertaken until certified.

### 3.8.2 Community gardening (CG) space

The CG provide spaces across the GM region for communities to come together, growing their own produce and educating people on the benefits of UA (as identified in Chapter 2). Their use of regular food growing events and workshops assists in encouraging people across the region (and wider through a network of similar projects), to interact with green environments, generating intergenerational work, and providing a positive experience whilst impacting on health and wellbeing of participants. This social movement consists of many subgroups, spanning the geography of GM, but for this thesis focusing on smaller area, principally due to access by gatekeepers. They have a variety of spaces, with examples highlighted below in Figure 13. The groups identified have a focus on community growing, with some having the opportunity to engage with the wider community through creation of planters, open days, attending community cafes and produce sale events. Initially numerous groups were scoped out and followed, to establish understanding of what one would be most reliable to base research on. While doing so, there were many groups that solely consisted of two or three older adults, some were inconsistent in meeting, and others did not welcome research.



Figure 13: Community Growing Sites (Author, March 2019)

All groups consisted of older adults, were small, and had a mixed desire to take part in research. Therefore, this encouraged the research to follow two parallel groups, who initially received support from a local enterprise (with volunteer facilitators to engage them in the CG) and now working semi-independently, with groups being similar in size, and age, with participants willing to take part in research (with two clusters convened together to be discussed as the CG group).

One subgroup of the GC was set up in 2016, growing produce and flowers around a small urban community building. This building provided amenities (café and charity shop) and comfort (toilets) for the older adults, whilst facilitating the opportunity to grow in this space. While the other subgroup of older adults has been growing since 2018, in a similar way, using raised beds in the local area to grow fruit and vegetables, and window ledge planters to inject life into the community by growing vividly coloured plants. Both subgroups have seen members change over these years but both show cohesion between each other, being comfortable in discussing personal matters. In working over this time both subgroups have expanded their growing capacity through growing on local common grounds within raised beds across the region.

### 3.8.3 Care farming (CF) space

In comparison, the farming site is classed as a social enterprise, which are not for profit organisations that operate day services for those in need across multiple sites, including dementia services, respite care, and more informal arts and crafts sessions alongside gardening clubs. The space involves user groups from across GM, with the organisations head office based in an urban area which is where participants were recruited from (see Figure 14).



Figure 14: Care Farming outdoor space (Author, November 2018)

This site was selected as it fulfils the criteria of a CF, with access to a variety of activities on site, with examples such as: horticulture and flower arranging, animal assistance and interaction, arts and crafts, alongside guided meditation, and an assisted light room. While gatekeepers were interested in being involved, and the site was comparative in urban and deprivation classification to the CG.

This small site is located within a housing estate and is currently under further construction for further amenities to be delivered, delayed by Covid-19. On site growing capacity is limited to a small sensory garden, four raised beds and a green house, yet the farm provides opportunity to engage with a variety of animals including pigs, ponies, reptiles, and birds. This site has been operational for many years, building a positive reputation in the community and having a far-reaching impact through providing aesthetic improvements to the area (through planting on common grounds) and hosting numerous community events. The numbers of people making use of the farm is small, and intergenerational work often occurs. A group leader tends to organise the tasks required, including feeding animals, and planting seeds, for which members are dedicated to work on these, mostly independently, with space to collectively show and discuss their contribution at the end of the session.

As this study looks to engage with NBI exposure, there was focus on activities outdoors and horticulturally related. Most users of CFs both within this study and a wider scale tend to have chronic mental and cognitive impairments, considered at great length, and incorporated within ethical decision making (see 3.7, with representation respectfully completed within the findings of these individuals). Alongside this, the age profile of these spaces was lower than comparative others, therefore the participants available for this research were limited.

### 3.9 Reflective practice

As Chun Tie, Birks and Francis, (2019) suggest the '*data generation and/or data collection and analysis is fundamental to GT research design. The researcher collects, codes and analyses this initial data before further data collection/generation is undertaken*' (pg. 3). A connection to the research is instigated, one through emersion in understanding how concepts are grounded in data (Glaser & Holton, 2004), alongside constant comparison makes it a highly iterative process (Belfrage & Hauf, 2017; Bryant, 2017; Charmaz, 2014). In analysis, the theoretical coding involves strong



engagement around core themes, with decisions made around the 'elevated' status of those perceived to be important (Timonen, Foley & Conlon, 2018). The use of qualitative research encourages reflection through the process, as it suggests *'researchers are not wholly objective observers of social phenomena because of their social, political and cultural positioning in the worlds they study'* (Engward & Davis, 2015, pg. 1530), recognising that collecting and understanding data is not unidimensional, therefore reflection on the use of GT is needed to enhance the quality of qualitative research (Holloway & Freshwater, 2007), giving transparency to positionality (DeSouza, 2004) and improve credibility (Patton, 2002).

Reflexivity encourages the development of a deeper interrogation of *what, how* and *why* in research, or as Pretorius & Ford (2016) suggest: "*purposefully revisiting events with the need to learn from [a] situation*" (pg. 241). With many techniques developed to enable this reflection from thinking reflection, reflection-in-action, reflection-on-action, and reflection-for-action (Reed, Dagli & Hambly Odame, 2020). To reflect on the process of data collection as researcher, this following section is written in first person.

### 3.9.1 Carving a career in human geography

It is important to identify the positionality of the researcher undertaking the study, to identify potential conflicts of interest and bias from the outset (Holmes, 2020). An individual's view on the world influences the position they adopt for research, thus how it is conducted, its outcomes and results (Rowe, 2014; Foote & Bartell, 2011). Therefore, this section briefly speaks in first person, to illustrate the background and personal desires to complete research in this topic, and with the participants demographics, methods, data collection and a reflexivity (field) diary/note.

This thesis was influenced by my previous undergraduate and postgraduate degree in environmental sustainability through which I had been exposed to research that would constitute as geography. I have always had a passion to understand the ramifications that our natural world has on humans, whether that be socially, biologically, economically, and so on. During my Post Graduate work, I began to question how our life is impacted by the environments that we are born, live, work, and eventually retire into. I developed my research skills further and interests into health and wellbeing grew, from researching the rural-urban divides effect to mental wellbeing, to how

sustainable energy technology is perceived by communities. This provided vital experience in carrying out literature reviews, conducting qualitative research and reporting findings in a manner that would enable progress on these matters.

From a personal perspective, I have an interest in using the environment for health, having been fortunate enough to be raised in 'bonnie Scotland', with ample access to nature. My prior experiences influenced my passion to understand more about the world that we live in, how it helps us and how we can ensure others have access to it in the future. The focus on older adults only recently became a passion, and one that continues to grow, after witnessing my grandparents struggling with health conditions as they aged. My nana is living with advancing multi-morbidity mostly established after a stroke in 2013, for which I was the initial responder. On reflection, this was a difficult experience at that point, with subsequent long-term impacts. While papa, is now beginning to struggle with declining mental and physical health. Both are still able to live independently, however more resources could be incorporated to increase quality of life. Having been made aware of the need for healthy ageing, this has fuelled me to study opportunities that enable more people to be happier and healthier as they age. This speaks for my pragmatic and constructivist view to research, advocated for studies embedded in the fabric of real life to engage and explore the opinions and consequent theories that are built from normality. Even though small samples give interpretations rather than being representative, they should matter, all voices should be heard, and opportunities opened.

While my academic transition from traditional hard environmental sciences, working with the sciences of geology, climate change and pollution (with a BSc in Sustainable Environmental Management, and MSc in Environmental Sustainability), towards this public health facing has been influenced by personal and professional experience working in the field, I have really strived to be transparent and realistic about the goals of the research, whilst still enabling flexibility in attempt to reduce bias and assumptions. However, I do acknowledge that my previous use of research methods, interest in the research field and involvement in data collection and analysis will have resulted in unavoidable bias/limitations, for which is discussed in Chapter 7.

Setting out on this project seemed daunting at the beginning, where I was enthusiastic to learn numerous data collection techniques and cram them into the three-year cycle.

Yet after meeting with those taking part in the sites, it became clear that overloading with convoluted tools and intensive interviews, would ultimately restrict older adults the ability to be fully immersed in the NBI – therefore contracting what I set out to study. Even after simplifying the data collection tools, it was important to reflect on how I positioned myself in the context of research, for example comparatively with background, ethnicity, gender and in what I found out within the research, being an outsider due to age and accent (Hennink, Hutter & Bailey, 2010). After each meeting with the study group, initially attended to build rapport, I began a fieldwork diary. It became clear that my relationship with participants in the case sites was different. Due to the location and frequency of meeting, I was able to attend the CG group more frequently, building rapport by being invited through a gatekeeper and by attending lunches with one group.

Those attending the CF site had mild learning difficulties, leaving me detached as I took further ethical advice, as discussed previously in this chapter, regarding the effect of my presence. However, all were able to provide informed consent, but having not completed studies of this nature previously I self-imposed further safety precautions. For example, I ensured a known member of staff from the site was always present when I was interviewing the participants. This was done primarily to ensure safety of the participants themselves, as there was someone present that they felt they could trust and who would be able to offer support if needed. Looking back on this, I feel guilty about treating this group differently to others, as they had the same capacity. Further differences between groups became apparent very quickly, the CG group were a tight knit small band of older adults, while the CF seemed to work as individuals, who worked with facilitators more often than each other, and on an ad hoc basis. These dynamics illustrate an important difference between sites, making rapport building differ between sites, with an informal and engaging approach seen at the CG, as they were very welcoming and were easy to get to know quickly, with them chatting together. While those at the CFs were more reserved initially and caused relationships to build slower as individuals had to be approached singularly.

When meeting with both groups, I continued to keep notes of conversations, discussions and those informal observations researchers tend to identify throughout the course of the study because it enabled reflexivity, therefore relating to the wider

frame of GT. Initially I was met with enthusiasm but was seen as an outsider by participants at both study sites, with some remarking on the polarising age gap and my 'funny accent', making it seem that I was there to 'analyse and interrogate people'. While this positioning never changed at the CF, the opposite could be said for the CG group as I began to be perceived in a different way, with members showing a caring and nurturing aspect to our relationship, with one suggesting that it was like "having a new granddaughter". I was perceived as being seen as an equal, using terms of endearment, as they did each other. While in more private moments, I was able to have honest and open conversations about the more sensitive topics concerning this population, including morbidity and mortality. This gave me cause to reflect on my own behaviour and try to access if this different relationship forming with participants, and if this would be seen as problematic for the study, where I would be unable to provide robust evaluation of the changes in these spaces. Yet, due to the wider context and nature of projects like this, others have also experience similar concerns, and checking reflexivity throughout helps identify and consider it throughout research. Discussion on wider topics, such as politics (with examples such as Brexit and Scottish Independence), economic changes (pensions, funding losses) and alongside societal influences (with examples across cultural exchanges and gender fluidity), often crept into conversation when collecting data on the study sites. These discussions made me aware of my position in their world, as we learned from each other, and helped me understand the participants views on the world which helped to ultimately enhance the relationships between myself and the participants, while enabling a deeper understanding of their views to be identified in the data set constructed.

### 3.10 Methodological summary

In summary this thesis has been influenced by a constructivist pragmatic paradigm that uses GT methodology. The research design included a case study approach to focus on health, wellbeing, and social impacts older adults received from accessing a CF or CG, completed using semi-structured interviews with older adults. Other perceptions are gathered from GFs, members of the public and external stakeholders, using semi-structured interviews, to establish understanding around acceptability, sustainability, and future potential. This ultimately allows themes to be constructed from the data that was captured, enabling opinions to be voiced, evaluation of both study sites and the consolidation of the wider appreciation of nature for health and wellbeing.



## **Chapter 4: Cultivating findings of older adults using gardens and farms**

### **4.1 Outlining the findings**

The previous chapter illustrated the methodology set out within this thesis, linking to the aims and objectives, while accentuating the contribution to knowledge (initially evidenced in Chapter 2). This Chapter (4) engages with the older adults making regular use of one of the case studies sites, through in-depth semi-structured interviews. In doing so, this chapter provides exploration around the motivation for attending and participating in these activities, alongside the subjective health and wellbeing changes due to undertaking regular attendance at the projects. It concludes by looking at how a pandemic effected the ability to attend the projects, and how participants would like the projects to progress in the future. The design of this findings Chapter (together with the following findings Chapters 5 and 6) allows discussion of the points raised by each stakeholder, while referring to the literature. This format of allowing discussion points to be built within each findings chapter increasing clarity by corresponding directly to each findings section, while a meta-discussion at the beginning of Chapter 7 pulls together these separate findings to a conclusion.

### **4.2 An introduction to the older adult participants**

Ten older adults, who regularly access the case study CF or CG, were interviewed as part of this research. CG older adults voluntarily access these spaces, while CF adults attend day services, and can select to contribute to the farm as part of their day. Of the ten, there were six males and four females who between them generated nearly twenty-five hours' worth of recordings. The ten participants cover all walks of life, with all data reported anonymously, using pseudonyms, to avoid participants self-identifying within groups. Further to this, participants were happy to be referred to with pseudonyms, but in some cases, they were only willing to give opinions if the quote could be attributed without a pseudonym, to prevent group members identifying other members opinions in fear of identification and the repercussions of their viewpoint. To enable this, some quotations in this chapter are given without pseudonym to accommodate these requests. To aid readers' understanding of the participants, Table 8 describes them individually, in a manner to avoid the possibility of identification.

Table 8: Getting to know the participants

Name (pseudonym)	Getting to know someone
<b>Community gardening participants: Pseudonyms that use 'G' for gardening</b>	
<b>Genevieve</b>	A very quiet lady, Genevieve often worked alone, yet was engrossed by gardening. This lady was in her mid-seventies, and struggling with arthritis, high blood pressure and having suffered the precursor for a stroke (TIA: transient ischaemic attack), she moved around undertaking the less physical aspects of gardening, including potting, and pruning. Her previous work in the civil service was an interesting topic of conversation with the researcher and within the wider group.
<b>Gerald</b>	Gerald was a man in his mid-sixties, with good health, and didn't report any health conditions. He took an informal leader position in the group, gathering donations to buy equipment for the garden. Having lived in the local area for most of his life, he was well voiced in giving suggestions on where to find gardening essentials. With an employment background in technology, he spent a lot of time galvanising the group, motivating members to use the space.
<b>Gill</b>	Welcoming and always ensuring everyone was included within the group, Gill was a quiet man at times, but always on hand to speak adoringly of his partner. Secondly, gardening was always the topic of conversation. He was a core member of the group, who was highly educated, which he put to great use, organising funding bids. Now in his late seventies, he was living with a health condition which did not stop him from taking part in even the most physically intensive elements of gardening.
<b>Ginny</b>	Ginny, a very talkative lady, in her mid-fifties, who had recently lost her husband, started attending the group as an opportunity to communicate with others prior to his death. She had always been active over her life course and had been employed in the arts, a passion that continued to today. She reported that she was physically fit yet began to frequently use a walking stick to help with

	backpain, and arthritis developing in both knees. She attended exercise classes throughout the week, such as pilates and Zumba, however, recently began struggling with hearing and eyesight loss.
<b>Grace</b>	Grace was a lady in her late seventies, with a laugh that would fill a room. She often spoke of her holidays around the UK, and how much she adored her grandchildren. Previously having been a housewife, her warm nature attracted people towards her, as she learned about gardening as a beginner. Her health had declined recently, and she was seeking clarification as to why, yet this resulted in her being unsteady on her feet. But that did not stop her from being interested and invested in learning all she could about gardening.
<b>Gwen</b>	Gwen, in her early fifties was open about her issues with mental health in the past. She suffered from OCD (obsessive compulsive disorder), anxiety, anorexia, and depression, starting in her early teens. Her physical health was 'grand', as she would put it, enabling her to do a lot of the physical labour required to move pots, soil, and planters. As she was semi-retired, now working as a cleaner at the local school, the gardening group provided some structure to her week.
<b>Care farming participants: <i>Pseudonyms that use 'F' for farming</i></b>	
<b>Finlay</b>	Early fifties, quiet and unsure about new members of the group and the researcher, Finlay was distant from the group. This made it difficult to discuss the activities he took part in on site and resulted in limited conversation, about life in and outside of the farm. Yet he was passionate about sports, especially playing football recreationally – keeping him in good physical health.
<b>Franklin</b>	Franklin was in his early fifties, enjoyed being outdoors and had been accessing the farm for a couple of years. He was a well-educated man, speaking openly around his family life, what the project brought to his life and what they planned for the future. He was in good physical and mental health, often being the designated

	individual who would assist with heavy lifting and mucking out of the animal shed.
<b>Fraser</b>	In his late fifties, Fraser was an intelligent man who would volunteer to give visitors a tour around the space, identifying animals and plants along the way. He continually reported within the interview that his physical and mental health were good, through his time spent on the farm alongside regular walking with his family.
<b>Fred</b>	A happy man in his mid-fifties, Fred was sometimes difficult to understand, due to a speech impediment, but spent time helping in the cafe. He sought solace in sitting with friends in the café and wandering throughout the outdoor space. Doctors were investigating his blood pressure and cholesterol levels, yet Fred suggested the rest of his health was good.

Each of the participants has varying backgrounds and lifestyles, with different levels of physical and mental health as gathered through interacting with participants and alluded to in Table 8. The findings that are reported in the following section was collected over the span of two years, with both face-to-face and distanced method used (as set out in Chapter 3). Eight face-to-face (F-2-F) interviews were carried out prior to the pandemic (four from each CG and CF), and then a further two members were virtual engaged as sites closed in the pandemic. The four CG members already involved were re-interviewed (virtually) to identify the impact of restricting access to the sites, while it was not practical (due to numerous barriers) to re-engage those at the CF. The following section tackles the themes that were constructed, with a thematic map illustrated in Figure 15, and their relationships with each other. These overarching themes and their subthemes include motivations for attending projects, the health and wellbeing impacts, how Covid-19 influenced these spaces and how the older adults would like the study sites to progress into the future.

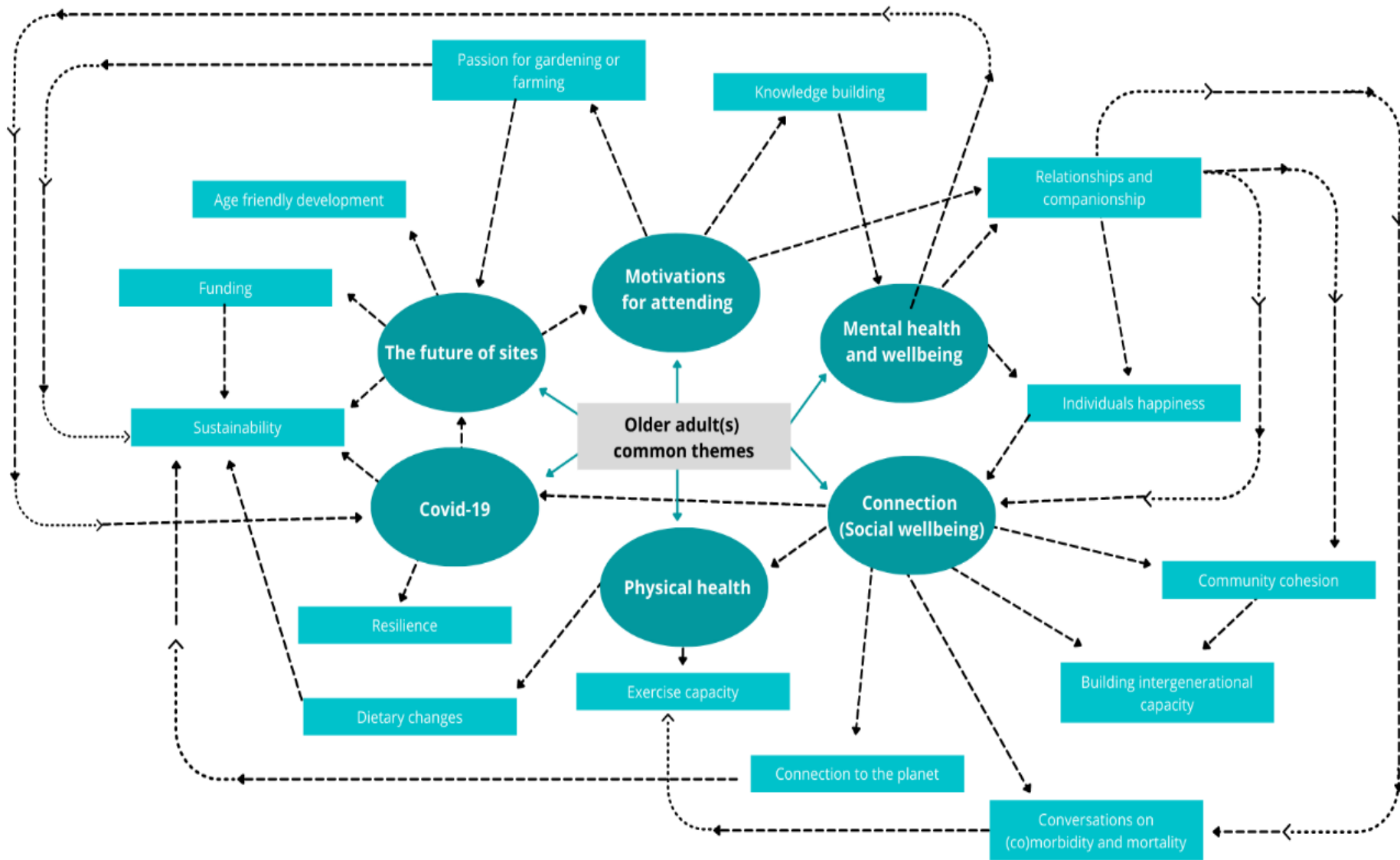


Figure 15: Thematic map (Authors own, constructed from transcript coding/thematic analysis)

### 4.3 Motivations for attending

Reasons behind attending the NBIs were initially discussed with older adults, in attempt to build rapport between the group and the researcher, alongside being able to fully engage with the motivation for group members to continually attend. Other academics such as McVey, Nash and Stansbie (2018), have investigated the underlying motivations for attending CGs, reporting knowledge exchange, and building community cohesion as the major cause of regular attendance. While Kingsley, Foenander and Bailey (2019) add building identity and pride, alongside stress relief, and a family history or passion for gardening, they suggest '*there needs to be a clearer narrative of the motives and drivers for participation*' (pg.10). While the current understanding around the motivations in attending CFs is less understood, with studies mostly focused on the motivations from the farmers perception (see Ihlebæk, Ellingsen-Dalskau, & Berget, 2016).

This section develops the current knowledge base, by engaging those using the case studies, and stresses that the major reason in attending is to initiate social connection with others. Initially participants spoke of their love for gardening or farming, with undercurrents of the social aspects arising from attending projects as the conversation progressed:

*"I've been coming here since the start. I really like meeting people, gaining knowledge on how to garden, and being in a healthy environment"* (Gerald)

*"my main motivation is being able to share a long-term, which is a nearly sixty-five-year, interest in gardening with other likeminded folk"* (Gill)

*"I like working with animals and planting, and seeing my friends"* (Fred)

These statements illustrate the desire to connect with nature, animals, and others in these spaces. Across both study sites participants spoke at length about how they enjoy attending the NBI and powered them to continue attending. With an example of one suggesting that:

*"when I was younger, I really enjoyed geography, and I think this is where this comes from, I want to be outside. I don't want to be cooped up in my flat"* (Grace).

Indicating that gardening and being outdoors was important for Grace, and other members of the group, where they spoke of the importance of accessing nature and the outdoors, with Fred going on to suggest that he liked '*being outside, even out in the rain*'. Conveying that the human need and connection to nature exists in many forms, from being actively present in gardening, or even passively exposed to the elements, linking to biophilic theory. Users of the CF spoke of the capacity to connect with the environment and animals using it, as Franklin suggests: "*I like being able to work outside, with the animals*", while similarly Gorman (2017) conveys this facilitates a therapeutic engagement opportunity for the participant (which is developed further in 4.4).

Yet, the work of gardening or farming was continually set aside in favour of communication, with all participants suggesting that this was the main motivation in attending. Many spoke fondly about the strong relationship between group members, with age consistently referred to throughout the conversations. These conversations highlighted to the researcher about the impact of ageing on the ability to connect with others, as some spoke of losing significant others, and friends. This left a profound impact on the research, as one participant speaks of the hope that the project provided her:

*"I come along as it gives me a protected time where I know I am going to see and speak to people. I think when you get to my age, it is difficult to get people to take notice of you. It's often the case that you are seen as a burden or a waffler in conversation."* (Ginny)

This quotation identifies the impact the group has had on Ginny, providing a sense of connection, after the death of her husband. As this group met at the same time each week, it awarded Ginny the prospect of '*something to look forward*', as she knows that she will be able to speak to someone at least once a week, which as she suggests is '*keeping me going*'.

Alongside the perceived inability to connect with others in daily life, this group gave her space to '*speak to others that have gone through the same thing, like losing their other half*' (Ginny). These difficult conversations, surrounding death alongside health conditions, are often suggested to be avoided particularly with older generations (Age UK, n.d), yet these projects provide activities '*that take your mind off the sad thing, and*

*seems to trick you into being able to offload your worries'* (Genevieve). This emphasises the ability for taking part in an activity can inadvertently enable participants to open up to each other, share worries and in this case *'help us feel better, because you are engrossed in nature, you realise how small your problems are in the grand scheme of things'* (Gwen).

Older adults are at an increased risk of loneliness and social isolation because of a variety of factors, including living alone, loss and illness (CDC, n.d). According to AgeUK, more than 1.4 million older people in the UK are often lonely (2021a), resulting in detrimental impacts to health including heightened levels of depression (Erzen, & Çikrikci, 2018), higher perception of illness (Özkan Tuncay, Fertelli, & Mollaoğlu, 2018), a 50% increased risk of dementia, 29% increased risk of heart disease and 32% increased risk of stroke, alongside premature death (National Academies of Sciences, Engineering, and Medicine, 2020). These spaces provide an environment where isolation is reduced by providing safe spaces for (difficult) conversation to be initiated between group members, on topics that are pertinent to the age group, while being able to connect to nature.

#### 4.4 Effects across health and wellbeing

The therapeutic elements of nature have been highlighted extensively within Chapter 2, the literature review, from walking in nature improving mood (Olafsdottir, et al, 2018), to decreased levels of depression, anxiety, and loneliness if able to view nature from a window throughout the pandemic (Soga, et al, 2021a; 2017ab). Yet there is still limited knowledge about how specifically older adults' health and wellbeing is changed due to experiencing NBIs, such as CFs and CGs while ageing in place (as identified in Chapter 2), and for which this section looks to explore further.

The health and wellbeing benefits were not initially connected to the spaces, by participants alone, resulting in the researcher prompting the older adults, by asking specifically how they believed they had changed due to attending. Therefore, this section looks to tackle the subjective narratives provided through interviews with those using the spaces, in doing so three key areas have been highlighted with Grace suggesting: *'you just have to look at me, I am happier, healthier and more connected, just coming along'*



#### 4.4.1 Mental health and wellbeing: *happier*

Kaley, Hatton, and Milligan (2019) have investigated CFs, and evidence that *'participants often described themselves as feeling happier or more able to cope in their everyday lives'* (pg. 13), however this and other CF research is based with younger cohorts. While ageing CG research and its links to happiness is still difficult to find, especially based in the UK, where studies favour access to green space, individual allotment gardening, or those prescribed access to green activities.

Within this study older adults were able to articulate that these spaces provided happiness, through being able to connect with others, and some open to suggest this was *'the only time to speak to someone else in the week, otherwise it is just me and the walls'* (Ginny). It therefore provided a sense of companionship, where the individuals were able to discuss topics of interest and particular issues that effected this population. Yet, because of the group dynamics, specifically the age of those involved, loss and mortality became an issue that caused upset. It became a sensitive topic as some members were affected by conditions, seeing the deterioration in health (leaving a profound effect on the group). The following section will take each of these sub-themes in turn and discuss them at a deeper level, providing evidence of findings.

##### 4.4.1.1 Personal happiness

All older adults were passionate about expressing how happy these spaces made them feel, with some sincerely opening to the express the contrast in their lives outside of the projects:

*'I feel happy when I am gardening. It's being able to see something grow from nothing. I am happier here than at home. I do struggle. At home it's just me and television. Here I come along and get involved in the garden. See the insects using the garden, the birds. It's just a space where I feel relaxed, so I am happy'* (anon participant, without pseudonym, this is remarked in this manner to avoid group members self-identifying each other on matters that they perceived as requiring further anonymity).

Illustrating the ability to attend the project for their own happiness, irrespective of the group's dynamics. This reflection by the participant towards their own home life, portrays an insight to the life of an older adult, as this participant went on to suggest that *'this is the only thing keeping me going, it is keeping me sane'* (anon), conveying

that this space and group is like a lifeline for some. While academics including Zaitsu, et al, (2018) suggest; *'participation in "horizontal" organizations consisting of peers, such as sports and hobby groups and voluntary associations, may be particularly effective in the prevention of the onset of functional limitations and disability among older adults'* (pg. 2), therefore conveying that these groups can assist with mental and physical health, while the quotations suggest the older adults of this study believe this too.

Other participants remarked on the nature of these projects allowing them to be happy, because they were outdoors, as evidenced by Franklin: *'the sun and even the rain, just being outdoors makes me happy'*. This concept of being outdoors has been researched by other academics, especially in the time of the pandemic, and concurs with this finding that being outdoors in clean environments improves wellbeing (see Bu, et al, 2020; Krekel & MacKerron, 2020; Sobel, 2020). Interaction with animals and other organisms became a point of conversation that emphasised the ability to bring happiness to the older adults. Many academics have already studied the influence of animals with individuals, for example pet ownership improving wellbeing (Bao & Schreer, 2016), therapy dogs increasing self-reported happiness, while reducing stress (Trammell, 2019). Participants at the CF and CG demonstrate the impact of this relationship and spoke of watching the interaction between organisms and plants or other group members, with conversation on the interaction at small scales, such as ladybirds running across hands, bees pollinating flowers, to seeing a pony being guided through the building (with Figure 16 showing the pony onsite).



Figure 16: Shetland pony at CF site (Authors own, 2020)

Fred suggested that the *'laughs when I can work with the animals, they do silly stuff...being able to see the dog [physically motions using fingers to push a grin face], or the horse being inside [Fred laughs]'*. These interactions, especially at CFs have been referenced by other academics including Gorman and Cacciatore (2017; Gorman, 2019) who suggests they facilitate a mutually therapeutic relationship,

enabling a sense of belonging and contribution, while potentially providing space for grief. Broadly, the concept of interaction with wildlife has been advanced by Castillo-Huitrón, et al, (2020) who discuss interactions with animals resulting in happiness, followed by sadness when expressing concern over conservation status of species in the future.

Other points of sadness were expressed by participants, contradicting the original expression of happiness voiced by the older adults. This emotion of sadness stemmed from feelings of embarrassment or low confidence, as Gwen suggests: *'it knocks my confidence sometimes, when I don't know what plants what are what'*. She went on to say that *'I don't want to ask people in the group, because I will look dim, and then might forget the name and have to ask again'*. These groups had a strong bond, where they were able to transverse over personal matters, yet there still seemed to be barriers when it came to learning about gardening and farming, as evidenced by Gwen. Others suggested similar, where they wanted to learn more about species, and took time away from the group to undertake research and then have conversations to disperse this new information. Further elements of sadness were expressed by the full group when crops did not grow, or plants/animals died, knocking the confidence in the group's ability to be successful in its plans. However, the group's tight relationship ensured that members would be given time to think over the loss, but not dwell, as other participants would involve them in another task – illustrating the power of the relationships built.

#### *4.4.1.2 Relationships and companionship*

The main motivation in attending the case study sites was for social connection, with many academics suggesting the psychosocial benefits from attending similar spaces (see examples including Spano, et al, 2020; Veen et al, 2016; Poulsen, et al, 2014). These relationships constructed at these spaces often provide a sense of companionship, especially in this case for older adults who may not have significant others at home, with participants suggesting; *'I've got really good friends here'* (Finlay), and *'I have been able to find friends here as well as garden, getting friends as an older person is hard'* (Gill). Conveying the ability for these study sites to allow people the capacity to come together over a shared passion, while facilitating conversation. Others went on to point out the value specifically for older people, as most interviewees suggested that they felt overlooked or left out in society, often struggling to make conversation with others, and valuing the opportunity to do. They discussed the

difficulty in making new friends as they aged, while also advocating for the rewards that come from making friends, especially intergenerational ones. The concept of relationship building within these settings has been studied previously, with some studying the intergenerational connections (Keen, 2017), knowledge exchange (Datta, 2016) and creation of social capital (Glover, Parry and Shinew, 2005). This section advances on existing knowledge by voicing the opinions of the older adults and gives a unique perspective from this standpoint in the life course.

One participant remarked on a death in the family (which will be discussed further in the section 4.4.1.3), and requests this is reported anonymously (without pseudonym).

*'I live on my own since my other half died, being able to come here, means that I have that comradery again, we are all going through similar things, so it's having a comradery to go through it...If I am honest, I went through a really bad bout of depression when we were told they were not well. It was a really really dark place. I didn't see a way out of the drudgery, watching the TV and then getting those awful sympathetic faces...I didn't want to see the doctor, I didn't want those tablets. I didn't want to go downhill [referring to health] ...I came along here, just before the death, and was welcomed with open arms. They know some of what has gone on, but it's my decision to keep the rest to myself. They give me such light and laughter when I am here, I don't want to change how they see me'.*

This illustrates from this participants point of view the '*light*' that this group provides to their life, while facilitating opportunity to discuss their own worries and concerns. While others went on to suggest they feel confident in discussing health concerns alongside disputes, however Genevieve pointed out that: '*I do not always feel happy when I am here, sometimes there are disagreements about how to do things, and that brings an atmosphere that stays around in the session*'. This illustrates that disputes within the groups occur, causing a short-term detrimental impact on wellbeing. Other concerns were mirrored by Grace: '*I don't always agree with people, I want the garden to do well, and people don't always see what needs to be done, so I do get annoyed, it takes the enjoyment out of it*', demonstrating how relationships can become fraught due to the workload and ambition for the sites.

#### 4.4.1.3 Morbidity and mortality

Links have been made between green environments, morbidity, and mortality, with a high-quality systematic review carried out by Rojas-Rueda, et al, (2019) investigating this link with accessibility to green spaces. The paper, published in *The Lancet*, screened 9,311 studies, with the final inclusion of nine (although omitting UK based research), suggests that they '*found that increasing increments of residential greenness is significantly associated with reducing all-cause mortality in longitudinal studies*' (pg. 473). Yet, Leng and Wang (2016), evidence that home gardening eases the stresses of living with conditions through their seven-year interview study based in Taiwan, and they suggest it seems to postpone mortality. CFs have also been reported to provide rehabilitation, whilst providing a place to overcome trauma and grief (Cacciatore, Gorman & Thieleman, 2020). Still discussion around morbidity and mortality is often hard to face, with many avoiding the topic altogether, while professionals express the importance of having these conversations before it was too late, especially with older adults and those with learning disabilities (see Sundström, et al, 2018; Lord, Field & Smith, 2017). Researchers are now connecting the restorative nature of gardens with conversations around death, absence, and the afterlife (Ginn, 2014), yet the attributes awarded by CG and CFs, primarily the ability to engage as a group, are still yet to be explored, and in which this section looks to contribute.

This research did not initially set out to explore the idea of mortality with the older adults, yet due to the nature of working with older adults, some members of the group (not participants) unfortunately died throughout the study period, and this left a profound effect on the group. Some were able to process grief by reminiscing over time spent with that person, yet others seemed distant, preferring to avoid the topic in group settings. When interviewed about the group, older adults took it upon themselves to speak about losing members of the group. In doing so, the CG members explicitly spoke about this and as Gill suggests '*It is a fact of life that people go*', while no CF participants entered a discussion about mortality. This is thought to be due to the age of participants, with those at the CF being younger in comparison to those at the CG, alongside the inability to reflect without experience, as mortality hadn't been a large part of time spent at the CF.

It became clear when speaking about the concept of death, the older people acknowledged that they did not like speaking about it, but the garden provided a safe

space, where they could openly discuss the loss, as well as their own wishes with people they trusted and saw as similar in life span. Gwen talks about a time where another member of the group was ill; *'I do struggle with it, I do not show it to the group, but it really gets me when someone is ill or God's sake they aren't here anymore. It brings it home to you because everyone is of a similar age.'* She went on to reiterate that she internalises the worry, and self reflects the potential health issues that she will face in the future, resulting in a negative influence on her own health, with her offering examples such as suffering migraines, anxiety, stress, and depressive thoughts because of the conversations had within the CG site. One member, who didn't want to be named, even with their pseudonym, expressed mixed emotions when connecting to the garden:

*'years ago, I used to go gardening with my mother. She was such a lovely woman. She taught me a lot. But now she's gone. So, it is tinged with sadness really. I get little flashbacks, where she spoke about plants, and I'm passing that on to you now'* (anon, without pseudonym)

This conveys the ability for practices such as gardening to provide connection to the past, in both a positive and negative manner. This interviewee demonstrated physical emotion when telling the researcher this, by laughing and recalling historical accounts of family life, however, suggested that *'it was happy memories, otherwise, I would not still come to garden, it makes me happy that she was the one that started this passion'*.

However, living with health conditions seemed to be discussed more readily, with older adults taking comfort in finding others with similar health concerns. Ginny said, *'we share tips to get through pains, and offer advice to each other, like where to get the health check-ups'*, while Genevieve gives a glimpse into how people attempt to mask conditions: *'I get problems with my arthritis, and the majority have it, they probably won't tell you that, but you hear them struggling when they are out there [motioning towards the garden]'*. These contrasting statements where they are open about conditions and seek opinions from others, versus the attempt to conceal pains, is something that the researcher also witnessed on site, and this was discussed with participants, where they suggested that they did not wish to be perceived as frail or unable to participate to the same capacity as others. This concept has also been explored by Same, et al, (2016), whose study involving older gardeners showed that

they did not want to be a burden to family members and wanting to remain autonomous and in control of their garden, for which this research engages and advances discussion.

Participants in this study went on to discuss particular conditions that they felt were coupled with mental health, and had been positively influenced by attending the sites, with Genevieve conveying: *'my blood pressure was high, but I changed my diet, because of growing the vegetables and now it's bang on'* while Fred agreed as his *'blood pressure is slightly high, but here I relax'*. This conveys the perceived physical benefit in attending, growing healthy produce, and altering a diet to reflect this, alongside the perceived change due to the therapeutic nature of the space creating an environment that reduces stress and therefore conditions that might be alleviated as consequence. The following section will now discuss these physical attributes further and give more discussion around the effects of CGs and CFs to health.

#### 4.4.2 Physical health: *healthier*

Physical benefits from gardening have been researched by academics across the globe, with Wang, and MacMillan (2013) completing a systematic review evidencing changes that general gardening activity brought to older adult's physical activity levels. They reported on studies conducted that improved strength and flexibility, alongside bone density (Park, et al, 2017), and self-reported pain (Park, Shoemaker & Haub, 2008). A paper examining the time of exposure to nature and the impact to health, identified that those exposed to over one hundred and twenty minutes had consistently higher levels of both health and wellbeing in comparison to others with no exposure (White, et al, 2019). While studies conducted in Austria and Iceland, compared walking outdoors and indoors, evidencing further improvements to mood, with exercise perceived to be easier in green environments. The pandemic shone a light on access to natural environments (as illustrated in Chapter 2), for the benefit of physical exercise, Cook and Hayes (2020), illustrated how the politics and planning of green spaces often divide the ability for use as an exercise space, whereby some are excluded and therefore unable to use. There are still inconsistencies in the research, and therefore further understanding of how nature and in particularly spaces such as CFs and CG influence movement and diet is required.



#### 4.4.2.1 Exercise capacity

Soga, et al, (2017ab) conducted a comparative questionnaire-based study in Tokyo, looking at the exercise activity between those who took part in allotment gardening versus those who did not. This study evidenced that allotment gardening assists with getting people more physically active, which in turn promotes physical fitness and health, illustrating capacity for future research. While van den Bergs (2010) survey in the Netherlands with allotment gardeners self-reported higher levels of physical activity in the summer, due to gardening activities, still the comparisons drawn to the control group introduces bias and reduced statistical power as they were not well matched. Others such as Zick et al, (2013) suggest:

*‘Community gardeners had significantly lower BMIs (–1.84 for women and –2.36 for men) than neighbours not in the programme. Significantly lower BMIs for women community gardeners were noted compared with their sisters (–1.88) and men community gardeners compared with their brothers (–1.33). Community gardeners had lower odds of being overweight/obese than their neighbours. No statistically significant difference in BMI or odds of being overweight/obese were observed amongst gardeners and their spouses. Health benefits of community gardening may extend beyond an increase of fruit and vegetables. Community gardens may be a valuable neighbourhood feature that promotes health’ (pg.1110).*

While the evidence base of physical changes of CF is also building, with de Bruin, et al, (2020), suggesting they saw increased exercise levels for dementia patients. Yet, as this and the literature review testifies there is still limited understanding of the physical implications CFs and CGs provide for older adults, with previous studies lacking depth or a comparative approach to the types of environments used, therefore this research expands this, and give voice to those taking part in the study sites.

Initially participants highlighted that they felt that the sites provided opportunities to *‘be more physically active, and active without realising’* (Gerald), as gardening and farming was demanding, yet the activities and the group mentality meant that members did not initially realise the physical exertion in taking part. Genevieve, who had struggled with reduced sensation and strength on her left side, since a mini stroke, suggested:



*'I have got some strength back, I can grip better, and I do think that is because of the gardening. It builds muscle memory, little by little and now I can do stuff I used to do before the stroke. But you must watch because you can overdo it, and then the muscles really hurt.'*

Participants were able to recollect times where they had done more exercise than they realised and this sometimes resulted in feelings of tiredness or pain: *'I have arthritis in my hands, sometimes it gets sore, I notice when I've done too much, after I go home'* (Genevieve), *'sometimes I get sore, my knees or back with the bending'* (Gwen), *'it is tiring'* (Fraser) and *'feet and hands hurt from taking part'* (Franklin). This weighing up of the positive and negative physical changes has been suggested by others with studies having *'explored the benefits of leisure gardening for older adults, it is acknowledged that gardening can burden the body and may even injure the older adult gardener; future research is necessary to explore this aspect'* (Scott, Masser & Pachana, 2020, pg. 11), therefore suggesting further investigation is needed to ensure these activities are safe for older adults, and potentially enabling understanding of when to stop before injury.

All participants expressed that they felt more energetic and active while being at the site, in comparison to their normal life outside of the club. Some went on to suggest that by attending the CG, or CF it empowered them to find more activities that would encourage exercise, as Ginny shows she built confidence by attending the CG, and desired to attend other similar opportunities: *'I am healthier with being able to do something. I go here, I go to an exercise class, and other things. It's all about having that something in your diary that you know you have to go to. This [group] made it easier to go to others because I realised that I could go to others. It brought that wall down'*. Therefore, this statement illustrates the power that these groups have for individuals, while pushing them to be more active in other ways, building confidence in themselves and others.

#### **4.4.2.2 Cultivating healthy dietary changes**

The life course is impacted upon by the determinants of health, as outlined in Chapter two, thus, negative effects of ageing can be slowed through healthier lifestyles and accessing safe (green) environments (Wickramasinghe et al, 2020; Freeman, et al, 2019). While attendees of NBIs report higher consumptions of fruit and vegetables

(Barnidge, et al, 2013; Litt, et al, 2011; Alaimo et al, 2008), and this also increases food security (Garcia, et al, 2018). Conveying that CGs and CFs have an opportunity to increase healthy diets and food security.

Most participants within this study, concurring with this research, spoke of positive impacts they felt these case studies' activities had to their diet, with the CF not growing as much fruit and vegetables as the CG. However, participants suggested that they were consuming the fresh fruits and vegetables that they were growing – as they felt pride in being able to grow for themselves, consequently making them feel that their diet was now more nutritious. On top of this, growing herbs also pushed them to cook from fresh, *'rather than the microwave meals'* as they took the produce home and constructed meal plans around what they had grown (Grace), improving the potential nutrient intake of the diet.

Participants evidenced this connection with the produce: *'if I am taking that long to grow it, like the lettuce [shown in Figure 17], I am by sure that I am going to eat it'* (Gwen).



Figure 17: Lettuce grown by participants (Authors own, 2019)

While another interviewee, who would like to remain anonymous, suggested:

*'If I am honest, I do not tend to have many fresh meals, for me everything is just, throw it in the micro, and wait for it to heat. So having this, where I grow something from seed, put that effort in, and grow something, it makes me want to eat it. We meet for lunch, and it is great. Its sometimes the only hot meal I have in the week. You don't want to cook for yourself when you get older, and you do not want to eat it on your own. So having the group allows me the chance to actually enjoy eating'.*

Bloom et al, (2017) have also investigated this phenomenon, and found that *'greater participation in social and cognitive leisure activities was related to better diet quality'* (pg. 276), concurring with the findings of this thesis, while advocating for future use of these social opportunities to further the healthy diets of older populations. However,

there were more negative conversations had around diets, particularly at the CF, where participants suggest: *'we don't grow a lot of veg, so it is hard'*, yet they did suggest the growing of herbs pushed them to grow more at home, and they were interested in learning more about how to grow.

Older adults are also more vulnerable to dehydration due to physiological changes in the ageing process, as the biological indicator of thirst is not as pronounced in this population. While Mantantzis, et al, (2020) accentuates that dehydration is associated with steeper declines in cognitive function and wellbeing as a potential consequence, and Edmonds, et al, (2021) suggest that *'Dehydration in older people is associated with increased mortality, poorer course of illness and increased costs for health services'* (pg.1). Yet, the participants involved in this research felt capable of drinking enough because of individuals reminding each other when onsite: *'we are always geeing each other, reminding folk to keep drinking...we have cups of tea, most of the time it seems like they want to natter with a cuppa, rather than garden'* (Gwen). Another suggests that as a group they log consumption of water, while on site and at home, almost engaging in competition, while reducing the stigma attached to drinking in older age, including having *'humour conversations around incontinence, to overcome the worries about suffering in silence'* (Grace). This narrative adds to the research and discussion around hydration of community dwelling populations, such as those carried out by Bhanu, et al, (2020) and Abdallah, et al, (2021), therefore evidencing how social structures and groups like those involved in this study, could benefit the health of older adults by engaging in healthy practices and reminders around drinking water.

#### 4.4.3 Social wellbeing: *more connected*

Connection to other individuals (as discussed in 4.4.1) alongside connection to the local community was highlighted to be significantly important for all participants interviewed. Every interviewee suggested that relationship building, and social or community cohesion were benefits that came from the study sites, and consequently impacted on the individuals' health and wellbeing. This relationship has been remarked on by other academics, linking the power of CGs to build relationships within the group completing the activity, alongside having a diffuse effect into the wider area, therefore engaging those not involved (see Lenferna De La Motte, 2021; Kingsley, Foenander & Baile, 2019; McVey, Nash & Stansbie, 2018; Zoellner, et al, 2012). In contrast, the research basis for the ability for CFs to result in community cohesion is limited, with

studies suggesting relationship building within the group (Ibsen, Erikson & Patil, 2018), however there is not reference to the community surrounding sites. While Cumbers, et al, (2018) suggests: *'To date, however, there has been less discussion about the potential of community gardens to provide alternative social relations around work that can empower individuals'* (pg. 134).

Alongside this, the distinct connection to nature, and in turn the planet, is discussed (see 4.4.3.2). This full thesis draws on the connection to nature through gardening and farming; however, this small section enables narration of the spirituality that older people feel they are provided through this connection, providing a sense of connection to the site's environment, the local area, and the planet. Therefore, this section looks to add to these findings, and evidence how older people feel in respect of these themes.

#### *4.4.3.1 Connection to community*

A strong sense of being proud of their work in the local area was gathered throughout interviews, with participants reminding the researcher about the different spaces, outside of the main site boundaries, that they had improved. The GC individuals remarked on feeling connected as a group, but also to the local community, as on occasion when tending to planters on a civic space, they were approached by members of the public, who complimented and thanked them for their work. While those at the CF noted the ability to host flowerpots and hanging baskets across the town. With Grace summing it up by commenting: *'we are making the place nicer, nicer to look at, it's so much more colourful now'*. This has also been discussed by Firth, Maye and Pearson (2011), who suggests that this pride can provide others the *'motivation to make aesthetic changes to their areas'* (pg. 557), while Siewell and Thomas (2015) stresses that this increases pride for those living nearby.

This ability to make a change in the local area accumulated within the interviewed participants, who went on to suggest they were left feeling useful. This attribute, usefulness, is particularly felt in older populations, as this period in life is often given negative connotations, as there tends to be disengagement with employment (Gruenewald, et al, 2007), alongside *'every second person in the world is believed to hold ageist attitudes'* (WHO, 2021). Which gives the portrayal of older adults as not

useful, or burdensome. Participants suggested feeling this way, however the CF and CG gave them spaces to feel useful:

*'I do not feel useless, dodging about the house, I have a purpose, I have to garden'* (Ginny)

*'I have tasks to do, so am doing something'* (Finlay)

Members of the group often pinpointed the sharing of knowledge to be useful, but also rewarding: *'if people want to learn, we tell them about us and the gardening'* (Gerald) and *'with you coming along, I have told you about the types of seeds and the flowers...it makes me feel that I am useful'* (Genevieve). They went on to suggest that this ability to inspire and transfer wisdom to others, made them feel *'valid'*, *'helpful'* and *'worthy'*. Lucke, Mamo and Koenigstorfer, (2019) explored the connection between CGs and knowledge exchange in Southern Africa and reported that this exchange facilitated resource integrations and value creation. While Ong, et al, (2019) illustrates that culture, experiences and spirituality is often exchanged – displaying an opportunity for this research to further discuss how NBIs enable education and cultural exchange.

#### *4.4.3.2 Connection to the space, place, and planet*

Heintzman (2009) suggests that spiritual meaning is not just attached to religious practices, but often associated with leisure activities. While Kleiber, Hutchinson and Williams (2002) to further convey that leisure can be calming and restorative, therefore assisting with daily life and providing enjoyment. As Unruh and Hutchinson (2011), make the link to nature by proposing; *'Gardening may be particularly conducive to spiritual experience because the gardener is interactive with nature in caring for the garden'* (pg. 567), while going on to suggest that individuals feel bonded to the earth, others, and time, through gardening. Specific discussion about spiritual connections is limited, yet Thieleman, Cacciatore and Gorman (2021) portray a participant's ability to connect the relationship with animals, while being on the CF, to being grounded within the earth, while allowing grief to process.

Within this thesis, participants of both study sites were able to identify the connection to the planet, in a therapeutic manner, while being underpinned by the idea of sustainability, therefore advancing the current understanding expressed above. They spoke about being able to combat stress and difficult life stages, while onsite it



provided ‘serenity and escape’, which in turn enabled individuals to practice mindfulness, detachment exercises and feel connected to the earth. Ginny goes on to speak about the connection built between her work on site and how she takes benefit from it:

*‘It’s picking up the soil, [as seen in Figure 18] watching it glint in the sun, seeing the little different colour specks, and then dropping it through my fingers. I feel so small in the world, but I feel connected to the planet...looking at the leaf, you see all the veins, it’s like your arm. It makes you have this weird connection to it. It calms me down; you realise you’re not far away from other things in this world.’*



Figure 18: Soil and its connection to health and wellbeing (Authors own, 2020)

While others remark on the animal–environment–participant relationship, with Gwen suggesting: ‘I enjoy looking at the animals and insects, especially the bees, they come here because of all the flowers, it makes you realise that we all live side by side’, and Fred encourages ‘feel the animal fur, it is happy’. They both spoke of the spiritual benefit of taking part, including feeling more ‘content in life’, ‘relaxed’, and ‘less stressed because you realise how insignificant your worries are’.

Other members of the group expressed their connection to the planet in a different manner, by suggesting the positive impact they felt they were having. They felt that they were sustainably working, by recycling materials for planting, turning plastic bottles into makeshift pots, and trying to establish localised food systems: ‘We always reuse our pots...nothing gets thrown away’ (Gill), ‘we use nature to make stuff, like art’ (Franklin), and ‘I feel that I am having less of an impact on the environment, because I am recycling, it’s the first step’ (Grace) – showing the hopeful and progressive nature of those involved. The research field currently lacks materials to concur with these opinions, therefore further work in this is suggested.

#### 4.5 Covid-19: Planting in a pandemic

Covid-19 has been difficult for a whole population, with lockdown urging people to stay indoors, along with many of the world's older populations being asked to shield, this made it incredibly difficult for them both mentally and physically in this period (Brooke & Jackson, 2020; Pelicioni, & Lord, 2020; Richardson, et al, 2020). Covid-19 disproportionately affected older populations and those living with disabilities, and to a heightened degree for those living in care homes (which this research does not cover), resulting in older adults being fearful of contamination and often isolated, alongside facing ageism-based behaviours (Fraser, et al, 2020; Gordon, et al, 2020).

A recent study by AgeUK (2020a), has attempted to understand the impact that lockdown has had on older populations, with an online survey in August 2020 collating opinions from 1,933 older people perspectives. Physically, it was suggested that one in three now have less energy, one in four are now unable to walk as far as before and one in five are now less steady on their feet (AgeUK, 2020a). While there is also a mental health toll, whereby one in three are now less motivated to prepare nutritious meals, one in three now suffer with anxiety and the proportion of over seventies experiencing depression has doubled since the pandemic (AgeUK, 2020a), however this study does not recognise or evaluate the extent in which this is contributable specifically from the enforced isolation. The follow up study, released in February 2021, suggests that these declines in older adult health have continued to occur throughout the remaining restrictions (AgeUK, 2021ab), even with vaccination programmes, there were issues of changing rules, and for some anxiety about getting back to normal (McPherson, et al, 2021; McCausland, et al, 2021; Shaer & Haghshenas, 2021).

For the public in the period of lockdown, it was suggested that there were heightened desires to get outdoors and be involved in gardening (see Hockenfull, Squibb & Cameron, 2021; Pouso, et al, 2021). Ironically this was just not possible due to the restrictions. Yet, it has left people more in touch with nature and potentially more likely to attend community groups based around nature in the future (ONS, 2021a). Lockdown had a profound impact on CF and CG spaces, with a mixed model of how to operate (and discussed further in Chapter 5). Some completely ceased face-to-face activities with older adults, as was the case in these case studies selected for this research, whilst others found alternative opportunities to assist the local community – like the wider CG network, some of whom were creating vegetable boxes for those in

need. Looking back over the pandemic there was a clear disruption within this ability to come together to grow. Overnight, groups stopped, causing detrimental impacts on their users. In this study, virtual interviews gave a glimpse into the effect that this had on six members of the GC (two for the first time, as sites closed due to the pandemic, and a further four re-engaged with after closure).

In the times of the pandemic, they reported issues around anxiety, increasing feelings of illness and worries around mortality, with Gwen suggesting; *'actually no, I feel shut out of the world because I am old. But I still want to be out there, I don't have long left,* and this really highlights the isolation and reduced communication that this participant felt. This is also discussed by Heid, et al, (2021), who suggests that in the initial stages of the pandemic, social interactions and restrictions on activity was the biggest challenges faced by older adults. Gwen went on to talk specifically about the inability to access nature; *'I can't garden. I don't have a garden. We are in a built-up area. There isn't anywhere really to go.'* – portraying the unequal access to nature that was experienced throughout the pandemic. Another participant went on to say that *'I want to get out, I am more able than some youngsters'* (Gerald), stressing the determined nature of participants to still contribute and particularly in this context keep the growing sites going. This nudges into the concept of ageism, where participants were able to reflect on how people perceived them in the pandemic, one suggested that *'folk need to stop feeling sorry for me, I am doing more than they are, we are made of harder stuff. I am still out there gardening'* (Grace). Ageism existed prior to the pandemic, and this thesis tries not to trivialise, yet it can be said that ageism intensified in this time, with older adults being misrepresented and undervalued (Swift & Chasteen, 2021; Fraser, et al, 2020), and as a group member suggests: *'I watched older people getting forgotten about'* (Ginny). Therefore, this illustrates the importance that these older adults attach to these spaces yet also evidencing the abilities and resilience of older populations in time of crisis.

On a positive note, older adults were shown to be very resourceful and tried to overcome the issue of not being able to see one another as they continued to be in contact with each other virtually. Some were still left behind, as they didn't have the technology or the knowledge to connect in such a way, and even if connected still suffered: *'I struggled, I didn't really have anyone physically to talk to, but the group kept me going'* (Gwen). Another went on to articulate ways that their mental health



deteriorated due to prolonged inability to communicate face-to-face, with one suggesting that they *'went against guidance, because I was really suffering, If I hadn't seen someone, I would have gone mad'* (anon, without pseudonym).

Over the course of lockdown many continued their love for gardening, and grew fruit, vegetables, and flowers on small containers on window ledges or in self-contained gardens: *'I have been able to grow on my window ledge...it's not the same as the group, but it's something'* (Genevieve). They spoke of the joy of being able to take photographs of their produce and share them with the group, almost competing to grow more. Participants were able to share photographs of their plants with the researcher, having grown in planters they already had, and make-shift options, such as yoghurt pots and milk cartons. They spoke about the relief that gardening had on their health, providing an opportunity to distract them from the *'worrying conversations had on the news, around older people dying everyday'* (Ginny). Some expressed how the vivid colour provided by growing plants enabled them the ability to see a positive within the pandemic, and nurturing them from *'seed, makes me useful, unlike what was being said by politicians'* (Genevieve). Through attending the CG, it could be alluded that most participants have developed better skills and resilience to cope with adversity, evidenced by the pandemic: *'I have got through because I have to keep the plants growing'* (Grace). While others who were unable to remain connected virtually to the group, nor take part in individual gardening practices could have had reduced ability to remain optimistic.

Even after the vaccination roll out members discussed their desire to *'get back and garden'* (Gill), yet pragmatically as *'the pandemic is a pain for everyone, but personal safety was paramount'*. Another who asked not to be named, reporting this feeling, suggested that they:

*'feel worried about going back, it's hard because people forget about distancing. It's difficult with older people as well, we aren't stupid, and we really need to be gardening. But what if it rains, you are asked to be outdoors, we feel the cold more than others, so I worry people will get ill'*

This pays attention to the worries of a member, when the group were allowed to meet again, emphasising potential health impacts from gardening post pandemic. They went on to discuss weighing up the mental positives from being able to communicate with

others, while still considering the risk of being outdoors. As restrictions eased another spoke of the increased awareness of the inability to access nature more generally, as they highlighted the inability to access parks that they felt ‘*safe in*’. This is also highlighted by Levinger, et al, (2021), who recognise the toll that the pandemic had on health and wellbeing, while exposing the inequalities experienced around vulnerable and low socioeconomic populations accessing green spaces and calls for further integration of nature into the development of urban spaces. As a group they are now pushing back to reclaim a gardening period that they lost last year; ‘*we will be bigger and better*’ (Gerald).

These populations are inspiring, their ability to bounce back and reclaim their gardening plot in a difficult year is something that could be learnt from. These case studies could be used as the blueprint for future development, empowering spaces like these to be incorporated into everyday lives, both now and when individuals move into the older adult category. The annual survey conducted by Social Farms and Gardens (2020) illustrated that most CFs remained open (46% with services as usual, while 42% had reduced service), while only 12% were closed except for essential staff. CGs were reported to have quickly adapted to the pandemic, with additional safety measures, that enabled 70% of those surveyed by Good to Grow & Capital Growth (2020) (for Sustain) to remain operational – showing the ability of these spaces to continue in difficult periods to assist the community. However, these surveys haven’t illustrated the difficulty faced by individuals such as older adults, or those vulnerable and being asked to shield for longer periods and unable to access the open sites, nor the site facilitators who have been unable to use funding which is ringfenced for activities (for which the next section 4.6 will expand on, while Chapter 5 develops further). The older adults represented within this thesis also looked towards the future, and the next section highlights some of the barriers they foresee and ways to overcome these.

#### 4.6 The future of sites

The older adults were able to identify numerous things they would like to change and were very passionate about ensuring the group continued ‘*well past the current members’ expiration dates*’ (Gerald). This section provides discussion around some of the barriers that they face and the innovative ways they plan on ensuring sustainability.

Participants from both the CF and CG suggested they would like to continue growing in these spaces, meeting each other, and inviting new members. Franklin and Finley called for '*more animals*' and '*more activities, especially at night-time*', while Genevieve suggested she would like to '*grow more and learn more about flowers and how to grow*' while '*attracting more wildlife*'. Members from both case study sites emphasised again about the value they attach to the spaces, and advocate for others to attend, in doing so there were conversations around expanding group membership. The CF currently exists as an intergenerational project, while the CG consists of members over fifty, however they '*are open to younger people*' (Gill). Gerald suggested that:

*'there is a keen interest in younger people, but we are primarily for over fifties...it would be good to get younger people, but it might also put the older ones off, you have to talk about different things, what would we talk about?'*

While Gill suggests that in the future, he would like to keep the project running: '*Much the same as today subject to the change of group dynamics as members join or leave or fall off the end of life's conveyor belt*' (Gill), and Franklin comments: '*I'd like more people*'. Therefore, illustrating that members are open for new people to join and keep projects going, while bringing in fresh perspectives. Gerald highlights an important point surrounding intergenerational work and its potential ability to deter older people, as witnessed initially by the researcher. However, over time the older adults acclimatised to the idea of having a younger member within the group (as suggested within Chapter 3's reflection). This ability to adapt to the incorporation of younger members has been previously explored by Kransy and Doyle (2002), who suggest it is a rewarding experience that enables networking and building partnerships, while learning about each other. Practically this is somewhat problematic, with limited spaces available, specifically at CFs. There is currently a move to expand capacity with the Growing Care Farming project (Natural England, 2019). However, further limitations around funding, and practical access to spaces, also restricts this ability to grow interest and membership of these projects.

The location of projects, based in urban areas, often restricts the size of project and possible impact, and this was a matter considered by both CF and CG members. Gerald suggests '*we probably need more space; we have kind of outgrown this plot...but there isn't anywhere else here*', while Fraser observes that '*the space is*

*small...not enough room*'. For both groups, the urban location of projects, had led to limitations of what can be grown or animals that can be kept on site. Both groups have advanced into the local community, using community grounds to grow flowers, with a positive perception returned by locals (discussed further in Chapter 6). However, this conversation on limited access to space is not an isolated affair, with academics having discussion built on the contested nature of planning for community growing or farming spaces, while favouring further development in housing, and commercial premises (Schmelzkopf, 1995).

The urban location of projects, and issues around accessibility, continued to be contentious, with Gill suggesting; *'we need more parking and bigger premises'*, while Grace went on to identify that the space wasn't age friendly as they would like: *'A lot of older people can't walk as far, or disabled, and they need to be able to park here [motioning to the main road, 10 meters away], or they won't come to the group'*. This exhibited the issues of situating a project in a built-up area, where parking was becoming increasingly difficult. Grace went on to suggest that membership of the group was under threat because of the inability to easily get to the site:

*'people don't come, because they can't get parking, and everywhere is permits. Some people don't have [blue] badges, so can't park on the [double] yellows [lines] outside the front, so they can't come.... We can't get things into the site, like soil, because you can't carry it far.'*

This highlights the issues and concerns that older adults face in the current towns and cities, where projects exist, yet are inaccessible for some, further exacerbating inequalities. Academics such as Dwyer and Hardill, (2011) evidence that immobility leads to isolation, therefore reducing opportunities for accessing social services and everyday social interaction, such as that provided by these case studies. In Graces' case people cannot attend the projects because of limited parking outside of the sites, alongside the limited availability of public transport serving these spaces, while further work cannot occur on site because of the inability to get gardening supplies dropped off.

Transport continued to be a negative in most conversations with participants, with one who will not be named, sincerely telling the researcher that they must *'sometimes pick*

*between the fare here and lunch'* (anon). This harrowing quotation stresses the economic cost of attending these projects, using public transport to the site, and an economic cost that could not be carried by all participants. Yet, it also illustrates the significance that participants attribute to the projects, as they were willing to give money to getting to the project and gain the benefits of doing so, and sacrifice the ability to eat. This sad reality also impacts further than economics, as inadequate diet in older populations can lead to health impacts, including loss of bone density, muscle mass, strength, and vitamin absorption (Amarya, Singh & Sabharwal, 2015), consequently leading to medication and potential hospitalisation (Brownie, 2006). This demonstrates the necessity to realign priorities and enable less costly opportunities to access projects like these, to ensure that other older people are not put in this predicament.

#### 4.7 Conclusion of older adult viewpoints

These findings illustrate how valuable these spaces are to older adults using them, from providing a sense of happiness, companionship, and an ability to be physically active – *happier, healthier and more connected*. All participants suggested that the main motivation was to be able to be social, an often-onerous task in older age, with some evidencing how some feel like a burden when trying to engage in conversation outside the group. Alongside this they speak about how diets are altered, as they can grow their own produce, and bring fresh fruit and vegetables to their meals, something that they suggest is different to their weekly shop. But they also feel more active, being given tasks to complete across gardening or farming, to move the body in ways *'different to just sitting in the chair all day'*. This really voices the ability to provide activities for this age group, that they feel able and confident in approaching. Participants also discussed the idea of being connected to each other and at a wider capacity to the local community, with the benefits this gave at an individual and societal level. The interviews undertaken within Covid-19 illustrated the disruption caused on the ability to garden or farm, the ability to connect with others and make a difference, leading to detrimental impacts on health and wellbeing. However, the skills and interests developed, especially in the CG, were put to good use in the lockdown with many growing at home (on windowsills and private gardens), remaining in contact with each other electronically, highlighting their resilience and desire to *'bounce back'* and use these spaces in the future. However, there is still room for improvement to make

these sites a success; careful planning, with older adults at the centre of decision making and advocating attendance can assist with ensuring sustainability. This chapter shines a light on how valuable these projects are to the older adults involved in this research. While similar projects may hold similar benefits for other older adults and the wider population and be a viable opportunity to green a growing urban world.

## Chapter 5: Harvesting findings with group facilitators

### 5.1 An introduction to group facilitators

There are considerable moves toward making GM Age Friendly, enabled by working with ageing populations to improve the lives of those living in the region, with many advocacy charities prominent in hearing older perceptions and collectively improving health and wellbeing (GMCA, 2018; 2017a; n.d). They undertake research creating guidance specifically for older adults, such as of how to 'Keep well over Winter' or throughout the pandemic, to working with older people to influence resources in the local area or policy at a national level. While the overarching body of Age UK has a physical and online presence, to connect older adults to each other, and other generations, through social groups, befriending services, day centres or online forums (AgeUK, n.d.). Both the Greater Manchester Combined Authority (GMCA) and AgeUK have projects looking to engage older adults with the outdoors, through the medium of Men in Sheds, arts, and crafts, alongside gardening. Specific engagement opportunities for older people to access the outdoors is provided by numerous actors in the field, including the UK wide charity Social Farms and Gardens, who set out to support communities to farm, garden and grow together (Social Farms and Gardens, 2020), mapping the opportunities available in local areas and hosting events to get people engaged with the environment. These opportunities are powered by a network of passionate leaders, who push these movements forward and create the opportunities for locals to be involved.

This findings chapter adds to the perceptions gained from older adults in Chapter 4, as it goes on to explore the range of views of those powering access to these activities, with an in-depth investigation of the group facilitators (GFs) of the case studies. This chapter discusses findings collected from six GFs involved in establishing groups within case studies, with the CG group working more independently from the GFs than at its inception. In total this chapter represents approximately 745 minutes of interview data conducted with those directly involved within the case study projects identified. Alongside two subsequent follow up interviews conducted virtually during the pandemic of 2020/21, with the same managers, for a glimpse into the effect it had on these spaces and populations benefiting from them.

As there are many voices included in this framework, these participants have been coded separately, as illustrated in Table 9, where those from CG group will be referred to with the initial G, and their counterparts at the CF with F, with follow-up pandemic interviews coded with P. Additionally, to expand and add value to this data collection phase, two further interviews were conducted with external GFs who led separate community growing projects. This enables further external opinions to be gathered, on a wider scale than the case studies, while being compared and contrasted with the case study facilitator viewpoints. Thus, attempting to verify if these viewpoints are held on a wider (localised) platform, and therefore initialled E.

Table 9: GF interview demographics

Site of interest	Code	Interview length (mins)	Date	Role	Age	Career background
<b>Community garden (G)</b>	G1	100	05.12.19	Facilitator	50 - 59	Archaeology and community up-cycling
	G2	150	10.12.19	Lead GF	50 – 59	Teaching and engineering
	G3	70	10.01.20	Facilitator	50 – 59	Nursing and adult care
<b>Care farm (F)</b>	F1	90	24.01.20	Facilitator	50 – 59	Adult care
	F2	70	24.01.20	Lead GF	50 – 59	Retail and adult care
	F3	50	24.01.20	Community coordinator	60 – 69	Adult care
<b>Study sites reflecting on pandemic (P)</b>	P1	45	18.06.20	Lead GF of garden(G) site	50 – 59	Teaching and engineering
	P2	30	20.04.21	Lead GF of farming (F) site	50 – 59	Retail and adult care
<b>External sites (E)</b>	E1	90	15.01.20	External GF leads project in local area	60 – 69	Teaching and community improvement
	E2	50	07.02.20	External GF leads project in local area	20 – 29	Environmental education



As per Chapter 3, using thematic analysis on the initial interview transcripts (pre-pandemic) allowed common codes to be identified, which led to the development of six themes:

- Facilitatory relationships and local power (5.2)
- Motivations and current success (5.3)
- Physical health changes (5.4)
- Mental and social wellbeing (5.5)
- Funding and support mechanisms (5.6)
- Development and persistent barriers (5.7)

Within this chapter the results of the interviews are displayed and discussed to appropriately report the GFs' expressed opinions in relation to these six themes. Further to this, follow up/return interviews are also discussed towards the end of this Chapter (5.8), regarding the effect of the pandemic, surrounding three main discussion points:

- Communication with older adults in the pandemic
- The health and wellbeing of older adults and facilitators from not being able to attend the CG or CF
- and exacerbating barriers

It is hoped that this provides understanding to the GFs role in improving the health of older adults through their work within GM, whilst also being able to impact on wider platforms such as evidencing for funding applications of case studies and similar projects. Whilst also feeding into future research and policies, with the potential to provide evidence for platforms such as the GM Ageing Hub, Age UK and Social Farms and Gardens, and bring about change for this sector.

### 5.2 Facilitatory relationships and localised power

This theme looks to identify how GFs impact on the success of the projects. Where possible, links are made between these viewpoints provided and the benefits to health and wellbeing that GFs receive because of this interaction alongside the results for

older participants. This section also provides understanding of the impact of locally based action and its consequent impact to communities on a wider level.

### 5.2.1 Locally based people and power

All GFs interviewed across both case studies reported living locally to their respective projects. The participants were asked if proximity to the projects led to any specific advantages or disadvantages, with most GFs interviewed suggesting that they only felt positives arising from living locally, for example, one of the GF's stated that:

*'I have only seen benefits....., I feel more part of a community than anywhere else I have been... there is something about Salford and Manchester that has a stronger identity.'* (G1).

On discussing this further, the GFs all suggested that they felt more included in their local community. In this sense, through being a recognised member of the community that provided volunteer work which benefited the masses. Another GF reflected on a previous employment role:

*'Mainly benefits because of the relationships that you build...I can't think of anything negative, one of the differences in this role is that there isn't emergency calls at nine o'clock at night, saying 'my carrots are dying, can you come and fix them', which is one of the advantages'* (G2).

This indicates the importance of community cohesion, and therefore may impact on the personal wellbeing of GFs, with all suggesting similar opinions to *'feeling part of the community'* (F1), and *'part of something bigger'* (G3). This idea has been expanded by those such as Hicks and Ison (2018) (looking at community energy) and Blake, et al, (2008), who suggest that community-based projects enable a greater sense of inclusion and therefore limiting negative isolation emotions, however there are still barriers to this. While cities are described to be places of exclusion, these groups provide a sense of community and localism, (Power, 2001) the use of localised power and 'third places' such as coffee shops and cafes (for which these GI projects are located around), consequently instigating pride in the local area and this in turn reduces other issues like vandalism (Williams & Hipp, 2019; Chataway & Hart, 2017; Wo, 2014). Still another GF questioned that:

*‘Some might perceive that we [speaking of the GFs] are not local. But then again, if we are local then it also restricts us from doing stuff outside of the area...because we are a local project, we want to give back to the local population’ (G2).*

This quotation suggests that the GFs feel they may be seen as outsiders, as they do not live close to the site in which they work. Therefore, exposing that they feel a strong bond to the local community might not be fully developed and therefore still segregates some from being motivated to attend and access within these projects. They also suggest that this limits the action that can be achieved locally and further afield, as they weigh up the ability to provide regionally without compromising their perception of being a local project. This accentuates that community-based growing projects (farms and gardens) may not significantly allow cohesion on a large scale – as some still feel excluded. This idea of community cohesion is particularly important within deprived communities, as also suggested by Slee and Harnmijer (2017). The authors suggest if these barriers still exist, they can instigate further isolation to communities, in particular members which require this the most, potentially resulting in creation of further barriers, particularly those between GFs and members of the community (Slee and Hammijer, 2017). This results in limiting the success of these projects whilst also failing to supply opportunities for divergent interests and capabilities (Coutard & Rutherford, 2010).

This idea is also furthered by Darling (2014), where they suggest that stigmatisation infringes participation. Ultimately, if GFs are ‘outsiders’ it is likely that the communities surrounding these projects are less likely to be empowered to take part in these projects. This potentially limits the impact on health and wellbeing, as GFs can become less motivated to lead and develop these sessions and therefore communities cannot benefit from the health and wellbeing resulting from attendance, however future work is required to understand this assumption. This links to the work by Macias (2008), who suggests that local agricultural production has a direct effect on communities through providing healthy foods, social inclusion, and knowledge of the natural world. This is also linked to the greater concept of community citizenship, where these urbanised growing spaces can provide vistas for transformative governance on local scales (Ghose & Pettygrove, 2014). The development at local scale provides opportunity for improvement in public awareness and perception of the projects:

*'People are getting to know us and know what we are about...we have a lot of events on and people seem to be getting more and more involved in that...People feel like they are a bigger part of the community too, we go out and make a difference' (F2).*

This proves important as increased involvement is motivated through seeing success, therefore having a knock-on effect at a wider scale (Richards & Dalbey, 2009). This is critical for older generations as it has been studied that healthier ageing in contributed to those that take part in community activities (Strawbridge, et al, 1996). This idea of community cohesion was also highlighted by another GF who suggested it is powerful for this knowledge to be exchanged between GFs and older members of groups as: *'they feel that they are out there doing good in the community' (F3)*. This is particularly useful for health and wellbeing of older participants as academics such as Gruenwald, et al, (2007), having highlighted those positive feelings of usefulness in older adult's consequently impact on shaping health trajectories, specifically making activities easier to preform and being advantageous to mental health.

There was also significant reflection by GFs concerning their ability to impact on a larger scale (beyond localised sites), through educating group members on sustainability, impacting their life through daily changes and through outreach programmes to initiate change in the community. This concept of community tries to initiate a wider influence, one where people are conscious about their impact on the planet, and therefore changing their behaviours to correspond, thus moving towards a utilitarianism approach (Kingsley, et al, 2019). Facilitators suggest that these practices could be used on multiple localised levels to educate and inform those using these projects to agree a sustainable and universal approach to future developments. The GFs indicate that they are enabling progress by developing educational programs to raise awareness of global issues, with one suggesting that:

*'More and more people are conscious of the climate change impact from gardening. But it also is very educational, we teach them more about it, and that pushes them to learn more independently' (G2).*

Demonstrating that the GFs are proactive and educating those participating in the projects, on environmental issues concerning their participation. Other academics

have evidenced this ability for grassroots projects to have a wider scale influence, with Puidueta, et al (2021), suggesting that UA can have a positive influence on galvanising climate awareness through dietary changes (e.g., low carbon options), while Nettle (2016) suggests laying claim to social action and change, consequently encouraging activism. Steele et al (2021) goes further to suggest these can form examples of ‘quiet activism’, where modest acts can accumulate into larger impacts, therefore enabling local adaptation, with accumulative impacts enabling larger scale change. It was alluded from the interviews for this thesis that these educational stimuli were positively affecting participants and GFs as both are mutually benefiting from exchanges (as suggested in Chapter 4). GFs gain the benefit being able to communicate more knowledge to participants, therefore gaining success/reward from transferring knowledge. Whilst participants gain greater understanding of their influence and potential to give back to the local community and see improvements through health and wellbeing by providing opportunities to further research that they've learned.

#### 5.2.2 Local deprivation impact highlighted by GFs

The significance of selecting these case studies highlighted the importance of deprivation and integration of communities (as highlighted earlier in Figure 6, and discussion around Indices of Multiple Deprivation (IMD)). All GFs were asked if their project are located within a deprived neighbourhood to understand if they believed participants health and wellbeing was changed particularly in these localities. Each GF responded that they did feel that the area was significantly deprived, yet this provided a viable opportunity to galvanise communities to ‘*better the area*’, however they lack adequate resources for impact as they: ‘*just don’t get the money in these areas to run many projects*’ (F1).

A variety of barriers were identified by GFs; however, it was suggested that these were particularly problematic within deprived communities. This quote highlights that one of the main barriers for deprived communities was the lack of financial aid, limiting the impact of the projects. Subsequently, GFs often take innovative approaches to ensure that projects succeed, at a risk to the health and wellbeing of GFs as they often spend their own personal money, to ensure that projects have equipment and materials required for continual development:

*'I bring along some stuff from home, I know I should not, but I don't want them to miss out, sometimes it leaves me a bit stuck' (G3).*

This shows that poorly funded projects are being supported by the good will of volunteers and staff to ensure that participants' health is not affected because of the project failure. Many academics continue to suggest that funding is insecure, fragmented, inappropriately structured, and therefore not sufficiently supporting projects (see Jacob & Rocha, 2021; Social Farms & Gardens, 2020; Schoen, Caputo & Blythe, 2020; Crossan, et al, 2015; Vitiello, & Nairn, 2009; Wakefield, et al, 2007). Alongside this, the UK care sector has been in long-term crisis, due to insufficient funding, alongside structural changes resulting from privatisation, exacerbating inequalities, and therefore calling for larger numbers of society to require care (Bayliss & Gideon, 2020), with contribution through further stresses caused by the Covid-19 pandemic. However, NBIs have the potential to play a main role in three policy areas receiving attention at national level: health, climate change and environment and community cohesion/development. Therefore, there is a need for strengthening the economic framework provided for these types of projects, for them to sustainably continue and create impact in the future. This concept will be reflected within other chapters of the thesis, to further explore the impact deprivation has on projects like these.

The lack of projects within deprived areas can be problematic for health, with further impact as these projects are susceptible to closure as illustrated above, and within Chapter 2's discussion on deprivation (see 2.2). Academics such as Ellis, et al, (2007) have suggested the areas with the lowest levels of physical activity are mostly located in northern industrial towns of which both case studies reside. This proves particularly impactful to the current physical and mental wellbeing impacts from these environments, as projects of this nature could provide viable 'green health' opportunities such as improved physical activity levels (Dustin, et al, 2010; Rappe, et al, 2006) alongside reductions in isolation stress and depression (Poey, et al, 2017; Bragg & Atkins, 2016).

Conversely, other GFs suggest that meaningful impact may not be directly related to demographic backgrounds for older adults. GFs suggest that it is more important for older adults to be able have availability and reliability of social support structures, as:

*'When talking about older people, it comes down to family and friend networks rather than the actual environment...In a less deprived area there may be less opportunity for things, so if things do come up then it is more precious, maybe not that there is less opportunity to be involved in' (G1).*

This quote highlights that social interaction plays a large part within health mobility of older adults, with others also having suggested that isolation has a detrimental impact on mental health (Cornwell & Waite, 2009). These projects provide a viable source in which communities can come together to be able to improve local environments whilst also providing a social construct for which communication can occur. While suggesting that they believe that if older adults have a strong friendship/family structure existing, then they may not benefit/require projects such as the case studies – in comparison to other older adults with reduced communication opportunity. This GF provides an insight into how these projects provided vital lifelines for older participants who have lost a social connection to friends or family networks and an opportunity to provide communication on a semi-regular basis. This alludes potential benefits to the GF in the form of volunteering benefits (wellbeing) and providing companionship to the older adult – as previously expressed.

An external GF also suggested that because projects were local it was providing a sense of community cohesion and a chance for localised integration by amalgamating different individuals from varying backgrounds, and therefore impacting on health/wellbeing:

*'Two people from different ethnicities, who would not have normally interacted.... but people feel more at home and able to speak to everyone...so people want to come along and spend longer here, but this toilet allows this' (E1).*

This quotation highlights the importance that this project has given the local community by providing a space in which individuals can come together on a mutually positive collaborative project. The GF also alluded to the idea the older participants are more welcome as new facilities have been included on site (i.e., toilets), therefore adding to the comfort of everyone that takes part and creating a more inclusive environment. This specific concept, and more so designing environments for older adults, has been

developed by a variety of different academics, including Alves, et al, (2008), who suggested that older people do require different facilities to feel comfortable, giving importance to accessing toilets, benches, and a variety of plants. This idea of enabling inclusiveness is explored later within the chapter.

### 5.3 Motivations and current success

This theme discusses the motivations of both participants and GFs for attendance and development of groups towards success. By interviewing GFs, it was possible to extract their opinions regarding the older adults' motivations for attending these groups (reflecting on health and wellbeing), for which individual interviews may not develop. Understanding these motivations is important to consider how they influence the health and wellbeing of the older adults, while also knowing contributing factors that could deter them from attending. Alongside this, the interviews provide a basis for GFs to share their own personal motivations for continuing to assist within these community groups, to understand how their own health and wellbeing is affected.

#### 5.3.1 Older adult motivations seen through facilitator eyes

Firstly, it was identified by GFs that the greatest personal motivation for older adults attending these groups appeared to be for social purposes rather than a desire to grow food or farm, concurring with findings from Chapter 4:

*'They just come for the companionship. It still makes them useful but in a different way. I have found that people do like to get involved across gardening activities though, like once they get into it.'* (G1).

Thus, for communities of older adults, these groups often provide a *'lifeline'* (G1), for which isolated older adults can come together for companionship whilst also making an impact to the local community. This idea has been referenced by other academics including Tse and Linsey (2005) through suggestion that adult groups like these are important for companionship, not only between participants but also between them and the GFs (see others on social power of NBIs: Choppin, 2021; Nettle, 2016; Veen, Bock & van den Berg, 2016; Leck, Upton & Evans, 2015; Elings, 2012; Alaimo, Reischl & Allen, 2010; Sempik & Aldridge, 2006).



These spaces provide a sense of companionship with a GF highlighting how strong the nature of these relationships has been built and therefore the older adults value the strength of these relationships rather than the quantity of social engagements in which they could receive. The creation of these social networks, within gardens or farms, was explained by GF's to be: *'particularly important to 'older old' members'* (expressed GFs from both sites), as their communication networks begin to reduce caused by natural mortality due to ageing. However, these alternative group structures provided an additional friendship circle to prevent loneliness, with others including Pollard, et al, (2019) indicating positives such as sharing food and skills.

Endo (2018) suggests that older adults *'valued their community activities as a process of creating – and changing – their common world through the interaction of individual initiatives...offered an important opportunity for older people to exercise self-determination and be recognised by others in ways that were not always possible in paid work or in the household'* (pg. 1191), therefore suggesting that being a part of community activities provided a sense of *'giving back to the community, remaining useful and able to make a change'* (G2). The *'act of giving back'* was highlighted as a significant motivation for both the older adults and GFs, awarded from the connection with each other and benefits the local community. Therefore, providing a resource of improved mental wellbeing to older adults, whilst also providing a fundamental motivation for taking part. One GF suggested that the older adults obtain rewards from discussing the success of projects and passing on the information to others:

*'Older people take reward from making a difference and being involved in their community... they are proud about doing the gardens'* (G2).

The GF went on to suggest that it is a visual impact to health as the older adult takes pride and ownership from the space, they have created whilst also being perceived as being happier as a result. A sense of worth was also suggested to be important feeling as they have a sense of: *'belonging and being useful. I think everyone needs to be needed in some way to feel relevant and have reason to be here'* (G3). These groups were suggested to provide a sense of companionship, but they also give structure to a population that traditionally have a more flexible week, while giving a specific time in which they would meet others. This view was expressed by multiple GFs, and

conveyed that group meetings were motivating older adults to communicate, alongside being able to access environments:

*'it gives protected time where they know they are seeing people, that really is the reason they come' (G1).*

*'Older people seem to need a structure, they want to know when you're coming, and it has to be regularly, so they have something to look forward too. Some of them won't go in-between these sessions because they won't go and do the garden without you.'* (G3).

These quotations indicate the importance placed on these groups meeting, enabling this population who can be forgotten about, an opportunity to come together for friendship. The connection that these spaces provide was developed by one GF suggesting that they witnessed the older people looking forward to communicating with others that are not deemed to be within their generation:

*'I think the groups I lead, only go out when I turn up. They look forward to having a chat with someone younger and finding out about the world that seems to be happening around them. If you can form a group that can lead themselves between meetings that is obviously more beneficial for the garden. But it seems that these groups just need someone to lead it. But again, they are not striving for an award-winning garden, they are just happy to do something different.'* (G1).

Current literature lacks reporting across older populations, yet it has been explored from the alternative perspective; looking at understanding how younger people feel when communicating with older adults and highlights an importance of integration between generations (Williams, et al, 1996). A sense of dependence was evident within these interviews, as the GFs suggested that those older participants do not necessarily feel able to take part in gardening or farming practices unless the younger GF is present to lead pre-planned/scheduled sessions.

It became evident that older participants within these groups are fiercely independent, however they still require a motivational lead within these groups to ensure gardening and farming activities are constructed to a successful extent within the local area. This

highlights the theory that the older adults are typically stereotyped as dependent on others, which is explored by different academics including Adams-Price and Morse (2009), who suggested that a power balance was at play between younger and older generations. Presenting that GFs, because they are younger than the participants, may be emplacing stigmatisation, as they enable further dependences or view older people as dependant on their service.

It was also discussed by a GF at the CF that older adults were able to gain skills, which provided a purpose and reduced isolation:

*'this project gives people an opportunity to learn a skill, which in theory they could take with them and maybe gain qualifications....it gives them purpose, instead of just sitting around all day' (F2).*

This alludes to the idea the case studies are currently enabling participants to take part in formalised qualifications regarding horticulture and animal care, which examines core knowledge and dissemination abilities. Providing a key understanding that participants can now collect information for their own benefit and gain imperative skills therefore giving back to others, consequently empowering the feeling of usefulness. A GF from the CF suggested that participants are also motivated by learning about the environment that they are working within, with progress made towards specific educational qualifications:

*'For example, all of the group members at the farm will take part in an ASDAN course, so an animal care qualification, and we were intending that by now we would be doing the horticulture version...you can see they feel successful when they get that award' (F1).*

This highlights the divergent approaches between both case studies, the CG had taken a less-formalised approach to educational understanding, whilst the CF case study provides participants with more formalised qualifications. Ultimately, providing this knowledge had been seen to be beneficial to older adult participants as it aids understanding about the work in which they are taking part, limiting their impact to the environment, and motivating people to return for further education – ensuring a greater chance of sustainability. Alongside this, the older adults are said to be *'happier*

*because they can pass the information on, they feel helpful'* (G3), therefore illustrating another motivational factor in attending these activities.

These NBIs were also remarked to be accessible and local. One GF went on to explain that this was important, as it allowed older adults to access spaces even if mobility was an issue, with easier use of equipment for gardening or farming, for example the use of raised beds and similar tools:

*'We have raised beds, they are good, because people can sit at them and they don't have to bend down as far... all made as easy as possible and having a variety of activities is good, to allow people that don't want to go out and get their hands dirty don't have too'* (G3).



Figure 19: Raised bed/planter example (Author, October 2019)

This provided greater motivation for participants with mobility or frailty issues with an opportunity to galvanised and increase the likelihood of returning to the project. The use of raised bed has been explored by academics in the field as such as Kwack, Relf and Rudolph (2005), who looked at providing horticultural activities for older adults with mobility restrictions. They suggest that a variety of different tools including raised beds can provide ease for older adults, with an example from the case study illustrated in Figure 19.

This increased ease when taking part in horticulture activities results in participants more likely to return and thus improve their health subsequently. Moreover, the use of raised bed systems, helps prevent other related concerns, including exposure to harmful soils as compost is typically brought to site, (Kim, et al, 2014), while a liner provides division from underlying soil (EPA, 2011). However, it should also be considered that urban location puts them under other environmental pressures like industry and traffic activities (Voigt, et al, 2015). This pressurises the creation of strategies to enable accessible gardening and farming approaches to be available for those with difficulties related to ageing. Contrasting with the work conducted by Park and Shoemaker (2009) contrasted, as they looked at the risk to health for older adults across horticulture projects, it was suggested that pain within older adults could be

worsened by taking part in these projects, due to incorrect posture, therefore the use of raised beds could provide our solution to address these uncomfortable risks.

#### 5.3.1.1 *The GFs identify factors that reduce motivation/attendance*

When taking part in research the GFs also highlighted demotivating factors such as mobility, weather, and interest in activities, which all in turn would prevent the older adults from gaining the health and wellbeing positives through attending. This section expands on these to further to identify these deterring factors and add to the discussion on how health and wellbeing can be improved through NBIs.

GFs suggested that they need to adapt to changing populations, particularly to assist ageing and in turn ensure success of these projects. To achieve this, one example was given by the CF GF who suggested that mobility and genders (to an extent) of older adults played an important role and diversifying activities available. This enabled the CF to provide less physically intensive activities for those less mobile, while going on to suggest that the group that is most likely to use these activities who are older females, as displayed in Figure 20.

*'we started to be asked to do more and more physical work, and a lot of the females didn't really want to be a part of that and that's fine... so the interest was waning from the females. So that's why, the floristry group started up. But it allows people that don't want to do something as physical to go and do that. They still have an option of the farm, so they'll come across and use it, but they also have the option to sit and arrange the flowers and learn about them.'* (F1).



Figure 20: Diversifying example, including visual of change within the care farm (Author, December 2019)

This ultimately highlights those older adults included in this study are interested in gardening or farming practices; however, these community projects must enable

change and adapt to mobility and health conditions to ensure people are still motivated to attend and ultimately gain both health and mental wellbeing impacts as a result.

An external GF suggested the desire to give back can also negatively affect mental health and social wellbeing of participants, particularly if personal mobility does not meet personal capacity expectations – leading to frustration. This becomes clearer in the following quotation:

*'He [older man] stood on a nail, and it had got infected...he felt that he could not come to the project... I think the older people like [name], feel more ok, if it's a mixed environment. Because they can feel useful putting out biscuits of stuff for people. But if everyone is their age, with some people digging and they are not, then they feel a bit like they have too' (E1).*

Developing the idea, the older participants have an increased likelihood of dealing with conditions that affect daily living (e.g., longer recoveries, arthritis), which leads to frustration on an element of embarrassment if they're not able to keep up with others of a similar age. This impression of embarrassment within social settings has been explored through studies looking at shame and guilt, such as those conducted by Brackbill & Kitch (1991), who suggest that inter-generational work also presents *'relational conflict and emotional strain, including resentment or anger, depression, guilt, and a decline in self-esteem'* (pg.78), conforming to the view discussed above. The availability of literature specifically focused on older adults' inter-relationships is not forthcoming across community-based interactions. However, opinions can be drawn from literature based around the concept of age-related carer and patient relationships, with examples such as Sharkey and Sharkey (2012), suggesting that guilt surrounding physical and mental incapacity could be alleviated with alternative care services (i.e., in the case of Sharkey and Sharkey the use of robotics could award care, while reducing human contact, comparatively community care such as growing/farming would benefit both carer and recipient).

Motivation within older participants was also slightly problematic across non-growing seasons, by which outdoor work ceases and alternative indoor work must commence, or groups do not meet until the following growing season. Environmental conditions, including weather, also made an impact on the motivation of older adults specifically.

It was suggested that there were higher return rates when the weather was more pleasant:

*'We'd have more people if the weather was nicer, but obviously I can't affect that. There are some that if it looks a little grey outside, they will refuse to go outside to do anything.'* (G1).

The impact of weather is significant for the older adults as this can affect the health and wellbeing of those involved, for example physical activity levels can reduce because of an inability to access outside environments and therefore have a consequence on a variety of health conditions. This has been researched by a variety of academics across the globe including Brandon et al, (2009), who suggests that physical activity levels of older adults were affected by summer weather variables. Less research has been followed by others to investigate fluctuations in all year-round weather and its impact on ability and participation within older adults. However, Clarke (2015) highlighted those participants are less likely to leave home and/or attend volunteering groups because of bad weather. This is particularly important across autumn and winter months as it could significantly impact on social isolation, causing health and wellbeing declines including isolation related conditions and mortality levels within older adult cohorts.

It is also becoming increasingly challenging to accurately predict the pattern of weather, which is set to increase due to climate change. An increased likelihood to experiencing extreme events which affect sectors such as health, transport, agriculture, and energy (Hanlon, et al, 2021), with older adults included in this thesis choosing to stay indoors or not attend the case studies in the circumstances of poor weather. Therefore, further work should contribute to understand how climate change and the induced extreme weather events can be accommodated and mitigated, including how these GI projects can assist with easing the implications of climate change (Clarke, et al, 2018), and the appropriate opportunities to keep older adults engaged safely in these uncertain times, alongside planning resilient strategies for future impacts. Moreover Curtis, et al (2017) states that the *'impact of these changes on population health and health care systems will depend in part on adaptation to these changes'* (pg. 28). However, there is a limited understanding regarding further influences of seasonality on older adults specifically due to community based growing



projects therefore highlighting another area in which research could be expanded. GFs are already aware of motivation changes in cooler months, and have made viable propositions to overcome this, primarily by providing alternative indoor activities such as environmental crafting, as evidenced in Figure 21.



Figure 21: Crafting quotation and examples of crafting activities (photography by author, December 2019)

Accordingly providing sessions for older adults throughout the year and enabling preventatives for motivations to decline. This was remarked to be positively functioning as GFs suggested that they were able to identify that more participants continued to come to CG and or CFs because of continual group meetings, in comparison to years previous with limited meetings outside the growing season. When asked a GF from the CF suggested that seasonality did not significantly impact the motivations and numbers of those attending as they reflected on comparison to the gardening group, shown in Figure 22.



'I'm not sure seasonality overly impacts us, because the animals are here all the time. So, when the gardens aren't here then they have the animals....like the run up to Christmas, people get involved in the Christmas plants, the theatre production and other Christmas events, so they are always doing something. There is never nothing to do, I can't remember a time where there wasn't something to be doing' (F1).



Figure 22: Seasonality at care farm (photography by author, December 2019)

This distinguishes differences between CGs and CFs, as the gardening projects tend to take alternative approaches indoors, looking towards environmental crafts (Kingsley, Foenander, & Bailey, 2019; Kingsley, et al, 2019) and are constrained to the breadth of activities on offer. Yet the CF still works on a caring capacity outdoors with animals (Moruzzo, et al, 2019), potentially impacting on health and wellbeing of participants consequently. Caring relationships are consequently conducted on contrasting populations outside growing season, as CG groups focus on crafting and socialised caring. While the farming group focus on animal interaction, which both will provide positive effects for health and wellbeing of participants (Gorman, 2017). Ultimately this identifies that both projects have made a consecutive effort to ensure motivation to attend are appropriate and stabilised throughout the year.

Opportunities must be presented in ways that will motivate those to continue attending, therefore illustrating the requirement of personalised care, to keep people benefiting from their interactions with nature, being able to work to the capacity they are capable of, rather than resenting the activity or those leading the sessions. While seasonality and the specifics of locating projects within build up areas exposes novel barriers to its development – for which pragmatic solutions need to available, to ensure these GI projects are sustainable and prove viable in the fight against climate change.

### 5.3.2 Facilitators' personal motivations

GF interviews highlighted that the main reason behind leading and developing these sessions for older adults was to give back to the community by making the local area more cohesive and a nicer place to live, as identified in the previous section. Similar opinions were held by staff at both the CG and CF. It is important to capture the GFs motivations for taking part as their desire to lead sessions is important to acknowledge, understand and be able to build on for future projects. Their resultant consequent health benefits from leading these sessions can also influence the populations taking part. Therefore, to holistically understand the older adult's health and wellbeing impacts, it is also valuable to understand the health impacts from those providing the activities. GFs suggested that they led these activities to motivate and benefit older adults. It was established within the interviews that facilitators did not automatically make the link between these activities and the impact to the older adults physical and mental health, until being asked questions in the interview. This will be discussed later within this section to develop an understanding of current data collection practices involved across the case studies.

Throughout the interviews GFs suggested that they gained personally from motivating older adults to take part. It was suggested by one that their mental health improved because of attending the projects and helping others, with an example of these interactions seen in Figure 23.

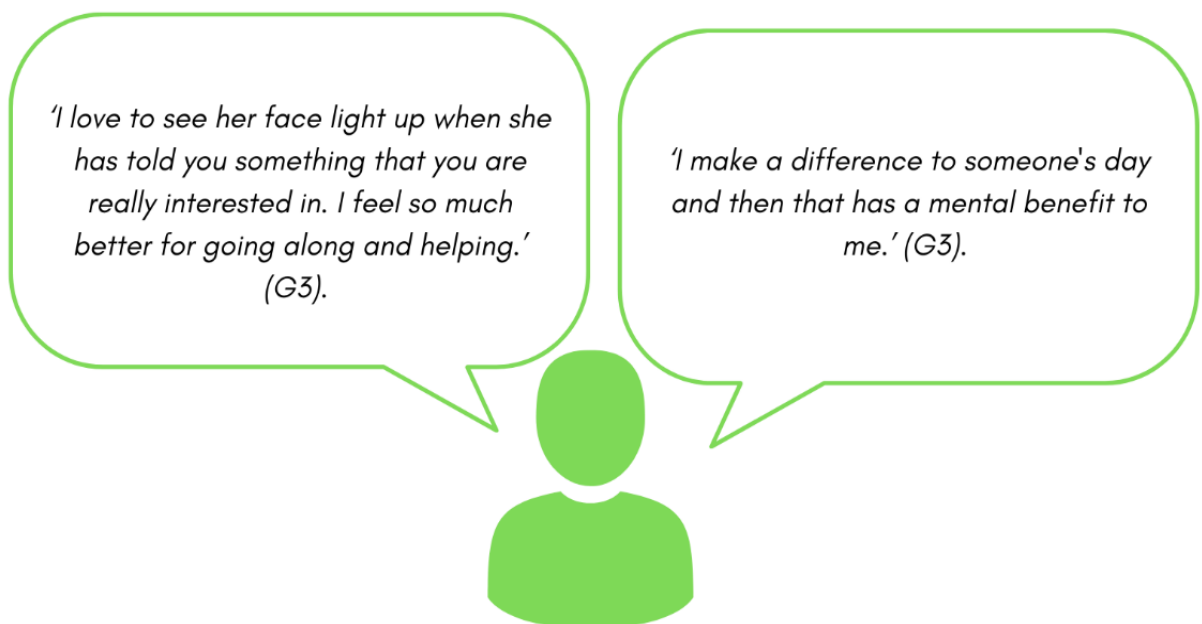


Figure 23: GF impact on participant in photograph (Author, August 2019)

This idea was also shared by another as they suggested that they make participants aware that they have improved their health through leading these sessions:

*'They know they are my motivation. And that's positive for them, I like them to think that they are there to help me, not just me there to help them'* (F3).

This is important as it illustrates that GFs connected their own personal wellbeing with their role in leading groups (whether volunteering/paid), therefore conveying that GFs are aware that these projects have an individual impact on themselves. This makes it more likely they remain motivated to continue these sessions and further advance inclusion of other older adults. Participant studies have been conducted on a wider scale looking at volunteering and its effects on health, with the majority including that was published by Yeung, et al, (2018) suggesting significant positive impacts benefiting health.

GFs at the CG site suggested that they were more motivated to continue leadership as it was required by projects to continue to be successful as implied by the previous section, 5.3.1. GFs suggested that some groups would not meet until GFs were present therefore stalling potential development of sites particularly growth of vegetation and flowers:

*'So, I think for the sake of the garden, knowing what has been done, helps to know what's growing where, gives continuity of what should be growing...I think they would be disappointed in not growing and then they may lose interest in gardening'* (G1).

This emphasises that to be able to produce the desired outcome, at a CG, there must be a leader of the group to establish how development will happen on site, whether that be a GF or an older person that assumes a leadership role. In the case of CG group this tends to fall to a GF (except for one other member that acts as co-lead). In comparison, facilitators at the farm suggested that they also need a leader to understand what needs to be done and what should be done in the future:

*'You need someone that leads, to know what should be done next, we only have a small area, whether that is someone with the title of group leader or not. If*

*they don't have someone to plan it, then they'd just be redoing what others had done' (F2).*

This highlighted that both case studies have similar viewpoints regarding management and motivation regarding the groups that participate on site to ensure success in the long term. Ultimately, GFs from both case studies suggested that they wanted to reach out further and benefit the local community. A GF from the CG wished to take the project forward and introduce further sustainable practices to ensure the older adults fully understood the impact that they had on the wider environment, and not solely restricted to the garden. In this sense, they explained that:

*'It seems like people see the projects as extended attachments to buildings, and therefore are owned by the building inhabitants, but that's not the case. I would like the community to feel ownership, potentially expanding into other environmental areas, like litter picking, taking responsibility for our section of society, and taking pride of the places that we live in.... Because obviously if we are putting in that effort, we want it to be maintained, which is important considering the age of the people in the groups. They want something for the community to remember them for' (G3).*

Further to this a GF from the CF case study suggested that further understanding of environmental consequences would be provided to participants in the future through *'recycling programs and cookery classes'* (F3), to enable participants to identify the globalised impact from pollutants (e.g., fertilisers) and closed loop economies (e.g., recycling materials for reuse in groups); potentially enabling this formal qualification to act as an incentive to entice more participants in the future. As discussed earlier, these groups can engage with those taking part in the activities, making a change to their lifestyles, bridging the gap between formal and informal education (Datta, 2016), with those at the case studies being rewarded with a recognised farming or horticulture qualification. However, by educating them on these matters they also have the ability pass on pro-environmental behaviours and accumulate a larger influence on the local area, through citizen participation and education of future generations (see Luetz & Beaumont, 2019; Looy, 2015; Guitart, Pickering & Byrne, 2014; Henderson & Hartsfield, 2009) alongside the wider ecological impact on the planet (see Kingsley, et

al, 2021; Mancebo, 2018; Krishnan, et al, 2016; Specht, et al, 2014; Hess & Winner, 2007).

### 5.3.3 Facilitators impact on evidence and measurability

GFs from both case studies were seen to be highly motivated to continue leading sessions to enable success. However, both sites suggested that they had not significantly measured participant benefits to health or wellbeing, with one suggesting that after the interview they would *'be more inclined to ask questions about how it changes their health'* (G3).

GFs were asked within their interviews to suggest how long they believe it takes for older adults to see benefits coming from attending these projects. It was found that facilitators from CG and CF groups both acknowledge that this was very difficult to quantify, and it was suggested that everyone has a different approach to the projects and therefore success is on an individual scale and cannot be generalisable to an extent. This can be evidenced in the following Figure 24, detailing remarks from two GFs from different case studies.



Figure 24: GF views on success within participants

Again, both quotations emphasise that GFs are aware that there are benefits gained from attending these projects. However, they are unsure to what extent people receive

benefits and how quickly benefits can be reaped, as they themselves are not able to monitor the changes of participants. Facilitators are restricted by time and resources; therefore, their focus is paid to delivering sessions, providing a rationale to research further regarding the nature in which health and wellbeing benefits can be derived and within the field of exposure to or 'environmental dosage' (Cox, et al, 2017), as Chapter 4 has contributed.

When discussing measurability, the extent to which the outcomes of health and wellbeing are measurable, it became apparent that this was thought to be very difficult:

*'it's incredibly hard to understand the change because you're only seeing them at meetings, so we don't see how much they are improving compared to the amount they are deteriorating in everyday life.'* (G1).

GFs were aware of changes within participants, however, found it difficult to track these consequences of attending the projects, with others commenting on similar (such as Arvidson, 2009; Pollock and Whitelaw, 2005). Difficulty tracking this population is often expressed through links to cognitive decline for which this thesis does not fully expand on this area of research due to the ethical challenges in working with this more vulnerable population. Rather, this research takes an approach to engage with those who can supply consent, while future research could expand the visibility of those living with conditions to further comprehend the relationship between nature and the health of older adults. Nevertheless, when developing this idea with the GF, it became clear that facilitators are aware that age related diseases do play an important role within health and wellbeing of participants. The GF suggest that these community activities can provide an outlet for which their health can be improved, *'even if the garden only allows them to have the ability to remember for a short time, but for some, you can see it fires off a little memory from a while back, and that makes them happy'* (G3). Other academics have explored this area including Ward, et al, (2018), where social environments are suggested to provide opportunities to people with dementia, including community groups. However, Mapes et al, (2011 & 2016) argues that there are key gaps in the current evidence-based pertaining to dementia care within green settings, particularly across community space design, therefore calling for more support across planning for neighbourhoods' effectiveness for positive living (Morton, et al, 2021), again strengthening that more research is ultimately needed.

Facilitators went on to express the numerous external barriers that made measuring changes to participants health difficult. This included participants self-reporting to others regarding health status:

*'They've been a different person when they come along, they forget, or it doesn't bother them. Literally there is a change immediately with some people. We have had family members, that come in because they haven't believed that they are different when they are here too. Sometimes they can't believe the difference that they've had' (F1).*

Again, they are acknowledging the benefits that come from attending projects, however GFs have highlighted participants attending these projects may not fully comprehend the changes that has to their health and wellbeing. Therefore, recognising the hidden element that may not have been captured whilst conducting an individual interview with the older adult participants for this research study. This quotation also highlights that measuring change can affect the participants behaviours, with this theory having been discussed by numerous academics including White, et al, (2019), who examined self-reported health because of spending time in nature. Throughout using self-reporting methodologies, it enables a greater understanding of phenomena, however it should be noted that it is open to individual interpretation.

The GFs later suggested there was a barrier related particularly to collecting some data within older generations. When probing it became evident that older adults are perceived to be more concerned about giving personal information:

*'It's really difficult to measure changes, especially within this generation [older] as they are afraid to give you information, it's the way they were brought up. But I would say they do look happier within minutes' (G1).*

Ultimately, this indicates that it's perceived to be difficult to measure the older population because of vulnerability (e.g., information scams) and lack of understanding regarding storage of personal information through technology, alongside knowledge of where information will be disseminated. Another GF went on to give example conversations held with older people; *'they worry where information ends up...they see*

*others being scammed and don't trust it'* and then went on to reflect on their own experience:

*'I am younger than them, but you hear about all these scams, people losing money, and it make you cautious about opening up to people'* (G3).

In this sense, this presents challenges for these organisations to track personal changes over a period as personal details would be required for comprehensive follow up of individuals. It was discussed with GFs to understand if it would be possible for them to measure health/wellbeing changes with participants without the requirement of personal information, however they all suggested that they would not have time to do so, as they must dedicate time to deliver sessions, making it impossible for the GF to track changes.

Another alternative would be to employ an external party to track these changes, yet this also increases barriers specifically with older generations, due to the barriers identified above, with Floyd and Arthur (2012) suggesting issues around building rapport, ethical ramifications, and anonymity. Therefore, these interviews with GFs have ultimately enabled a greater understanding from a 'bystander/gatekeeper' viewpoint regarding the change and health and will be of this older population whilst also providing a link into older adult groups to enable involvement in activities and trust building (Corra & Willer, 2002). The interviews with the GFs have provided a valuable source of information regarding the generation's barriers to data collection.

#### 5.4 Physical health changes

This section explicates the GFs acknowledgment of physical changes that occurred to the health of the older adults attending these groups. The interviews revealed that physical health improvements were observed within this population, however the GF's remarked that they '*hadn't really thought of it*' (G1) before being asked for this research. This section looks to expand on the differences between the CG and CF groups to evaluate how each impacts their population health in different ways.

##### 5.4.1 Physical mobility

It has been well documented that populations are more physically active if they partake in gardening, irrespective of age (Hermann, et al, 2013; van den Berg, et al, 2010). Park, et al, (2008), and van den Berg, et al, (2010) have specifically identified that older



gardeners within the United States are able to meet weekly physical activity guidelines through this type of activity. Similarly, GFs illustrated the impact NBIs had on the physical exertion imposed through attendance, with an example shown in Figure 25.



Figure 25: Physical movement quote and photographic example of work (Author, July 2019)

This highlights that gardening GFs understood that these activities have a physical impact on health of participants, however it should be noted that due to the activities required between the CF and CG, there is less intensive manual labour required at the CG and as such physical effects are less pronounced. Other gardening GFs disclosed a similar opinion and is shown in Table 10.

Table 10: Overview of physical impacts from GFs

Quotation	Explanation
<p><i>'physical improvements across all the people that take part in the farm, they are 100 times better from being out and doing the farm. People do feel fitter, and they will say that to you. They come up and say that they are losing weight, and you can see that visibly on them. They just look slimmer'</i> (F2).</p>	<p>This indicates that the GF feels that physical activity has a physical impact to the body of those taking part including weight loss. Investigation of weight loss within farming settings is not as widely published compared to gardening settings, however Coombes, et al, (2010) Lopez and Hynes, (2006); Vreke et al, (2006); Lewis (1996), suggest that obesity and weight related conditions (physical: heart disease, cancers, stroke, and mental: depression, anxiety, etc) are increased by lack of access to natural environments, therefore conforming to this theory.</p>
<p><i>'the physical benefits are almost immediate with people that take part in the farm. For example, weight loss, fitness and of course that makes people feel better about themselves. But then socially they are more confident too'</i> (F1).</p>	<p>The farming facility suggested that physical benefits and are advantageous to mental health. The statement highlights that both physical and mental health are connected for these participants and therefore a conglomerate effect has been witnessed by facilitators.</p>
<p><i>'people were coming back to me saying that they had lost weight because of taking part. We have a lovely Jamaican lady, and she would say 'look at me now, don't I look wonderful', and then wiggle her hips and things'</i> (E1).</p>	<p>Again, when speaking to an external GF the idea about interrelationship between physical and mental health was highlighted again when they suggested that physical exercise provided within the groups made an impact to body weight as well as perceived image. This idea of weight change through physical exercise and mental positivity has been explored by academics such as Mikkelsen, et al, (2017), yet to date there has not been a link made between physical exercise at community-based projects.</p>

Another significant factor reflected by both case study GFs revealed the impact that these activities had on the management of pain. It is suggested that the likelihood of dealing with a variety of health conditions increases with age (Cronin, et al, 2013), for example, risk of arthritis increases because of the ageing process (Serhal, et al, 2020). Conditions, increasing in older age, may induce greater amounts of pain, however, some question this and suggest older adults pain prevalence decreases with age. For example, Dionne, et al, (2006), research casts doubt on whether back pain is affected, which could be related to the use of gardening and farming activities due to mobility required for particular tasks. Conveying that these therapeutic activities could provide physical exercise in a relaxed manner, where participants could work until they reach their pain limit.

Accounts given by GFs at both projects illustrate that facilitators have witnessed the older adults less visibly in pain than in their 'normal life', as shown in Figure 26.

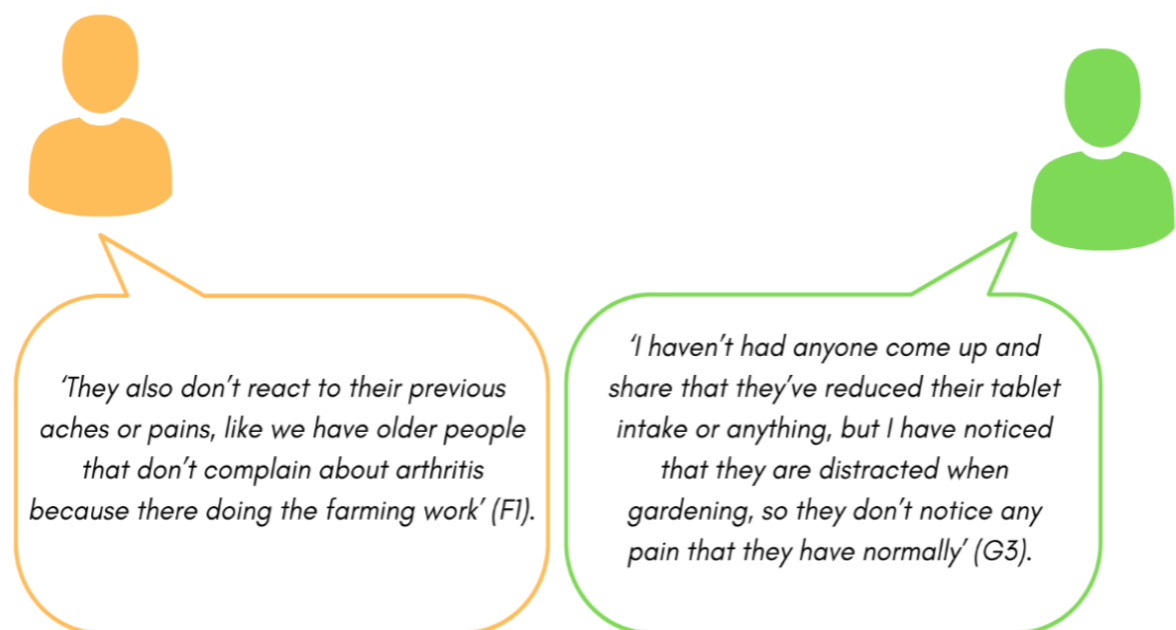


Figure 26: Pain management of older participants

This GF has illustrated pain management, specifically of arthritis, and suggested that these projects are a viable opportunity to deviate some time/minds from being consumed by pain. This is important as cases are continually growing globally and affecting all ages. This concept suggested by the GF, of using these spaces to improve health conditions such as arthritis, also adheres to suggestions by Public Health England, who suggest greater reductions in obesity and inactivity could assist with tackling painful attacks of osteoarthritis (Arthritis Research & Public Health, n.d.).

Another GF suggested that there are negatives regarding being physically active outdoors within these urban areas, as the quality of environments somewhat limits the overall benefits felt:

*'For physical health, you've obviously got, you know the activity itself, you know there is nothing better than being outdoors in the fresh air. That's debateable though, in Salford, with all the emissions. But it's getting us out there and getting us moving. They do look a lot fitter once they've been a few times' (G3).*

This GF went on to discuss the idea of harmful emissions in the local area and suggested that older adults were aware of this issue and have discussed it with them previously. The GF went on to say:

*'They are aware of the pollution; they say they can taste and smell it. Sometimes it puts them off working outside' (G3).*

This GF suggests that older adults could be put off working within these projects due to environmental factors such as air or traffic pollution. GFs and CGs tend to be small in size, limiting the numbers of people that can access, alongside the effect that these issues have, and no GFs at the farm discussed the idea of air pollution however they did suggest that this project was located within a built-up area therefore *'they are more worried about traffic'* (F1) and its consequent impact to participants health. They suggested that older participants were more conscious of their surroundings, increased potential for traffic accidents and anxiety directed towards mobility issues (i.e., crossing the road). It was alluded within this interview that participants could feel uneasy regarding making a community-based impact in comparison to taking part in activities within the ring-fenced project.

GFs also suggested that their own physical health was changed because of leading these projects. It was suggested by a gardening GF that they felt: *'thinner and confident because they had lost weight attending these projects'* (G3). Correlation between an external GF is possible, as they also suggested that their physical health had improved because of beginning these sessions, through identifying their physical health was not of an appropriate level to carry out required tasks:

*'I wasn't massively healthy, and I could see that when I started digging for a couple of hours. I was completely exhausted. I do think it has helped my physical wellbeing and mental wellbeing. It's the same with the girl I was talking about. Most people are happy to come down and get stuck in working, instead of going to the gym and spending money on that'* (E2).

Again, highlighting those physical activities at these spaces ultimately impact the physical health of all concerned – a concept covered in Chapter 4, and expanded within latter chapters of the thesis. It also suggests that nature projects such as this could provide valuable opportunities to be physically active without the requirement for indoor gyms and therefore providing an economic saving for those partaking in alternative paid workouts. Therefore, this section has enabled a link to be made between physical and mental health consequently, through discussion of influence made to older adult human health, alongside those that set up or facilitate site activities.

#### 5.4.2 Dietary impact

The EAT-Lancet report recommended that consumption of fruit and vegetables needed to double to achieve optimal diets for planetary and human health (Willett, et al, 2019). Highlighting the critical need of generation of produce, with one opportunity existing in the form of UA, such as sites discussed in this thesis. There is increased attention being paid to the contribution that local UA can pay on diet quality, with Mead et al (2021b) suggesting *'that greater proximity to and engagement with UA is associated with greater perceived access to fruits and vegetables, health and ethical-related food choice motivations, nature connectedness'* (pg. 5).

The physical health of participants in this thesis concurs with the findings of previous academics, suggesting that diets change as direct consequence of attending similar projects, with the older adults extending this from the change to physical health. The diet is important for all aspects of life, across the lifespan, yet crucially the diet becomes more important in older populations due to their increased vulnerability to malnutrition (WHO, 2017). The importance of a balanced diet, alongside lifestyle factors and maintenance of a healthy body weight are crucial for healthy ageing (Robinson, 2018). Leslie and Hankey (2015) suggest that *'Ageing is accompanied by many changes that can make it more difficult for nutritional needs to be met'* (pg. 649), they go on to include a range of factors including physiological changes (e.g., hormonal), reduced energy

expenditure (reduced physical activity) and pathological changes (combining medical, social, and psychological circumstances).

Yet GFs across both projects suggested that older adults tended to favour healthier options, and desired to produce their own fruit and vegetables while being educated on environmental impacts of farming/horticulture. The significance of dietary intake was highlighted by a GF who suggested that older adults were trying to improve access to food grown locally:

*‘If groups are moving towards being more self-sustaining, by creating their own produce they will obviously end up eating better too – so a dietary benefit also’ (G3).*

This is particularly important for the current generation of older adults as one GF commented on a particular member of the group:

*‘He lost his wife, and he could not cook. They’re of a generation that didn’t cook if you were a man, that was the wife’s job. So, he ended up just having microwavable meals’ (G2).*

The conversation highlighted that this member had reduced motivation to eat fresh fruit or vegetables and therefore relied on convenience foods, consequently impacting on physical health. Stressing how historic gender conforming roles (female dominated cooking roles), has enlightened in this case, a male orientated inability to have skills to prepare food for themselves (Calasanti, 2010). Obviously other support mechanisms are in place, including Men in Sheds, which is a movement that gives place to pursue practical interests in leisure through making and mending, however these activities are often competing for the same funding as those in the green sector (i.e., funding streams: community regeneration projects, development funds), therefore causing a trade-off between resources (Men’s Sheds Association, 2020). It should be considered that this is not generalising the concept across the gender yet provides an aspect that can be further researched with this current generation. Portraying the effect that this may reduce over time because of positive blended genderism and reduced gender-based stereotypes/roles. The GF went on to say:

*'Now he has more motivation to cook the fruit and veg that he makes at the project. He knows it's his and he is proud of it. He doesn't cook all of the time, because when you're on your own you lose the motivation to do it, but he definitely eats a lot more than he did' (G3).*

This highlighted a key issue faced by older adults and, as mortality increases with age so does isolation, therefore motivation to eat healthier lives to lead healthier lifestyles is diminished (Hansen, 2019; Pilgrim et al, 2015). This exemplified a potential opportunity in which older adults can become involved within community growing groups for the benefit of their physical health through improving diets. This idea was considered by the external GF who also agreed that growing fruit and vegetables on site did make a significant impact to older adults specifically:

*'Eating the food, and then that gets them more interested in eating more fruit and veg. And then thinking about recipes, so we linked it in with cookery days. Older people were the ones most inspired. They went home and researched international dishes to cook with what they have grown. So, they ended up learning about places and people that they didn't have the opportunity to when growing up' (E1).*

This empowered the external GF to understand more about the older adult's relationship with food and ultimately, provided understanding that grew to motivate them to change food behaviours, and learn about other cultures, leading on from the earlier discussions. This GF made a connection to potential older age deprivation as it was suggested by them that by growing this food, they were able to save money from purchasing at supermarkets: *'they are able to make a saving in buying, but also eating healthier'* (G2). This is particularly important for these older adults as financial worries are known to be problematic for this generation as suggested by Litwin and Meir (2013). Where financial distress can impact on life satisfaction, and in turn, both physical and mental health particularly through depression and anxiety related disorders (Borg, et al, 2006). While the use of UA can provide an opportunity for communities to connect with nature, reduce food miles, access local fresh produce, and in turn add value to existing diets, therefore assisting with food insecurity. However, the movement still lacks scale and capacity, with reliance on traditional agriculture still needed to ensure supply (Artmann & Sartison, 2018; Hardman, 2016).

### 5.4.3 Inclusion of gender roles, frailty, or physical disability

The GF interviews illustrated their great passion to understand how older adults can be more included within society today. It also highlighted that GFs had conversations with participants who were concerned that there was stigma attached to old age, particularly with younger members taking over tasks and suggesting the older participants could not take part in physical activities due to their age. This was discussed at great length with one GF suggesting:

*‘They tell you to back off and let them do it. They won’t have anyone babying them. They do as much physical work as they can do, but then they still have the leaders to ask for help if they need it’ (G3).*

The idea of age stereotypes and stigma has been developed by Chasteen and Cary (2015), who suggest that ageism is present in a variety of different forms on a regular basis however older adults have developed several coping strategies to be able to overcome stereotypes. The quotation illustrates that GFs are aware that older participants are independently able to complete tasks both at garden and farming situations and adapt to the physical health required by each participant. This therefore ensures that each older adult can enjoy the activities that they take part in but also, GFs are present to assist in any physical tasks that might be too strenuous to complete, therefore trying to enable inclusion of all strengths and abilities.

Possible exclusion was highlighted when being asking GFs around physical activity as they suggested that abilities, mobility, and perceptions around gender-based roles could often influence participation, with examples shown in Figure 27.

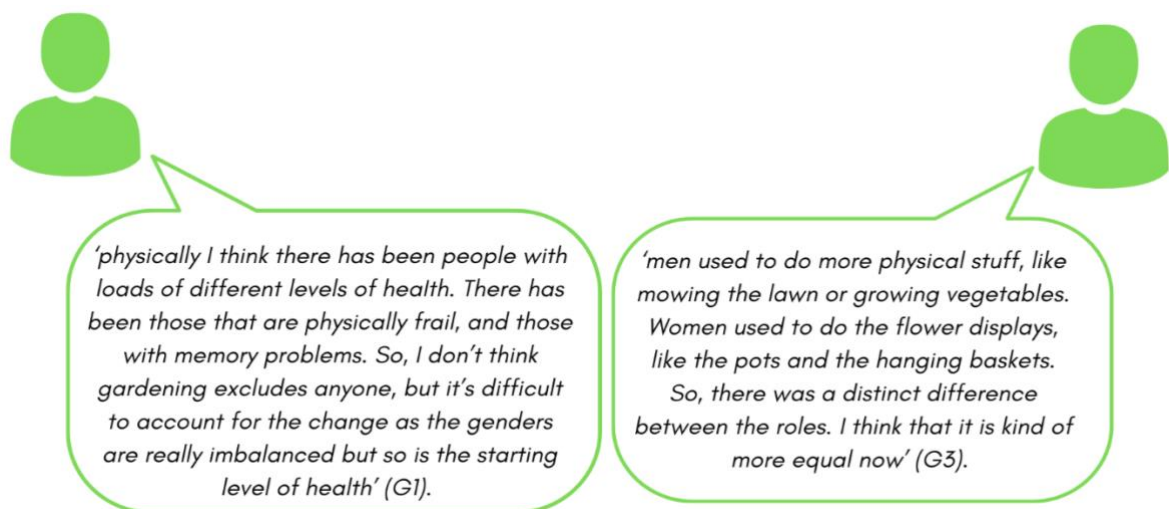


Figure 27: Gender based roles within activities



The facilitator described how gender historically impacted on the gardening and farming tasks likely to be undertaken by the older adults whilst at the projects. They then went on to discuss how they believe these roles make the participants more included within society:

*'I think now, the older people also do it to make the families feel better, especially after the loved one has died. They join the groups to show the families that they don't have to worry about them, they're still doing something and getting on with it (G3).*

This portrays that the older adults take part in activities to feel included within the group but also alleviate family's anxieties regarding their older individuals' possible exclusion from the local area. This was built upon through discussion on these groups providing 'a safe space' (F2) or 'introduction to the community' (G3), therefore giving an initial project for older adults to come together, communicate and find other alternative opportunities to improve their physical health. Examples were given by GFs by suggesting that the older adults would be able to come to the CGs or CFs projects, gain physical and mental benefits from accessing them and then create a network in which they were able to seek alternative activities to further enhance their health/wellbeing together, with suggestion that people 'come here [the farm] and make friends, then they're out on the weekends doing even more activities together that make them more physically fit.' (F2). Providing a sense of friendship/companionship between group members and enabling a greater cohesion/use of community resources consequently (also previously signposted within Chapter 2). GFs were aware that older adults were seeking alternative activities to take part in this was previously identified, and diversification of the CF site was discussed to enable people to take part in activities that suited their interests (e.g., animals, flower arranging). While CGs have been afforded the ability to integrate into urban areas easily, the same cannot be said for CFs, with many situated within areas that the most deprived communities will be unable to attend, due to a lack of transport or other issues (e.g., mobility, cost) (Mitchell, et al, 2021). This diversification of spaces illustrates that GFs are empowered to find alternative opportunities depending on older adults' interests as well as physical abilities, however further consideration should be paid to the placement of these spaces, to ensure all that require them have equal opportunities to access them.

## 5.5 Mental health and social wellbeing

This section reports the GFs viewpoints relating to mental health and social wellbeing, which was discussed at length within interviews and ultimately is (in)directly related to concepts already been discussed. This section is divided into five main subthemes, to ensure clarity throughout. The subthemes span concepts such as cohesion, isolation, visual changes contributed by changes to mental health. Alongside looking at how older adult's mental health changes over time accessing projects.

Mental health is significantly important, with the WHO stating that it '*is an integral and essential component of health*' (2016). It can be said that mental health is imperative for healthy ageing, as it is considered that it can be an important cause in morbidity and mortality (Rao & Shaji, 2007). The NHS Mental Health Task Force (2016) suggest that '*One in four adults experiences at least one diagnosable mental health problem in any given year*' (pg.4), whilst stressing that anyone can be impacted.

Poor mental health can result in consequences to health, including '*people with severe, prolonged mental illnesses are at risk of dying on average 15 to 20 years earlier than other people*' (NHS Mental Health Task Force, 2016, pg.6), with '*One in five older people living in the community...affected by depression*' (pg. 7). This negative mental health impacts on people in a variety of ways, such as increased likelihood of cardiovascular events such as strokes and heart attacks (Dregan, et al, 2020) alongside being less likely to recover from being diagnosed with cancer (Batty, et al, 2017). While Bennett, (1998) highlighted specific concerns with ageing mental health such as widowhood; impacting on the remaining spouse, both mentally and physically (e.g., having to learn skills in the absence of the partner).

### 5.5.1 Isolation, socialisation, and community cohesion

The social capacity that spaces such as CFs and CGs provide to society is widely advocated by academics in the field, as suggested in the literature review (Chapter 2). With examples such as Suto et al (2021) evidencing CGs as places that develop a sense of belonging, socialisation, and optimism, while Moruzzo et al (2019) articulates CFs provide opportunities to establish relationships, and personal skills. Socialisation and community cohesion were a key area developed as a discussion point by all GFs and all identified it to be the crux of project success and motivation for people attending these activities, as discussed previously. Initially, one of the GFs for this thesis,

suggested that the largest motivation for older participants attending these groups was for socialisation purposes:

*'This gives them the chance to have a chat with someone else, and build relationships with others in the group, whilst getting outside and doing some gardening. But I do think the most valuable thing they get is the socialising bit, they are not really interested in the garden by the end. They just want to sit and talk' (G1).*

This highlights that one of the main motivations for the majority attending these projects is not specifically because of a desire to garden or farm but to have time with others that would like to communicate (Scott, Masser & Panchal, 2020; Kingsley, et al, 2019; Ong, et al, 2019). This provides a theory that members attending the project gain mental and wellbeing improvements because of attending these projects – a theory also suggested by the older adults in Chapter 4.

A GF from the CF suggests that socialisation accumulates into a wider scale impact as people continue to work together to benefit both themselves, the project, and the local community. This is evidenced within the following quotation: *'everything that we do is based on teamwork, so whatever is done then you are depending on other people, so each member of the team has a job and has to supply the stuff for you to do your bit (F1).* This opinion has been discussed in a different environment by Parkinson, Lowe and Vecsey (2011) who suggested that inpatients on mental health wards undertaking horticulture programmes benefited from teamwork and ultimately catered for both individual interest and socialisation. This was also observed by another case study GF who suggested that these groups could provide a social support network in which their mental and physical health are improved through friendships made:

*'The group have a tight friendship, they can talk to each other about their worries, especially health ones. They talk and then help each other through rough patches' (G3).*

This suggests that people attending the groups amalgamate together to be able to come through difficult personal periods and therefore do not feel as isolated as a consequence. This leader goes on to suggest that teamwork enables better mental

capacity as individuals' anxieties are shared, and unpicked, potentially preventing depression and further advancements of detrimental health, as people feel empowered and more confident to access further health treatments if required due to conversations within the group. The community mentality of GCs and CFs proved positive, and one which should be encouraged and supported, while other models of connecting to nature exist, which include the use of conventional allotments, this is portrayed as revolving around an individualistic model. These traditional means of UA do not base themselves around community and therefore communication is limited, therefore leading to further societal fragmentation. However, the community model could also be considered to have negatives, as these worries could accumulate due to sharing personal information and concerns as participants may become overwhelmed with information from friends within the group. Therefore, it should be considered '*that a problem shared is not always a problem halved*' (Steppacher and Kissler, 2018).

The use of interviewing GFs has enabled integration of those older adults who may not feel comfortable disclosing within the interview, about feelings and telling their community about their mental health. This can be related to the isolation/loneliness factor as some feel embarrassed to admit this (Dugan, et al, 1994), however as the GFs have been working with communities for years this has enabled this element to be developed. The concept of isolation reduction was developed by a GF, as shown in Figure 28.

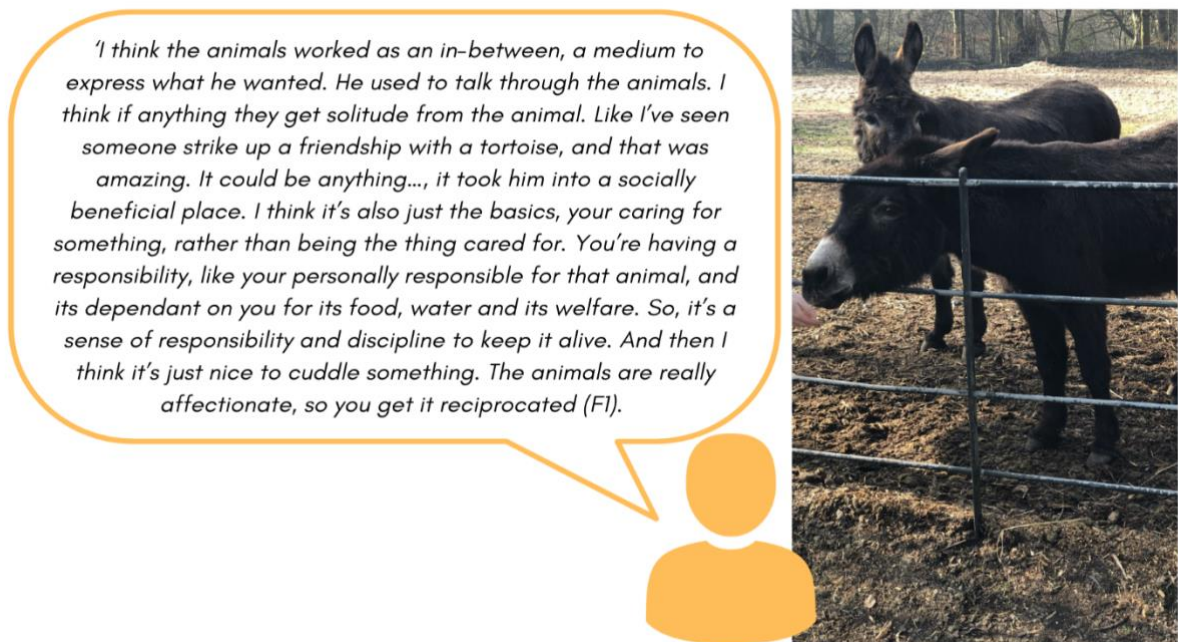


Figure 28: Animal interaction to assist mental health (Author, February 2019)

The GFs suggest that isolation is not only alleviated through human interaction but could also be reduced through working with animals. This is particularly important to members of the CF project, due to accessibility to a large variety of species. This GF suggested that the relationships engaged between older adults and the animals enabled greater communication, by providing a comfortable environment for the member to discuss matters and often broke barriers down to enable further interaction. Therefore, enabling socialisation and preventing isolation and positively impacting on mental wellbeing. Ideas surrounding this concept have been explored by Hart (2006), with evidence of improvement to life satisfaction and morbidity and early mortality. Concurring with Gorman's work in 2019, highlighting the significance of these relationships, specifically within farming settings, to generate *'new knowledges, experiences, socialities, and ways of thinking about and understanding oneself and one's place in and with the world'* (pg. 231), thus benefiting mental health of those taking part (Leck, 2013). In comparison to the CG site these formal animal interactions cannot be provided to participants, limiting the health and wellbeing improvements seen consequently.

Analysing across the interviews data sets revealed that the GFs believed they could see a change to older adults specifically. It was suggested by one that it was *'keeping people a little sharper and entertained. I think they are happier, that makes a difference. If people have had a nice morning, it makes a difference.'* (G1). This illustrated that the GF believed communication between people enables a higher cognitive function than those that are socially isolated. This may be crucial in staving off cognitive decline conditions such as Dementia or Alzheimer's disease. For example, initial studies within this area of research suggest that this is correlated, with observational studies identifying that regular social engagement and living conditions (relationships) can provide a protective effect of it developing dementia across westernised societies (see Aguirre et al, 2013; Pillai and Verghese, 2009; Spector et al, 2003).

These viewpoints were repeated by the external GFs who agreed and elaborated, suggesting that projects of a similar nature bring communities together from different backgrounds and enable communication between classes, cultures, and generations.

This is evident within the following quotation by another GF not involved in the case studies (external GF) who described how:

*'They were talking about how days could pass, and they don't speak to any other human being, but when they come to our project, they feel that lovely connection. So, I remember overhearing that and it was lovely, I will never forget that.'* (E1).

Illustrating these relationships are vital for communication on a humanistic level whilst also impacting profoundly on the GF, adhering to the dimension's integral to human fulfilment (Stewart, et al, 2018). It is suggested within this quote that the GF overheard a conversation between older adults which has been personally significant as they have seen the impact that the project had and enables communication that ultimately would not be as strong in existence without it and alluding personal gratification from the interaction by the GF.

One GF described their personal ageing battle and how this influenced their understanding of how older adults use these projects to benefit mental health through the increased socialisation. It was suggested that the GF likes working with older populations, yet goes on to remark on mortality and grief, within Figure 29.

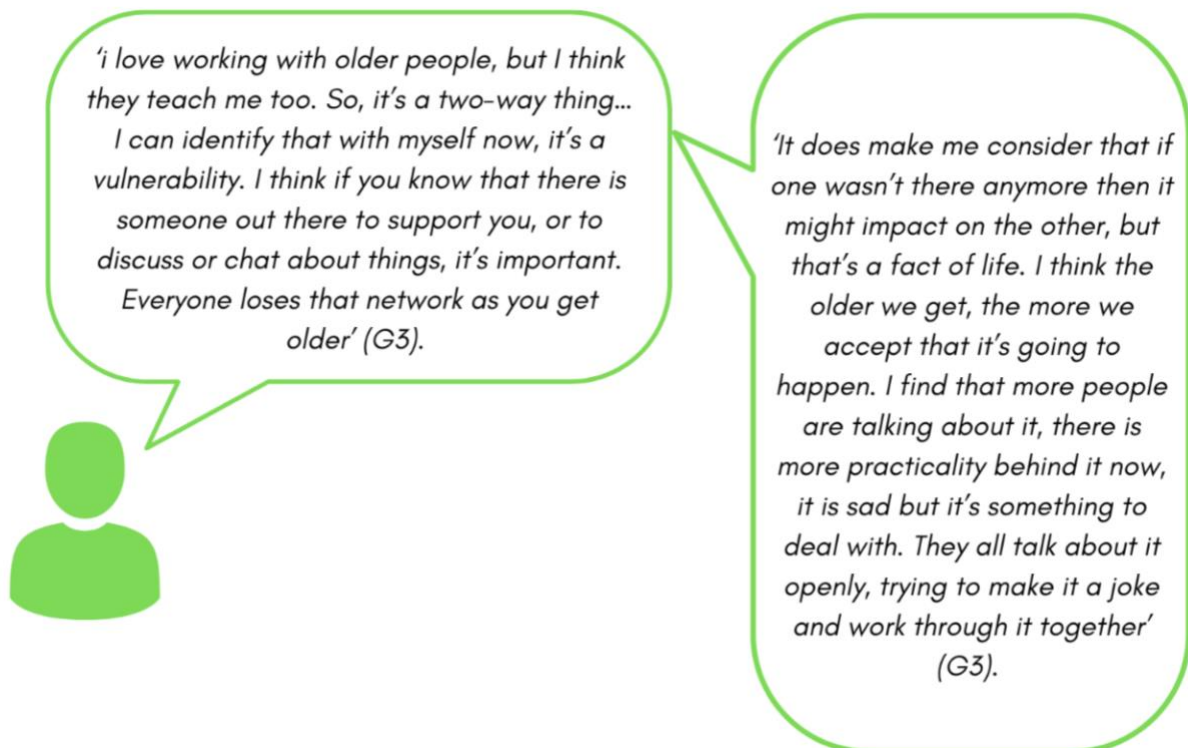


Figure 29: Mortality and working with older people

They suggest that they can now identify with some of the issues that older adults are facing about ageing and limited socialisation, with further portrayal that they understand problems through personal experience and can relate to accumulating issues surrounding mortality. GFs suggests within Figure 29 that mortality and grief was discussed within older adult groups when socialising, and it provided comfort and a safe space to discuss end of life, as well to deal with the passing of friends/family.

This quotation highlights the impact that group structure has on participants, as they reflect on a group which now consists of two regular members. It highlights the GF considering the impact if one member were to die, therefore instigating potential negative impacts on the remaining member, including grief (reduced mental health) and the difficult decision on whether to continue with the growing project without their friend. The concept of grief and bereavement within elderly populations, and their social connections, has been discussed by a variety of academics including Liu, et al, (2019) and Hashim, et al, (2013) who suggests that it could lead to psychological illnesses such as depression over longer periods of time. It is particularly interesting as those left bereft are suggested to never return to previous levels of social functioning or mental health scores (Liu, et al, 2019). This could play an important role across the older adult cohort, as death is more common within this group, therefore impacting at a more frequent level: meaning that participants wellbeing could be more detrimentally impacted as a result.

The external GFs agreed with the comments suggested previously by other GFs, as they proposed that older adults come to the groups primarily for socialising aspects, particularly to instigate friendships and networks of trust, implying that *'they're here for chatting, not planting, but being a community'* (E1) and *'it's more about having a nice time, making friends and doing something different'* (E2). This ultimately suggested that community cohesion was impacted positively due to the development of these projects or localised scales. Furthered within the following quotation:

*'I think the main positive is community cohesion. At the height of the expanded project, we saw neighbours talking to neighbours, people making links between communities... I love that they and I feel healthier because we are growing our own produce, so I know exactly what is being put into them and no chemical sprays are being added'* (E1).

This was also advanced by the other GFs who suggested that they took great '*pleasure watching older people work together*' (E2) and felt rewarded by bringing communities together. In contrast another GF indicated that the provision of these groups does not ultimately assure communication: '*people will sit and be friends, but I'm not sure if they actually socialise or just sit together*' (G1) – again confirming that personal actions by members ultimately decide the level of socialisation within groups.

All GFs interviewed suggested that these activities provided an alternative to the perceived traditional outlook for older participants daily life, of being consumed by television or a 'stay at home' nature, which increased over the pandemic. While Chapter 4 reflected on ageing perceptions around how people perceive these generations (Wiles, et al, 2012 and Clough et al, 2005). A real-life example of this includes:

*'I think it is mainly the company, building a little community and having something different to do, especially with some of the people that come along to the group with more needs'* (G1).

Emphasising that the GF is aware that this project could provide a vital lifeline for the participants to become socially involved, for which alternative communication throughout the week may not be possible. Communication proved vital for older participants as academics such as Gale, et al, (2011) and Sorkin, Rook and Lu (2002) concur and imply that any social deficit, including loneliness, could have an impact on physical health deteriorations including detrimental cardiovascular health leading to catastrophic events such as heart attacks. Similar findings are reported by Chen, et al, (2015) who suggest that mental wellbeing improvements, due to perceived improved community cohesion therefore impacts on limiting illness and disability mobility issues on the perceived social support available. This also leads to understanding that this age demographics could require more assistance, with increased likelihood of detrimental health conditions/comorbidity, such as dementia, and therefore conveys the compassion that the GF uses to assist them to their best capacity. Studies that relate specific cognitive decline have been explained by academics such as Ward, et al, (2018), who discusses the vital role of neighbourhoods with dementia patients to provide help and support for conditions.



The sense of community cohesion is vital for older populations capacity for healthy ageing, for example, Cacioppo, Fowler and Christakis (2009) suggest that loneliness is an emotion that can spread, meaning when rural members feeling lonely, then if they then meet another member of the community there is a 10% chance that this emotion will be passed on, compared to the 5% chance that happiness will be passed on. Whilst Leavell, et al, (2019) conveys that SPs in urban spaces (giving examples such as gardening) can promote physical and mental wellbeing by providing a community support network, potentially expanding the abilities of SPs (also see Husk, Lovell & Garside, 2018; Holland, 2004). These all strengthen the argument for community-based GI/UA projects, such as GCs and CFs in urban settings, to facilitate these connections with others. However, an opposing view, within deprived locations it is suggested by Cooper et al, (2014) that there is weakened cohesive ability, that therefore detrimentally effects health. However, the use of environmental spaces can break down this barrier to provide a greater support network (Peters, et al, 2010), and Canadian researchers suggest that urbanised community growing can improve social cohesion (Wakefield, et al, 2020; Wakefield, et al, 2007). This is also influenced by the SP movement, with potential to over emphasise benefits of these spaces to attract further investments or resources, stretch the third sector (ThirdSector, 2018), or trivialise health conditions (Kimberlee, 2018). Building the argument that spaces such as CGs and CFs can provide spaces for cohesion and consequently assist the health and wellbeing of locals.

Another area highlighted that community cohesion is dependent on the integration of different cultures, classes, backgrounds, and demographics in general. GFs commented on intergenerational work across the interview process as all projects took part in bridging the gap between generations. Mostly the interviews identified a positive working relationship between the older adults and specifically younger children as illustrated within Figure 30.

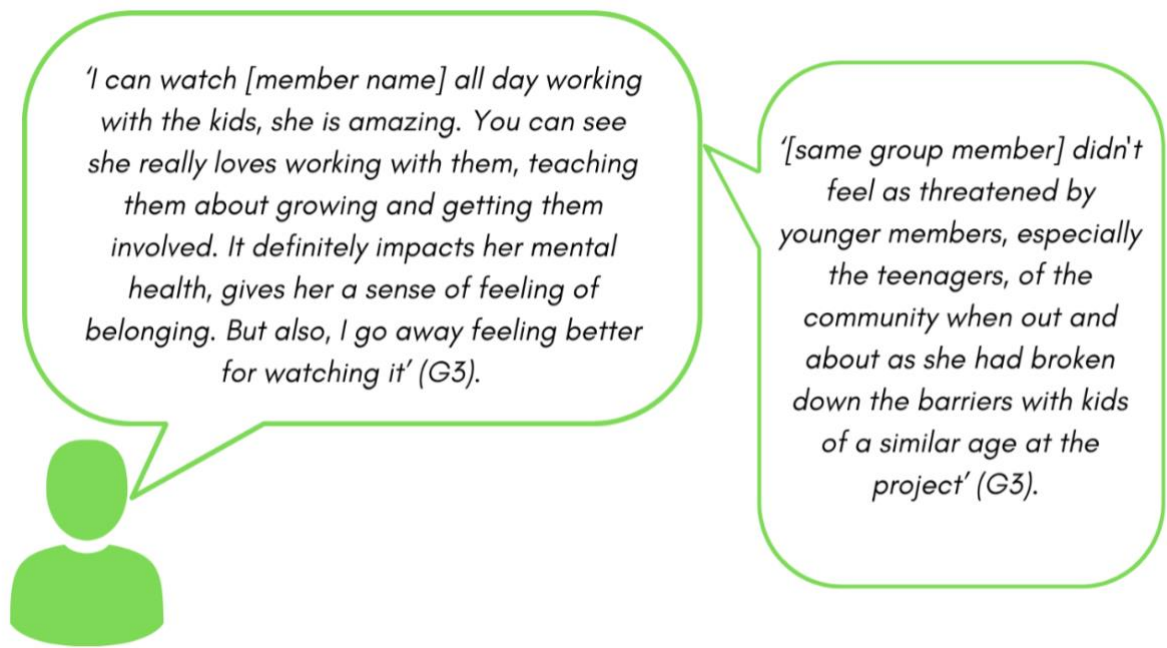


Figure 30: Intergenerational impact

Therefore, conveying that through socialising with others, the older adults gained a wellbeing benefit from interacting with children by teaching them about the growing project, showing the importance of spaces to build relationships for the benefit of health. A personal impact on GFs wellbeing was also recorded as they suggested they felt 'happy' and 'rewarded' because they initiated the connection between generations and watched relationships develop between generations. The GF also went on to discuss the secondary impacts of this type of work, including building community cohesion. They suggested that the project helped bring positive changes to the perceptions cast by older adults, as they became less anxious within the area. Suggesting this interaction made them feel safer in the community, with this having been discussed by other academics previously who portray that intergenerational activities limit anti-social behaviour and the fear of crime (Moore & Statham, 2006). In contrast to this, another GF suggested that these relationships do not always work as positively as previously thought, as seen in the following excerpt:

*'Some older people don't like kids.... One group didn't work... the kids did come but there was no interaction between the groups. The older people, I think just wanted to get on with the garden and didn't really make time for the children, which was the main aim of the group' (G2).*

This GF illustrated that socialisation is improved through accessing and attending these groups, but that the level of appeal may be different for every individual. In this case the GF suggested that some didn't want to integrate with the younger generations as they perceived that this would hinder or slow the success of the gardening project. However, it should be noted that this may not affect the mental health of the adults taking part as they we're still able to take part in the project to the level of comfort in which they desired. Other studies in this field have noted issues around fraught relationships, and ageism, resulting in detrimental wellbeing as a result; showing the requirement to listen to the needs of participants when developing NBIs, to design for the benefit of those prospective users (Ramirez-Andreotta, et al, 2019; Blais, et al, 2017). Another GF articulated the conflict between the group and local community:

*'You do get people that don't like what you are doing, they see you as different, a different class and that is sad, but we don't let it get us down' (G2).*

Therefore, highlighting a difficult relationship between the community groups and local area. This could be impactful on socialisation and community cohesion, with group members feeling segregated from the community. St Clair, et al, (2020) noted that those who are typically involved in local food systems are affluent individuals with free time and resources, suggesting that founding spaces in deprived areas could limit the acceptance of sites and its users, while those from affluent areas travelled to these deprived spaces and limit the value for local people (also see Rosol, 2012; Fyfe and Milliagan, 2003). It should be considered that the group enables cohesion between its members on a localised level, however this may not infiltrate at community scales and therefore interpreted as exclusivity or elitism, with CGs often associated with the middle classes, for those who can afford the time and resources (see Exner & Schützenberger, 2018). This is also conveyed in existing research, such as Hagget et al, (2013) where stigmatisation infringes participation across community energy projects, but also across social classes in general (Dorling, 2014), which is of importance here as group members could be seen as 'outsiders' and therefore limiting the ultimate integration of new members.

#### 5.5.2 Mental health over time

As the last section alludes, visual changes to mental health had been seen by GFs across a period working with older adults. However intrinsic factors which were integral

to these groups such as growing season, celebratory events (e.g., birthdays, Christmas), the pandemic, living with morbidity and mortality all significantly impact upon the dynamics and success of the growing projects. This was witnessed within the following quotation as a GF suggests that seasonally this can impact on the mental wellbeing of participants, as they are not able to congregate as often/ or at all:

*'We have a few weeks to build up the benefit, but then we fall back to zero over the winter, which makes us work even harder when we see them again, or even if we see them again. It's really detrimental as the times we are not doing the sessions tends to be the point where you can get SAD syndrome and other health issues, so it's the mental thing of when you slow down, but they don't really have anyone to talk to. It's also made even worse as its Christmas, we should all be with family, but in these cases, they don't have family, or they get Christmas lunch and then have to come back [from families] and sit on their own again' (G3).*

Similar opinions were described by another GF who suggested:

*'When it [activities] stops, if they withdraw, it might be a bit of a shock... so maybe it pushes them to find something else to go to' (G1).*

Highlighting the GFs feels that the older participants may become more anxious as growing season fades because they become aware that the groups will not meet as regularly. They are removing a sense of inclusion and community; this has not been specifically identified in literature previously (but this chapter touches on earlier). This opinion is also hailed by a GF at the CF who suggests if projects or leaders step away then it will have a detrimental impact to participants:

*'There was one older gentleman, he used to do all of his own cooking and the stuff around the house, I left and came back two years later...he could not do any of that anymore. If we turned around and said that we're not doing the farm anymore, the people would have nothing to do, they'd be completely different people, they'd be frustrated' (F2).*

This pointed out the difference in green care typologies, with a more structured outline nature at CF site, with daily tasks a necessity to keep animals safe and alive, in

comparison to CGs, which are less structured, and attendees select what to grow and when to undertake activities – with little consequence if they decide not to complete a gardening task in comparison to caring for animals. These differences were reflected in group members, through needing to acquire different skills at the two sites, and the nature of year-round care for animals, in comparison to the reduced upkeep of gardens in the autumn/winter seasons. Longer term differences to the abilities of participants were attributed to the growing season, with skills lost if unable to use them, as well as reducing motivations to continue daily tasks, with relationships potentially suffering consequently (Lee, Lee & Song, 2019). This ultimately impacts on the mental health over time as they become reclusive, self-neglectful and wellbeing decline could occur as a result (Day, 2020; Draper and Browne, 1993). Again, conveying the need for these spaces to adapt to change and facilitate opportunities all year round.

Varying levels of mental health across growing season was touched upon by GFs who suggested that resilience plays a role regarding wellbeing and stability of those older adults taking part in the projects. Conveying that those that were able to cope had a higher capacity when negative events occurred (major: death within groups, minor: crops failed) and were perceived to be happier in the longer term by the GF- seen in Figure 31.

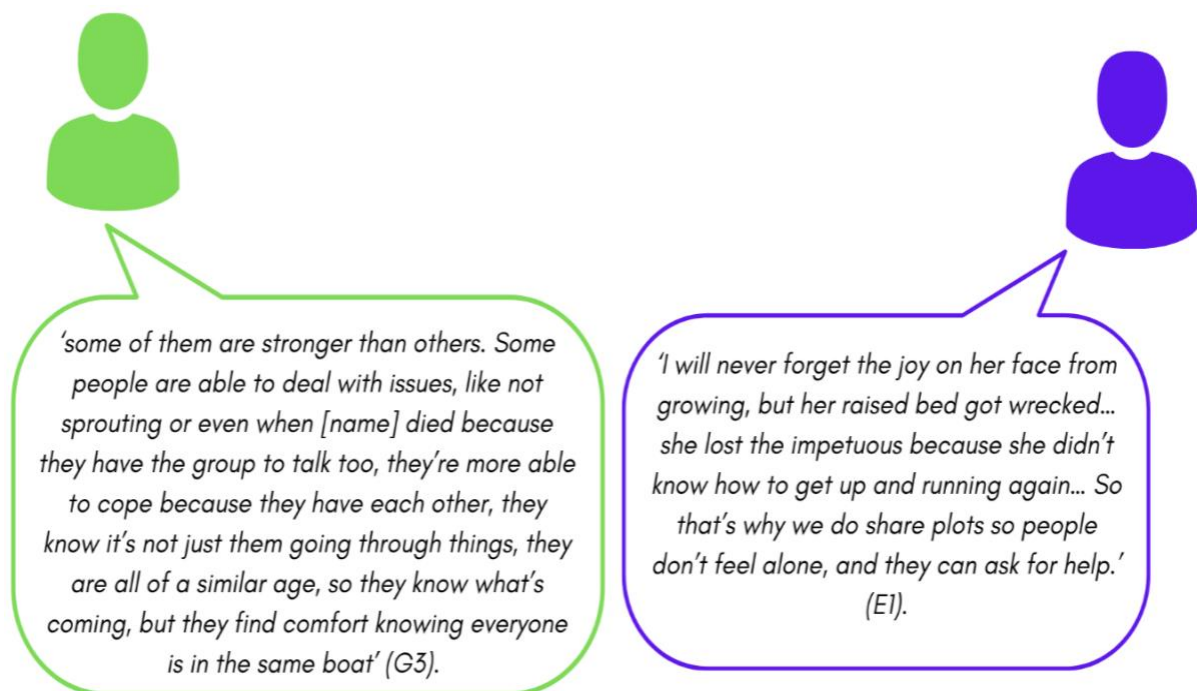


Figure 31: Contrasting views on resilience

However, this opinion is also contrasted in the figure by the external GF who suggested that an older adult growing independently (prior to being involved in the community space), was less able to cope and regain success, through reduced resilience. This pinpoints a requirement and justification for localised growing/farming projects to provide a support network, to allow skill sharing and community, whilst building resilience of older adults and enabling greater mental health and wellbeing.

Moreover, interviewees also suggested a positive insight, as people are motivated to find alternative opportunities to gain these benefits. When engaging with literature it becomes evident that this could become problematic if alternative options are not available to older adults (which could be noted as of greater difficulty in rural settings; Berg, 2020; Goins, et al, 2006), or if they do not feel confident in attending alternatives (leading to feelings of neglect; Choi, et al, 2009), therefore negatively effecting health.

## 5.6 Funding and support mechanisms

*‘Urban agriculture requires both financial and political legitimacy to increase its contribution to feeding cities. While there is increased political support, financial support for urban producers remains quite limited.’ (Cabannes, 2012, pg.665)*

Funding is a consistent issue for the progression of UA, and the subsequent CF and CGs development, at a national and international level (Wesener, et al, 2020). Ongoing funding strategies at government levels (such as Growing Care Farming), alongside diverse pathways (such as SPs), including donations and support from umbrella organisation *‘are not enough to keep sites sustainable’* (G2). With a complex web of funding opportunities available to sites, leaders could often become confused, and tired of overcomplex application forms – and is expressed within this research: *‘I am looking [for funding] everyday, you lose track of what you have and haven’t seen’* (G2).

Progressive opportunities including the FoodSync (2021) Climate Change Fund (FICF) looks to provide up to £20,000 to those who are positively changing ways of producing and consuming foods; yet as with all grants, competition means that not everyone will benefit. SP schemes across England were allocated £4.5 million to allow increased use of these services, through the dedicated introduction of link workers to every GP practice by 2020 (UK Government, 2018ab). However, this fund only enables link

workers to establish a connection with a small number of existing community projects; therefore, failing to support the sustainability of other current projects or growth of new projects (UK Government, 2018b). The Government also offer the annual Voluntary, Community, and Social Enterprise (VCSE) Health and Wellbeing Fund, with a total available up to £510,000 per applicant, however this still requires match funding and will not cover any shortfall, potentially leaving projects incomplete (UK Government, 2018a). Alternative funding streams are also available from other sources, with examples, such as The National Lottery Community Fund and Connect Well, yet again these often involve a competitive process with extensive application forms. These applications require large amounts of staff time and skill to complete, which puts some organisations at a disadvantage in accessing these funds. Proving problematic for community-run organisations as they must seek alternative funding streams regularly to avoid periods of limited or no income, whilst also being detrimental to participants involved, as planning of activities is difficult prior to knowing if funding is secured. Therefore, this section looks to evaluate the impact that GF feel funding and support has on the physical and mental health of participants across the site. This section is broken down to three main subthemes to grasp the awareness in accessing support between projects (5.6.1), difficulties in accessibility (5.6.2), longer term attitudes and support available at regional and nation level (5.6.3).

#### 5.6.1 GF awareness of funding/support and pinpointing control

These interviews conducted with GFs illustrated that not all were aware of the variety of funding supporting these projects. GFs were able to suggest where funds 'may' have come from, yet they were not certain, unless they had applied for the fiscal aid themselves. Across both case studies the interviews highlighted that funding and support was different between sites. Within the CG the responsibility for gaining funds was given to one individual to write funding applications and establish support within the local area, still they were also delivering sessions and ensuring daily tasks were completed. They then liaised with other GFs regarding the funds given to the project and suggested where money should be allocated. When interviewing GFs not directly involved in the bids, they could not tell what funds have been used to enable success of the project. Within the CF interviews it became clear that they also did not know the specifics of where funding or support was received, yet they were able to indicate main streams that they were aware of, that enabled construction of physical resources on



site. This is thought to be primarily since this organisation was in position to employ a member of staff whose role is to specifically look for funds appropriate for the maintenance and development of the project. Therefore, indicating that opinions around funding streams and resource availability vary between CGs and CFs:

*'We don't really worry about the money side, we get personal payments from attendees, which means we are not looking all the time for funding'* (F1)

*'I have to fund it from somewhere, we are made up of a mix of different funds. We are always trying to find new ones, just to get by'* (G1).

Which may be exacerbated as each set out with disparate aims; with one adapting a voluntary flexible community-based project, where health benefits are an added benefit (CG), compared to a stricter business-based health setting that uses nature as an activity (CF). GFs were more aware of social support available particularly from a variety of different local charities and national age-related organisations, who provide information and advice when leading these projects, and this could be due to the formal nature of their projects. It should be considered all GFs, including those external, suggested that the social support (information) received was: *'really helpful and they explained everything'* (E2) therefore suggesting that the support structure was in place for GFs to access and therefore improve the success of projects. It is suggested that increased support for staff will improve health of participants as a greater consequence, however factors including age, disability and disadvantage openly impact level of success possible (Kaplan, 1977).

#### 5.6.2 Availability and restrictions within funding

The general landscape of funding is set out within the literature review (policy section 2.7), yet it should be considered that there is a variety of funding streams available to the sites from (see Social Farms and Gardens, 2020, for full list):

- Top down: for example, the Green Recovery Challenge (UK Government, 2020a), provided in wake of the pandemic to establish green jobs.
- private sector
- and third sector: for example, Inspiring Communities Together Salford, that provide grants to deliver activities in the local area.



Conversations around funding formed a large proportion of the interviews with each GF discussing tribulations without being probed for detail. Initially it was believed this aspect would only form evidence within a theme. However, all GF illustrated great passion to accentuate the issues that they face surrounding fiscal and social support, as they suggested that it was integral to the benefit for health and wellbeing of participants, without it the project just would not be able to be managed or progress. Without being probed, they mentioned funding throughout the interviews, suggesting that this theme underpins the overall positive impact to participants health and wellbeing: *'as without it, the projects don't run and then they can't get healthier'* (G3). GFs suggest that funds were relatively easy to access within the initial stages of projects yet once success had been documented or publicised there was more resistance to allocate funds to projects had already received financial aid, this is shown in Figure 32.

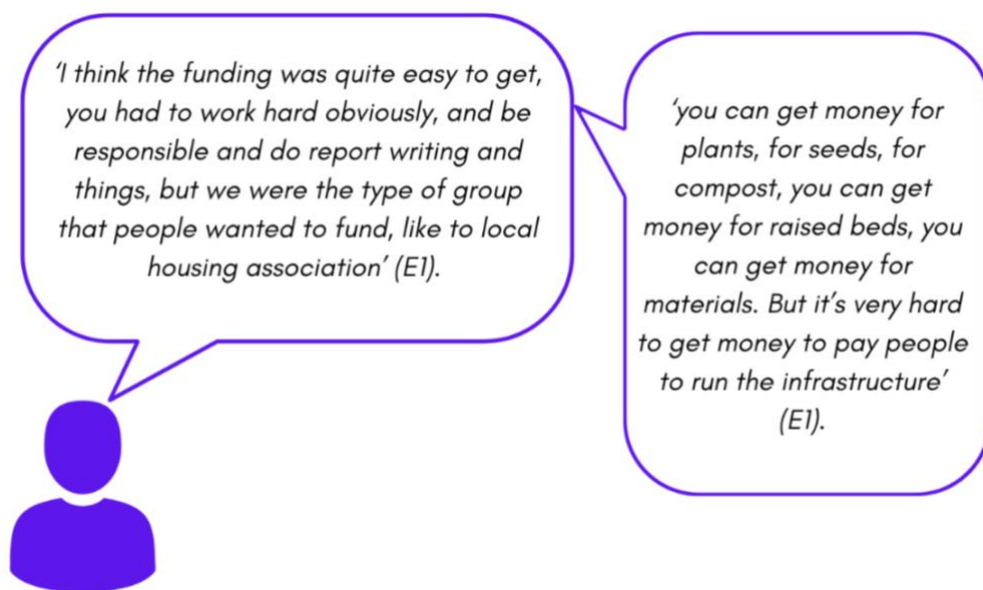


Figure 32: Funding issues

Therefore, this suggests that GFs find it difficult to access further funding after the initial payment, alongside allocating money for ongoing costs. GFs suggested that it was easier to bid for physical resources, such as planters, animal feed, fertilisers, and tools rather than everyday costs such as employment costs, and printing costs, or other miscellaneous costs that could not be foreseen. They were increasingly asked to be innovative on funding bids, as opposed to sustaining the successful initiatives already underway, but needing finance to continue.

This concept was also developed by another GF as they suggested that funding bids and current allocation cycles of fiscal aid was problematic for community-based projects as leaders were always *'having to continually look for more pots of money'* (G2). With other academics also recognise the challenges of finding funding bids (Newman & Lake, 2006), conflicting priorities and competition amongst those looking for funding (Baker, 2004; Smith & Kurtz, 2003). GFs went on to suggest that their funding system was not reliable:

*'To be honest there are lots of funds out there, but that is no guarantee of money... the problem is if you don't write a good bid then you don't get the funding... I think you can access it, but it is having time to access it...you're that busy delivering the front-line services, that you can't take a step back and have a clear view, as you're that busy delivering it'* (G2).

Portraying that these project leaders often do not have appropriate resources in the form of skills or allocation of time to be able to write funding applications to ensure the delivery of programs. This has a consequence to the delivery of programs as facilitators must be allocated time to be able to write the bids which therefore removes the capacity to lead older adult groups, therefore limiting the positive impact to health and wellbeing. It was suggested by one GF that this unpredictable nature of funding provided a lasting impact to their mental health as they became anxious about the future development of projects and the stability of the business. They became worried about the lasting economic issues surrounding accessing money to pay costs for delivering leadership/resources as shown in the following:

*'you also have to pay the facilitators, so you're sitting not just worrying about yourself, but you have got to work out who needs it most. It's an awful position to be in'* (G2).

This was particularly evident across the projects and therefore has a long-lasting impact on the enjoyment the older adults can experience when taking part, as GFs were left anxious about knowing if or when they will be paid for the resources for sessions they deliver. This has also been experienced in other studies, including that of Ramsden (2021) who suggested that *'volunteers were extremely concerned that they would not be able to volunteer at the community garden after the funding finished'*

(pg. 294). While Purcell and Tyman (2015) and van der Jagt, et al, (2017) all argue that projects, and in particular CGs need resources, including land, funding and expertise, in the short-term, while municipal support is needed in the longer term. These indicate the uncertain nature of UA, being further problematic with the temporary nature of spaces, resulting in potential failure and longer-term development issues.

### 5.6.3 Longer term attitudes and progress

All GFs suggested that they required further funding to be able to achieve long-term success. It was also suggested that the current funding cycles only covered short periods each growing season, and this was not enough to stabilise those deliverance sessions over quieter periods (e.g., Christmas environmental crafts). This was particularly evident across winter months and throughout periods of uncertainty. One event that has threatened these groups was the spread of Covid-19, which immediately impacted on delivering sessions, particularly with older participants as they were of greater vulnerability. This period resulted in funding being withdrawn and further bids to be cut. This suggests that the year of 2020 would be '*a quiet year for funding these types of projects*' (F2). Even though these projects are not delivering sessions to older adults funding is still required for outgoings including plants that will now be unusable, payments on community owned land and insurance. It was highlighted in the following quotation with a GF suggest that their mental health has been impacted because of a lack of funds:

*'we need longer funding, so you're not waking up in the middle of the night thinking that you're not going to pay your mortgage'* (G2).

This excerpt from an interview was conducted prior to the lockdown, yet on speaking to this facilitator again they suggested that '*we face some difficult times*' (P1), and this will be reflected in the thesis. The farm insight receives payments for specific members attending this project with learning difficulties as they are referred by clinicians. Due to council cuts they continue to do reviews on those receiving payments to attend this facility, one GF suggested that the council plan on cutting placements to this site is therefore impacting on the funding available to the project. This is:

*'shown to be a worrying trend. Obviously as the council try to pull back funds, the people that are the easiest to hit. Those that you can say don't need facilities*

*like this one, are the very people that can contribute to the project. We could lose people who can really contribute to the garden or on the farm' (F1).*

This highlighted that through government and local budget cuts, GFs believe that projects like these are one of the first areas for funding to be restricted. This is problematic as those benefiting from these case studies, both through physical and mental improvements, will be negatively affected when the funding is reduced, as their places will be revoked (at farming sites) and/or funding will be cut for resources (impacting CG groups), with examples coming from charities, also finding it difficult to access due to ongoing cutbacks and austerity. The pandemic added extra stress to budgets, with almost all English councils planning to cut budgets this year, in the wake of the pandemic (NAO, 2021), potentially leading to further cuts in non-necessity areas such as community activities. Sites like these included in this thesis often apply to charities for funding, one of the sectors impacted influentially due to the pandemic, with 63% of charities having experienced higher levels of demand for help post-covid, while others had to close forever due to economic pressures (ProBono Economics, 2020). This is while the sector projects a £6.7billion drop in income, alongside a £3.4billion demand increase (NPC, 2020). Portraying a shortfall in the ability for charities to assist delivering projects due to limited funds, with organisation that are reliant on donations or charity are exposed to the negative impacts of the crisis (Wood, 2021). New SP funding is targeted towards integrating projects, rather than keeping those existing going. Ultimately, this suggests that the projects will suffer because of this as they will not be able to provide the workforce or resources to make projects successful or sustainable, therefore alluding to their demise.

GFs suggested that they believed that these projects could ultimately benefit the National Health Service (NHS) in the long term. It is estimated that approximately 20% of those attending GP appointments are doing so for social issues, that could be treated by others including through SPs (Husk, et al, 2019). Current studies are underway looking at piloting the use of green social prescriptions (see Howarth et al, 2020; Robinson & Breed, 2019; Helbich, et al, 2018; Kolt, et al, 2009; Pfeiffer, et al, 2001) with research estimating the impact that SPs have on the NHS (Dayson & Bashir, 2014), and the potential barriers for success (Aughterson, Baxter & Fancourt, 2020; Pescheny, Pappas & Randhawa, 2018). GFs concurred with this and suggested

improvements to the NHS, both through physical and mental improvements of participants taking part in these projects it would prevent in those members from attending doctors' appointments unnecessarily and therefore present further up the health care hierarchy. This can be evidenced through the following quotation:

*'We have had a lot of conversations on the site, when we have been digging and working. In that way it can provide as much of a service as a therapist could from the NHS, but obviously to the right person. In that way, I feel that it could benefit the NHS. If there were more projects like this and it was more inclusive, I think it could definitely help people' (E2).*

All GFs across both CG and CFs situations suggested very positively that they did believe that both the physical and mental health of their older participants had improved due to accessing these projects. With them going on to suggest that further research in this field is difficult to undertake due to the complexities of measuring this specific age group, people presenting to groups through self-referral and hidden health (between physicality and mentality). Thus, providing emphasis that this supportive statement advocates for research to evidence changes to health and wellbeing, to enable a comprehensive overview of impact.

## 5.7 Development and persistent barriers

This chapter looks to conclude the opinions expressed by the GFs by investigating at the desires for future development and the persistent barriers limiting the affectability of success.

### 5.7.1 Inspiration for future development

GFs stressed that they wished to develop projects further for greater success, with a multitude of opportunities to enable this, where both case study sites suggesting that they wished to reach out and involve the community to a greater extent. Not only for the benefit to people's health and wellbeing, but also to ensure the sustainability of the projects. GFs also suggested that they could reach out to segregated populations within the community including those within care situations to be able to benefit and integrate the community on a larger scale:

*'every older person had the option of being involved in gardening, especially those in care situations...the groups will keep going on...I think we could get more local people involved, and we need them to get involved to make sure the projects keep going' (G1).*

This provided understanding that GFs want to continue integration of communities for further cohesion, and they have identified particular [older] populations in which they can reach out to in the future, resulting in a wider benefit. Facilitators also stressed that generational changes have an impact to garden and farming motivations. It was highlighted that there is concern that younger generations do not have the same desire to take part in these projects and this could spell issues for the future, as an interviewee suggests *'some kids just don't seem interested because it is seen as not a cool thing to be doing'* (G3), while the pandemic may have changed these views and will be discussed in 5.8. Another GF gave their opinion on why this is occurring:

*'I think there are now more people, living at home longer, so they don't have the chance to move out and buy a house with a garden. I know what I was like, you feel that you must do something with it. But now, because people are in their thirties and still living at home, they are thinking I don't need to do it' (F2).*

To overcome this, both projects look to continue and expand intergenerational work in the community, by reaching out to school and the local area, whilst considering innovation in horticulture, specifically hydroponics. Further diversification at case study sites is possible to adapt to population interest, while some people will be able to *'keep with the traditional option'* (G1). Therefore, enabling younger populations to become inspired by local environments pushing them to conserve and live sustainably.

It was suggested by GFs that they believe the ideology of SPs would be ultimately beneficial for populations however they also suggested that community projects such as the ones they lead could be negatively affected by an influx of *'people that we could not deal with'* (G3). However, due to financial gain it is likely many community-based projects will be oversubscribed through the SP pathways to accumulate greater levels and certainty of funding:

*'The sort of social prescribing thing, I don't have the links, but in the future, it would be ideal to have groups coming in to get the benefits from our site. It gives a specific and reliable income, because you know people will be there for a set time period'* (E2).

This displays that GFs feel that SPs could provide a lifeline for projects and a financial framework to guide further funding bids. The extra pressure on SP providers has not been widely published, however members of charities involved in delivering programmes have voiced similar concerns (Shah, 2018). GFs also expressed opinions that they believed clinicians are not fully behind the use of SP due to lack of evidence of the effectiveness of these projects, as shown cited from a transcript:

*'I think older doctors, famously, have their heels in the mud and are fighting against change. The younger doctors seem to have a different attitude, where they recognise the impact of being outdoors and the community aspect to groups. It's got to be better. If working in a garden can help you as much as a drug, then it's got to be better all rounds. If you are not getting ripped off by a pharmaceutical company, you're not put in a strait jacket. It's got to be better'* (F2).

This GF suggests that there is uncertainty in the development of SP and, therefore this warrants further education to the staff involved in these pathways, research, and its development (including general practitioners, service providers and users). GFs ultimately believe that connecting to facilities, such as gardens and farms could enable greater health and wellbeing for participants, yet internal research is not conclusive for these sites. Greater connected data capture could be provided if participants were more formally 'admitted' via SP pathways, allowing members to be tracked on their time with the projects, however this is currently impractical as these projects enable self-referral and drop ins, meaning that change tracking over time would be unsuitable. However, GFs did suggest that their data collection measures may change because of taking part in the research study. These interviews have ultimately made GFs more aware of the issues surrounding data collection in the field and has provoked changed to GF future monitoring of physical and mental changes thus enabling comprehension at a deeper level.

### 5.7.2 Evident barriers for progression

Barriers for progression have been discussed throughout this chapter. Summarising the most evident barriers across both case studies have been included within Table 11, and how this is affecting projects, and possible issues/development strategies to overcome them in the future.

Table 11: GF perceived persistent barriers to development/success

Main barriers	Impact described	Strategy GFs suggested that they are using to overcome issue
<b>Participatory motivation</b>	Loss of participation primarily due to seasonality	Creation of ‘alternative’ indoors activities related to gardening/farming, outside the traditional growing season
	Loss of motivation for integration (between demographics and ages)	Increase flexibility of group dynamics, whilst the group facilitator is providing a role to communicate between different demographics and ages.
	Loss of participation due to lack of educational motivation	Creation of educational programs to make people interested about learning about gardening or farming practices, with the potential to get formalised qualifications as a result.
	Loss of participation in younger populations with consequences for ageing/later in life in the future.	Greater diversification of practices and technology used to include the potential to move towards alternative growing such as hydroponics, or involvement of non-traditional animal interactions such as reptiles, arachnids, and tropical birds already available



		within the CF case study. Therefore, increasing motivation to be involved at younger ages and are more likely to return across ageing demographics.
<b>Funding inconsistency</b>	Funding negatively affecting the health of a singular member, if in charge of funding applications.	Greater division across GFs to distribute responsibility of gaining fiscal aid.
	Hierarchical funding change turntable funding to be more complimentary with community-based projects yearly outputs.	GFs urged for a change in attitude of those in charge of providing funding projects to decide where money goes rather than dictate how it is spent:  <i>'there needs to be a change to the attitude of the people in charge, make them aware of the changes that spaces like this have on people and then hopefully they'd be more likely to try and start and support spaces like this one' (F1).</i>
	Lacking tangible support specifically across daily task skills, provided for GF to succeed.	Get GF support to be given to community-based project leaders as they didn't have skills required for daily tasks this included how to submit better funded applications and general paperwork required:

		<i>'we became too successful, but we didn't have bookkeepers, so they needed infrastructure, like someone to keep the database going, and the way it should be run. We didn't know about data protection. We didn't have knowhow on how to work with computers, to log all of this information'</i> (E1).
<b>Monitoring and engagement</b>	Lack of monitoring of physical and mental health changes of participants involved within case studies.	Learning and working with the research process currently undertaking and adapting future development using these tools to better understand the longer-term changes in participants involved specifically with these case studies.
	Lack of engagement with monitoring practices and disseminating findings, to service users and others (in a lay manner).	Working to disseminate health and mental changes towards those involved in the process of informing self-referring social prescribing pathways. Through public engagement events and publications.

## 5.8 Reflecting on Covid-19

Conducting interviews with the managers of the study sites proved problematic due to the changing advice provided during the pandemic, with the projects adopting different ways of working. Older adults were asked to shield, altering the demographic of those attending sites, and making it impossible for older adults to access these projects – affecting the outcomes of this research, whilst identifying that the barriers identified in the previous section have been exacerbated. Literature across CG and CF spaces in the times of the pandemic is still growing, with more resources available on the effects to gardens, for which this section incorporates. Therefore, highlighting a contribution to knowledge, by understanding at depth the impact Covid-19 has had on these project spaces.

At the beginning of the pandemic, the case study projects completely ceased activities onsite with GFs accessing sporadically to maintain the sites. This section reflects on the health and wellbeing effects of the pandemic on the group leader's health and wellbeing, and the consequent impact on the older adults that they work with across three main themes.

### 5.8.1 Inconsistency and alternative ways of engaging

A recent study by Sustain (2020) illustrated that *'almost 70% of all garden[er]s who were surveyed said they will continue to grow/harvest food this season where feasible'* (pg. 2), however both projects involved in this study closed overnight due to the pandemic, making it difficult to engage with those who would normally/regularly access the sites. This provided the GFs of each site a unique challenge to adopt to life in a pandemic themselves, whilst still being able to work with individuals in the community who benefited from their projects. Similar projects began drafting alternative communication methods (Zheng, 2020). Both case study projects quickly realigned their communication with participants to online opportunities, with the GC offering online 'fieldtrips' to engage the wider community, while the CF offered a variety of educational classes.

These options did little to practically engage participants with the natural world physically, yet enabled social engagement within the group, for which a leader suggested; *'was the main motivation, to keep their friendship alive, in a time that they felt scared'* (P1). These sessions proved vital with some *'having no one to speak too*

*in the whole pandemic'* (P1). When speaking with the CF leader they concurred with this thought and highlighted that those attending the CF were left worried about their health and wellbeing because of the pandemic but illustrated that they *'were educating people about the pandemic, to elevate the concerns and hopefully get them using outdoor spaces again, but in a safe way'* (P2).

The responsibility of the sites maintenance fell to GFs, with one suggesting that *'it has mostly fallen to us to maintain planters, because some sites are behind a locked fence, and older people are shielding'* (P1), which put stress and physical burden on the facilitators to constantly check on sites, alongside dealing with the pandemic themselves (which is developed further in section 5.8.2 and 5.8.3).

Facilitators remained in contact, as best they could, with all participants throughout the pandemic, yet this put pressure on staff to contact them in alternative ways, *'whilst being disadvantaged by the plethora of data protection and loopholes'* (P1). Facilitators spoke at length around the differences between age profiles engaging with the projects in the time of the pandemic, highlighting awareness of the inequalities experienced because of government guidance. They were able to articulate the difficulties experienced with trying to remain in contact with older adults, whom *'regularly didn't have access to video software, causing a disconnection as they could not see others in the group'* (P2). This proved important as facilitators highlighted that without the visual some remained feeling *'lonely'* (P1), because of the lack of social interaction. When speaking about younger adults, who were not included in shielding guidance, one facilitator suggested that when restrictions had been reduced; *'the younger groups have been meeting on weekends, in really small groups, sometimes I think that makes the older ones lonelier because they aren't able to make it out'* (P1).

The projects also tried to engage with communities in alternative manners including become a greater local asset by providing 'grow your own boxes' and plant sales, when the pandemic allowed travel, and one facilitator identified that *'it appears that people are still out there growing, but we just can't get people together to do it'* (P1). This act of community spirit has been remarked by many in current times, with Mercado (2021) reflected on the US situation having *'exposed the true fragility of our nation's food system'*, for which a similar view was held in the UK, as there were shortages and delays in restocking (Power, et al, 2020). The work by the projects proved successful

with locals, as people attended sites to collect these, while learning more about how to be involved in projects. Yet, failed to fully engage with older adults due to the overarching shielding guidance, ultimately keeping them away from the sites at this time – and exacerbating inequalities in this period for which the projects could not do anything about and left them worried about leaving *‘older people to fend for themselves’* (P2). Showing that this population could have had detrimental effects as a consequence of not being able to access NBIs and warrants further research to avoid this issue in the future.

### 5.8.2 Physical health and mental wellbeing

As Rousseau and Deschacht (2020) highlight, the pandemic affected our relationship with nature, making us more aware of the benefits received from accessing and using local green and blue environments, which resulted in knock on effects like reductions to pollution levels. However, environmental projects, such as those included in this study had to cease operations, therefore removing the community aspect to accessing nature. To fully understand the effect of this on health and wellbeing of older adults and facilitators, the interviews evaluated both personal outlooks with leaders of groups and asked for an insight to how they felt older adults were reacting in this time.

The GC leader highlighted the largely negative impact that the virus has had on the project and suggests that their health deteriorated specifically because of worry attributed to *‘not being able to see people benefiting from gardening’* (P1). This is important as this model of project relies heavily on funding provided by a variety of sources, for which the pandemic impacted, by inhibiting access to further grants that would allow for a stream of income. This ultimately left the facilitator worried about how projects would be sustainable, and *‘if people would come back to them if the sites didn’t look nice or weren’t looked after if growable’* (P1). They went on to suggest that the pandemic has:

*‘significantly impacted my health at times, my mood and anxiety levels have waxed and waned. I think that is because of thinking about the long-term impact on the projects. For some it is also down to the frustration of not being able to go out and do what we want to be able to do’* (P1).

This facilitator went on to suggest an impact to their physical health:

*'I was cycling for miles down to the site, that helped my health, I lost some weight, but I could not speak to anyone when I got there...so many people got into cycling too, so it was too overcrowded to keep doing it' (P1).*

While the following quotation highlights the physical burden of caring for sites on their own:

*'because all of the work relies on me now, I am struggling physically, it is a lot of heavy lifting, for example just watering the plants takes time and effort. Then mucking out and caring for the animals – it is a lot for one person, but I have to do it' (P1).*

This illustrates the impact that accessing these dormant sites had on those keeping them alive, with leaders feeling deflated when visiting sites and often physically exhausted, and the impact that this inability to garden has on the leaders themselves, those benefiting from the projects directly, and the local community. These issues have been illustrated in a recent study by Sustain (2020), where other leaders suggested that their physical and mental health had been affected through isolation and the pressure of maintaining sites. The CF leader went on to have a slightly more optimistic outlook, *'primarily because the council fund the project, and this has allowed us to come up with alternative ways of working, and some people are still here because of the animals'* (P2). They also discussed how this caused greater workload and stress to realign the ability to speak with participants, while suggesting that their wellbeing had been reduced because they would *'not see people using the farm, and that is something that would really make my work worthwhile'* (P2).

This ownership of older adults' feelings was consistently discussed throughout interviews, where facilitators felt *'guilty by not providing the same opportunities'* (P1) to come together to grow. When prompted on this matter, facilitators suggested that they were spending considerable amounts of time to overcome this issue by using their own time to engage with participants. Even when able to speak with participants, facilitators were often left feeling *'worn-out by hearing how lonely people were'* (P1). One facilitator went on to discuss a particular participant:

*'[participant name] haven't left the house since March, so that's horribly sad, so I've been phoning and popping in with some plants for the window ledges...I have been going in my own time...I feel really guilty when I leave because they don't have anyone else...I feel that I could be doing more for them, like getting shopping and stuff, but I am also worried about my own health and actually having a job after this pandemic, because there hasn't been support for 'green' industries' (P1).*

This quotation provides emphasis to how involved and passionate project leaders are about the projects and those in which they help. Often leading to the leader's health and wellbeing directly affected by the changes to sites and participants, therefore identifying some negatives of being involved, for which the pandemic has exacerbated these issues.

### 5.8.3 Exacerbating issues

The pandemic has exacerbated inequalities in all aspects of society (Patel, et al, 2020), yet as Geary, et al, (2021) suggests that recovery strategies: *'present an opportunity for sustainable transformation if they can be leveraged to simultaneously protect and restore nature and tackle climate change and health inequalities'* (pg.1). However, it should be considered that messaging around older adults could be considered as significantly disruptive and harming for future inclusive development (Age UK, 2020ab), while aggravating ageism.

Group leaders of both projects were able to provide coherent arguments around the confusing landscape of *'vital work in the pandemic'* (P1), with both feeling under supported throughout the pandemic (both financially and on an advisory basis) to ensure that participants that *'really needed to be involved in projects like these were able to get the support they needed'* (P2). One went on to suggest that the longer-term future of the case study project may be under threat:

*'it's the uncertainty of where we sit in the organisation outline from the government, so we don't know if we are vital...there is little advice...we are looking over our shoulder because of it, and that is making me ill' (P1).*

This uncertainty led to further health and wellbeing impacts as leaders, even when distancing relaxed, as they were left feeling responsible for allowing or restricting access to projects, creating an *'overwhelmed feeling because of the accountability, or deciding who can come on to site, whether that be other staff or those participants'* (P2). This conveys some of the pressures that were placed on leaders in this time, and those that detrimentally affected the mental health of those in this study.

Towards the end of the distancing regulations GFs were still feeling uncertain around the future of the projects, both identified that the majority of people *'really engaged with the outside world in the pandemic'* (P2), but *'some groups are finding that it is difficult to get people engaged post pandemic, because they have been shut off over this time...one group nearby experienced a little anti-social behaviour, where police were involved...the leaders were concerned about going back onto the site'* (P1). Ultimately identifying that the facilitators feel that the anxiety around the pandemic may overwhelm the benefits received from attending a group-based project, but *'time will only tell'* (P1): illustrating a need to research the longer-term effects of the interaction between the pandemic and these community groups.

### 5.9 Conclusion of group facilitator insight

In conclusion this chapter of the thesis has highlighted the main findings from the GF interviews. This includes extensive analysis of the six main initial themes devised, with all interviewees concurring that they believe these spaces are beneficial to mental and physical health of older adults. Finally, this findings chapter concludes by suggesting that there are main barriers existing limiting the success of projects and their potential in the future, alongside reflecting on the positionality of these projects due to the influence of the pandemic. It is hoped by discussing these issues in this thesis that recommendations (seen in Chapter 7), can be made to remove these barriers to increase the health and wellbeing of older adults.



## Chapter 6: Understanding the external stakeholder perceptions

### 6.1 Introducing and outlining the findings of external stakeholders

This chapter explores the final participants collected from the semi-structured interviews conducted, the external stakeholders of both case studies. These external views come from key expert actors in the field alongside a random and willing public sample directly accessing the two-case study projects identified and illustrated in Figure 33. Stakeholder mapping, conducted at the early stages of this research, allowed key actors to be distinguished as those who are significant in the development of NBIs, including those with a political responsibility, financial aid, or those with skills and expertise in the field.

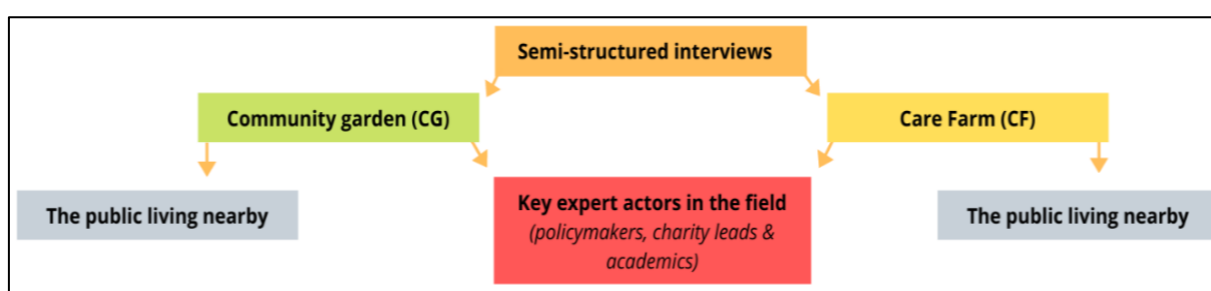


Figure 33: The framework of engaging with external stakeholders

A total of eight key expert actors in the field were interviewed, contributing 470 minutes, to provide an overview of all sectors, both at local and international scale. They encompass viewpoints held by governmental spokesmen, public bodies and the third sector with links to CFs or CGs, with a full description held in Table 12.

Table 12: Key actors interviewed

Pseudonym	Characteristics	Interview length (approx. minutes)
<b>Bertha</b>	Charity linking older people with NBIs in GM	70
<b>Deirdre</b>	Spokesman for charity that oversees advancing green activities and prescriptions	30
<b>Rosie</b>	Environmental policy advisor	40
<b>Dom</b>	Charity lead on green based activities	100
<b>Alistair</b>	Charity lead in local area on nature access	90
<b>James</b>	International academic and third sector, perspective on urban agriculture and its use for health	40
<b>Jenn</b>	International renowned academic and third sector, perspective on urban agriculture and its design for environment	40
<b>Fiona</b>	GM based ageing researcher	60

These semi-structured interviews were conducted virtually due to the ongoing pandemic, using a mixture of telephone or video conferencing software to engage with stakeholders' opinions. Throughout this section the key actors' opinions, observations and reflections will be used to add to the discussion provided by the public interaction.

To advance the knowledge of other external viewpoints there were twenty-five interviews conducted with members of the public, ranging from five to thirty minutes, adding more than 365 hours of interview data to that found with experts. These interviews were conducted with members of the public who were accessing the study spaces for other reasons than taking part in the gardening or farming activities, this therefore included people using the cafes, or attending other recreational activities (e.g., men in sheds, art and knitting clubs). These interviews were carried out over a three-month period, pre-pandemic, and outlined in Table 13.

Table 13: Public engagement interviews

Pseudonym	Background to interviewee	Number of interviewees	Interview length (approx. minutes)
<b>Public, gender, age</b>	A collective representation of the public opinions gathered at the CG site	14	5 – 30 (Total: 155 hours)
<b>Public, gender, age</b>	A collective representation of the public opinions gathered at the CF site	11	5 – 30 (Total: 210 hours)

This illustrates that the data collected is slightly skewed towards the public opinions held by those visiting the CG site, and this should be considered throughout. It is also acknowledged that this is a small sample when considering quantitative analysis, therefore there was no attempt to generalise, these opinions, but rather provide a narrative on those that have taken part in this research. Alongside this, the age and gender profiles of the public participants could also impact on the reliability of the findings, with this breakdown shown in Figure 34.

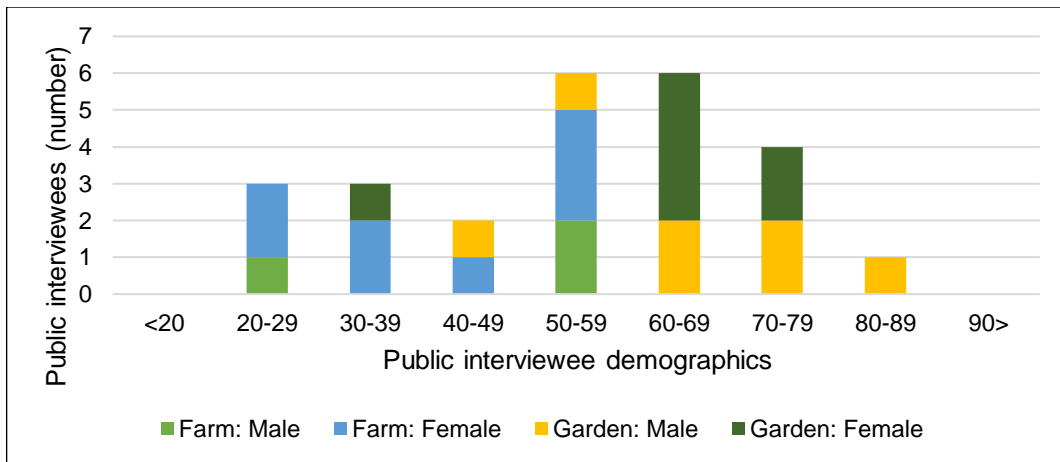


Figure 34: Demographics of public interviewees at each study site

This implies that the demographic split between the case study sites is also skewed, due to only interviewing those who access these spaces, and those who were willing. This does illustrate that interviews were conducted with 11 members of the public accessing the CF site, with a further 14 accessing the CG. In doing so, it portrays that user profile differ between settings, with a younger demographic gathered within the CF setting (mean age: 50-59), in comparison to the CG (mean age: 60-69), and a slight divide in genders accessing spaces – with a larger proportion of females being interviewed in the gardens when compared to the farm, with no public interviewees indicating that they identify with another gender.

The data collected from participants is displayed and analysed in this section, whilst also reflecting on the possible changes due to the global pandemic of Covid-19, primarily through data mining of existing media reports and referring to key actor opinions gathered throughout the pandemic. It has been important to display the characteristics of the interviewees to highlight the opinions gathered across sectors, sites, genders, and age profiles, albeit in a collectively small sample. Still, this provides an insight to the viewpoints held by key actors and the public surrounding these sites, showcasing the main themes derived, that the following sections will develop.

## 6.2 Knowledge of key terms

The National Institute for Health and Care Excellence (2017) suggests that community assets ‘are not only buildings and facilities but also people, with their skills, knowledge, social networks and relationships’, and in which the case studies of this project would fall within. Forrester, et al (2020) introduces that: ‘Assets will typically be defined as physical, tangible resources or spaces in communities (such as schools, parks and

*recreational areas, religious places of worship, sports facilities, community centres, etc.) as well as the more intangible personal and social qualities'* (pg. 444). However, Unsworth, et al (2011) recognises that they *'contain enormous potential which is underutilised by the residents and under-appreciated'* (pg. 186). Locality (2018), a charity network supporting community organisations suggest that *'on average more than 4,000 publicly owned buildings and spaces in England are being sold off every year'* (pg. 3), illustrating a loss in resources that could provide vital services and support to local people, and ultimately influences the populations health and wellbeing.

To establish the understanding surrounding the accessibility and use of the case study sites, the public were asked on their understanding of how to be involved, alongside any benefits derived from these or similar projects, alongside key academic terms such as 'green care' and 'social prescribing'. Initially public participants were asked if they were aware of the term 'nature-based activities', with the majority across both sites (75%), able to discuss and explain what this term means. Yet, a quarter that could not answer this question or gave incorrect answers. Leading on from this they were asked about the term 'green care'. The majority (23/25) had not heard/ did not know this term. Participants were prompted and reported questioning if the term related to *'painting everything green'*. Therefore, highlighting a significant missing link between the academic terms used and public understanding. The two who were able to answer this question both had environmental interaction and knowledge of this term through previous employment in the sector, with one summing up the term by advising that it is:

*'Being able to have a healthy environment and outdoor spaces that are beneficial to people, for a health purpose, like green gyms and stuff. There are three levels, and with each you get more involved in the environment and that benefits your health.'* (Public, male, early 50s).

Consequently, participants were asked to provide their views regarding the term SP. Eight public participants (four from each site) were able to fully discuss the idea of SPs, with a multitude of explanations given, as suggested in Figure 35.

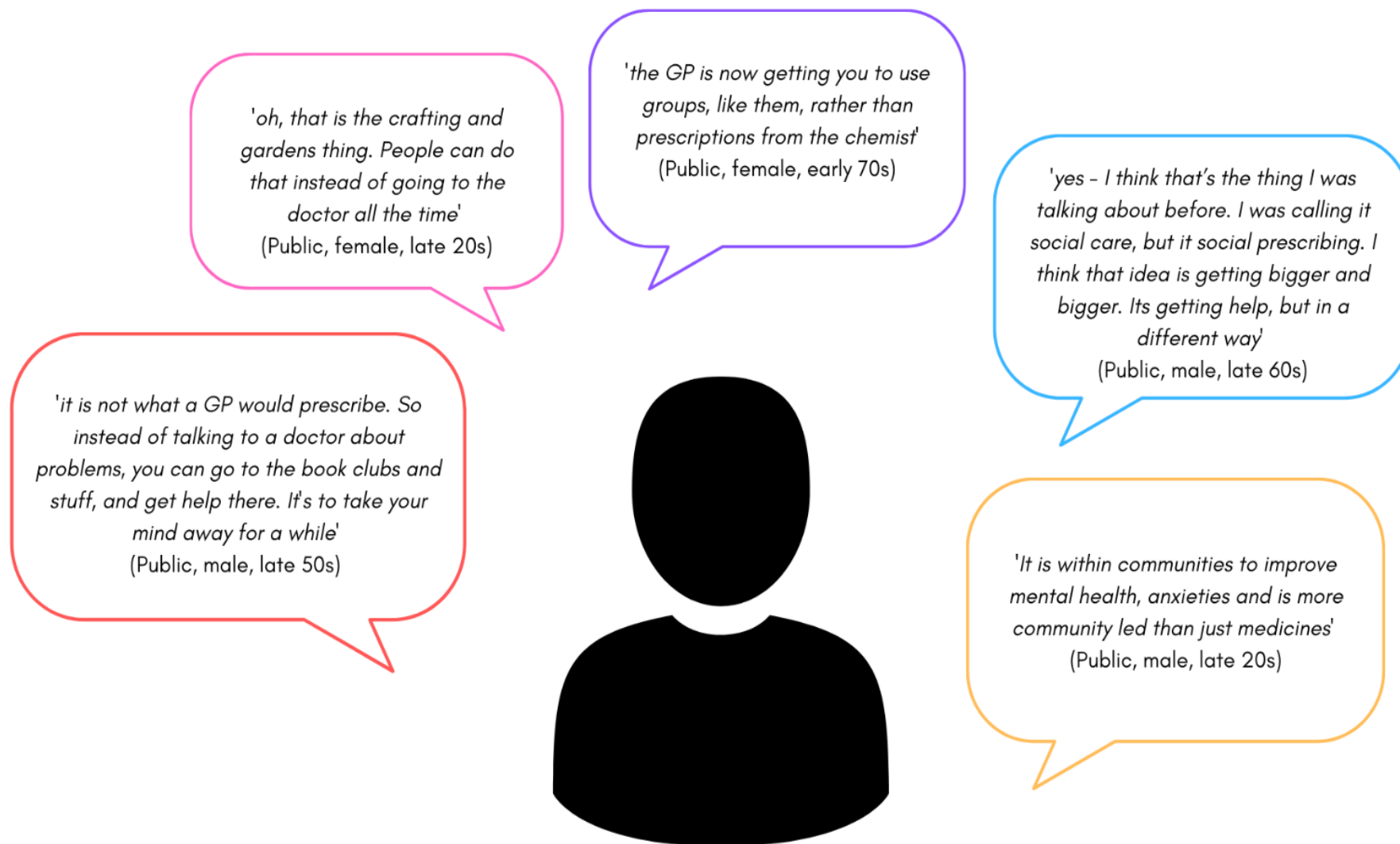


Figure 35: Public awareness of SPs

When probed further these interviewees explained that they all had previous careers that made them aware of SPs, with one indicating:

*'Not enough is being done, so people know that they can go to the doctor for stuff like this. Particularly men, they don't want to talk to people about their feelings, but these groups could make a difference, but folk don't know about them. It's really bad for the youngest men, like the eighteen-year-olds, and then the golden oldies too, they don't want to seem weak.'* (Public, female, mid 30s).

This quotation highlights the significance that this public member places on the importance of these projects and ones of a similar nature. Whilst referring specifically to mental health (which is later expanded), besides a lack of awareness in the public, this member suggested it is not being explored to its full potential.

Regarding awareness around the case study projects, only one person from the twenty-five sampled was able to suggest that they had heard of 'care farms' or 'social farms' previously, with academics such as Bassi, et al, (2016) highlighting that this concept is only beginning to gain mainstream traction. While Mitchell, et al (2021), stresses that the confusing terminology makes it difficult to engage, alongside the evidence that CFs are often located in rural spaces, potentially influencing understanding or urban residents, as they may have not had the chance to engage previously. However, after explaining the description of these terms, all the participants visiting the farming site, considered this site to be aligned to this description. This puts emphasis on the lack of transparency in the term, as the public surveyed were not able to identify this site as one that they were using, calling for greater dissemination of these spaces to a wider audience. The CG public were also given the explanation and likened it to *'urban farming, with a little bit of medicine thrown in'*. This concept was widened to the development of CG, for which twenty suggested they had heard of previously. When explaining the concept to the five that were not aware, they all likened it to owning an allotment, with one suggesting:

*'it's like the dig for victory stuff, you have a space for growing food, like the allotments.'* (Public, male, mid 60s).

Key expert actors also highlighted issues around these terms, by suggesting that *'to be honest, I still get mixed up with all of the definitions, there are so many'* (Alistair,

charity lead), while another suggests that they do not refer to the terms for fear of confusion, *'I try to simplify, that it may help them, so it is worth a try'* (Dom, charity lead). Therefore, highlighting a concern over the overly complex nature of this field, with different definitions and fluidity between the styles of therapeutic intervention, potentially leading to the public being confused over its adaptation. Nonetheless, this field, and its use of jargon is experiencing huge growth, from policy advancement including the 25-year Environmental Plan looking to extend places at CFs, and funding being directed towards green SPs, however the confusion over definitions and activities that fall inside or outside of this needs to be stronger, to enable easier understanding from both expert and lay perspectives. With other academics including Galardi, et al (2021), and van den Berg (2017) calling for development of consistent terminology, collaboration between providers and health professionals, increased awareness from both practitioners and the public of the benefits from CFs and CGs, alongside the existence of community assets/projects in general. In doing so, the sector could become better understood, advocated for, better funded, and used to its full potential. While this research advocates for the health implications of two study sites, it stresses a need for greater appreciation of the opportunities NBIs afford.

It should also be considered that the public participants interviewed also highlighted a worry regarding the usability of these spaces by locals. With both groups suggesting that those living in near proximity were not perceived to be making use of these projects, with one stating that *'it is always the same faces you see'*. This was developed with the participant, who implied that they thought this was because *'some people just aren't interested in this work'*, with others also suggesting similar. These opinions were also expressed by a charity key actor who expresses *'it's the same people that come back each time, it is hard to get new people involved for some reason'* (Bertha, charity in GM), confirming what the public suspect. This concept of *'seeing the same faces'* has been evidenced in previous chapters, considering elitism, exclusion and historical links to use of the environment (see work by St Clair, et al, 2020; Alkon and Agyeman 2011), further compounded by Sue Biggs, director of the Royal Horticultural Society, who said gardening; *'was seen as predominately white, middle class – and southern...We need to engage with new and diverse audiences'* (taken from an interview with The Guardian, 2015). Bertha, the charity lead based in GM went on to discuss how deprivation effects the ability to get people involved:

*‘People need to be galvanised and motivated, and you can’t guarantee that people will do something unless someone takes ownership...when you work in deprived areas, for some reason, they need permission to do something. I don’t know why, and I haven’t tried to understand why some need permission to value or do something.’* (Bertha, charity in GM).

This quotation emphasises the struggle that this charity has in trying to get people involved with environmental projects, like the CG or CF, and argues that those living in deprived spaces find it difficult to take part as they feel that they are not allowed to make changes to their space. Pitt, (2021), delves into to this by exploring how limited horticultural knowledge can result in disengagement, while Hastings, et al, (2005), illustrates that populations become galvanised after the first environmental changes are successful. The use of these questions within interviews therefore emphasises that these terms are not widely recognised by the public, even after prompts understanding by describing the terms, still there is not a popular awareness of academic terms within the population sampled. The findings here are indicative of the wider academic literature base, with a confusing set of descriptors and terms used by those in the field – and one that the expert key actors call for simplification. Although a study conducted into the specifics of these terms, and awareness by the public has not already been completed, this provides a narrow innovation across this field, providing a small contribution to knowledge.

### 6.3 Health and wellbeing impact perceptions

To instigate a deeper understanding of public perception regarding the impact that environments have on health, they were initially asked to rank their opinion over statements, the first being: *‘The importance of communities being able to access natural environments for health reasons.’* The statement returned a highly favourable response, with eleven participants suggesting that it was *‘important’*, and the further fourteen selecting *‘very important’*. On being asked to explain these views the participants remarked on a variety of motivations and impact to health, as shown in Figure 36, representing some of the quotations derived.



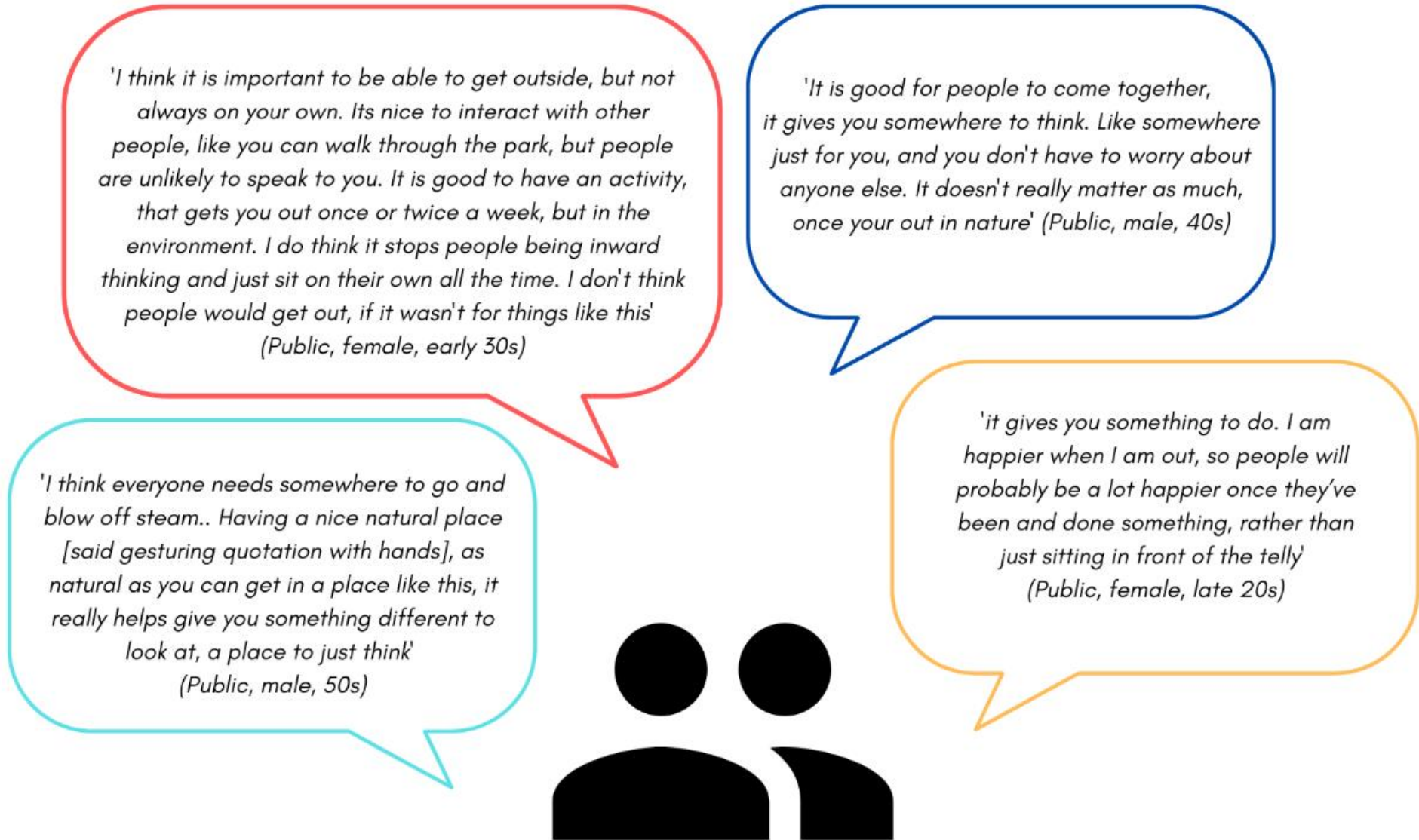


Figure 36: Perceptions on importance of natural environments

Figure 36 gives an insight to some of the opinions expressed by the sampled population, accessing the case study sites, which impacts the generalisability of these findings. However, it can be considered that those sampled all had a significant desire to have access to natural environments, whilst linking changes to their health as a result. This conclusion is also derived by other academics including Firth, et al, (2011) where they identify social connectiveness as the greatest motivation, though it could be considered that this is a branch of mental health. Academics such as McVey, Nash and Stansbie (2018), discuss this further and suggest that there are multiple motivations prior to health/wellbeing outcomes for individuals involved in these types of projects including neighbourhood engagement, increased leisure opportunities and social support. Yet when interviewing key actors, they were able to discuss impacts that nature had on mental health, with some providing their own case studies to speak about:

*‘We have improved the park and the wetland, so mental health is better, so their minds are clearer...people feel more fit...older people specifically feel that they can do things that they thought they could not do...people do tell us that they feel more physically able to do more, then that does have an impact on their weight’* (Bertha, charity in GM).

*‘[Name] comes along for the walking [in nature], and we have seen him going from strength to strength, before he would not speak, now we can’t stop him. His confidence has shot up, he doesn’t need as much help at home, like with the social, and now he feels able to come off his depression meds’* (Alistair, charity lead).

*‘We have lots of case studies showing the change in people on our website, people really have an infinity with being active outdoors, they change for the better’* (Fiona, ageing researcher).

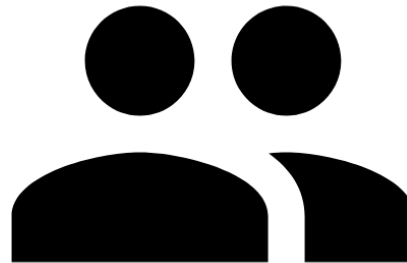
Interviewees were then also asked to give their opinions related to the existence of the case studies for the specific benefit to health and wellbeing of those attending. With all twenty-five giving positive viewpoints, with some suggested in Figure 37.

*'I think that health benefits are immeasurable and it impacts on community participation. So everyone can be treated as equals. People are able to be contributor rather than always being the one that receives. You can see them so much happier, because of it, they are rewarded mentally for helping the community. So the community sees the benefit of it, being out in the open air. It is endless' (Public, male, mid 60s)*

*'People are so happy that they have somewhere to go. It gives a protected time, where they only have to focus on planting, so minds can't wander to what they were worried, anxious or depressed about' (Public, female, mid 40s)*

*'I think it helps emotional wellbeing. It gives people something to look forward to, so they are emotionally stable from one week to the next, as they are looking to the next meeting or time that they will be coming along and seeing what they will get out of that one' (Public, female, late 30s)*

*'We make the best of what we have. We feel better in urban areas if we can get outdoors, I think we have to make the best out of the little semi-rural spaces we have left within these built up spaces. If we don't we will never interact with anyone, or feel the need to get out and be physical, so you would end up with a population that is depressed and fat' (Public, male, late 70s)*



*'I think it's really important that communities have projects like this one for social interaction mostly, but also keep active. I think people come along for more conversation than anything else. You hear about all of these mental issues that people are having nowadays, they need somewhere that will help their mental state, and I think this place would do that' (Public, female, late 60s)*

Figure 37: Perception of the case studies for health and wellbeing purposes

These quotations provided by the public participants highlight that they are aware of the possible benefits derived from accessing and contributing to these and similar projects. These positives range from individual mental health improvements, physical activity and to larger scale impacts on a community-based level. Therefore, emphasising a desire for these projects to continue interacting with locals for the benefit of health and wellbeing of those involved.

Those working in this sector were passionate when being interviewed about the benefits from taking part in community-based projects, with one suggesting *'its keeping people alive, I do not mean medically, but it is giving people that safe space to come together and work through problems, it's the social aspect that matters'* (Deirdre, charity spokesperson), while another illustrates that *'mental health is a pandemic in its own right, being able to come to projects, is just giving a small light in a very dark tunnel'* (Dom, charity lead). These quotations stress the value of these spaces for those suffering with mental health, and these could be vital in ensuring that the whole population are able take benefits from nature, therefore improving wellbeing. When speaking of ageing populations with key actors, they suggested that they knew this population were *'perceived as vulnerable and lonely but are often the ones out there in the community doing things, like gardening, making the place nicer...so they already benefit from nature and could be the example for other groups'* (Bertha, charity in GM), accentuating that this key actor believes that older people could provide a role model for younger generations to improve wellbeing in this manner.

Advancing this theme, the public interviews also suggest that accessing these projects would have a longer-term impact, both on an individual and at larger scales. This was evident, as all twenty-five participants suggest that they agree, or strongly agree with the statement: *'community based environmental projects, such as these, will be beneficial to the NHS'*. Key actors also highlighted that these projects could be beneficial in reducing the amount of social related illnesses presented at GPs, despite this they suggest caution was required as one articulates:

*'If we are not careful then we could say that if you fund a green project then it's cheaper than funding a nurse. And we are not saying that, and not comparing apples and apples, we are comparing apples and pears. People need to be*

*aware that if or when they need more help then they go to the GP' (Bertha, charity in GM).*

This is highlighted to connect the perception of these spaces with the benefit to physical and mental health, which in turn would reduce impacts on the NHS, but careful messaging needs to be incorporated to ensure that these opportunities are not perceived as a replacement for traditional medicine (when needed). The prospect of expanding the use of nature into medicalised settings is more advertised to the public, through the creation of wellbeing gardens within hospitals and architecture of new clinical buildings encouraging access to the outdoors, for the benefit of patients and staff alike (McDonald, 2020; Ulrich, et al, 2020; 2002; 2000; 1991; 1984). Again, these opinions have not been published at the time of writing, therefore it could be considered a contribution and requires further investigation for full comprehension at a larger scale. Participants were then asked to discuss why they felt this way (that projects would reduce impacts on the NHS), with some opinions expressed in Figure 38.

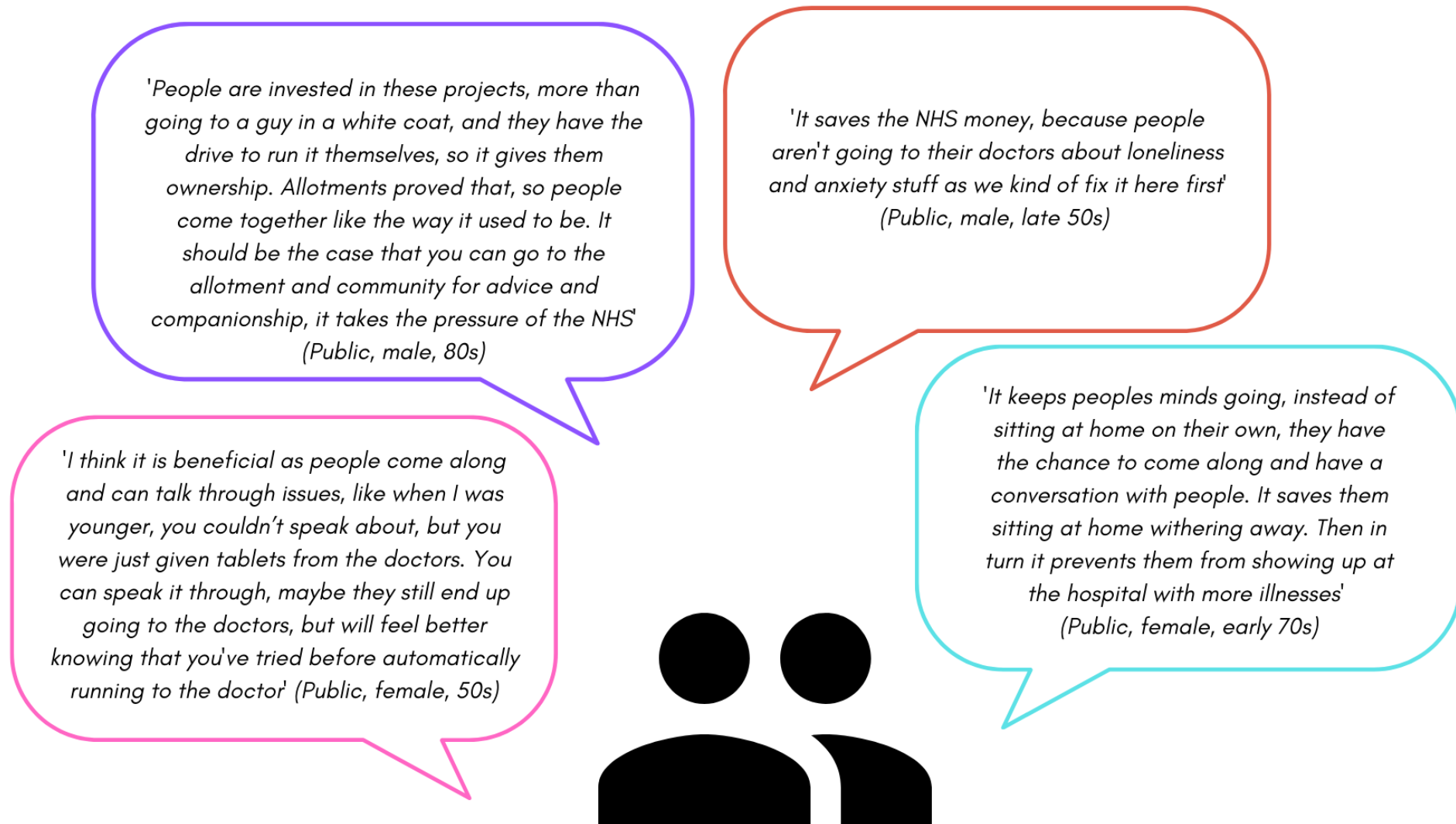


Figure 38: Perceived impact to the NHS

The viewpoints presented within Figure 38 identify that when asking participants to discuss their point further they conveyed that they believe that these projects have a viable impact to health and wellbeing, specifically referring to positives within mental health continually. However, when prompted no interviewees suggested that they had tried this for themselves, alongside this, as highlighted in the previous chapter with GFs, they had not been able to measure the influence or the ability to speak about issues had on the individual, or society as a whole – exposing a flaw in fully joining up the use of spaces and their impact. The public interviews often highlighted alternatives to traditional medication pathways and were generally positive with projects such as the case studies providing opportunities to *'soften the mental problems that people have'*. This indicates that the idea of SPs is favourably adopted by those interviewed, they also suggest that traditional pathways should also still be available for those in requirement, again reinforcing the need for appropriate messaging. Academics and clinicians within the SP field have suggested similar, with the opportunity for both traditional and informal support to be mutually symbiotic, each assisting the health of the participants (Husk, et al, 2020), and this was remarked upon within interview; *'we are clear that this [activity] helps but should not be seen as the only treatment'* (Bertha, charity in GM), and *'there are care professionals here to help when needed'* (Dom, charity lead).

It should also be noted that when asked about the health and wellbeing benefits derived from these projects, most of the public participants failed to recognise the importance of these sites specifically for older people, as they began listing the benefits to children and those of working ages. This resulted in noting this as a point of interest, and one that is reflective of the number of studies conducted in this academic sphere, predominantly skewed to understanding younger participants influence. When asking key actors, a similar response was gathered, with the majority referring to young adults and the effect nature projects has on this population, as *'they are the ones that all the funding seems to try to tackle, so we are pushing our resources and groups at younger ones'* (Alistair, charity lead). This highlights inequality, as older adults are generally perceived to be the population that would be most active in these types of activities, primarily due to the increased amount of free time due to retirement (Lovethegarden, 2021).

Through interviews, the public participants were asked to focus on the benefits they believed that older adults (those over the age of fifty), would specifically gain because of attending. Most interviewees suggested that they believed that this population would be the most positively benefited because of attending and went on to suggest that they would gain similar benefits to younger generations, highlighting replicable health and wellbeing impacts irrespective of age. In addition, interviewees deviated again from the older focus of these questions, with many going on to discuss the current effectiveness and availability of mental health support for younger adults, specifically young male orientated resources, with this evidenced by national charities such as Young Minds (2019), who suggest there are inconsistencies in treatment waiting times, while the numbers referred continue to increase. This is currently a pressing issue for the UK, with suicide rates rising by 10.9% in 2018, alongside being the biggest killer of men aged 20 – 49 (Samaritans, 2019). This issue was highlighted as significantly important in most interviews, suggesting that projects like this should also consider younger men, between the ages of 18 – 30, as there had been a spike in negative mental health resulting in suicide increases, particularly within the local area. This was particularly pertinent for one, who suggested that:

*‘There was a boy, well a man, he could not have been older than twenty, he was born here, lived here and died here. He killed himself because he didn’t have anyone to speak too. He went to the doctor; just given tablets. I think if he had gone to something like this [referring to the project] then he might have been here. He might have been able to see this [the project] into old age.’*  
(Public, male, late 50s).

As these public interviews were carried out pre-pandemic the mental health statistics have worsened for all. The Health Foundation (2020) found that more than two-thirds of adults in the UK (69%) reported feeling somewhat or very worried about the effect Covid-19 is having on their life. The most common issues affecting wellbeing are feeling worried about the future (63%), feeling stressed or anxious (56%) and feeling bored (49%). The pandemic was isolating for all, with some arguing that the information around aged communities was unhelpful and scaremongering. Age UK (2020ab) highlight that older people are typically extremely resilient and self-sufficient, although Covid-19 and the policy responses to it pose them with unique challenges. As stressed



in previous Chapters 4 and 5, the case studies, and similar projects faced different models of working, with some continuing to remain open as vital services (with precautions in place), while others closed for the full period, therefore limiting access to nature for those attending these spaces and contributing further impact to health and wellbeing. Key expert actors also stressed these issues, with their interviews carried out throughout the pandemic, they were able to evidence that this had a profound effect on the population with some *'looking for a way out into nature, to try and gather its mental health positives'* (Alistair, charity lead), while others highlighted the impossible nature of having to *'close activities for those when they needed it the most'* (Dom, charity lead).

Public participants continued to voice similar opinions, and similar accounts of incredible mental health pressures and struggles (pre-pandemic). Those that voiced these concerns all suggested these projects, or ones like them could provide an opportunity for this specific age group and gender to come together and communicate with each other in similar positions, to reduce the likelihood of events like this. These spaces often unmeaningfully exclude others from attending, with CFs only having a small number of placements available, therefore restricting, and potentially excluding those who do not meet the criteria. To give an example, gardening groups associated with Age UK do not specifically outline them for use by older adults exclusively, however this could deter those who do not perceive themselves as old. This was particularly pertinent when speaking with a key expert actor on the use of CGs and CFs within the pandemic, as they suggest:

*'Older people that come along are often isolated, this gives them the chance to chat and get to see people, with the pandemic, the conversation around old people being vulnerable has fed ageism discussions, so other people might not want to, or feel worried about interacting with older people again. This could really impact projects going forward as people could stop coming along, and intergenerational work might become even more difficult'* (Fiona, ageing researcher).

It was important to engage with these distressing topics and deviate from the 'older adult' category in this manner, as the interviewees illustrated a great passion for these projects to be open to all ages to benefit health and wellbeing of the masses. The

current UK academic landscape does not fully develop the idea of community-based resources, such as CFs and CGs (and wider green care) to alleviate severe mental distress, such as suicidal thoughts, primarily due to the reliance on traditional therapies, and the stigma attached to declaring a mental illness to others, therefore preventing them seeking assistance through group-based interventions (Machado and Swank, 2019; Wilson and Christensen, 2011). Still some academics such as Fountoulakis, Gonda and Rihmer (2011), look at the appropriateness of using community interventions across the globe, where they suggest that this practice is more accepted and practiced in other countries, but still not fully evaluated.

When developing this discussion further, the works of Oyama, et al, (2006), looked at older adults (65+) suicide prevention schemes, with community-based prevention interventions, through providing once monthly activities (including gardening). The result of this programme highlighted a significant change in suicide rates of older females, by reductions of approximately 74%, yet male rates were left unaffected (Oyama, et al, 2006). Therefore, indicating the differences still applicable between genders in society today, and the importance of including this aspect within the research. This finding doesn't concur with the suggestions from the interviewees, that projects like the case studies would reduce male suicide rate (even in older age), with it providing inspiration for further projects that could succeed.

Interviewees were steered primarily to the topic of those over the age of fifty, with deviation allowed, such as the important topic above. When linking back to the concerned age group of this research, the participants suggested that negative mental health is an important topic across all ages and genders. The majority suggest that across everyone's lifespan there are changes to mental wellbeing due to a vast variety of topics, with some suggesting examples like money worries, relationships, and grief, yet through communicating these with others it is possible to elevate these negative thoughts. Some examples of these have been included next:

*'You see that they try to cover up money worries, we can give them support if they open up, but it does take a toll on them'* (Bertha, charity in GM).

*'Everyone struggles with mental health at some point. It is easier for some to speak about it'* (Public, female, late 40s).

*'It must be hard for the older ones, they lose people, and then have to keep going'* (Public, male, early 50s).

*'People need to feel comfortable in discussing mental health before it gets too much. Too many people are being eaten up by worries'* (Public, male, 20s).

*'We see different people with mental health struggles, there should be no shame. Its everyone, young, old, wealthy, poor, and everyone in between'* (Alistair, charity lead).

Stressing that both expert and the public understand the value in speaking about mental health, across all ages as it affects all of society. Describing why, some suggested that they believed that these projects provide communication opportunities, which they believe diminished because of ageing, and many referred to retirement as a cause. They went on to suggest that a lack of communication could be detrimental for the health of this specific population, due to the links to cognitive decline conditions, such as Dementia and Alzheimer's. When looking to academic publication across this field, it can be suggested that social contexts should be considered when examining cognitive wellbeing in older adults, however this is unfounded as, some suggest that social isolation directly causes cognitive decline (Poey, et al, 2017), with others being at higher risk of these types of diseases (Yeh and Liu, 2003). This also builds association with justice, as previously highlighted earlier in the chapter, through being able to access these spaces, to be able to enjoy the environment, reap the benefits of doing so, while also being fully accessible for all.

When discussing this with public interviewees some suggested that they believed that: *'the elderly is the biggest drain to the NHS so these projects could help with that'*. They went on to advise that through attending these projects it would give older members of society an opportunity to discuss health and wellbeing issues with others at a similar stage in life, therefore providing an opportunity for comfort, regarding knowing that other people are facing similar issues. This was particularly identified by one who suggests:

*'Old people tend to have lots of health issues, and they just want someone to talk to about them. So, having this project would give them this chance to moan*

*about their issues, and then maybe reduce the likelihood that they will go to a doctor to do the same. I don't think they're looking for help, like medical help, they just want someone to moan to about it'* (Public, female, mid 30s).

This identified that the younger perception of the older people using these projects was for an outlet to discuss health and wellbeing. This discussion provides two possible outcomes, one for a largely positive outlook, where older adults have an opportunity to engage with others and discuss their health issues consequently. This could be positive as the older adults have the opportunity for communication with others and a sense of solidarity knowing that others have similar ailments. Alternatively, this also suggests a negative effect of accessing these sites, as this participant implies that people attend to discuss their health and mental wellbeing, with the potential to cause further health deterioration, almost by osmosis – again linking to the findings set out by the older adults themselves in Chapter 4.

A negative health impact could be others taking on the burden of understanding others health issues, therefore making people worry about them, and potentially negatively impacting on the health of those receiving this negative conversation. This quotation also highlighted the potential that these projects may divert the older participants from the internal validation to attend traditional medical pathways. This could detrimentally affect the elderly participants health, as they become aware of other participants health concerns, and this could lead to them not feeling that their health concern is of as great importance, something alluded to in the previous chapters. This could greatly disadvantage the health and wellbeing positives seen from these types of groups, as further health issues could be caused due to attending them, and therefore impacting on the NHS in the longer term, as they may have to deal with more severe health issues due to the delaying in attending appointments.

#### 6.4 Other benefits

The public interviewees attending these sites do not take part in the gardening or farming activities onsite, yet they were asked if they believed that they had or had not gained because of the existence of these projects in the local area. Of those interviewed, all twenty-five suggested that they had benefited, with some of the corresponding themes identified in Figure 39.



Figure 39: Personal benefit from case studies

Most interviewees suggested that their mental and physical health was improved because of being able to access the case study projects, through inspiring them to grow their own produce at home, learn more about the natural world, alongside viewing the groups work (e.g., flowerpots and hanging baskets in the local area). These were like the ones discussed in the previous section, yet they highlighted that even though they are not part of a specific group they still benefited from viewing the positive improvements that the group had made to the environment. They suggested that they attend the case study projects less frequently than those within the gardening or farming groups, but their sporadic attendance still had a largely positive impact to their health because of visiting.

They also suggested that they often felt themselves missing the spaces, and therefore had to make time to reattend the case studies, to improve their wellbeing. This concurs with the systematic review conducted by Bowler, et al, (2010), where they focus that even limited or infrequent access to public nature spaces help, yet this data does not cover CGs or CFs. Overlapping this theme, was the improvement to diet and nutrition. Onsite at case studies there are small cafes, that provide home cooked warm meals. These were remarked, specifically by older public interviewees as a key motivation for attending these sites, with one remarking that:

*‘I only come here once per week. It’s the only hot meal I get because I don’t want to be cooking just for me’ (Public, male, early 80s).*

This demonstrates that these projects can provide fresh fruit and vegetables to the case study cafes for the consumption of visitors. This proves particularly important to

the older attendees, as they often have diminished motivation to cook for themselves, therefore providing a key resource for improved nutrition. This has also been remarked upon by Alaimo, et al, (2008) who suggests that those taking part in growing their own food 'were 3.5 times more likely to consume fruits and vegetables at least 5 times daily' (pg. 94). This is particularly important for ageing populations as meals with fruit and vegetables assist with meeting guidelines of nutrient intake, assisting with dehydration, which in turn is associated with mortality, morbidity, and disability (Hooper, et al, 2014). While others went on to suggest that visiting these sites has empowered them to be more interested in the outdoors and/or other activities, as illustrated within Figure 40.

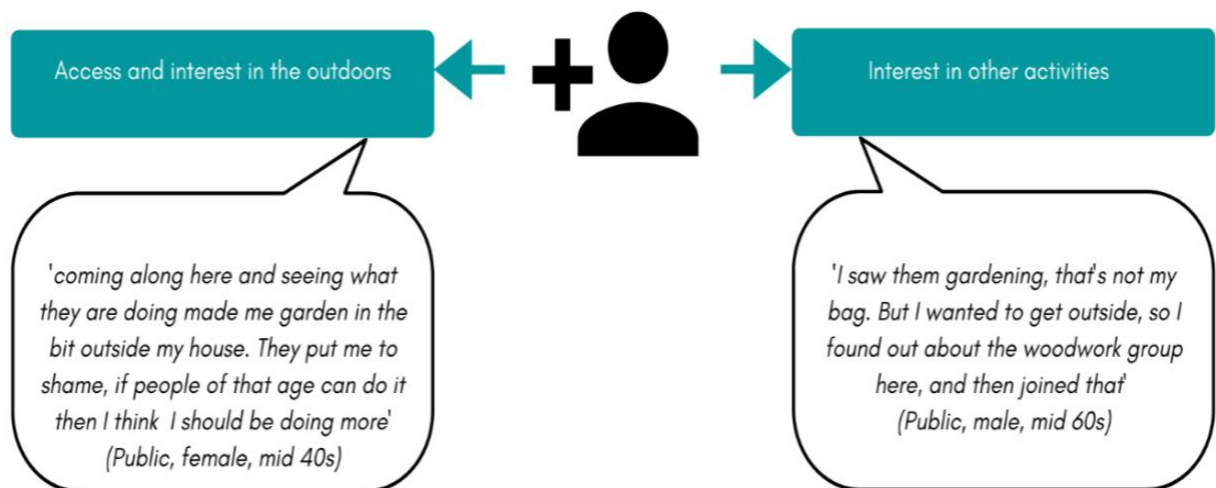


Figure 40: Positive impacts from public attendance

This emphasises that the existence of these projects has helped those wider than the groups physically involved onsite. Through the public interviews it became apparent that by experiencing the work that the members of the CG and CF groups (older participants) are having on these sites, it had pushed those visiting to get outdoors and potentially take up other activities. This could have a larger scale impact to health and wellbeing, as those people that are not directly involved gain positives from viewing these spaces, whilst also empowering them to become more active, learn and connect with nature on a wider platform. With academics such as Venter et al, (2020) illustrating an increased use of green spaces in the time of the pandemic, while Slater, Christiana and Gustat (2020) exposed those short periods in nature made a difference. Although systematic review carried out by Meredith et al (2020) around the required dose of

nature evidenced as little as 10 – 20 minutes can have significant psychological effects on urban populations.

When interviewing key actors they suggested that they were able to identify wider impacts occurring due to the existence of nature activities or projects, with one conveying that; *'we get little older ladies coming to site to have a cup of tea, they don't like gardening but they really appreciate being able to look at nature, because they don't get that in their built up granny flats'* (Fiona, ageing researcher), while another suggested that *'through the adoption of nature-based activities and infrastructure there are massive benefits to the public, through reductions in heat, potential flooding and obviously the health and wellbeing impacts of seeing it'* (Rosie, policy advisor). These quotations stresses that the public and key actors both feel that there are wider spread impacts from the existence of projects like those involved in this thesis, and these benefits reach further than those directly taking part. Therefore, they have the potential to assist with boosting positive mental wellbeing consequently, which in turn could assist the NHS through reduced detrimental health consultations (both physical and mental).

#### 6.4.1 Potential influence on these stakeholders

These viewpoints may have been boosted by the Covid-19 lockdown as there was a deeper desire to be outdoors and active across gardening activities (RHS, 2020), with Wortzel, et al (2021) finding *'that greenspace showed significant protective effects on both depression and composite mental health scores of the entire cohort'* (pg. 5). Yet this time also exposed an undesirable truth, that there is inadequate and unequal access to high quality green spaces (Grey & Kellas, 2020). To claim access to nature, home growing become popularised across the globe in the time of the pandemic (Mullins, et al, 2021; Music, et al, 2021; Rivas & Biana, 2021; Sunga & Advincula, 2021), however these do not provide communal or social benefits from growing. Projects like those in this thesis can assist with access, through generation and provision of green environments, as communities create spaces and groups themselves, with Kleinschroth and Kowarik (2020) concurring that: *'Given the stiff competition for available land in urban areas, creating more greenspaces will be a perpetual challenge. In addition to establishing new parks, innovative ideas are also needed, such as integrating greenways into transportation corridors, or allowing*

*access to informal greenspaces'* (pg. 319). It is suspected, through engagement with media reports, that this desire to take part in other activities when social distancing had been reduced there will be a greater attendance at projects like the case studies. This concept is also developed in the following section.

### 6.5 The future of projects

When speaking to the public it became apparent that the majority of those interviewed saw themselves as included in the project, as they used terms such as 'I' or 'we', as seen in previous figures. Insinuating that they also gain a benefit from one of attendance, or an individual impact from accessing natural environments in general. This suggests that these case studies are seen by the interviewees as community resources rather than just for those involved within the groups. This provides a strong basis for future development of these sites, as it shows acceptance in the local area, therefore further integration and access by the public would be possible. Interviewees were asked to consider how they felt about being involved in the gardening/farming projects in the future, represented by Figure 41.

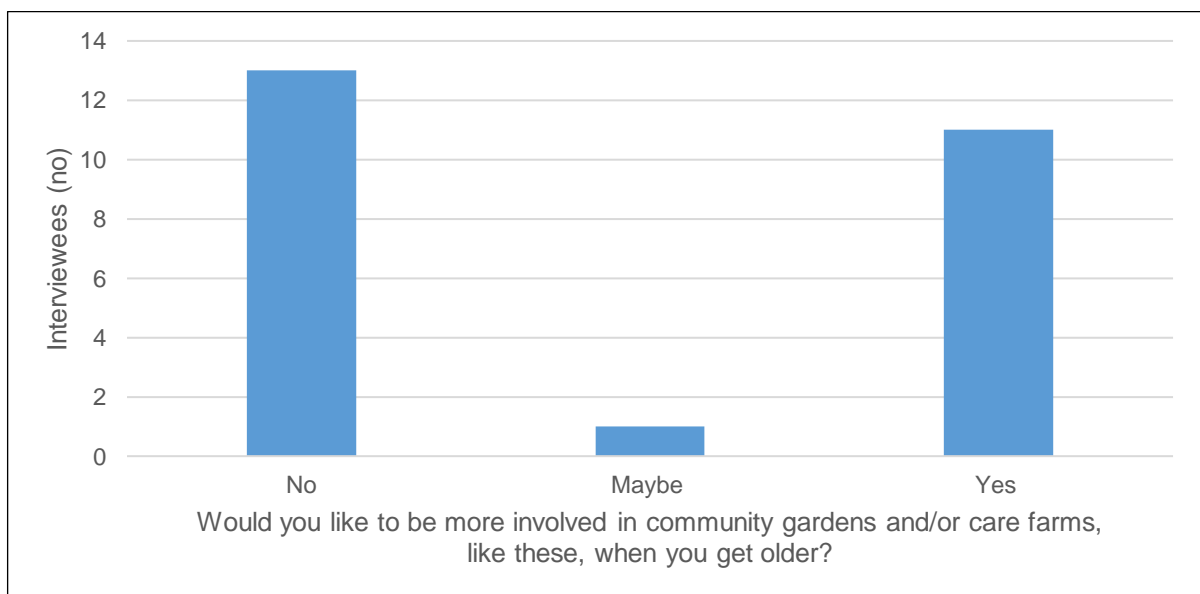


Figure 41: The desire to be more involved in the case study projects

A small majority (thirteen) of public interviewees suggested that they would not like to be more involved in the CG or CF projects when they get older, in comparison to the eleven that suggested they would like to. Key expert actors highlighted that they felt '*it is difficult getting older people engaged with groups, you can see there is only a handful*



*anywhere you go*' (Bertha, charity in GM), but *'people want to be involved, yet there is issues around pathways for strict green care options, and then people lose interest by the time they are eventually allowed, so informal options are better'* (Alistair, charity lead). This implied the issues around getting people engaged with the projects, many key actors were able to suggest that there was *'appetite for groups at the start and then they dwindle away'*, emphasising a drop of retention, and natural loss. While other key actors stressed issues around the restrictive allocation of spaces in traditional green care services (for which this study only touches on, i.e., personal social care budgets), with them favouring self-referral, so people from the community can attend groups if and when they please, as this *'allows groups to happen, people get the benefit from attending, and the plants are still looked after'* (Fiona, ageing researcher). A member of the public expressed their discontent at being placed on a wait list for an allotment, as they wanted to engage with UA in an individual manner *'to build skills and a bit of confidence'* (Public, male, late 40s). Waiting lists for allotments in the UK currently sit at approximately 900,000, for a space at one of the 300,000 council owned allotments (Power, 2019). This left the interviewee disheartened, he suggested he felt too young and inexperienced to attend the CG group, casting light on the difficulties people face in being able to take part in urban growing, one in which could go on to be addressed in future by these spaces to widen access.

The public interviewees returned a variety of reasons as to why people felt favourably about these spaces, yet did not want to be involved, including: feeling too old, lacking interest or limited time (which will be discussed in the next sections). The literature in the field, suggests other issues including limited space to effectively garden (Pauleit, Ennos, & Golding, 2005), limited agricultural knowledge (Pitt, 2021; Wise, 2014; Lake, Milfont, & Gavin, 2012; Hale, et al, 2011) and lack of time (Hale, et al, 2011; HTA, 2011; Kortright & Wakefield, 2011; Lake, Milfont, & Gavin, 2012; Wise, 2014). While literature often speaks of stereotyping the use of gardening towards older generations (Wallington, 2016), and meeting during working hours (Mangles, 2017). The expert key actors added to these discussion points, they also considered Covid-19 and the issues around researching this field, therefore these will also be interwoven within the following sections.

### 6.5.1 The ageing problem

Some reported feeling too old to take part, even with some in the 20 – 29 brackets responding with this. When probing this, the interviewee suggests that they have felt that *'this stuff is for kids, its childish gardening'* (public, female, late 20s), highlighting that this interviewee didn't want to be involved in gardening or farming due to the perception portrayed in taking part. This therefore illustrates a need to change the views on these practices to make them open for all ages to utilise. When speaking with other older interviewees they also suggested that they were too old to take part, as they perceived this work as physically demanding. Those over 50 suggested that they wanted to *'fill my time with different types of activities, so doing little bits of everything'* (public, male, mid 60s). Proposing that even if these projects were provided to people as they age, it is unlikely that they will partake in them a more frequent level that is currently undertaken, as those interviewed advised that they would like to have variety in the activities that they take part in. This identifies that these growing, and farming projects are beneficial and warrant existence, yet the frequency of participant visits would remain relatively static.

### 6.5.2 Lacking interest

Public interviewees also suggested that gardening activities were not of interest to them, favouring the use of more creative mediums, such as *'the arts, reading, knitting'* (Public, female, mid 50s). Some participants of the interviews suggested that they felt the gardening and farming *'just wasn't for them'* (Public, male, late 20s). This identifies that the interviewees suggest that they are not interested in gardening or farming and preferred alternatives such as book clubs knitting and/or haberdashery, therefore validating the use of an array of SPs focusing on a different interest. This was explored by public suggesting that gardening was socially accepted today as people have more opportunities to take part in a variety of activities include in online resources. Across younger adults (those under 40), it was suggested that they did not feel that the activities provided by the case studies would be socially acceptable, with them favouring spending time with other recreational areas (e.g., shopping, within the hospitality industry, on the internet). Yet the generation after this, collectively known as Millennials/ Generation Y (those born 1980 – 1994), contrasts this, with academic publications illustrating that people are more concerned about the environment and want to be instrumental in mitigating climate change (Naderi & Steenburg, 2018), particularly through green consumerism – which directly relates to the concept of

growing your own produce. Thus, illustrating a potential generation that will boost the attendance within the case studies, or similar projects. Again, the succeeding generation to this, the Generation Z (those born 1995 – 2015), look to impact on the interaction with the natural environment. Academics such as Singh and Dangmei (2016) suggest that this generation collectively favour online environments, which again could be detrimental to the sustainability of these projects, yet they are also *'very concerned with environmental issues, very conscious of looming shortages and water shortages which indicates that they have a high sense of responsibility towards the natural resources'* (pg. 3), building emphasis that environmental concern is continuing to grow with each generation, therefore stimulating the requirement for projects such as the case studies involved.

Key actors expressed a *'turning tide when it comes to using nature'* (James, academic), with suggestion that *'more people have become aware and use nature as a health and wellbeing resource, than pre-pandemic'* (Jenn, academic). All actors' interviews highlighted how important nature is now perceived across demographics and suggested that this would grow in the future (this theme will be discussed fully in the following sections).

### 6.5.3 Limited time

Public interviewees expressed that they would not have time in the future, as retirement ages will increase and there will be greater demand to take on care roles of family members. This was particularly suggested by the older interviewees who remarked on the limited time that they have due to caring for partners, caused by ageing conditions. This can be suggested by the following quotations:

*'I think if the wife stopped nagging as much. She might get a bit annoyed if I were to disappear for a while [to take part in CG or CFs] ...she needs me to be there to help, like get her prescriptions'* (Public, male, late 60s).

*'oh, I would love to, but I don't have the time. I am running about after everyone else. My other half is older, so I am looking after him and don't really have the time to do things for me'* (Public, female, mid 50s).

When interviewing public participants, they suggested that they had a reduced amount of time in comparison to previous ageing populations due to increased retirement age and a more restrictive economic background. While this generation also conformed to traditional genderised roles, this was developed by key actors who suggested that this was evidenced in the pandemic; *'the virus [Covid-19] either helped or hindered the gender stereotypes, for example some women were juggling a full time career at home, caring responsibilities and full time schooling'* (Fiona, ageing researcher). This was further explored, and the public suggested a divide in generations, feeling that older generations *'had it easier and we're able to afford a lot more'* (Public, female, 20s). However, a public interviewee suggested that *'pensions do not cover you for all of these expenses anymore, [gesturing towards the group] you can't afford to go to these things'* (Public, 80s, male), emphasising that these spaces have barriers in access even for those deemed by others as *'able to afford'*. This also identifies that the younger interviewee distanced themselves from the older members taking part in the case study groups, suggesting that there was a divide according to social demographic externalities, and potentially influencing the ability to gather social benefits from this intergenerational relationship (previously highlighted in Chapter 4). This was important across interviews with the public, and in particular younger members, who suggested that they felt that they faced an increasingly difficult ageing process in comparison to those before them. This included worrying about money and further caring responsibilities within families as people had to work longer and there were less resources available to them, leaving them with greater responsibility.

To follow this the interviewees were asked what would make people more likely to take part in the future/when they get older, and the public interviewees suggestions are displayed in Figure 42.

*'We need more hours in the day, outside work or having that time protected, so you don't have to do anything else'*  
(Public, male, mid 40s)

*'More promotion, that the group is open for everyone. Open days and stuff to get word out there that this resource is here'*  
(Public, male, early 70s)

*'groups were to branch out from gardening or farming, to other things, like woodwork or sowing'*  
(Public, male, mid 70s)



*'projects and members need to be inclusive of everyone. Groups per ages is good, but variety so its not just older people'*  
(Public, female, mid 40s)

*'Give us time away from work to take part in stuff like this. It would make me more likely to keep doing it as I get older'*  
(Public, female, mid 50s)

*'If people were more aware of the benefits from nature. If it was given in a simple way. So make it more acceptable to the public'*  
(Public, female, early 70s)

Figure 42: Motivation to attend related to prospective ageing

There are multiple motivations displayed by participants that if implemented would increase the likelihood of those people to attend CGs or CFs, and in turn potentially benefit their health and wellbeing. It was suggested that the biggest limitation to access in these projects was through communities disadvantaged circumstances, related to restricted availability of time and/or money. This proved particularly important for this study as it is situated within deprived communities which often feel the burden to the highest extent (concurring with literature, such as Kearns, et al, 2015).

Interviews with the public participants suggested that they felt that they lived within particularly deprived areas, with a large proportion of the participants going on to refer to these areas as *'forgotten'*. This influenced their opinions regarding taking part in the projects, as they suggested that people in these *'sorts of areas had to pick up the slack that the government weren't helping with'*. Implying that some of these individuals believed that people in deprived locations had to take it upon themselves to improve the environment, with one way being through the creation of welcoming green spaces (through planting on community land). While the previous quotation by a key actor, highlights an opinion that deprived communities find it difficult to claim land as their own – offering a critical lens from both perspectives. Favourable opinions were expressed at both case study sites, with the interviewees praising the work completed by these groups within the local area, highlighting an impact extending beyond the ramifications of the specific spaces. This is a concept explored by Mason, Kearns and Bond (2011), as they suggest that walking could be boosted in deprived settings by improving amenity use of parks and play areas, therefore simplifying access to nature. Yet academics such as Gidlow and Ellis, (2011) signify those deprived localities often face barriers to accessing green spaces and improved environments, such as elitism, antisocial behaviour and lack of facilities preventing their use. Therefore, it should be considered that community citizenship is important in the acceptability of these spaces and improvements made.

Public interviewees were also asked what would motivate them to take part in these projects as they age. It was often referred to that they should have more time to engage with projects such as these, but these participants also suggested that they might not get that opportunity due to the landscape that they live in. It was considered that the deprivation of the local area was having an impact on prospective retirement ages and life expectancy, with several interviewees suggesting that they didn't feel that they'd

live into old age. It concurs with the expected life expectancies of the wards in which the case studies are situated, as suggested in Table 14.

Table 14: Average Life Expectancy in wards of case study sites (adapted from Purdam, 2017)

Gender	Community garden site	Care farming site
<b>Male</b>	71	66
<b>Female</b>	78	74

The table signifies the disparities faced depending on geography, as it currently denotes the average life expectancy of those living in these deprived locations is below the average for the UK, at 79.6 years for males and 83.2 years for females (Raleigh, 2019, also see Office for National Statistics, 2021a). This portrays that those living in disadvantaged spaces are continually behind their wealthy counterparts, across accessing amenities, services and even in death. When looking specifically at the life expectancies surrounding the case study sites, all average life expectancies are found to be under that set for the UK, warranting consideration and active planning to reduce these inequalities.

However, people liked the prospect of engaging with these projects as they suggested it gave them '*protected time with the environment*' (Public, female, mid 50s). This was a concept that developed with interviewees, where they suggested that they didn't feel that they had time to engage with natural spaces, due to a societal norm heavily weighted to dedicating time within the workforce alongside any free time being preferentially spent at spaces such as shopping centres and/or catering and hospitality venues. Portraying the influence that society has on the allocation of free time, with a shift in attitudes towards alternative interests/hobbies (shopping/eating instead of gardening), therefore restricting free time in the outdoors.

To get a deeper grasp of these opinions on longer-term perspective, interviewees were asked if they would be more likely to attend projects like these, as they get older. The majority suggested they would because they would gain more free time, therefore potentially reducing time spent indoors, and pushing people to seek alternative interests, which may also develop across outdoor activities, such as gardening. Key actors reinforced this attitude:

*'There are so many people that come to me asking to take part in the nature activities when they retire, they don't want to be doing nothing, they are the best resource as they often have more knowledge than me about nature. They become happier because they can move between work and into the project, so they are still doing something, it doesn't hit them as hard – they are not sitting staring at the walls'* (Alistair, charity lead).

*'If you can get people doing both part-time, like the work and gardening, then it makes the transition easier. They build up friends, so mentally it's not as bad, because they go from seeing people every day to not very often'* (Bertha, charity in GM).

This concurs with work from Oksanen, et al, (2011) as they suggest that mental health improves with retirement. It was suggested by interviewees that they would like to engage with similar projects (gardening or farming based) prior to retirement as it would provide a transition towards reduced hours at work, with some offering that it would have a positive impact to their working output through improved mental health of the workforce. Academics such as Steffens et al, (2016) agree with this thought, as they highlight the importance of social constructs, such as these groups, for health/wellbeing particularly on the transition between work and retirement. Going on to suggest that access to community social group settings improved quality of life, objective health, and a predicted reduced mortality.

Alongside these, interviewees also suggested they'd be more willing to take part if these volunteering hours could accumulate towards a reward at work (with one suggesting *'a similar style to Duke of Edinburgh, but for older people'*). Again, the interview then reflected on the idea of incorporating this format prior to retirement, it was suggested by all that they believed that this would be beneficial as it would allow relationships to form within ageing communities prior to retirement. It was suggested that this would be appropriate and beneficial to mental and physical health, as participants would create the relationships before, they had more free time, then when retirement did occur, they were able to attend these projects without anxiety as they were already accepted within the group. This was explored with the interviewees, and they suggested that this would be beneficial as it would prevent them from retiring and



becoming reclusive or isolated, which in turn could prevent detrimental mental health, through reduced communication, consequently cognitive decline and mobilities across physical abilities.

#### 6.5.4 The outside world; a pandemic

It should be considered that public interviews were conducted prior to the global pandemic (Covid-19), and the consequent lockdown across the UK. This put *'great stress, pressure and worry onto the those in the field'* (Jenn, an academic), with a mixed approach to how projects like those involved in this study would continue to operate in this period. Due to the community/group approach to some projects, many closed their doors and participants were unable to attend, while others were able to continue if doing *'vital work'* (James, an academic). It is suggested that most CFs remained opened, with just under half able to deliver as normal, while in CGs were in a similar position (Social Farms and Gardens, 2020). However, this caused some sites to respond by continuing to grow, using skeleton staff, and providing fruit and vegetables for those in need in the local area. Yet operational in these terms fails to recognise the impact specifically to older populations who were unable to access these spaces due to being asked to shield for the benefit of their own health, evidencing:

*'the unfair nature of the pandemic, but also how older people were forgotten. You see surveys saying various services are open as lockdown was lifted, like your surgeries and things like garden groups, but they are not accommodating for older people, they were still asked to shield. Even after shielding stopped, they were still worried... Doors are open to site, but they are scared to go...they are given the option of online too, but some don't know how to use that either, or it is not the same'* (Fiona, ageing researcher).

In the time of the lockdown, there was *'an increase in the number of people visiting the outdoors to enjoy nature and stay healthy'* (NatureScot, 2020). The older populations (and those determined to be clinically extremely vulnerable), in the UK were asked to shield, making it incredibly difficult for them both mentally and physically in this period, with the Office for National Statistics found that 35% of those shielding suggest that their mental health is now worse (2020). A study by Age UK (2021c) has tried to understand the impact that lockdown has had on older populations, they suggest

- Physically, 1 in 3 now have less energy, one in four are now unable to walk as far as before and one in five are now less steady on their feet.
- Mentally, 1 in 3 are now less motivated to prepare nutritious meals, 1 in 3 now suffer with anxiety because of the pandemic and the proportion of over 70s experiencing depression has doubled since the pandemic.

Even with vaccination programmes, the population is still faced with the issues of changing rules, and anxiety about getting back to normal, with key actors suggesting that the *'struggle continues, as older people will want to be back out, they've had their injections, but are worried about getting the virus from others'* (James, an academic) - therefore feeding an unsustainable landscape. For the general public in the period of lockdown, it was suggested that there were heightened desires to get outdoors and be involved in gardening or farming. The Royal Horticulture Society identified that their website interaction grew by 500%, stockists saw a boost of sales of seeds and gardening equipment (ITV Reports, 2020). While the rate of home-grown food production grew globally (Mullins, et al, 2021), and this adaptation of home gardens proved positive for ageing gardeners, with positive impacts to physical and mental health alongside sleep quality (Corley, et al, 2021). Ironically, a community approach to gardening or farming was just not possible due to the restrictions, and still restrictions place an important role in getting older adults back to these study sites – yet give inspiration for future use and benefit.

Key actors interviewed evidenced some of the ways that they realigned their practice to engage with gardeners, specifically through virtual platforms and then subsequently with social distancing regulations. The move online proved challenging, as they had to deliver sessions via virtual conference software, for which the older populations *'were not familiar with, so a lot of time was spent trying to upskill, some didn't have the technology and for some this just wasn't possible'* (Bertha, GM charity). Evidencing that this time impacted on the older generations in a negative way, as some were excluded from activities, resulting in the potential breakdown of relationships between group members (see Moore and Hancock, 2020 who identify similar consequences due to the move online). Even after rules were relaxed, another key actor discussed how social distancing rules became problematic:

*‘To really experience nature, you must be able to touch it, but you can’t sanitise trees or plants, so we had to be really specific about what could be done. I think to really get the benefit of being outdoors, gardening or farming you have to really immerse yourself in it, but you can’t do that if you don’t feel safe or can’t have a chat with someone else in the group’* (Alistair, charity lead).

This portrays the difficulties experienced when trying to realign activities, even outdoors, with relaxed social distancing measures. This key actor went on to suggest that:

*‘It is difficult on us, we are trying our best, but we can’t do what we did. Nature is amazing, there are so many benefits, but we are being sent mixed messages, it is safe to meet outdoors, but we can’t do our activities outdoors’* (Alistair, charity lead).

Evidencing the difficult nature of developing and delivering sessions to the public, even after rules have relaxed, while also glimpsing into the pressures experienced by those leading this field. Controversially another key actor, who will not be identified, went on to highlight the inequality *‘weighing up saving the old versus young in respect to growing projects’*. This interviewee highlighted awareness of mental health issues in younger adult men, for whom their projects were now concerned with, and identified the positive impacts that CG and CF has had on this population. Yet when, older adult health was interwoven into this discussion the key actor accents several issues they were coping with:

1. The number of younger adults requiring mental health treatment was increasing and wait times could be exacerbating the issue (Greater Manchester Health and Social Care Partnership, 2019). When comparing to older adult health at this time, the decision was taken to prioritise younger health.
2. Getting younger people (mostly primary school aged) outdoors and engaged with environments was easier in the time of lockdown (social distanced), as they were able to make their own way to site (therefore reducing potential virus spread on dependants, see Lewis, 2020) and were not shielding.

3. The paperwork concerning older adults, such as risk assessments, became increasingly complex in the pandemic to ensure safety of all parties, therefore making it more time and resource efficient to work with younger populations.

The key expert actor was not trying to downplay the influence on older adults, preferring to highlight the concern for younger mental health. They also identify that due to geographical location of projects and mobility of the younger adults they are perceived as more able to access sites and therefore the benefits from these projects. These pressures highlight some of the real-life barriers that older adults were and continue to face when trying to access CGs or CFs.

Throughout the period of Covid-19 there was illustration of the inappropriate nature of the current growing and farming practices, with shops overwhelmed by shoppers and the delivery services not able to fulfil the requirement. However, this does not reflect badly on the farming practices, yet due to social distancing requirements (and arguably BREXIT proceedings) it has become apparent that there is a limited workforce employed in this sector, particularly across commercial fruit picking – highlighting an area of issue within the current food sector (National Farmers Union of England and Wales, 2020). However, this does not directly impact on the sustainability of the case studies, yet it portrays increased public awareness of the issue, resulting in some growing produce for themselves, rather than relying on commercial approaches. A key actor, informing policy highlights that *'there is great potential for GI [green infrastructure] to contribute to local food production, but it's not being maximised, a lot of the food goes to waste'* (Fiona, ageing researcher), this was furthered by another who suggests *'there is not enough people thinking about the business case from these projects'* (Bertha, charity in GM). When speaking around these issues it became clear that the groups these actors were engaging with were growing more than they could use, therefore this surplus could be being put to better use, especially in the pandemic time when food shortages were felt. Shisanya & Hendriks (2011) and Sithole, Nkala and Dube (2012) give examples where projects could learn from by selling surplus products, nevertheless there is a reluctance for food sharing with strangers (Devaney and Davies, 2016).

Developing on from this, inappropriate funding streams and existing use of funding plagues CFs and CGs, as for some *'funding was ceased, and funds we already had*

*ended up being ringfenced for the next year, but it makes it hard to get through the pandemic, if everything is carried over to the next year'* (Jenn, academic). This increased the anxiety for many key actors interviewed, as they became worried about how they would support attendees without the funding to keep projects going, and it pushed others to *'find an economic case to make GI valuable for all'* (Rosie, policy advisor) – highlighting some of the positive and negatives developing from this time.

Ultimately this increased biophilic desire to get outdoors for the public, can be contrasted by concerns about attending group based activities, with a potent expression from a key actor; *'projects are struggling to get going, because people are still wary about working with other people, we are still told to work at home if possible, but then you explain it, and people feel safer because it is outside'* (Fiona, ageing researcher). Thus, conveying the concerns over the sustainability of these projects for the future, the business case of the CFs and CGs, while giving hope that the use of the outdoors will inspire others back to normal post-pandemic.

#### 6.5.5 Longer term issues

Key actors were also able to identify a plethora of issues with the current research field, including the lack of interconnection between users and non-users of NBIs, alongside the underlying economics. The use of qualitative data became a point in which most key actors highlighted as *'valuable in understanding the real benefits from these projects but it doesn't gather much traction for making the economic case'* (Rosie, policy advisor), evidencing another area which is detrimental to the sustainability of projects. This issue around funding was also remarked upon by another key actor who suggests that *'we can get short term opinions from people, we are not good a longer-term stuff or the qualitative, and that's really what funders want to see'* (Deirdre, charity spokesperson). Evidencing a longer-term impact on sites like those selected for this thesis, if data cannot be gathered then projects may not receive adequate funding to keep going.

The key actors suggest that these types of projects are going to be vital in the recovery of the pandemic, and budgets should reflect this, yet *'local authority budgets have been low since 2008, and there is little movement'* (Rosie, policy advisor). Further research, like this thesis will be helpful in gaining a deeper understanding to how health and

wellbeing changes, across the life course, in the hope that projects like these can continue to help people into the future.

#### 6.6 Conclusion of the external stakeholders' findings

This research has helped further the understanding of how the public perceives these CG and CF projects, with viewpoints from the public remaining consistent across both case studies selected. Key actors interviewed across all sectors in the field strengthen understanding and provide a deeper connection to the barriers and challenges experienced. Therefore, this chapter has contributed in the following ways:

- It has provided formal insight to how the interviewees feel about these older groups alongside understanding how they would benefit in the future. Mostly positive attitudes are held, by the public and key actors about the influence these spaces have on health and wellbeing. The majority expressed feelings that these projects were beneficial to the older groups using them and talked favourably about both mental and physical improvements that they believed would be caused because of regular attendance.
- The public interviewed suggest there is less of a desire to attend these groups particularly because their reduced motivation and/or lack of interest in these activities, yet this could be altered due to Covid-19 with new evidence of increased interest in the outdoors.
- Motivations to improve attendance at CFs, CGs and similar projects, for prospective ageing populations was closely related to financial instability, with participants suggesting that they would require fiscal aid to allocate time for this purpose. Specifically, around delayed retirement prospects due to deprivation, as these would ultimately spell greater desire to be included within these projects.
- While key actors expressed concerns about the Covid-19 pandemic affecting these spaces, they have also illustrated the desire to engage with the outdoors, alongside some of the longer-term issues that need to be considered, ensuring that these projects are sustainable for the future.

## **Chapter 7: A meta-discussion and conclusion**

### **7.1 An introduction for a discussion**

This final chapter brings together the findings from the different participants to enable a holistic overview of the schemes. The aim of this research looked to critically explore urban nature-based health interventions in the form of a case study investigating care farming and community gardening, while expressing the value older adults attach to these spaces and build evidence on its role within the wider green movement. Each chapter evidence that the aim and objectives for this research have been successfully met, as a literature review has successfully identified and examined the role of GI and identified the opportunities that are available to expand the green and green social prescription movement. This has been expanded on by using this case study example as an offering of GI in practice, with identification of how these spaces can be successful to potentially contribute in the future to expanding green spaces in urban settings and how projects like these can be included in green prescribing.

The thesis has engaged with a variety of stakeholders involved in the GI schemes to understand their perceptions and ambitions for the activities. This has been completed through working to understand the narratives from those both directly (older adults; facilitators) and indirectly (external actors; public) affected by the presence of two example GI schemes in GM. While these two GI health schemes in GM formed the basis of inquiry, through semi-structured interviews, regarding these environmental spaces and their impact on participants' health and wellbeing, as summarised in Table 15.

With the interviews, it was also possible to evaluate the development of the wider nature-based health movement across the UK, alongside using a literature review and comparison to two example GI projects in GM; developing conversations on the benefits and barriers experienced. While those who took part were also able to offer recommendations for improvement in the field, this is reflected on later in 7.4 to illustrate how policy, practice and research can be strengthened in the future.

Table 15: Main outcomes from the research

Main benefits	Main barriers	Possible opportunities
<p><b>Happier:</b> Older adults can articulate that they feel happier by being able to take part in nature-based projects and the community nature of these meetings. Along with facilitators who are also able to identify secondary benefits through volunteering and witnessing the impact that these spaces have on the wellbeing of older users. While those who took part in public interviews also recognised the impact that the improvement of the environment in the local area due to the GI projects also improved wellbeing at a community level.</p>	<p><b>Accessibility and motivation:</b> Due to several physical barriers, including urbanisation and inappropriate street design, NBIs can often be difficult to access. This was developed by the older adults within the case studies as they narrated the strain of unsuitable parking, and the difficulty with public transport access, resulting in reduced desire to attend.</p> <p>Findings illustrate the difficulty in keeping populations engaged with these study areas, with older adults empowered through planning and motivational outsiders. While other factors including seasonal changes also influenced the accessibility of spaces, therefore illustrating that spaces require flexibility to provide opportunities for all abilities, seasons, and interests. Though lockdowns and social distancing illustrated a capacity to self-motivate and continue growing in different ways, portraying capacity to overcome this barrier.</p> <p>While barriers might change in the future, more is required to motivate generations to come. Public findings stress changes in</p>	<p><b>Future capacity:</b> to improve access and motivation to attend NBIs, there is a requirement for careful design of an ever-growing urban world. NBIs provide a vital opportunity for integration of green environments with expansion, all the while bringing positive health and wellbeing impacts. Greater adoption of the healthier cities design is required to enable new spaces to be designed appropriately with access to green environments, but also with the needs of older populations at its heart.</p> <p>Greater advocacy to elevate the voices of the marginalised or forgotten is required to allow these spaces to be designed for all. Moving away from pre-conceived ideas and stigma attached to ageing, towards designing new urban spaces with those living there. Therefore, to enable the best possible future, it is integral to include older people within research and the discussion to fully understand the needs and desires of this population.</p> <p>The existing NBIs also require a network of support. Facilitators spoke of the community spirit of these groups working in unison around the country. However, a</p>



	<p>motivational factors and therefore these should be considered going forward. While those taking part just now also suggest they quickly outgrow these spaces, therefore further expansion is required, that suitability addresses the needs and desires of the whole population.</p>	<p>greater collaboration is needed to join up the mosaic of projects, allowing sharing of knowledge and resources, while potentially enabling a greater environmental impact to be felt (e.g., green corridors).</p>
<p><b>Healthier:</b> Older adults and facilitators remarked on the improvement to their health caused by regular attendance at the two sites. They were able to pull on examples of physical and mental improvements, while suggesting that this also had a consequent impact on their daily life's.</p>	<p><b>Inconsistency:</b> at numerous points inconsistencies in both definitions and economics were highlighted as significant barrier for the progression, sustainability, and success of NBIs. The inconsistency in definitions means that the benefits derived from interactions with green environments is not fully understood or appreciated. With stakeholders in this research portraying the difficulty in understanding the different interactions with green environments, alongside evidence uncovering that the public are not fully aware of the meanings behind terms used (e.g., social prescribing, green care, etc.). Still financial instability of existing projects was also narrated by those experiencing difficulties accessing funding. This economic uncertainty means that the field could see difficulty in the future, where projects are unable to be self-sustaining and therefore limit the access to these projects.</p>	<p><b>Appropriate support for the sector:</b> this thesis has given voice to those that see the health and wellbeing changes from attending these spaces, but ultimately more is required to sustain these projects in the long term.</p> <p>Facilitators talk of the struggle accessing appropriate funding, with many only funded for its initial set up. Then projects are left to sustain their growth past this point, often resulting in leaders being overworked with maintaining daily activities while writing applications for grants (and in most cases these are complex and lengthy). Funding systems need to support these groups in a more consistent manner, and ensure ongoing support is available.</p>

**More connected:** Social connection was illustrated in this thesis to have the greatest effect on the participants, with all remarking on the spaces ability to bring people together, and subsequently have an impact on health and wellbeing of those taking part. Yet, they also enabled connection to the earth, through education of the effects nature and value attributed to its conservation. Alongside this, findings illustrate a wider and diffuse effect on the local community, through providing spaces of opportunity.

**Monitoring and understanding changes to health and wellbeing:** A final significant barrier includes the inability to track the changes experienced by users of NBIs, due to the lack of documented monitoring by those within spaces.

This study evidenced that older adults do feel that there is an impact to their health and wellbeing because of attending these spaces, yet prior to the research some had not made the link. While facilitators reported of the inconsistent nature of monitoring these changes, alongside the barriers with extracting information from its participants (e.g., sensitivity, privacy). While external actors, especially fellow researchers advocated for greater understanding of the changes to populations health through well designed monitoring programmes.

**A greater evidence base:** Another opportunity is to express the opinions of a wider population. The research field is expanding with more knowledge on the impact felt from experiencing green environments, yet a holistic and flexible approach is required. To fully extrapolate the benefits from these spaces, research has the opportunity to engage with both direct and indirect benefactors from the existence of these spaces. While education promoting the possible benefits derived from these spaces also provides an opportunity to (1) generate a wider comprehension of the influence spaces have on the population, and (2) allow more people to experience nature.

This chapter will now proceed to develop a final discussion to pull more of these findings from the different participant groups together (7.2). It explores the thoughts and feelings of those groups independently of each other, while also engaging with the concordant themes between participants, from the connections made with other, the community and the wider world (see 7.2.1). However, it is also possible to consider how this research can have ramifications on the wider field, therefore discussion of the influence that these spaces can have on the wider green and social prescription movement is also developed through understanding more about the overarching influences expressed throughout the preceding chapters: inequalities, urbanisation, and sustainability (see 7.2.2).

## 7.2 A meta-discussion pulling the findings together

*“Five million years passed before humans evolved into what we are today. Therefore, more than 99.99% of our evolutionary history was spent in natural environments, assuming that urbanisation can be defined as post industrial revolution development. We have become the species we are today, living in a modern civilization, through a process of evaluation within a natural environment. Human bodies are made so as to adapt to nature.”* (Lee, et al, 2012, pg.16)

This excerpt identifies the connection between human and nature, and one that guides the need to conduct the research held within this thesis. While using NBIs, such as CGs and CFs, this thesis looked to further examine and develop the connection between human and nature through these specific media. Chapter two, the literature review, explored the theories of importance, such as Attention Restorative Theory and Biophilia hypothesis that evokes understanding of the integral connection between humans and the natural environment, providing the basis for this research to investigate, with exploration of how different nature-based spaces would influence health and wellbeing. The literature review (Chapter 2) also demonstrated that significant gaps still exist around the use of such spaces for older adults, including both positive and negative outcomes. Revealing several gaps in the knowledge base for which the objectives were developed, with the aim of this research study to critically explore urban NBIs, such as CFs and CGs, in GM and to ascertain their value for the

older populations and their role within the wider green movement. A qualitative study of these voices, facilitators and external stakeholders therefore increases knowledge about the enabling factors to motivate populations to use these spaces. To do this, the research used the voices of ten older adults based in GM, accessing a CF or CG, alongside eight group facilitators, and thirty-three external stakeholders (8 key actors, and 25 public interviewees). Exploring these voices not only gathers knowledge on the positive results, but also gives opportunities to find out about the negatives to influence change by reducing and/or removing barriers. The aim of this study has been met, as there is now a depth of knowledge added on the lived experience of regular attendance within these case studies, while the work has also examined the role of these sites in the wider green movement by engaging with external stakeholders. Therefore, this section of the thesis brought together the multiple participant groups initially held separately in the finding's chapters, while also considering how these NBIs assist with the wider green and social prescribing movement. Thus, the following meta-discussion considers:

1. *Bringing the users together.* A holistic approach to understanding sites, the voices of those directly and indirectly using spaces for the benefit of health and wellbeing - to fully understand how these opinions from different sites compare with each other. Previous research does not involve many voices that are negative or critical about the use of these spaces (e.g., users, facilitators, public, etc) – therefore weakening any conclusions that can be drawn, while this study advances understanding of these critiques. Older adults pose a population gap, as they are often missing from research across this field, therefore missing an opportunity to evidence the impact that accessing these spaces would have on this population.
2. *Intertwining this study with the wider green and social prescribing movement.* Investigating the geographical context of sites, including the socioeconomic background of users, the urban/rural debate, typography of environmental sites and overall sustainability allows this study to understand where and how opinions are informed. While this research draws together the findings from different green typologies (CG and CF), enabling a full understanding of these socio-environmental issues, providing understanding about the gap between these sites.

This meta-discussion therefore draws together the findings from the different user groups from Chapters 4, 5 and 6, allowing comparison between the direct users of the sites, those facilitating access and external stakeholders. This discussion enables critical exploration of the health and wellbeing benefits derived from these projects, how benefits are distributed and disrupted, alongside the limitations going forward. In setting out this meta discussion, there will be conversation around the three main common themes across participant groups; (1) happier, (2) healthier and (3) more connected, with these being the overarching themes arising from the findings Chapters 4, 5 and 6. Other residual themes are also explored including the effects of the pandemic and the future sustainability of these spaces. The chapter finishes with sections on the recommendations, limitations, strengths, contributions to knowledge, and ultimately future research opportunities.

### 7.2.1 Bringing direct and indirect user groups together

Chapter 2, the literature review, reported on the benefits received from nature, and the studies looking at CFs and CGs, however it identified that there was limited research on older adults using these case study sites (the specific CF or GCs), nor sites specifically in urban deprived areas. Chapters 4, 5 and 6 evidenced the opinions of different users of the case study sites, from older adults actively involved in these spaces, the facilitators of groups, the public, planners, funders, and policy makers. Each articulated how they believed these spaces impacted health and wellbeing, specifically of older adults. The findings from these studies reinforce the notion that health and wellbeing is impacted by these types of sites; however, urbanisation, deprivation and sustainability played a role in limiting the magnitude of benefits received – in which this section and the following discussion develops.

#### 7.2.1.1 Individual health and wellbeing

The findings chapters highlight the importance that the older adults placed on these NBIs, often suggesting them to be '*lifelines*', where they provide connection to other people and something they enjoy doing. The focus on older adults is important, with Walker (2007) advocating for the involvement of older adults for the purposes of '*consumerism and empowerment*' (pg. 481), alluding to the fact that elderly

perspectives should be considered due to increasing ageing global populations, therefore empowering a desire to be responsive to the needs and desires of this changing demographic. Engaging older adults in research is important in this case to identify the benefits that arise from NBIs, alongside highlighting the barriers, but also as they could have more free time to dedicate to leisure activities such as CGs or CFs (Agahi & Parker, 2005). However, others such as Zarotis and Tokarski (2020) show that leisure time is often dictated by other factors including education, occupational status and ultimately undermined by income. Therefore, it could be suggested that older people often have the most time available, in comparison to others, especially post work. Thus, NBIs can provide an opportunity for people of this age to come together, gather the health and wellbeing benefits from doing so, and arguably have the greatest chance to have an impact on the community as they have more time, resources and therefore ability to do so. Further consideration should be paid to the work conducted by older people in communities, and therefore policy and practice should identify and benefit those who make positive changes in the local area.

The older adults onsite discussed their health and wellbeing impacts at length, and overall were able to identify that their mental health was ultimately improved at a more consistent and significant level than physical attributes. Mental health was attributed to be reduced feelings of anxiety and depressive symptoms, while improvements were seen through them being happier, able to communicate with others, being useful and making a difference in the local area. Facilitators of sessions were able to agree with these, suggesting that participants enjoyed being outdoors, and this consequently impacted on these variables.

Physical health was also affected, however to a lesser degree. Older adults spoke of the happiness and tranquillity they felt when on both the CF and CG, while being '*excited and motivated to see each other the next week*' (Gill, older adult). This concept that community groups provide a sense of improved health concurring with findings suggested by Zaitso, et al (2018), who found that older adults in Japan reported feeling better, while other studies suggest community groups are protective against dementia, diabetes and mortality (Kopdo, et al, 2020; Ashida, Kondo & Kondo, 2016; Kanamori, et al, 2014).

Alongside this, those who helped set up the projects, or facilitate progress also evidenced witnessing both physical and mental health effects on the older populations they worked with, as discussed in Chapter 5. These included witnessing participants '*light up*' when onsite, being able to see friendships forming (between themselves and the animals), while physical attributes suggested included weight loss, feeling fitter and therefore more confident (also identified by Moffat, et al, 2017). However, they also remarked on the effect working within these spaces had to their own health, through giving back to the community by supporting the work of these groups, for which existing research has yet to explore. They did also highlight issues witnessed within older adult groups, such as group dynamics and the declining health of participants. Morbidities and mortality within interviews continued to be a focus for older participants and stressed how activities on these spaces both helped and hindered their ability to cope, as evidenced in Chapter 4. While measuring these changes over time also proved to be difficult, as they advised the older adults themselves are difficult to track over time, a lack of knowledge on how to do so, and there are confidentiality issues raised by the participants themselves. The pandemic illustrated the hard work achieved by the facilitators for the success of these projects: with an example given from the gardening project where they closed their doors to participants, however the main facilitator worked tirelessly to ensure spaces still grew, and the community was supported (through plant, fruit and vegetable drop offs), as shown in Chapter 5. However, resources available for these spaces was continually suggested to be an issue, both pre, during and post pandemic (as portrayed in Chapter 6), with these limitations explored later in this discussion.

#### *7.2.1.2 Connection to animals and wildlife*

All participants within this thesis could identify the value in connecting with nature, particularly in an urban area, where '*there isn't as much opportunity, in comparison to rural*' (thesis older adult participant). Current modes of city planning have not typically developed with natural spaces or habitats in mind, limiting the access to nature and wildlife (Magle et al, 2019), yet spaces such as nature reserves, golf courses, cemeteries and gardens are a valuable resource of wildlife to exist (Gallo et al, 2017; Belaire et al, 2014). The sites investigated as part of this thesis enable animals, and in particular urban wildlife to interact frequently with humans. These human-wildlife interactions in urban settings have been suggested to be mostly positive or harmless

(Soulsbury & White, 2015), while providing a viable opportunity for conservation. Participants from the CF spoke about the impact that the resident animals, such as pigs, chickens and a horse all played a role in health, as they were able to engage with them, providing a caring relationship. As such this generated a mutualistic relationship which adds to the concept of the Ecological model of health first explored in Chapter 2, as it indicates the ability for human health to improve while these acts also improve the planet/community. These interactions proved particularly important for older adults, as it gave them a sense of belonging and worth, as they were trusted to look after the animals, therefore improving their mental health consequently. This relationship has been previously explored by others, including Leck, Evans and Upton (2014), who suggest that it provides '*opportunities for personal development, social inclusion and rehabilitation can be equally important to many*' (pg. 314), suggesting some of the benefits that individual receive from caring for the animals. However, the farms also benefit through this diversification, as the facilitators health is benefited by seeing users happier and healthier, alongside other subsidiary benefits including increased income (for example through personal placement payments, social prescription), and improved perceptions of the spaces, as communities value the resource.

A systematic review conducted by Methorst, et al, (2020) expresses the positive health and wellbeing influence that wildlife can have on human health and wellbeing. Those based in community gardens also spoke about the impact that wildlife had on their health and wellbeing, which was initially unexpected due to the small scale of the sites and when compared to the CF site as they had animals cared for permanently onsite. CG older adults conversed about the smaller organism's found in soils, or birds and bees attracted by the pollinating flowers. They made connections with the wildlife in a slightly different manner to the CF participants, they found these interactions therapeutic, remarking that they '*watch them float about, making my cares disappear*' (Grace, older adult). Both groups highlighted that these interactions made them feel happier, but also calmer, with the interactions providing a topic to initiate conversation with others – something those older adults were identified to consider as difficult. Facilitators and external stakeholders suggested similar, as they witnessed the changes in participants moods because of interacting with the resources onsite. The (in)formal interactions with animals and insects being specifically important for older people, their health and wellbeing, especially alleviating stress, in which these NBIs



can provide these connections, therefore warranting further research and development of sites.

### *7.2.1.3 Positioning these spaces as UA opportunities for communities*

The older adults coarticulated that they felt their health and wellbeing had been positively affected by regularly attending projects, however some negatives were also experienced. The positives included feeling more happy, healthy, and less isolated, while GF participants also suggested their health and wellbeing was positively affected by attending groups. They articulated that the main motivation in attending projects was for socialisation purposes, with age specifically highlighted as factor influencing this. Locher, et al, (2005) propose that: *'As persons age, their need for social support increases. A large body of research consistently shows that older adults with better social support systems experience better health'* (pg. 748). Participants of this study advised that they felt more isolated as they aged, giving examples such as bereavement and declining health - however these green activities provided protected time in which they knew they would be able to meet others and potentially discuss topics that were more prevalent in an older group. This is also considered by Cantarero-Prieto, Pascual-Sáez, and Blázquez-Fernández, (2018), who completed a macro-regional analysis on the relationship between social interaction and the probability of chronic-illness, where they illustrate that there is an increased propensity to be diagnosed with conditions if older adults are isolated - therefore conforming to the suggestion that groups like those investigated in this thesis, could assist with preventing chronic illness in older populations.

Due to being able to connect with each other, those involved in this study felt more able to eat and consume healthier products. For example, some remarked on the undesirable nature of eating alone, while being proud of the fruit and vegetables that they have been successful in growing. Locher, et al, (2005) portrayed that *'geographic location is important in regard to general health outcomes. Several factors may influence the poorer nutritional health outcomes of older adults'* (pg. 749). Going on to suggest that rural communities are more likely to rely on home-food production, while supposing that urban counterparts have greater access to retail food markets. Research is now being conducted on the influence of food growing on nutrition, with food insecurity being an issue for developing and developed countries alike, encompassing issues like quantity, quality, under and over consumption (Sonnino,

2016), while austerity has driven more people in the UK towards food banks (Lambie-Mumford, & Loopstra, 2020). Systems like CGs and CFs enable food to be produced locally and at low cost, providing nutritious foods in a sustainable and equitable manner (Fanzo, et al, 2021). The research set out in the thesis gives emphasis that local growth of produce is possible within urban settings, therefore contributing towards healthier diets, while being economic and benefiting older adults growing.

In this case, the ability for participants to come together to grow also benefits the health and wellbeing, with older adults speaking in Chapter 4 of being more likely to eat fruit and vegetables having grown it themselves. These findings connect with a wider body of work in which the potential for more local food production is explored, with examining food security (Prosekov & Ivanova, 2018; Maxwell, 1996), food sustainability (Béné, et al, 2019) and food governance (Coulson & Sonnino, 2019). Current supply chains have made it possible to spend less money on more calories, which in turn is less nutritious, contributing to malnutrition alongside chronic conditions, particularly those living in deprived urban areas (Morland and Filomena 2007; Nestle 2002). In the context of this study, older adults spoke of their ability to grow produce and use it themselves, which was particularly important for some, as it provided nutrition, but also reduced the economic spend on food. This therefore contributes to theories explored in Chapter 2, such as Presence Theory, Social Support and Social interactions concept, and Self-Efficacy theory. As these groups evidence that through these supportive environments there is the opportunity to learn, grow and become healthier through being active in the environment (see also SCT and the Health Belief model), while also facilitating opportunities to improve health rather than the conditions associated with ageing.

External stakeholders remarked on this capacity to grow locally, help those growing but also grow the local economy. Participants spoke of food sovereignty, '*the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems*' (Patel, 2009, pg. 666). Older adult participants suggested that the localised and low impact nature of growing was a reason they enjoyed taking part. This conveys an underlying motivation for people to be involved and potentially attract new people to growing locally as increasing attention is paid to the impact activities have on the planet, turning towards self-sufficiency therefore reducing the impact felt from farming and from transportation of foods (Kriewald, et al, 2019). However, when attending

groups, it became clear that more space was a resource required by both study sites, with both groups expressing desires to expand, however due to space limitation imposed due to urban location, this was not possible. Therefore, participants expressed that they felt that they were unable to meet their full growing potential, and as a result health and wellbeing was compromised.

Alongside this, other groups (that were followed in the recruitment phase of this study), disposed of produce because of over production, illustrating loss from both perspectives. Highlights some of the current failures in the system and one where appropriate balance should be initiated to allow those without space to grow in alternative spaces, while the redistribution of food products from those 'over producing' would prevent loss of local produce. An alternative method would be to amalgamating or strengthen the relationships between groups working across regions, however this is often fraught with difficulty as these change dynamics and sometimes causes disputes, therefore resulting in negative health and wellbeing outcomes.

#### *7.2.1.4 Social development: urban community cohesion*

Lai, Zhou and Yuan (2021) suggest that community cohesion '*covers a rich variety of aspects such as social integration, community identity, and support...On the one hand, social capital, an evolving and rich concept defined as features of social organizations, such as networks, norms, and trust, facilitates action and cooperation for mutual benefit and promotes social cohesion*' (pg. 2), they go on to argue that there are four dimensions of community cohesion: interaction, participation, belonging and environmental satisfaction. While Elliot, et al, (2014) reported that community cohesion directly impacts on wellbeing, demonstrating if individuals have social support their wellbeing can be improved as a consequence. Zuniga – Teran, et al, (2020), illustrates that GI provides an opportunity to improve the urban environment, increasing resilience and sustainability, while also providing spaces for community cohesion to develop (Tidball & Aktipis, 2018). Therefore, the GI projects examined in this thesis provide these nature-based opportunities, where agglomeration can occur, improving the environmental spaces of the local area and the health and wellbeing of the individuals making an impact.

This thesis has given examples of where the communal nature of the sites has also spread out past the boundary of the premises, into the local community, by planting

outside of council buildings, hospital grounds, community centres, civic lawns and installing hanging baskets across the region. In the cases of this study, it was seen to build a sense of connection, community spirit and pride (see Wakefield, et al, 2007), as participants felt that they '*were giving back and being useful*' (Gerald, older adult). Facilitators articulated that they also benefited mentally from doing so, while members of the public interacted with the groups to suggest how appreciative they were because of what the groups were contributing to the local area. Many facilitators were able to give examples of when the public engaged with group members, building confidence and general wellbeing for both participants in these interactions. The influence that the group has on the local community is seen to be powerful, with academics such as Teig, et al (2009) describing those activities such as CGs, serve as a positive social influence, acting as a catalyst for other positive place-based social activities to occur, adding strength to the relationships of locals while generating environmental improvements.

Yet, the findings from the thesis highlight while the public understood the value of these projects, especially in providing nature within the urban area, they were not sure of how to be involved. They went on to illustrate potential barriers of being involved in the future, including lack of time and care responsibilities - emphasising a requirement to establish a greater connection to the community with active signposting to opportunities for involvement. This diminishing connection to the community was also identified by some older adults, as they suggested the numbers of participants was consistently dropping, and they would like to see increased membership within groups.

The Covid-19 pandemic influenced the connection to nature, which is reinforced by theories such as the instinct to interact with nature (Biophilia hypothesis), in an attempt to bring about stress-relief from a difficult period (Presence Theory) and health promoting behaviours to remain healthy and happy throughout lockdowns and lifting restrictions (conforming to the ideology of the Health Belief Model and Salutogenic Theory) alongside the connection to community (through SCT). The groups involved in this research had to stop in the pandemic, primarily due to the age of participants. Soga, et al, (2021ab) studied the pathways, evidence and implications of the human-nature interactions in the time of the pandemic and found that there was increased interest in outdoor activity, positive attitudes towards nature and increased opportunity to directly interact with wildlife. But as Bowe, et al (2021) elaborates:

*'whilst the pandemic has created an urgent need for people to find opportunities for social connection to support their mental health, it has also created demand for community members to volunteer time to support others'* (pg. 2).

This work strengthens the output of this research, as it confirms that NBIs would provide facilitation of social connections and assists with fulfilling the desires set out in the aforementioned SCT, yet through the pandemic they had to be closed and these outcomes could not be realised. However, it should be said that facilitators worked tirelessly to engage with older adults through calls, or by dropping of food packages on doorsteps – however as a GF suggests this *'fell short of the benefits received from seeing each other'* (P1). This illuminated concern over the sustainability of projects and their users, with academics and policy makers suggesting that this period put added stress onto project leaders, with some facing detrimental health as a result of increased stress and uncertainty of the future of projects. Even if projects survive the pandemic lockdowns, stakeholders suggested they now face concerns over *'trying to get people back using the spaces'*, as they remain cautious of interaction. This concern was highlighted as particularly important with older adults, due to the longer period in which they had to shield, potentially making it harder for them to *'return to normal life'*.

The findings were able to evidence the narrative on how these small scale NBIs had an impact of health and wellbeing, with older adults and GFs evidencing lived experiences, while the key actors witnessed the effect on themselves and the older adults taking part. They were able to suggest that the main motivation in attending a site like the case studies would be for socialisation, creating relationships that in turn assist with wellbeing. This thesis has developed the discussion around the impact that these spaces have on older adults, evidencing the contribution that a sense of connection plays on their health and wellbeing, however further discussion is needed by stakeholders around the rehabilitation of projects post-pandemic to ensure that all projects are supported, therefore enabling social connection of communities to strive into the future.

#### 7.2.2 Intertwining the study with the wider green and social prescribing movement: growing flowers and food for wider impacts

Participants speak of the wider impacts that these spaces have on the community, local regions and even at a wider scope - where some are used as exemplar case

studies for others to learn from, while also building evidence of the need for NBIs to be available to assist with the development of green environments (with the benefits they provide) alongside the SP movement. Participants discussed the possible impact that these spaces had on concepts such as local food availability, sustainability, community cohesion and even local empowerment. This section discusses these topics, by referring to the findings of the thesis, while incorporating wider literature to explore the importance of these spaces and the future of resources.

#### *7.2.2.1 Acknowledging inequalities when developing NBIs*

The UK has had a long-standing issue with inequalities, with an estimated 14.5 million in relative low income (22% of the UK population) in 2019/2020 (Francis-Devine, 2021), with the gap being exacerbated in the pandemic, while those in the lowest paid jobs three times as likely to experience consequences including job losses and being furloughed (Cominetti, McCurdy & Slaughter, 2021). These inequalities present barriers situated within less affluent areas, identifying that due to socio-economic situations some individuals are negatively affected. Globally this is seen as communities experience differing poverty levels: '*Substantial geographic segregation also exists within nations, with income poverty (or conversely, wealth) being much more prevalent in certain cities and neighbourhoods than others*' (Bouzarovski & Simcock, 2017, pg. 643) (also see Dorling, 2014; Dorling & Ballas, 2008). Dorling and Ballas (2008) highlight that due to geographic location there is variance in the allocation of resources and opportunities, with some areas being unfairly disadvantaged. Due to socio-economic restrictions, some people experience poor living conditions (e.g., energy inefficiency) and further debt (e.g., increased energy bills), resulting in reduced expendable finances.

Several studies based over long periods of time, and systematic reviews have reported the link between neighbourhood deprivation and prospective health outcomes, with exposure over the life course being specifically damaging in later life (see Bonomi Bezzo, et al, 2021; Jivraj, et al, 2020ab; Rocha, et al, 2017). Some examples of how poverty affects health include: stress caused by worrying about affording daily living costs, sacrificing food or fuel, increased feelings of helplessness making it difficult to access healthcare and lowering self-esteem (Westwater, 2021). While Grossman and Creamer (2017) say: '*Participation is often limited to those in higher socio-economic groups*' (Grossman & Creamer, 2017), stating a clear link between background and

ability to participate in community activities and wider aspects such as planning decision making.

Both case studies selected for this research are in urban deprived locations, evidenced when looking at the Index of Multiple Deprivation (IMD) survey between both sites, with the CG, ranking in the 2<sup>nd</sup> most deprived decile (2) (CDRC, 2019). While the CF is in the most deprived in decile (1) (CDRC, 2019). Locating this research within deprived areas highlighted its implications on health and wellbeing, as older adults attending sites sometimes spoke of concerns over money, the inability to afford meals or equipment for the sites. Most equipment was already available onsite, however informal purchases of equipment occurred regularly, which in turn had a detrimental effect on the wellbeing of those facing the inability to contribute, as they felt shame and embarrassment, causing them to hide this from others in the groups (see Salvatore & Grundy, 2021). The development of these negative thoughts when accessing the CG or CF suggests that there could be a stigma attached to the ability to take part, with some able to afford equipment, while others cannot. The experience of shame is also thought to be correlated to ageing, physical disease and quality of life, thus further detrimental health could be felt through inability to '*keep up with others*' (Mantzoukas, et al, 2021). The presence of shame was also evidenced by GFs within this research as at points they were unable to access adequate funds for the needs of groups, with external academics concur by suggesting that NBIs can be expensive to set up and continue running (Thompson, 2018).

Therefore, there is a moral requirement to reduce the shame felt by those attending groups, thus a need to fund these projects in a manner that participants do not need to purchase goods to keep groups successful. Facilitators have highlighted in Chapter (5) that they feel that funding is consistently difficult to navigate, with short funding cycles and tight budgets making it unsustainable. Facilitators spoke of the reliance on them to provide additional materials when required; '*as the budget does not reach that far*' (anon GF), which consequently had a financial and emotional impact on them. Funding for these projects, and those similar, are at the mercy of large funding schemes set up by government bodies, or third sector organisations – requiring extensive applications, for which some in deprived communities do not have the social infrastructure nor time to complete, resulting in some neighbourhoods being '*left behind*' (OCSI, 2021). Even specific funding grants for deprived communities are not

meeting the needs in which they set out to target, with funding directed towards large scale projects, leaving groups like those in this research excluded. Even so, these remain underfunded, with suggestion that a further '*£5.5bn capital investment in this programme, would deliver £200bn in physical health and wellbeing benefits to these most disadvantaged communities, in tandem with the active travel, biodiversity, carbon capture and air quality enhancements green infrastructure provides in support of our journey towards net zero*' (OCSI, 2021, pg. 2). Therefore, consistent funding is needed for both CFs and CGs, to enable them to continue, grow and enable health and wellbeing benefits to overcome the consequences of inequality.

#### *7.2.2.2 Urban location of sites as an influencing factor on health and wellbeing*

Most green care facilities, particularly CFs, are still located in rural spaces, with spatial mapping revealing that the majority of known current CFs are located predominantly within the south and across rural areas of the UK, away from the populations that would benefit most from the spaces (Mitchell, et al, 2021). Therefore, making it difficult and accepting the impossibility for most deprived communities, alongside disabled and elderly members of society unable to attend, due to a lack of transport or other issues. The coronavirus exposed the impact of widespread green space deprivation particularly within urban areas (de Zylva, Gordon-Smith & Childs, 2020), and this has a detrimental impact on health, while exposing links to the underlying theories contributing to these health outcomes. Through this inaccessibility, the population lose the opportunity and potential desire to connect with nature (biophilia), and therefore cannot appreciate what it can provide to health and wellbeing (ART, SPT, SCT). However, strategies including the 5 Year Environmental Plan, set out to expand the use of NBIs, are looking promising as it gives an opportunity space to engage with disadvantaged populations by situating new CFs across more accessible spaces, particularly within urban postcodes, whilst cutting down transportation costs, increasing the likelihood of attendance and overall sustainability of these projects. Living, working and retiring in urban areas does bring positives and negatives to the lives of inhabitants (Lecic-Tosevski, 2019; Leviton, Snell & McGinnis, 2000; Wandersman & Nation, 1998). Kuddus, Tynan and McBryde (2020) declare that:

*'Cities are known to play multifaceted functions in all societies. They are the heart of technological development and economic growth of many nations, while*



*at the same time serving as a breeding ground for poverty, inequality, environmental hazards, and communicable diseases'* (pg. 1).

Older adults and those with disabilities are often at a disadvantage in urban areas, as they still consistently are not 'age friendly', as indicated in Chapter 2 by the WHO age friendly principles, with spaces being inappropriately planned and lacking in facilities for this population (for example, accessible parking, dropped kerbs). Strides have been made towards overcoming challenges set by the WHO's Age Friendly Cities strategy, however, more needs to be done (Rémillard-Boilard, Buffel & Phillipson, 2021), with the case studies identifying persistent issues existing specifically because of the urban location.

While advances in developing and recognising the need for nature in urban spaces is growing, there is a push for policy and practice to place importance on making this achievable and available (Hunter, et al, 2019; Jennings & Bamkole, 2019; Cox, et al, 2018). The Ignition (2020) project, a research consortium across GM, highlights that over 50% of district is comprised of green spaces, in the form of parks, trees and playing fields, however half of this is private gardens. This demonstrates the inconsistency and variability to access green space in the region, with many people living in flats and apartments with limited access to green spaces – therefore creating a need for community-based resources to foster the relationships that could produce the positives seen through the Health Belief Model, SCT, Presence theory, self-efficacy theory and social interaction/support concepts by Cobb (1976).

The research has demonstrated the value of community-based projects, in the form of NBIs, constructing environmental, social and health capital. However, urban spaces pose unique challenges to the development of green spaces including limited expansion due to constraints set within the city (e.g., lack of space, inability to grow on concrete). Still, GI can be adapted at even the smallest scale, from pocket parks, green roofs, and community-scale GI for example those included in the case study sites of this research (Brzoska & Spage, 2020; Jerome, 2017). However, even those on the smallest scale sometimes do not avoid these restrictions, particularly when sites become saturated (with participants and/or plants), with the studies having no further land available to sprawl easily and accessibly, resulting in an impact to wellbeing as users felt constricted to the original boundary of the sites.

Moving forward, planning and development should consider developing a network of connected spaces that enable community-based GI, on small scales, to prevent restricting the numbers benefiting from their existence. Urban activities such as industrial activities, agricultural practices, natural sources, and traffic emissions could influence the desire and safety to undertake UA (e.g., soil composition) (see Adimalla, et al, 2020; Dennis, et al, 2020ab; Dennis, 2018; Chaney, Sterret & Mielke, 1984; Mielke, et al, 1983; Spittler, 1979). The participants spoke of using resources such as raised beds, for the benefit of age-related conditions, alongside other co-benefits including using commercial soils, and reducing the potential of runoff pollution from heavy traffic roadways nearby. Further work should be developed looking at investigating the appropriate use of common grounds in which soils would be safe. Therefore, locationality of projects like those involved in this study should be considered, with greater consideration paid to the effects of horticulture or amenity activities to ensure everyone can participate fully and in a safe manner.

### *7.2.2.3 Pushing for a green and social prescriptive movement; justice and sustainability*

This thesis has developed the evidence that these spaces assist with the green movement, by giving those in environmentally deprived areas the opportunity to engage with nature. It also provides evidence of the use of green activities for health, therefore underpinning the need for green social prescribing, with the evidence that older adults experience changes because of attending. The investigation into the impact of NBIs provides evidence of its influence on environmental justice and sustainability more broadly, through providing activities that are open to all. Therefore, giving an increased opportunity to connect with nature and therefore foster relationships with the planet for conservation (Wolch, Byrne & Newell, 2014; McIlvaine-Newsad, & Porter, 2013), while the previous discussion sections all contribute to the wider ideology of sustainability.

Creating, developing, and caring for these spaces provide vital opportunities to move towards greener futures, with the use of GI being a salient approach to addressing climate change. However, as Clarke, et al, (2019) describes: *'some green infrastructure like community gardens are rarely incorporated in resilience and adaptation plans'* (pg. 241). People are still having to travel to access nature and specifically NBIs such as CFs which are concentrated in rural areas (contributing to

climate change through anthropogenic emissions, accentuating a necessity for the planning system to understand and incorporate the pragmatic value of nature). These sustainable grassroots projects, and bottom-up approaches can provide a better approach to mitigation than government mandates (Okvat & Zauta, 2011), as they award health, wellbeing and social benefits evidenced in this thesis, while being inclusive, and resilient (Agustina & Beilin, 2012). Clarke, et al, (2019) additionally gives an argument that UA and NBIs can *'increase the availability of fresh local produce, develop the local economy, improve the natural environment, convert vacant lots to productive uses, provide educational opportunities and improve community resilience'* (pg. 247).

There is also potential for these spaces to become hostile environments, for which people feel excluded and unable to approach, yet this was not experienced by participants in this study (see Billings, 2018). The current framework and definitions around green care and the subsequent terms CFs, can be seen excluding, as those who are not prescribed access to these spaces miss out, causing an injustice. The UK government has set a series of ambitious targets including supporting the roll out of SP connectors, which link patients to projects in the local area, by 2023. SP schemes across England were allocated £4.5 million to allow increased use of these services, but this fund only enables link workers to establish a connection with a small number of existing community projects; therefore, failing to support the sustainability of other current projects or growth of new projects (UK Government, 2018b). The Government also offer the annual Voluntary, Community, and Social Enterprise (VCSE) Health and Wellbeing Fund, with a total available up to £510,000 per applicant, although this still requires match funding and will not cover any shortfall, potentially leaving projects with aspects incomplete (UK Government, 2018a), as it impedes the financial flow to the grassroots institutions. Alternative funding streams are also available from other sources, with examples, such as The National Lottery Community Fund and Connect Well, however these often involve a competitive process with extensive application forms. These applications require large amounts of staff time and skill to complete, which puts some organisations at a disadvantage in accessing these funds. This proves problematic for community-run organisations as they must seek alternative funding streams regularly to avoid periods of limited or no income, whilst also being detrimental to participants involved, as planning of activities is difficult prior to knowing

if funding is secured. However, there is scope for future improvements within social prescribing services due to the NHS Comprehensive Model of Personalised Care—this plan puts the patient at the centre of solution, by providing them with “*choice and control over the way their care is planned and delivered, based on ‘what matters’ to them and their individual strengths, needs and preferences*” (NHS, 2019). Enabling care to be tailored to the individual, making it matter to the person, rather than what is the matter with them—therefore adopting non-medical approaches, through alternatives, such as social prescribing activities, and potentially through CFs and CGs.

The NHS Long Term Plan (NHS, 2019) predicts that within five years ‘*over 2.5 million more people will benefit from social prescribing*’. Current SP research is restricted to those formally prescribed access to activities but opening this up to the wider use of green activities gives a greater opportunity to evidence its benefit, and further advancing the progression of SPs and its underlying funding streams in the future. Further research should be available using fluid definitions, in which everyone who requires help should be able to receive it, irrespective of the pathway they took to access it. In doing so, the progression and use of SPs has the potential to benefit society – as those included have not been prescribed access yet demonstrate a: reduced reliance on the NHS and traditional prescriptions, therefore saving time and money (see SP case study by Dayson & Bashir, 2014). The risk of overclaiming about what SPs can achieve should be carefully considered going forward, as Gibson, Pollard and Moffatt (2021) point out: inequalities may not be reduced through these projects, nor are benefits homogenously felt. Bickerdike, et al, (2017) shows that evidence fails to provide significant detail to judge impact or value for money. Alongside this, standards of care are lacking clear guidance within SP projects due to the use of the third sector being underprepared to deliver therapy (South et al, 2008), recognising the need for future development to enable clarity and safety for those involved (Polley, et al, 2020; 2017ab).

Meanwhile, older adult participants also spoke at length about how they were ‘*being environmentally friendly for the future generations*’, with group members and facilitators educating each other on ways to reduce their environmental impact. Examples of the increased awareness of their impact included greening abandoned or derelict spaces, recycling materials including rainwater and unavoidable plastics. Another example includes the awareness and concern shown by participants about

the overuse of (peat-based) fertilisers regarding potential risks for the future, which resulted in agreement in banning it at both study sites. GI itself has been shown to be beneficial for the environment, including enabling improving air and water quality, carbon sequestration, reducing the urban heat island effect, reducing energy use and noise, while improving the environment for biodiversity and amenity use (Keune, et al, 2013). While contributing economic and social benefits to urban dwellers (Parker & Zingoni de Baro, 2019). It is recognised that CFs and CGs can be '*identified as providing a model for the promotion for sustainable urban living*' (Turner, 2011, pg. 509), with greater ecological sustainability now being acknowledged as required due to rising consequences of climate change (Clavin, 2011). At the local contextual level for these study sites, the GM Green Infrastructure Framework (GMCA, 2019a) set out a conceptual framework that has never come into use. Even the GM Strategy in 2018 fails to fully mention how GI could be used as a realistic method to become greener and more carbon neutral (Reimer & Rusche, 2019), however a more targeted approach is seen in the 25 Year Environmental Plan – showing a shift in recognition that GI is important.

Concurrently, the pandemic allowed populations to connect to nature once more, inspiring them to sustainably protect these spaces for the future (Lieven, 2021). This coupled with the increased alliance with global climate citizenship, such as the growing “Extinction Rebellion” movement could provide the foundation for future generations to establish a stronger climate justice movement. The use of CFs and CGs form a strong grass-rooted approach for “greening” cities to reduce the mass concrete creation of cities around the globe. While Kim and Song (2019) suggests that '*a holistic approach is needed to apply GI*' (pg., 1), alongside implying that more research is needed across the field to elaborate on the various functions and benefits that could be provided through its integration in the urbanised world. This thesis has explored these various stakeholder viewpoints regarding GI projects, specifically considering health and wellbeing, moving forward the overall sustainability of these sites should be considered, and consistently when planning, with consideration of the benefits they provide to individuals, alongside the wider society. While gaps and limitations exist it is possible to identify ways in which these can be reduced – to enable these projects and those similar to specifically benefit the health and wellbeing of older populations living in urban deprived locations.

### 7.3. Key contributions to knowledge within this thesis

Bapista, et al, (2015) suggests that the '*role of the doctoral thesis as an original contribution to knowledge has traditionally signalled a high level of intellectual output within the academic discipline*' (pg. 56). While Nowotny, Scott and Gibbons (2001), propose that creativity, application, and flexibility is valued in generating knowledge within society, for which the doctoral journey facilitates. Originality forms a major factor in being awarded, for which moving beyond surface level assessment of the field is required (Clarke & Lunt, 2014). With originality being expressed in several ways, and the kind of originality differing between disciplines (Guetzkov, Lamont & Mallard, 2004; Lamont, 2009). For example, Clarke and Lunt (2014), accentuate the difference between disciplines, where science originality is heavily defined around 'publishability', while those in the arts, humanities and social sciences focus on intellectual originality.

This thesis combines disciplines, and therefore contributes across both sub-fields. Below is suggestion of how gaps, outlined in Chapter 2, have been advanced through this study.

- A comprehensive understanding of NBIs, especially CFs and CGs, and its impact of health and wellbeing (both positive and negative), from those directly and indirectly impacted through the existence of these case study projects. While a narrative of the effects that Covid-19 placed on these projects is also developed. With the CFs and CGs case studies used in this thesis having not been explored in this capacity previously, to enhance and build knowledge to the underlying theories.
- A focused approach on older adults, to provide an in-depth narrative on how these spaces contribute to health and wellbeing for this specific population, across mental, physical, and social wellbeing. Novelty including the understanding of how older adults deal with morbidity and mortality, dietary impacts and connection to each other, the community, and the environment, advance the current understanding of the field. While the voices of these projects are displayed where they portray their innovative coping strategies to the challenges presented due to the pandemic, for which is novel.
- Examination of the influence that these projects have on facilitators' health and wellbeing. Those delivering sessions have their health impacted by the interactions with older people, while barriers and Covid-19 causes detrimental impacts to wellbeing.

- A critical discussion over health-based projects, looking at placement in urban and deprived locations. Exploring positives and negatives attributed due to socioeconomic factors.
- How these spaces can provide evidence for the wider green movement, along with the development of green social prescription. With full excavation of the barriers, expressed by those working the field identified, and recommendations acted upon to enable success in the future.
- This thesis also makes theoretical advances, through deeper comprehension of the underlying theories identified in Chapter 2. Biophilia theory, for example, conveys the innate desire to be outside. The results of this thesis delve into this by the narratives given by the older people identifying this link with the natural world and the benefits that they received from this interaction. This research highlights the desire and love of nature through interacting with the spaces, while remarking on the animals they come across, and portraying the impact they have through conservation efforts. While Attention Restorative, Presence and SCT is also furthered, with older adults speaking of the motivation and attention increasing due to activity based within NBIs, while the group structures provided through these activities enabling access to the green spaces, allowing them to feel present within nature, even within urbanised areas. The findings allow interpretation of these interaction with others and the environment having a direct effect on the health of participants, where the personal, behaviour and environmental stimuli all play a role in health. Therefore, allowing positive environments for which healthy ageing can take place, while other indirect effects are felt by facilitators, and stakeholders.
- Finally, connections are made to link health, wellbeing, and nature through the prescribed models, including the Ecological model of Health and Health belief model. With these groups building mutual relationships by which the older populations health benefit through tending to the environment, but this is reciprocated as the environment is improved. Yet they also provide a health promotion effect, by which healthy activities are advocated, in this case the NBIs allow this, through social connection, and physical work on site. This then assists with health through promoting behaviour changes and positive ageing practices. Therefore, this thesis expands on these models and theories, and gives real life practical examples of where nature and health are intertwined.

## 7.4 Recommendations

The following recommendations have been developed and are directed towards the group facilitators and external stakeholders to improve sustainability of the projects and the wider green movement. These recommendations are broken down in national (7.4.1), local in the form of site level opportunities (7.4.2) and research based (7.4.3), to illustrate multiple ways strength could be provided to this movement for enabling success of NBIs, such as CFs and CGs in the future.

### 7.4.1 National policy recommendations

- Develop a wider and stronger connection between nature and people. Ensure everyone can engage with nature, in the capacity they feel comfortable. Identified as passive or active, such as those set out in this thesis. This involves ensuring equity in environmental resources and ensuring sustainability for the future.
- Increase public campaigns about the benefit of nature, SPs, especially green social prescribing should be considered, to evolve the thought process around traditional medication pathways. It is hoped that this would assist with changing the mindset of practitioners and the public alike, making the use of SPs more attractive. Additionally, campaigns centred around the '*real look of older populations*', moving away from these ageist perceptions, persuaded towards the value that older adults bring to these projects and society in general.
- Advocate for strengthening partnerships between projects, allowing leaders from different sites to share materials and learn from stories of success and failure. A stronger connection between sites and national bodies such as Social Farms & Gardens, would provide networking opportunities and training, to support the continued success of these spaces.
- Plan and develop for stronger support of these styles of projects, with stronger economic processes and resources. This research has effectively demonstrated the potential impact that these spaces have for older adults, but they are restricted by the inconsistency in funding and the current short-term nature of funding calls. Therefore, longer term opportunities should be maintained to allow projects to reach their potential and be sustainable for the future.



- Use the pandemic as a point of reflection. More people have been enjoying nature in this time, including spaces like CFs and CGs. Providing this connection to nature, therefore advocacy of its use and expansion would raise the profile of the green movement, while giving an opportunity for communities to engage, while benefiting health and wellbeing.

#### 7.4.2 Practice recommendations at site level

- Integrate NBIs in place and spaces closer and suited to the population requiring them. Ensuring accessibility is key to the development of these spaces and therefore crucial in acquiring the health and wellbeing benefits derived from them. By integrating these spaces into urban areas there is a greater opportunity for people to access them. However, when thinking of older adults specifically, the planning of these spaces needs to consider location, facilities, and furniture – to enable older people easy access and comfort when within these sites.
- Diversify the '*normal users*' of attending groups, welcoming others that would like to be involved to enable greater interaction between members and benefit derived from accessing nature. Intergeneration bonds are important and enable spaces to succeed into the future. Projects should be open for people to be able to attend projects that they are interested in, without the requirement of being referred to them.
- Work on developing a safe space for older adults to speak about the health and wellbeing positives, as well as worries and concerns they have. In this thesis, NBIs have illustrated that they can provide a space in which to speak of difficult issues including morbidity and mortality, assisting with mental health. Enabling these spaces could alleviate mental health concerns in elderly populations through supporting them with connections to others, building social support.
- Develop opportunities to engage with nature throughout the year. This is especially important for older adults, who are more susceptible to ill health. Use nature as a medium to connect those isolated in the autumn and winter, for example through opportunities including art-based nature therapies.
- Employ workers or volunteers who are engaging, knowledgeable and passionate about horticulture and/or farming. This would keep group members

engaged about the work undertaken on site. While being followed by people passionate to make a change.

- Develop and train facilitators to measure the health and wellbeing changes/trends of participants using spaces. This would add to the knowledge base and provide evidence for further development of these spaces.
- Develop a recording mechanism for those attending NBIs to reflect on how their health and wellbeing is changed because of accessing projects. Allowing participants to realise the impact and feel that they are creating a change on themselves and the wider community, enhancing future understanding of these differences. Advocate and incorporate objective testing of health outcomes into the measure of the change in health and wellbeing because of using spaces. To open and further strengthen the case of their development.
- Advocate for sustainability in practice. Use case studies like these, where recycling and environmental education is used to upskill members and allow for these behaviour changes to be adapted to home life.

#### 7.4.3 Recommendations for research

- Research should aim to understand more about the environmental opportunities that these spaces provide to the local population, and wider implications of its development. A comprehensive approach to establishing baselines for tangible and intangible outputs from these spaces would help generate more knowledge on health and wellbeing models and in consequent influence ecosystem services.
- Research opportunities still exist looking at topics such as: food (in)security of these spaces, local economic potential, intergenerational influence, etc. Researchers should aim to incorporate these topics into future research and expand understanding of the wider implications arising from the existence of NBIs.
- Academics in the field should advocate for interdisciplinarity, with holistic approaches enabling greater understanding from all actors involved. Flexibility in definitions of green care, NBIs, green health promotion, would assist with developing the field, opening up opportunities for all, rather than those prescribed or within the '*traditional user groups*'. With this approach enabling a greater understanding of the spaces for all, alongside the future implications for

social prescription (e.g., through voluntary access rather than professionally prescribed).

- More needs to be done to incorporate and encourage research across populations often overlooked or misrepresented (in this case older adults and those with minor learning difficulties, however progress is also needed for other underrepresented populations). Therefore, inclusive research should be advocated, with the potential to use co-design with these populations giving a viable opportunity for research to further understand the phenomenon, challenging the image of these groups, and giving greater possibility to make real life change. More research for older populations that reflects their opinions is needed to remove the medias stigmatised opinion of ageing. Research should aim to portray these voices to enable real change to occur and in turn establish healthy ageing cities that is planned by those who experience these spaces first-hand, in the hope that inclusive cities will be normalised and be designed for all populations in the future.
- The use of mixed methods should be advocated to enable both subjective and objective understanding regarding the influence that NBIs have on populations. This research has initially incorporated this stance, with the use of physical activity monitors, biological indicator testing and mental wellbeing scales, however due to pandemic these were removed. Therefore, future research can consider these tools to add to the value provided by this qualitative work.
- More research is required to understand how barriers are detrimentally affecting provision. With the third sector bearing it majority of the practical implementation, more research is needed rapidly to identify pragmatic solutions to the third sector being overwhelmed.
- Research on the consequences of the pandemic should be considered, for both the study spaces, the field in general and the research community. This could provide an opportunity to build on the current field by reflecting on how these spaces could increasingly be important for health and wellbeing.
- Collaborations when researching should be advocated, whether across universities, industries or third sector, to work together in identifying the appropriate ways for these spaces, and the likes to succeed into the future.

### 7.5 Implications for policy and practice

This research has important implications for policy and practice for using CFs and CGs for health and wellbeing of older adults, by providing evidence of the benefits for those using the spaces. The accounts given by participants provide information on motivations, the changes to health and wellbeing and the future aspirations, something which is lacking in the existing literature. The research offers recommendations as a model to guide and progress the use of these sites, and similar in the future, thus contributing to effective person-centred use of green settings.

The benefits narrated therefore can be used for future funding calls by the case studies involved, and wider similar GI sites. Therefore, this thesis identified the health and wellbeing benefits to enable a wider audience to enjoy gardening and farming activities in the future by evidencing its effect on these participants. It also has wider implications, as suggested in the discussion section, particularly for the SP movement, as it gives the grounding evidence of the benefit of interacting with green environments, moving away from the traditional prescriptive pathways. SPs was introduced into the NHS Long Term Plan (NHS England, 2019), which aimed to refer 900,000 by 2023/24, with a further £5million announced because of the pandemic. Since beginning this research the study sites have moved to incorporate SP into their working models, therefore benefiting more individuals in need. The findings by Lemmey (2020), predict that more people will spend more time in nature in the future, creating a potential increased engagement by which CFs and CGs could assist with in urban environments.

This research is influenced by policy, but also could influence future policy decisions. The findings highlight the value that older adults place on these spaces, while facilitators and external stakeholders also contribute to the argument. As highlighted above health inequalities exist, but there is a growing recognition that environments play an important role in reducing these, with green space often pinpointed as a study focus. In July 2020, the UK Government allocated £4 million towards green social prescribing, hoping to reduce these inequalities by enabling access to green environments or activities, and hopefully reducing the strain on the NHS (GMHSC, 2021). This research accentuates those future policies should advocate for green social prescription, while funding them appropriately, to enable the health and wellbeing benefits to be derived from well-structured and supported projects.

## 7.6 Limitations

Studies are often exposed to limitations, with Theofanidis and Fountouki (2018) defining them as: *'potential weaknesses that are usually out of the researcher's control, and are closely associated with the chosen research design, statistical model constraints, funding constraints, or other factors. In this respect, a limitation is an 'imposed' restriction which is therefore essentially out of the researcher's control'* (pg. 156). While Ross and Bibler Zaidi (2019) conveys that *'Regardless of the format scholarship assumes, from qualitative research to clinical trials, all studies have limitations'* (pg. 261).

This section therefore explains the limitations of this thesis, therefore impacting on the findings and future direction of research. Firstly, this project was bound by timeframes imposed by a PhD, alongside the lengthy process of ethical approval and the pandemic of 2020/21 effecting data collection. The findings included in this thesis can therefore only represent a snapshot of these case study sites and their participant's opinions. This therefore means that many of the more recent developments at the sites could not be included within this study.

The small number of study sites also limited the overall generalisability of results. However, this project did not set out to be generalisable, in favour of portraying the lived experience of a few. The two studies involved provided an opportunity to investigate the motivations, impacts and future desires of two contrasting projects. However, there are many other NBIs/ green care sites and GI projects that could have provided an interesting comparative, had the scope been larger.

The methodology set out for this thesis is also limited, with the semi-structured interviews (which were recorded and transcribed) being unable to be independently verified. They are also open to researcher bias, through the prolonged embedded period spent getting to know participants, to build rapport. The guiding constructivist approach highlights that objectivity is not the goal of research, with attention paid to reducing other research and cultural barriers, through reflexivity pre, during and post data collection.

Accessing participants for this study was also not initially thought to be overly complex, with access through gatekeepers. Following various GC groups over the course of a year was undertaken to identify suitability and desire for involvement. Yet, when

accessing groups, it became clear that they were comprised of a small number of people, with differing desires to be involved in research, causing the most reliable CG groups selected and cohesively referred to generate a bigger response. This research did not set out to include large populations, instead aiming to give an in-depth narrative across stakeholders. This is a concept popular with the constructivist qualitative approaches, where depth is favoured over breadth, that is highly informative and provides meaning, while striving for saturation (Boddy, 2016). Hackshaw (2008) suggests: *'There is nothing precise about a sample size estimate when designing studies... There is nothing wrong with conducting well-designed small studies; they just need to be interpreted carefully'* (pg. 1143), conveying that the truths given by those in this study, are not generalisable, instead building more knowledge on the paradigm, with Shipman (2014) going on to suggest that this is felt throughout social sciences: *'humans who are always working out and sharing new meanings of the world around them, a social science has to be 'interpretive' in order to study those shared meanings'* (pg. 7). However, there is always more that can be done to gain access to a wider audiences' opinions; an example of this would be to include more participants of green activities, or even to expand into different age profiles for contrast.

When accessing the CF, it became clear that the majority of those involved in the CF were on average 55 years old, with minor learning difficulties, therefore further ethical amendments were sought to accommodate this, however both set the research back slightly – gaining assistance from those on site along with rewriting applications. Alongside this, a quantitative formal data collection phase was initially planned for April 2020, with the pandemic causing the research to be realigned – as discussed to in Chapter 3. This resulted in some qualitative data to be collected in a virtually distanced capacity, while quantitative was not possible, which may have altered the 'truth' exposed by participants as their opinions altered through the inability to access spaces.

### 7.7 Future work

This research has a real-life impact for those using nature, and in particular the study sites selected as it adds to the evidence base through providing powerful lived experienced narratives. In doing so, the reader is exposed to the feelings older adults have about the spaces, including both positive and negatives. Ultimately strengthening the knowledge that nature can generate an impact on an individuals' health and wellbeing.

Additionally, this research is providing evidence of the change that nature imposes on people, therefore adding to the green and social prescription movement. As it enables a deeper insight to the therapeutic qualities of using nature for care, therefore supporting further advancement in the field. As this research was carried out over the course of the pandemic it has also been able to briefly illustrate the effects of being unable to access NBIs, in the form of the case studies. These emotive illustrations of older people isolated from the rest of the group and the desire to reclaim the time lost enables in depth understanding of the benefits from attending community groups.

However, further work is still needed in this field, as several areas have been identified through this study, with limitations (seen in 7.6) suggesting the improvements required, while recommendations set out pragmatic ways to ensure success at national and local levels, while improving the research field. There is need for examination of a wider range of environmentally based projects to comprehend the changes to health and wellbeing across these spaces. Using studies along the GI spectrum would help evidence and compare resources and the effect on populations using them. The roles and influence of volunteers and facilitators is another area for contemplation, as some projects work solely on their own, others have self-appointed leaders, and then some paid facilitators organise groups. Alongside this, quantitative measurements of change would be powerful in evidencing a change to health and wellbeing, this has been remarked on by other academics including Hoffman (2018), who calls for '*More empirical and qualitative interviews would be recommended to address these very important questions*' (pg. 5).

Food security and UA was a theme that had crept into discussion with the older adults, and one in where further work could give greater depth to the links between food growth with health and wellbeing. Yet participants did speak about how their diets changed due to growing themselves, yet spoke of the limited crop, however when prompted they did not divulge more about the effects this had. A deeper investigation of the potential capacity of spaces would be useful to identify the ability to grow at local scales, and how to assist with urban agriculture. A greater understanding of the cumulative effects of these spaces for sustainability would help understand the power they have in mitigating an impact on the world. Again, other academics also concur, with Lovell et al, (2014b) calling for research '*identifying the specific ecosystem*

*services, goods, and processes through which biodiversity may generate good health and well-being* (pg.1).

Therefore, this thesis explores at depth the health, wellbeing and social impacts resulting from older adults accessing CFs and CGs in GM. Its holistic approach enables different opinions to be expressed contributing knowledge, with expression of both positive and negative influences these spaces have on older adults and those facilitating their access. While external voices enable wider field of vision to be illustrated, giving perspectives of the future of these activities in urban and deprived settings. However, it also advocates for more research to fully understand on a wider scale the implications of NBIs to ensure success for individuals, communities, and the planet in the long term.

#### 7.8 Thesis conclusion

This thesis has examined the health, wellbeing and social impact for older adults using urban community gardening (CG) and care farming (CF) sites in the Northwest of England, by means of case study based in Greater Manchester (GM), therefore fulfilling the research aim. It started with a brief introduction to the research landscape and the emergence of the case study sites, to allow the reader to be fully immersed in the research journey, with clear justification for this study.

The goals of the thesis were set out within Chapter 1, through conveying the aim and objectives set, to ensure a contribution to knowledge. The literature review, in Chapter 2, enables the reader to be guided through the current studies, whilst signifying the various gaps still existing.

The methodology, Chapter 3, helped establish greater understanding of how these gaps are filled, through an in-depth qualitative approach across a variety of stakeholders – to provide a cross-cutting study from those directly and indirectly involved in these spaces.

Chapter 4 consisted of the findings from the use of these methods, with older adults. From this work, participants were able to suggest that they feel *'happier, healthier and connected'* to others in the group and the local community. It can be implied that both groups' opinions indicate that GI spaces like these have an overwhelming positive impact for the older adults, with examples given across the spectrum of physical and



mental improvements; from providing companionship, exercise, and a vital connection to the natural world.

Chapter 5 discussed the opinions held by GFs, where six key themes arose. It is suggested by facilitators that older adults get overwhelming benefits from attending the study sites, including physical mobility, dietary impacts, socialisation, and strengthening community relations, alongside positive mental benefits for the facilitators engaging with groups. Even now barriers still exist, such as funding inconsistencies and an ability to track health and wellbeing progress. While Covid-19 hit this sector hard, causing sites to close, the health and wellbeing of facilitators to suffer along with further economic hardship.

Chapter 6 looked at views of external stakeholders, consisting of policy makers, funding bodies and the public near the sites. This chapter exposed the inconsistencies in jargon used in the field, and the inability to gather enough evidence of the benefits from such projects. While the public suggested that they appreciated the existence and work of groups in the local area, they cast doubt on the sustainability of such groups in the future, due to reduced time availability and dwindling interest in nature. Yet, the Covid-19 pandemic may have altered these perceptions, and this identifies potential areas for future work to fully comprehend how CFs and CGs will evolve in the future.

Finally, Chapter 7 pulled these findings chapters together in a meta-discussion. A holistic approach was taken to draw out the main issues concerning each participant group, therefore establishing a grounded approach to integrate differing opinions and fully comprehend the thesis topic. Moving on from this, recommendations for future studies in the field are highlighted, alongside pragmatic considerations to make projects like these viable for the future.

Therefore, the thesis provides a contribution to knowledge (fully expanded in 7.2), by studying at depth, contributing to over 400 hours of interviews with multiple stakeholders in case studies previously unexplored, with a population that is often overlooked. As a holistic approach was used and provides novelty, it gives capacity to learn through engaging with the direct and indirect users of these spaces. Providing insight to garner opportunity for improvement, establishing recommendations for the future. While reflecting on the impact that Covid-19 has had on health and wellbeing, motivations, and pragmatically considering the future of CFs and CGs.

## References

- Abdalla, M., Oliveira, L., Azevedo, C., & Gonzalez, R. (2018). Quality in Qualitative Organizational Research: types of triangulation as a methodological alternative. *Administração: Ensino e Pesquisa*, 19, 66–98. <https://doi.org/10.13058/raep.2018.v19n1.578>
- Abdallah, L., Remington, R., Houde, S., Zhan, L., & Karen, M. (2021). Dehydration Reduction in Community-Dwelling Older Adults: Perspectives of Community Health Care Providers. *Research in Gerontological Nursing*, 2(1), 49–57. <https://doi.org/10.3928/19404921-20090101-01>
- Adams-Price, C.E. and Morse, L.W. (2009), Dependency Stereotypes and Aging: The Implications for Getting and Giving Help in Later Life. *Journal of Applied Social Psychology*, 39: 2967-2984. doi:10.1111/j.1559-1816.2009.00557.x
- Adimalla, N., Qian, H., Nandan, M. J., & Hursthouse, A. S. (2020). Potentially toxic elements (PTEs) pollution in surface soils in a typical urban region of south India: An application of health risk assessment and distribution pattern. *Ecotoxicology and Environmental Safety*, 203, 111055. <https://doi.org/https://doi.org/10.1016/j.ecoenv.2020.111055>
- Agahi, N., & Parker, M. G. (2005). Are today's older people more active than their predecessors? Participation in leisure-time activities in Sweden in 1992 and 2002. *Ageing and Society*, 25(6), 925–941. <https://doi.org/DOI:10.1017/S0144686X05004058>
- Age UK. (2021a). All the lonely people: Loneliness in later life. Retrieved from <https://www.ageuk.org.uk/our-impact/policy-research/loneliness-research-and-resources/>
- Age UK. (n.d.a). Let's talk about dying. Retrieved from <https://www.ageuk.org.uk/information-advice/health-wellbeing/relationships-family/end-of-life-issues/talking-death-dying/>
- Age UK. (2020a). The impact of COVID-19 to date on older people's mental and physical health. Retrieved from <https://www.ageuk.org.uk/latest-press/articles/2020/10/age-uk--research-into-the-effects-of-the-pandemic-on-the-older-populations-health/>
- Age UK. (2021b). Number of pensioners living in poverty tops two million. Retrieved October 17, 2021, from <https://www.ageuk.org.uk/latest-press/articles/2021/number-of-pensioners-living-in-poverty-tops-two-million/>
- Age UK (2021c) Age UK research lays bare the drastic impact of the pandemic on our older population's health and morale. Available from: <https://www.ageuk.org.uk/latest-press/articles/2020/10/age-uk--research-into-the-effects-of-the-pandemic-on-the-older-populations-health/>
- Age UK. (2019a). Age UK calls for a more considered approach to prescribing medicines for older people.
- Age UK (2020b). Why age-based restrictions won't work for coronavirus | Age UK. Retrieved October 17, 2021, from <https://www.ageuk.org.uk/discover/2020/10/age-based-restrictions-coronavirus/>
- Age UK. (2019b). 43% waiting too long for social care. Retrieved from <https://www.ageuk.org.uk/scotland/latest-news/2019/may/43-waiting-too-long-for-social-care/>
- Aguinis H., & Henle C. A. (2004). Chapter two: Ethics in Research. In *Handbook of Research Methods in Industrial and Organizational Psychology*. Retrieved from <https://books.google.co.uk/books?hl=en&lr=&id=qOs36d2SXrAC&oi=fnd&pg=PA34&dq=aguinis+and+henle+ethics&ots=aEaMX-RR-Y&sig=HL-aZc2h-n4ZpZVV-ajzvRtFGFw#v=onepage&q=aguinis+and+henle+ethics&f=false>
- Aguirre, E., Woods, R. T., Spector, A., & Orrell, M. (2013). Cognitive stimulation for dementia: A systematic review of the evidence of effectiveness from randomised controlled trials. *Ageing Research Reviews*, 12(1), 253–262. <https://doi.org/https://doi.org/10.1016/j.arr.2012.07.001>
- Agustina, I., & Beilin, R. (2012). Community Gardens: Space for Interactions and Adaptations. *Procedia - Social and Behavioral Sciences*, 36, 439–448. <https://doi.org/https://doi.org/10.1016/j.sbspro.2012.03.048>
- Agyeman, J. & McLaren, D. (2017) Sharing Cities, Environment: Science and Policy for Sustainable Development, 59:3, 22-27, DOI: 10.1080/00139157.2017.1301168
- Agyeman, J. Bullard, RD, & Evans B. (2002) Exploring the Nexus: Bringing Together Sustainability. *Environmental Justice and Equity, Space and Polity*, 6:1, 77-90, DOI: 10.1080/13562570220137907
- Agyeman, J. (2002). Constructing Environmental (in)Justice: Transatlantic Tales. *Environmental Politics*, 11(3), 31–53. <https://doi.org/10.1080/714000627>
- Aitken, M., Porteous, C., Creamer, E., & Cunningham-Burley, S. (2018). Who benefits and how? Public expectations of public benefits from data-intensive health research. *Big Data & Society*, 5(2), 205395171881672. <https://doi.org/10.1177/2053951718816724>

- Alaimo, K., Packnett, E., Miles, R. A., & Kruger, D. J. (2008). Fruit and Vegetable Intake among Urban Community Gardeners. *Journal of Nutrition Education and Behavior*, 40(2), 94–101. <https://doi.org/10.1016/j.jneb.2006.12.003>
- Alaimo, K., Reischl, T. M., & Allen, J. O. (2010). Community gardening, neighborhood meetings, and social capital. *Journal of Community Psychology*, 38(4), 497–514. <https://doi.org/https://doi.org/10.1002/jcop.20378>
- Alderwick, H., & Dixon, J. (2019). *The NHS long term plan*. *BMJ (Online)* (Vol. 364). <https://doi.org/10.1136/bmj.l84>
- Alexander, T. M. (2014). Linguistic Pragmatism and Cultural Naturalism: Noncognitive Experience, Culture, and the Human Eros. *European Journal of Pragmatism and American Philosophy*, VI(2). <https://doi.org/10.4000/ejpap.299>
- Alkon AH, & Agyeman J (2011) *Cultivating Food Justice: Race, Class, and Sustainability*. Cambridge, MA: MIT Press.
- Alshenqeeti, H. (2014). Interviewing as a Data Collection Method: A Critical Review. *English Linguistics Research*, 3(1), 39–45. <https://doi.org/10.5430/elr.v3n1p39>
- Alves, S., Aspinall, P. A., Ward Thompson, C., Sugiyama, T., Brice, R., & Vickers, A. (2008). Preferences of older people for environmental attributes of local parks: The use of choice-based conjoint analysis. *Facilities*, 26(11–12), 433–453. <https://doi.org/10.1108/02632770810895705>
- Amarya, S., Singh, K., & Sabharwal, M. (2015). Changes during aging and their association with malnutrition. *Journal of Clinical Gerontology and Geriatrics*, 6(3), 78–84. <https://doi.org/https://doi.org/10.1016/j.jcgg.2015.05.003>
- Annerstedt, M., & Währborg, P. (2011, June 27). Nature-assisted therapy: Systematic review of controlled and observational studies. *Scandinavian Journal of Public Health*. <https://doi.org/10.1177/1403494810396400>
- Antonovsky, A. (1979) *Health, Stress, and Coping*. Jossey-Bass Inc., San Francisco.
- Armitage, R., & Nellums, L. B. (2020). COVID-19 and the consequences of isolating the elderly. *The Lancet Public Health*, 5(5), e256. [https://doi.org/10.1016/S2468-2667\(20\)30061-X](https://doi.org/10.1016/S2468-2667(20)30061-X)
- Armstrong, A., Brockett, B., Eustice, T., Lorentzon, A., O'Brien, L., & Williams, S. (2021). *Why society needs nature: Lessons from research during Covid-19*. Retrieved from [https://www.forestresearch.gov.uk/documents/8053/Why\\_Society\\_Needs\\_Nature](https://www.forestresearch.gov.uk/documents/8053/Why_Society_Needs_Nature)
- Armstrong, D. (2000). A survey of community gardens in upstate New York: Implications for health promotion and community development. *Health & Place*, 6(4), 319–327. [https://doi.org/10.1016/S1353-8292\(00\)00013-7](https://doi.org/10.1016/S1353-8292(00)00013-7)
- Arthritis Research UK & Public Health. (n.d.). Prevalence of osteoarthritis in England and local authorities. Retrieved from <https://www.versusarthritis.org/public-health-bulletins/osteoarthritis/north-west/>
- Artmann M, Sartison K. (2018). The Role of Urban Agriculture as a Nature-Based Solution: A Review for Developing a Systemic Assessment Framework. *Sustainability*. 10, (6), 1937. <https://doi.org/10.3390/su10061937>
- Artmann, M., Chen, X., Iojă, C., Hof, A., Onose, D., Ponizy, L., ... Breuste, J. (2017). The role of urban green spaces in care facilities for elderly people across European cities. *Urban Forestry and Urban Greening*, 27, 203–213. <https://doi.org/10.1016/j.ufug.2017.08.007>
- Arvidson, M. (2009). Impact and evaluation in the UK third sector: reviewing literature and exploring ideas. *Rivers*, (December). Retrieved from <http://www.tsrc.ac.uk/LinkClick.aspx?fileticket=rMh0Fqb6iCk=&tabid=634>
- Asenahabi, B. M. (2019). Design : A Guide to selecting appropriate research design. *International Journal of Contemporary Applied Researches*. 6 (5), 76 – 89.
- Ashida, T., Kondo, N., & Kondo, K. (2016). Social participation and the onset of functional disability by socioeconomic status and activity type: The JAGES cohort study. *Preventive Medicine*, 89, 121–128. <https://doi.org/https://doi.org/10.1016/j.ypmed.2016.05.006>
- Aughterson, H., Baxter, L., & Fancourt, D. (2020). Social prescribing for individuals with mental health problems: a qualitative study of barriers and enablers experienced by general practitioners. *BMC family practice*, 21(1), 1-17.
- Austin, G., Duncan, M. J., & Bell, T. (2020). Codesigning Parks for Increasing Park Visits and Physical Activity in a Low-Socioeconomic Community: The Active By Community Design Experience. *Health Promotion Practice*, 22(3), 338–348. <https://doi.org/10.1177/1524839919900768>
- Ayer, A. (1968). *The Origins of Pragmatism: Studies in the Philosophy of Charles Sanders Peirce and William James* (1st ed.). London: Macmillian and Co Ltd. Retrieved from

- [https://books.google.co.uk/books?id=wYSvCwAAQBAJ&printsec=frontcover&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](https://books.google.co.uk/books?id=wYSvCwAAQBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false)
- Baart, A. J. (2007). *Een theorie van de presentie*. Lemma.
- Baker, J. D. (2016). The purpose, process and methods of writing a literature review: Editorial. *Association of Operating Room Nurses [AORN]*, 103(3), 265–269. <https://doi.org/10.1016/j.aorn.2016.01.016>
- Baker, L. E. (2004). Tending Cultural Landscapes and Food Citizenship in Toronto's Community Gardens. *Geographical Review*, 94(3), 305–325. <https://doi.org/10.1111/j.1931-0846.2004.tb00175.x>
- Baker, M., & Schaltegger, S. (2015). Pragmatism and new directions in social and environmental accountability research. *Accounting, Auditing and Accountability Journal*, 28(2), 263–294. <https://doi.org/10.1108/AAAJ-08-2012-01079>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bao, K. J., & Schreer, G. (2016). Pets and Happiness: Examining the Association between Pet Ownership and Wellbeing. *Anthrozoös*, 29(2), 283–296. <https://doi.org/10.1080/08927936.2016.1152721>
- Baptista, A., Tesch, J., Frick, L., Holley, K., Remmik, M., & Åkerlind, G. (2015). The doctorate as an original contribution to knowledge: Considering relationships between originality, creativity, and innovation. *Frontline Learning Research*, 3, 51–63.
- Barbour, R. S. (2001). Checklists for improving rigour in qualitative research: A case of the tail wagging the dog? *British Medical Journal*, 322, 1115–1117. <https://doi.org/10.1136/bmj.322.7294.1115>
- Barnidge, E. K., Hipp, P. R., Estlund, A., Duggan, K., Barnhart, K. J., & Brownson, R. C. (2013). Association between community garden participation and fruit and vegetable consumption in rural Missouri. *International Journal of Behavioral Nutrition and Physical Activity*, 10(1), 128. <https://doi.org/10.1186/1479-5868-10-128>
- Barry, J. (2007). *Environment and Social Theory*. London, Routledge.
- Bartlett, R., Milligan, C. (2015). Exploring issues of participation, control and ethics. In *What is Diary Method?* (pp. 69–88). Bloomsbury Academic. Retrieved from <http://dx.doi.org/10.5040/9781472572578.ch-005>
- Barton, H., & Grant, M. (2006). A health map for the local human habitat. *Journal of The Royal Society for the Promotion of Health*, 126(6), 252–253. <https://doi.org/10.1177/1466424006070466>
- Barton, J., Griffin, M., & Pretty, J. (2011). Exercise-, nature- and socially interactive-based initiatives improve mood and self-esteem in the clinical population. *Perspectives in Public Health*, 132(2), 89–96. <https://doi.org/10.1177/1757913910393862>
- Basiri, A. (2021). Inclusivity and diversity of navigation services. *Journal of Navigation*, 74(2), 269–272. doi:10.1017/S0373463321000072
- Basset, F., & Giarè, F. (2021). The sustainability of social farming: a study through the Social Return on Investment methodology (SROI). *Italian Review of Agricultural Economics*, 76(2 SE-Research Articles). <https://doi.org/10.36253/rea-13096>
- Bassi, I., Nassivera, F., & Piani, L. (2016). Social farming: a proposal to explore the effects of structural and relational variables on social farm results. *Agricultural and Food Economics*, 4(1). <https://doi.org/10.1186/s40100-016-0057-6>
- Batty, G. D., Russ, T. C., Stamatakis, E., & Kivimäki, M. (2017). Psychological distress in relation to site specific cancer mortality: Pooling of unpublished data from 16 prospective cohort studies. *BMJ (Online)*, 356. <https://doi.org/10.1136/bmj.j108>
- Bayliss, K., & Gideon, J. (2020). *The privatisation and financialisation of social care in the UK. Working Papers*. Retrieved from <https://ideas.repec.org/s/soa/wpaper.html>
- Becker, C., Lauterbach, G., Spengler, S., Dettweiler, U., & Mess, F. (2017). Effects of Regular Classes in Outdoor Education Settings: A Systematic Review on Students' Learning, Social and Health Dimensions. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph14050485>
- Belaire, J. A., Whelan, C. J., & Minor, E. S. (2014). Having our yards and sharing them too: the collective effects of yards on native bird species in an urban landscape. *Ecological Applications*, 24(8), 2132–2143. <https://doi.org/https://doi.org/10.1890/13-2259.1>
- Belfrage, C., & Hauf, F. (2017). The Gentle Art of Retroduction: Critical Realism, Cultural Political Economy and Critical Grounded Theory. *Organization Studies*, (38), 251–271.



- Belotto, M. J. (2018). Data analysis methods for qualitative research: Managing the challenges of coding, interrater reliability, and thematic analysis. *The Qualitative Report*, 23(11), 2622-2633. <https://search.proquest.com/docview/2133763005?accountid=8058>
- Béné, C., Oosterveer, P., Lamotte, L., Brouwer, I. D., de Haan, S., Prager, S. D., ... Khoury, C. K. (2019). When food systems meet sustainability – Current narratives and implications for actions. *World Development*, 113, 116–130. <https://doi.org/https://doi.org/10.1016/j.worlddev.2018.08.011>
- Benjamin, C. A. (2020). A place to breathe in the Dense city: Community gardening and participatory urbanism in Paris. *Socialni Studia/Social Studies*, 17(1), 55–70. <https://doi.org/10.5817/soc2020-1-55>
- Bennett, K. M. (1998). Longitudinal changes in mental and physical health among elderly, recently widowed men. *Mortality*, 3(3), 265–273. <https://doi.org/10.1080/713685953>
- Benton, J. S., Anderson, J., Cotterill, S., Dennis, M., Lindley, S. J., & French, D. P. (2018). Evaluating the impact of improvements in urban green space on older adults' physical activity and wellbeing: Protocol for a natural experimental study. *BMC Public Health*, 18(1), 923. <https://doi.org/10.1186/s12889-018-5812-z>
- Berg, B. L. (2007). *Qualitative research methods for the social sciences*. London: Pearson.
- Berg, N. G. (2020). Geographies of wellbeing and place attachment: Revisiting urban–rural migrants. *Journal of Rural Studies*, 78, 438–446. <https://doi.org/https://doi.org/10.1016/j.jrurstud.2020.06.041>
- Berman, M. G., Kross, E., Krpan, K. M., Askren, M. K., Burson, A., Deldin, P. J., ... Jonides, J. (2012). Interacting with nature improves cognition and affect for individuals with depression. *Journal of Affective Disorders*, 140(3), 300–305. <https://doi.org/https://doi.org/10.1016/j.jad.2012.03.012>
- Bernard, H. R. (2006). *Bernard, H. R. (2006). Qualitative data analysis I: Text analysis. In Research Methods in Anthropology: Qualitative and Quantitative Approaches (Fourth edition). Lanham, MD: AltaMira Press. (5th ed). Lanham, Md: AltaMira Press.*
- BGS: British Geriatrics Society. (2020). Coronavirus: Current information and advice. Available from: <https://www.bgs.org.uk/resources/coronavirus-current-information-and-advice>
- Bhanu, C., Avgerinou, C., Kharicha, K., Bauernfreund, Y., Croker, H., Liljas, A., ... Walters, K. (2020). 'I've never drunk very much water and I still don't, and I see no reason to do so': a qualitative study of the views of community-dwelling older people and carers on hydration in later life. *Age and Ageing*, 49(1), 111–118. <https://doi.org/10.1093/ageing/afz141>
- Bhattacharjee, A. (2012). *Social Science Research: Principles, Methods, and Practices. Textbooks Collection* (3rd ed.). Florida: University of South Florida. <https://doi.org/10.1351/pac198961091657>
- Bickerdike, L., Booth, A., Wilson, P. M., Farley, K., & Wright, K. (2017). Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ Open*, 7(4), e013384. <https://doi.org/10.1136/bmjopen-2016-013384>
- Bigonnesse, C., & Chaudhury, H. (2020). The Landscape of “Aging in Place” in Gerontology Literature: Emergence, Theoretical Perspectives, and Influencing Factors. *Journal of Aging and Environment*, 34(3), 233–251. <https://doi.org/10.1080/02763893.2019.1638875>
- Billings, D. R. (2018). *White Space, Black Space: Community Gardens in Portland, Oregon*. Portland State. Retrieved from <https://doi.org/10.15760/etd.6435>
- Birks, M., Mills, J. (2015). *Grounded theory: A practical guide*. Los Angeles, CA: Sage.
- Birks, M., & Mills, J. (2015). *Grounded theory: A practical guide*. Sage.
- Blais, S., McCleary, L., Garcia, L., & Robitaille, A. (2017). Examining the Benefits of Intergenerational Volunteering in Long-Term Care: A Review of the Literature. *Journal of Intergenerational Relationships*, 15(3), 258–272. <https://doi.org/10.1080/15350770.2017.1330056>
- Blake, G., Diamond, J., Foot, J., Gidley, B., Mayo, M., Shukra, K., Yarnit, M. (2008) “Community Engagement and Community Cohesion.” (2008). Joseph Rowntree Foundation. ISBN: 978 1 85935 660 9. [www.jrf.org.uk](http://www.jrf.org.uk)
- Block, E. S., & Erskine, L. (2012). Interviewing by telephone: Specific considerations, opportunities, and challenges. *International Journal of Qualitative Methods*, 11(4), 428–445. <https://doi.org/10.1177/160940691201100409>
- Bloom, I., Edwards, M., Jameson, K. A., Syddall, H. E., Dennison, E., Gale, C. R., ... Robinson, S. (2017). Influences on diet quality in older age: the importance of social factors. *Age and Ageing*, 46(2), 277–283. <https://doi.org/10.1093/ageing/afw180>
- Boddy, C. R. (2016). Sample size for qualitative research. *Qualitative Market Research: An International Journal*, 19(4), 426–432. <https://doi.org/10.1108/QMR-06-2016-0053>

- Bonomi Bezzo, F., Silva, L., & van Ham, M. (2021). The combined effect of Covid-19 and neighbourhood deprivation on two dimensions of subjective well-being: Empirical evidence from England. *PLOS ONE*, *16*(7), e0255156. Retrieved from <https://doi.org/10.1371/journal.pone.0255156>
- Booth, J. (2019). Empowering Disadvantaged Communities in the UK: Missing the Potential of Co-production. *Social Change*, *49*(2), 276–292. <https://doi.org/10.1177/0049085719832401>
- Borg, C., Hallberg, I. R., & Blomqvist, K. (2006). Life satisfaction among older people (65+) with reduced self-care capacity: The relationship to social, health and financial aspects. *Journal of Clinical Nursing*, *15*(5), 607–618. <https://doi.org/10.1111/j.1365-2702.2006.01375.x>
- Borgogni A, & Agosti V (2021) Urban outdoor education as a driver for active mobility in children. *Journal of Physical Education and Sport*. 21 (1) 574 – 579.
- Bouzarovski, S., & Simcock, N. (2017). Spatializing energy justice. *Energy Policy*, *107*, 640-648.
- Bowe, M., Wakefield, J. R. H., Kellezi, B., Stevenson, C., McNamara, N., Jones, B. A., ... Heym, N. (2021). The mental health benefits of community helping during crisis: Coordinated helping, community identification and sense of unity during the COVID-19 pandemic. *Journal of Community & Applied Social Psychology*, *n/a*(n/a). <https://doi.org/https://doi.org/10.1002/casp.2520>
- Bowen, K. J., & Lynch, Y. (2017). The public health benefits of green infrastructure: the potential of economic framing for enhanced decision-making. *Current Opinion in Environmental Sustainability*, *25*, 90–95. <https://doi.org/10.1016/j.cosust.2017.08.003>
- Bowler, D., Buyung-Ali, L., Knight, T., & Pullin, A. (2010). A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health*, *10*, 456.
- Bowling, A. (2014). *Research methods in health: Investigating health and health services*. Open University Press.
- Bowling, A. (2001). *Public health-Research-Methodology. 2. Community health services-Research-Methodology. RA440.85. B69* (362). Available from [www.openup.co.uk](http://www.openup.co.uk)
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oak, CA: Sage Publications, Inc.
- Brackbill, Y., & Kitch, D. (1991). Intergenerational relationships: A social exchange perspective on joint living arrangements among the elderly and their relatives. *Journal of Aging Studies*, *5*(1), 77–97. [https://doi.org/10.1016/0890-4065\(91\)90026-O](https://doi.org/10.1016/0890-4065(91)90026-O)
- Bragg, R. (2020) Growing Care Farming. Annual Survey 2020: Full report. Available from: <https://www.farmgarden.org.uk/qcf/scale-of-sector>
- Bragg, M., Grayling, A. C., Baggini, J., & Fricker., M. (2015). Introduction to American Pragmatism (In Our Time: BBC). British Broadcasting Company (BBC). Retrieved from <https://simplyphilosophy.org/study/pragmatism-definition/>
- Bragg, R., Atkins, G., Eley, H., Bragg, R., Elings, M., Cade, J. E., ... Gigliotti, C. M. (2010). A review of nature-based interventions for mental health care (NECR204). *American Journal of Alzheimer's Disease and Other Dementias*, *4*(1), 1–82. <https://doi.org/10.1177/1471301209354023>
- Bragg, R., Wood, C., & Barton, J. (2013). *Ecominds effects on mental wellbeing: An evaluation for Mind*. Retrieved from <https://www.mind.org.uk/media/354166/Ecominds-effects-on-mental-wellbeing-evaluation-report.pdf>
- Bragg, R., & Atkins, G. (2016). *A review of nature-based interventions for mental health care (NECR204)*. Natural England Commissioned Report, 204, York.
- Bragg, R., Egginton-Metters, I., Eley, H., & Wood, C. (2014). *Care farming: Defining the “offer” in England*. Natural England Commissioned Report NECR155. York.
- Bragg, R., & Leck, C. (2017). *Good practice in social prescribing for mental health: the role of nature-based interventions*. Natural England Commissioned Reports, Number 228. York.
- Brandling, J., House, W., Howitt, D., & Sansom, A. (2011). *New routes: pilot research project of a new social prescribing service provided in Keynsham*. Available from: <https://www.pdfFiller.com/87706080--New-Routes-Pilot-Social-Prescribing-Service-Final-Report-190911doc-thecareforum->
- Brandon, C. A., Gill, D. P., Speechley, M., Gilliland, J., Jones, G, R. (2009) Physical activity levels of older community-dwelling adults are influenced by summer weather variables. *Applied Physiology, Nutrition, and Metabolism*, 2009, *34*:182-190, <https://doi.org/10.1139/H09-004>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>

- Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic Analysis. In *Handbook of Research Methods in Health Social Sciences* (pp. 843–860). Singapore: Springer Singapore. [https://doi.org/10.1007/978-981-10-5251-4\\_103](https://doi.org/10.1007/978-981-10-5251-4_103)
- Brewer, T., & Pringle, Y. (2015). Beyond Bazalgette: 150 years of sanitation. *The Lancet*, 386(9989), 128–129. [https://doi.org/10.1016/S0140-6736\(15\)61231-4](https://doi.org/10.1016/S0140-6736(15)61231-4)
- Brinkley, K., Chappell, G. (1999). *The Gardens of Colonial Williamsburg*. Colonial Williamsburg Foundation, US.
- Brooke, J., & Jackson, D. (2020). Older people and COVID-19: Isolation, risk and ageism. *Journal of Clinical Nursing*, 29(13–14), 2044–2046. <https://doi.org/https://doi.org/10.1111/jocn.15274>
- Brownie, S. (2006). Why are elderly individuals at risk of nutritional deficiency? *International Journal of Nursing Practice*, 12(2), 110–118. <https://doi.org/https://doi.org/10.1111/j.1440-172X.2006.00557.x>
- Brusseau, M. L., Ramirez-Andreotta, M., Pepper, I. L., & Maximilian, J. (2019). Chapter 26 - Environmental Impacts on Human Health and Well-Being. In Mark L Brusseau, I. L. Pepper, & C. P. B. T.-E. and P. S. (Third E. Gerba (Eds.) (pp. 477–499). Academic Press. <https://doi.org/https://doi.org/10.1016/B978-0-12-814719-1.00026-4>
- Bryant, A. (2017). *Grounded theory and grounded theorizing: Pragmatism in research practice*. (Illustrate). Oxford, UK: Oxford University Press.
- Bryman, A. (2012). *Social Research Methods*. Fourth Edition. Oxford: Oxford University Press.
- Brzoska, P., & Späße, A. (2020). From City- to Site-Dimension: Assessing the Urban Ecosystem Services of Different Types of Green Infrastructure. *Land*. <https://doi.org/10.3390/land9050150>
- Bu, F., Steptoe, A., & Fancourt, D. (2020). Loneliness during a strict lockdown: Trajectories and predictors during the COVID-19 pandemic in 38,217 United Kingdom adults. *Social Science & Medicine*, 265, 113521.
- Bu, F., Steptoe, A., Mak, H. W., & Fancourt, D. (2021). Time use and mental health in UK adults during an 11-week COVID-19 lockdown: a panel analysis. *The British Journal of Psychiatry*, 219(4), 551–556. <https://doi.org/DOI: 10.1192/bjp.2021.44>
- Buck, D. (2016). Gardens and health: Implications for policy and practice. *The King's Fund and National Gardens Scheme*, (May). Available from: <https://www.kingsfund.org.uk/publications/gardens-and-health>
- Buffel, T., McGarry, P., Phillipson, C., De Donder, L., Dury, S., De Witte, N., ... Verté, D. (2014). Developing Age-Friendly Cities: Case Studies From Brussels and Manchester and Implications for Policy and Practice. *Journal of Aging and Social Policy*, 26(1–2), 52–72. <https://doi.org/10.1080/08959420.2014.855043>
- Buffel, T., & Philipson, C. (2018). Urban Ageing: New agendas for geographical gerontology. In M. W. Skinner, G. J. Andrews, & M. P. Cutchin (Eds.), *Geographical Gerontology: Perspectives, Concepts, Approaches* (pp. 123–135). London: Routledge.
- Buglife (n.d). B-Lines North England. Available from: <https://www.buglife.org.uk/our-work/b-lines/b-lines-north-england/>
- Byrnes, M., Lichtenberg, P. A., & Lysack, C. (2006). Environmental Press, Aging in Place, and Residential Satisfaction of Urban Older Adults. *Journal of Applied Sociology*, 35(2), 50–77. <https://doi.org/10.1177/19367244062300204>
- Cabannes, Y. (2012). Financing urban agriculture. *Environment and Urbanization*, 24(2), 665–683. <https://doi.org/10.1177/0956247812456126>
- Cacciatore, J., Gorman, R., & Thieleman, K. (2020). Evaluating care farming as a means to care for those in trauma and grief. *Health & Place*, 62, 102281. <https://doi.org/https://doi.org/10.1016/j.healthplace.2019.102281>
- Cachada, A., Pato, P., Rocha-Santos, T., da Silva, E. F., & Duarte, A. C. (2012). Levels, sources and potential human health risks of organic pollutants in urban soils. *Science of The Total Environment*, 430, 184–192. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2012.04.075>
- Cacioppo, J. T., Fowler, J. H., & Christakis, N. A. (2009). Alone in the crowd: the structure and spread of loneliness in a large social network. *Journal of personality and social psychology*, 97(6), 977–991. <https://doi.org/10.1037/a0016076>
- Calasanti, T. (2010). Gender Relations and Applied Research on Aging. *The Gerontologist*, 50(6), 720–734. <https://doi.org/10.1093/geront/gnq085>
- Calton, T., & Spandler, H. (2009). Minimal-medication approaches to treating schizophrenia. *Advances in Psychiatric Treatment*, 15(3), 209–217. doi:10.1192/apt.bp.107.004028
- Cameron, R. W. F., & Blanuša, T. (2016). Green infrastructure and ecosystem services - is the devil in the detail? *Annals of Botany*, 118(3), 377–391. <https://doi.org/10.1093/aob/mcw129>

- Cameron, R. W. F., Blanuša, T., Taylor, J. E., Salisbury, A., Halstead, A. J., Henricot, B., & Thompson, K. (2012). The domestic garden - Its contribution to urban green infrastructure. *Urban Forestry and Urban Greening*, 11(2), 129–137. <https://doi.org/10.1016/j.ufug.2012.01.002>
- Campbell J. (2015). A History of Pragmatism. In *The Bloomsbury Companion to Pragmatism*. <https://doi.org/10.5040/9781474235747.0010>
- Campbell J, Quincy C, Osserman J, Pedersen OK. (2013). Coding In-depth Semi Structured Interviews: Problems of Unitization and Intercoder Reliability and Agreement. *Sociological Methods & Research*. 42(3) 294-320. DOI: 10.1177/0049124113500475
- Cantarero-Prieto, D., Pascual-Sáez, M., & Blázquez-Fernández, C. (2018). Social isolation and multiple chronic diseases after age 50: A European macro-regional analysis. *PLOS ONE*, 13(10), e0205062. Retrieved from <https://doi.org/10.1371/journal.pone.0205062>
- Capone, V., & Petrillo, G. (2013). Health Promotion in International Documents: Strengths and Weaknesses from the Perspective of Community Empowerment. *Journal of Community and Applied Social Psychology*, 23, 98–114. <https://doi.org/10.1002/casp.2103>
- Carico, R., Sheppard, J., & Thomas, C. B. (2020). Community pharmacists and communication in the time of COVID-19: Applying the health belief model. *Research in Social and Administrative Pharmacy*, (March), 1–4. <https://doi.org/10.1016/j.sapharm.2020.03.017>
- Carnes, D., Sohanpal, R., Frostick, C., Hull, S., Mathur, R., Netuveli, G., ... Bertotti, M. (2017). The impact of a social prescribing service on patients in primary care: A mixed methods evaluation. *BMC Health Services Research*, 17(1), 1–9. <https://doi.org/10.1186/s12913-017-2778-y>
- Carp, F. (1966). *A future for the aged* (1st ed.). Austin: University of Texas Press.
- Carr, E., & Worth, A. (2001). The use of telephone interview for research. *Journal of Research in Nursing*, 6(1), 511–524. Retrieved from <https://doi.org/10.1177/136140960100600107>
- Castillo-Huitrón, N. M., Naranjo, E. J., Santos-Fita, D., & Estrada-Lugo, E. (2020). The Importance of Human Emotions for Wildlife Conservation . *Frontiers in Psychology* . Retrieved from <https://www.frontiersin.org/article/10.3389/fpsyg.2020.01277>
- CDC. (n.d.). Loneliness and social isolation linked to serious health conditions. Retrieved from <https://www.cdc.gov/aging/publications/features/lonely-older-adults.html>
- CDRC (2019). CRDR Maps: Index of Multiple Deprivation 2019. Consumer Data Research Centre Mapping Software. Available from: <https://maps.cdrc.ac.uk/#/geodemographics/imde2019/default/BTTTTFPT/14/-2.3348/53.5100/>
- Centre for Ageing Better. (2018). *The NHS needs radical change to adapt to our ageing society*. London. Available from: <https://ageing-better.org.uk/blogs/nhs-needs-radical-change-adapt-our-ageing-society>
- Centre for Ageing Better. (2019). *The State of Ageing in 2019: Adding life to our years*. London. Available from [https://ageing-better.org.uk/publications/state-of-ageing-2019?gclid=EAlaIqobChMIraaMtNrK9AIVze7tCh0nuAKsEAAYASAAEgKWN\\_D\\_BwE](https://ageing-better.org.uk/publications/state-of-ageing-2019?gclid=EAlaIqobChMIraaMtNrK9AIVze7tCh0nuAKsEAAYASAAEgKWN_D_BwE)
- Chakraborty, I., & Maity, P. (2020). COVID-19 outbreak: Migration, effects on society, global environment and prevention. *Science of The Total Environment*, 728, 138882. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2020.138882>
- Chamber, R. (2020). Vitamin N: the power of nature to help us through difficult times | Inside track. From <https://greenallianceblog.org.uk/2020/04/14/vitamin-n-the-power-of-nature-to-help-us-through-difficult-times/>
- Champion, V. L., & Skinner, C. S. (2008). *The health belief model*. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (p. 45–65). Jossey-Bass
- Chaney, R. L., Sterrett, S. B., & Mielke, H. W. (1984). The potential for heavy metal exposure from urban gardens and soils. In Proc. symp. heavy metals in urban gardens. univ. dist. Columbia Extension Service, Washington, DC (pp. 37-84).
- Charmaz, K. (2014). Grounded Theory in Global Perspective: Reviews by International Researchers. *Qualitative Inquiry*, 20(9), 1074–1084. <https://doi.org/10.1177/1077800414545235>
- Chaney, R., Sterrett, S., & Mielke, H. (1984). The potential for heavy metal exposure from urban gardens and soils. In J.R. Preer (ed.) Proc. Symp. Heavy Metals in Urban Gardens.37-84. Univ. Dist.Columbia Extension Service, Washington, DC.
- Chapman, A. (2010). The social determinants of health, health equity, and human rights. *Health and Human Rights*, 12, 17–30.
- Chapman, R., & Middleton, J. (2019). *The NHS long term plan and public health*. *BMJ (Online)* (Vol. 364). British Medical Journal Publishing Group. <https://doi.org/10.1136/bmj.l218>



- Chapple, A. (1999). The use of telephone interviewing for qualitative research. *Nurse Researcher*, 6(3), 85–93. <https://doi.org/10.7748/nr1999.04.6.3.85.c6090>
- Charmaz, K. (2003). Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies for qualitative inquiry* (Second, pp. 249–291). Thousand Oaks, CA: SAGE.
- Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Research*. (D. Silverman, M. Bloor, B. Czarniawska, N. Denzin, B. Glassner, J. Gubrium, ... J. Potter, Eds.). London: Sage Publications. Retrieved from [http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Charmaz\\_2006.pdf](http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Charmaz_2006.pdf)
- Charmaz, K., & Belgrave, L. (2013). Grounded theory. In *Qualitative Research in the Health Sciences: Methodologies, Methods and Processes* (Vol. 9780203777, pp. 30–55). Oxford, UK: John Wiley & Sons, Ltd. <https://doi.org/10.4324/9780203777176>
- Chasteen, A. L., & Cary, L. A. (2015). Age stereotypes and age stigma: Connections to research on subjective aging. *Annual Review of Gerontology and Geriatrics*, 35(1), 99–119. <https://doi.org/10.1891/0198-8794.35.99>
- Chataway, M. L., & Hart, T. C. (2017). Crime prevention and reduction programs: How does knowing about community initiatives moderate attitudes towards criminal victimisation? *Australian & New Zealand Journal of Criminology*, 51(2), 239–257. <https://doi.org/10.1177/0004865817717055>
- Chatterjee, H. J., Camic, P. M., Lockyer, B., & Thomson, L. J. M. (2018, May 4). Non-clinical community interventions: a systematised review of social prescribing schemes. *Arts and Health*. Routledge. <https://doi.org/10.1080/17533015.2017.1334002>
- Chen, W., Okumiya, K., Wada, T., Sakamoto, R., Imai, H., Ishimoto, Y., ... Matsubayashi, K. (2015). Social cohesion and health in old age: a study in southern Taiwan. *International Psychogeriatrics*, 27(11), 1903–1911. <https://doi.org/10.1017/S1041610214002907>
- Chenarides, L., Grebitus, C., Lusk, J. L., & Printezis, I. (2021). Who practices urban agriculture? An empirical analysis of participation before and during the COVID-19 pandemic. *Agribusiness*, 37(1), 142–159. <https://doi.org/https://doi.org/10.1002/agr.21675>
- Chenoweth, R. E., & Gobster, P. H. (1990). The Nature and Ecology of Aesthetic Experiences in the Landscape. *Landscape Journal*, 9(1), 1–8. Retrieved from <http://www.jstor.org/stable/43322886>
- Chivian, E., & Bernstein, A. (2008). *Sustaining Life: How Human Health Depends on Biodiversity*. New York.
- Choi, N., Kim, J., & Asseff, J. (2009). Self-Neglect and Neglect of Vulnerable Older Adults: Reexamination of Etiology. *Journal of Gerontological Social Work*, 52, 171–187. <https://doi.org/10.1080/01634370802609239>
- Chopin, L. B. (2021). *Social farming in France : therapeutic benefits and sustainability of social farms*. Norwegian University of Life Sciences, Ås. Retrieved from <https://nmbu.brage.unit.no/nmbu-xmlui/handle/11250/2767000>
- Chuenpagdee, R., Said, A., Aguilar-Perera, A., Arce-Ibarra, M., Gurung, T. B., Bishop, B., ... Jentoft, S. (2019). The Principles of Transdisciplinary Research in Small-Scale Fisheries. In R. Chuenpagdee & S. Jentoft (Eds.), *Transdisciplinarity for Small-Scale Fisheries Governance: Analysis and Practice* (pp. 411–431). Cham: Springer International Publishing. [https://doi.org/10.1007/978-3-319-94938-3\\_22](https://doi.org/10.1007/978-3-319-94938-3_22)
- Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE Open Medicine*, 7, 2050312118822927–2050312118822927. <https://doi.org/10.1177/2050312118822927>
- City of Amsterdam. (2014). *Green Agenda 2015 - 2018: Investing in the Amsterdammers garden*. Available from <https://networknature.eu/casestudy/19449>
- Clarke, M., Davidson, M., Egerer, M., Anderson, E., & Fouch, N. (2018). The underutilized role of community gardens in improving cities' adaptation to climate change: A review. *People, Place & Policy Online*, 12(3). 241-251. DOI: 10.3351/ppp.2019.3396732665
- Clarke, G., & Lunt, I. (2014). The concept of 'originality' in the Ph.D.: how is it interpreted by examiners? *Assessment & Evaluation in Higher Education*, 39(7), 803–820. <https://doi.org/10.1080/02602938.2013.870970>
- Clarke, J. (2015). Solidarity and Survival: A Multidisciplinary Exploration of Volunteering during the Greek Crisis. In J. Clarke, A. Huliaras, & D. Sotiropoulos (Eds.), *Austerity and the Third Sector in Greece: Civil Society at the European Frontline* (pp. 67–84). London: Ashgate Publishing.
- Clarke, M., Davidson, M., Egerer, M., Anderson, E., & Fouch, N. (2018). The underutilized role of community gardens in improving cities' adaptation to climate change: A review. *People, Place & Policy Online*, 12(3).

- Clavin, A. A. (2011). Realising ecological sustainability in community gardens: A capability approach. *Local Environment*, 16(10), 945–962. <https://doi.org/10.1080/13549839.2011.627320>
- Clements-Cortés, A., & Yip, J. (2020). Social Prescribing for an Aging Population. *Activities, Adaptation & Aging*, 44(4), 327–340. <https://doi.org/10.1080/01924788.2019.1692467>
- Clough, R., Manthorpe, J., Green, O. B., Fox, D., Raymond, G., Wilson, P., ... Hay, J. (2005). The support older people want and the services they need Communications Department, Joseph Rowntree Foundation. Available from: <https://www.jrf.org.uk/report/support-older-people-want-and-services-they-need>
- Cluley, V. (2017). Using photovoice to include people with profound and multiple learning disabilities in inclusive research. *Br J Learn Disabil*, 45: 39-46. <https://doi.org/10.1111/blid.12174>
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, 38(5), 300–314. <https://doi.org/10.1097/00006842-197609000-00003>
- Cohen, E. B., & Lloyd, S. J. (2014). DigitalCommons@URI Disciplinary Evolution and the Rise of the Transdiscipline. *Informing Science: The International Journal of an Emerging Transdiscipline*, 17, 189–215. Retrieved from [https://digitalcommons.uri.edu/cba\\_facpubs](https://digitalcommons.uri.edu/cba_facpubs)
- Cohen, L. and Manion, L. (1986) *Research Methods In Education*. London: Croom Helm.
- Cohen, Manion, L., & Morrison, K. (2007). *Research Methods in Education* (6th ed.). New York: Routledge.
- Cohen-Cline, H., Turkheimer, E., & Duncan, G. E. (2015). Access to green space, physical activity and mental health: a twin study. *Journal of Epidemiology and Community Health*, 69(6), 523 LP – 529. <https://doi.org/10.1136/jech-2014-204667>
- Cole, H. V., Lamarca, M. G., Connolly, J. J., & Anguelovski, I. (2017). Are green cities healthy and equitable? Unpacking the relationship between health, green space and gentrification. *J Epidemiol Community Health*, 71(11), 1118-1121. <https://jech.bmj.com/content/71/11/1118>
- Collins, C. S., & Cooper, J. E. (2014). Emotional Intelligence and the Qualitative Researcher. *International Journal of Qualitative Methods*, 13(1), 88–103. <https://doi.org/10.1177/160940691401300134>
- Cominetti, N., McCurdy, C., & Slaughter, H. (2021). *Low Pay Britain: 2021*. London. Retrieved from <https://www.resolutionfoundation.org/publications/low-pay-britain-2021/>
- Committee on Climate Change. (2019). *Progress in preparing for Climate Change: 2019*. London. Retrieved from <https://www.theccc.org.uk/publication/progress-in-preparing-for-climate-change2019-progress-report-to-parliament/>.
- Connolly, P. (1990). *Pompeii: Rebuilding the Past Series* (1st ed.). Oxford, UK: Oxford University Press.
- Cook, P. A., Howarth, M., & Wheeler, C. P. (2019). Biodiversity and Health in the Face of Climate Change: Implications for Public Health BT - Biodiversity and Health in the Face of Climate Change. In M. R. Marselle, J. Stadler, H. Korn, K. N. Irvine, & A. Bonn (Eds.) (pp. 251–281). Cham: Springer International Publishing. [https://doi.org/10.1007/978-3-030-02318-8\\_11](https://doi.org/10.1007/978-3-030-02318-8_11)
- Cook, S., & Hayes, S. (2020). Covid-19 and the changing geographies of exercise Title Covid-19 and the changing geographies of exercise. *Geography Directions*. Retrieved from <http://usir.salford.ac.uk/id/eprint/59739/>
- Coombes, E., Jones, A. P., & Hillsdon, M. (2010). The relationship of physical activity and overweight to objectively measured green space accessibility and use. *Social Science and Medicine*, 70(6), 816–822. <https://doi.org/10.1016/j.socscimed.2009.11.020>
- Cooper, C. H. V., Fone, D. L., & Chiaradia, A. J. F. (2014). Measuring the impact of spatial network layout on community social cohesion: A cross-sectional study. *International Journal of Health Geographics*, 13, 1–14. <https://doi.org/10.1186/1476-072X-13-11>
- Corkery, L. (2004). Community Gardens as a Platform for Education for Sustainability. *Australian Journal of Environmental Education*, 20(1), 69–75. <https://doi.org/DOI:10.1017/S0814062600002317>
- Corley, J., Okely, J.A., Taylor, A.M., Page, D., Welstead, M., Skarabela, B., Redmond, P., Cox, S.R., Russ, T.C., (2021). Home garden use during COVID-19: Associations with physical and mental wellbeing in older adults. *Journal of environmental psychology*, 73, p.101545. doi: <https://doi.org/10.1016/j.jenvp.2020.101545>
- Cornwell, E. Y., & Waite, L. J. (2009). Measuring social isolation among older adults using multiple indicators from the nshap study. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, 64(SUPPL.1), i38-46. <https://doi.org/10.1093/geronb/gbp037>
- Corra, M., & Willer, D. (2002). The Gatekeeper. *Sociological Theory*, 20(2), 180–207. <https://doi.org/https://doi.org/10.1111/1467-9558.00158>

- Coulson, H., & Sonnino, R. (2019). Re-scaling the politics of food: Place-based urban food governance in the UK. *Geoforum*, 98, 170–179. <https://doi.org/https://doi.org/10.1016/j.geoforum.2018.11.010>
- Coutard, O., & Rutherford, J. (2010). Energy transition and city–region planning: understanding the spatial politics of systemic change. *Technology Analysis & Strategic Management*, 22(6), 711–727. <https://doi.org/10.1080/09537325.2010.496284>
- Coutts C, Hahn M. Green Infrastructure, Ecosystem Services, and Human Health. *Int J Environ Res Public Health*. 2015 Aug 18;12(8):9768-98. doi: 10.3390/ijerph120809768. PMID: 26295249; PMCID: PMC4555311.
- Cox, D. T. C., Shanahan, D. F., Hudson, H. L., Fuller, R. A., Anderson, K., Hancock, S., & Gaston, K. J. (2017). Doses of Nearby Nature Simultaneously Associated with Multiple Health Benefits. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph14020172>
- Cox, D. T. C., Shanahan, D. F., Hudson, H. L., Fuller, R. A., & Gaston, K. J. (2018). The impact of urbanisation on nature dose and the implications for human health. *Landscape and Urban Planning*, 179, 72–80. <https://doi.org/https://doi.org/10.1016/j.landurbplan.2018.07.013>
- Creswell, J. (2009). Five Qualitative Approaches to inquiry . In J. Creswell (Ed.), *Qualitative Inquiry and Research Design* (pp. 53–84). Thousand Oaks: Sage Publications. Retrieved from [http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Creswell\\_2007.pdf](http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Creswell_2007.pdf)
- Creswell, J. (2014). *Research design : qualitative; quantitative; and mixed methods approaches*. Thousand Oaks; California: SAGE Publications; Inc.
- Creswell, J. W. (1994). *Research design: Qualitative & quantitative approaches*. Sage Publications, Inc.
- Creswell, J., & Plano Clark, V. (2007). *Designing and conducting mixed methods research*. Sage publications.
- Creswell, J., & Poth, C. . (2017). *Qualitative inquiry and research design: Choosing among five approaches*. (Fourth). London: SAGE Publications.
- Crisp, N. (2020). Health is made at home: hospitals are for repairs. *Salus*.
- Cristobal, L. (2016). Application of the Green House model to the U.S. geriatric Veteran population. <https://elischolar.library.yale.edu/ysndt/1027>
- Cronin, H., O'Regan, C., Finucane, C., Kearney, P., & Kenny, R. A. (2013). Health and aging: Development of the Irish Longitudinal Study on Ageing health assessment. *Journal of the American Geriatrics Society*, 61(SUPPL2), 269–278. <https://doi.org/10.1111/jgs.12197>
- Crossan, J., Shaw, D., Cumbers, A., & McMaster, R. (2015). *Glasgow's Community Gardens: Sustainable Communities of Care Professor Andrew Cumbers Professor Robert McMaster*. Glasgow. Retrieved from [https://www.gla.ac.uk/media/Media\\_622132\\_smxx.pdf](https://www.gla.ac.uk/media/Media_622132_smxx.pdf)
- Crow, G., Wiles, R., Heath, S., & Charles, V. (2006). Research Ethics and Data Quality: The Implications of Informed Consent. *International Journal of Social Research Methodology*, 9(2), 83–95. <https://doi.org/10.1080/13645570600595231>
- Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC medical research methodology*, 11, doi:10. 10.1186/1471-2288-11-100
- Cumbers, A., Shaw, D., Crossan, J., & McMaster, R. (2018). The Work of Community Gardens: Reclaiming Place for Community in the City. *Work, Employment and Society*, 32(1), 133–149. <https://doi.org/10.1177/0950017017695042>
- Cummins, S, Berger, N, Cornelsen, L, Eling, J, Er, V, Greener, R, Kalbus, A, Karapici, A, Law, C, Ndlovu, D, Yau, A. (2020) COVID-19: impact on the urban food retail system and dietary inequalities in the UK. *Cities & Health*. pp. 1-4. doi: <https://doi.org/10.1080/23748834.2020.1785167>
- Curtis, S., Fair, A., Wistow, J., Val, D. V., & Oven, K. (2017). Impact of extreme weather events and climate change for health and social care systems. *Environmental Health*, 16(1), 128. <https://doi.org/10.1186/s12940-017-0324-3>
- Cutchin, M. P. (2007). The need for the “new health geography” in epidemiologic studies of environment and health. *Health and Place*, 13(3), 725–742. <https://doi.org/10.1016/j.healthplace.2006.11.003>
- Daly, J., Gliksman, M., & Kellehear, A. (1997). *The public health researcher: a methodological guide*. Oxford University Press, Melbourne. Melbourne: Oxford University Press.
- Daly, M., & Robinson, E. (2021). Longitudinal changes in psychological distress in the UK from 2019 to September 2020 during the COVID-19 pandemic: Evidence from a large nationally representative study. *Psychiatry Research*, 300, 113920. <https://doi.org/https://doi.org/10.1016/j.psychres.2021.113920>

- Danson, M., & Arshad, N. (1993). The literature review. *The Journal of the New York State Nurses' Association*, 24(1), 14–15. [https://doi.org/10.1007/978-1-349-14559-1\\_6](https://doi.org/10.1007/978-1-349-14559-1_6)
- Darling, J. (2014). Emotions, encounters and expectations: The uncertain ethics of 'the field'. *Journal of Human Rights Practice*, 6(2), 201-212. <https://doi.org/10.1093/jhuman/huu011>
- Darton D., Strelitz J. (2003). Tackling UK poverty and disadvantage in the twenty-first century: an exploration of the issues, 163. Joesph Rowntree Foundation. <https://www.jrf.org.uk/report/tackling-uk-poverty-and-disadvantage-twenty-first-century>
- Datta, R. (2016). Community garden: A bridging program between formal and informal learning. *Cogent Education*, 3(1), 1177154. <https://doi.org/10.1080/2331186X.2016.1177154>
- Davenport, R. J., Satchell, M., & Shaw-Taylor, L. M. W. (2018). The geography of smallpox in England before vaccination: A conundrum resolved. *Social Science & Medicine*, 206, 75–85. <https://doi.org/https://doi.org/10.1016/j.socscimed.2018.04.019>
- Davies, K., Collerton, J. C., Jagger, C., Bond, J., Barker, S. A. H., Edwards, J., ... Robinson, L. (2010). Engaging the oldest old in research: lessons from the Newcastle 85+ study. *BMC Geriatrics*, 10(1), 64. <https://doi.org/10.1186/1471-2318-10-64>
- Dawson, A., Emanuel, E. J., Parker, M., Smith, M. J., & Voo, T. C. (2020). Key Ethical Concepts and Their Application to COVID-19 Research. *Public Health Ethics*, 13(2), 127–132. <https://doi.org/10.1093/phe/phaa017>
- Day, M.R. (2020) Self-Neglect in Older Adults. In: Phelan A. (eds) *Advances in Elder Abuse Research. International Perspectives on Aging*, vol 24. Springer, Cham
- Dayson, C., & Bashir, N. (2014). *The social and economic impact of the Rotherham Social Prescribing Pilot: Main evaluation report* (Vol. 53). <https://doi.org/10.1017/CBO9781107415324.004>
- Dayson, C., & Bennett, E. (2017). *Evaluation of the Rotherham mental health social prescribing service 2015/16-2016/17*. Retrieved from <https://www4.shu.ac.uk/research/cresr/sites/shu.ac.uk/files/eval-rotherham-mental-health-social-prescribing.pdf>
- de Boer, B., Hamers, J. P., Zwakhalen, S. M., Tan, F. E., & Verbeek, H. (2017). Quality of care and quality of life of people with dementia living at green care farms: a cross-sectional study. *BMC geriatrics*, 17(1), 1-10.
- de Bruin, S., Hassink, J., Vaandrager, L., de Boer, B., Verbeek, H., Pedersen, I., ... & Eriksen, S. (2021). Care Farms: A Health-Promoting Context for a Wide Range of Client Groups. In *Nature and Health* (pp. 177-190). Routledge.
- de Bruin, S. R., Pedersen, I., Eriksen, S., Hassink, J., Vaandrager, L., & Patil, G. G. (2020). Care farming for people with dementia; what can healthcare leaders learn from this innovative care concept? *Journal of Healthcare Leadership*. <https://doi.org/10.2147/JHL.S202988>
- de Bruin, S., de Boer, B., Beerens, H., Buist, Y., & Verbeek, H. (2017). Rethinking Dementia Care: The Value of Green Care Farming. *Journal of the American Medical Directors Association*, 18(3), 200–203. <https://doi.org/10.1016/j.jamda.2016.11.018>
- de Costa, P. I., & Norton, B. (2017). Introduction: Identity, Transdisciplinarity, and the Good Language Teacher. *Modern Language Journal*, 101(Supplement), 3–14. <https://doi.org/10.1111/modl.12368>
- de Keijzer, C., Bauwelinck, M., and Dadvand, P. (2020). Long-term exposure to residential greenspace and healthy ageing: a systematic review. *Curr. Environ. Health Rep.* 7, 65–88. doi: 10.1007/s40572-020-00264-7
- de Pue, S., Gillebert, C., Dierckx, E., Vanderhasselt, M.-A., De Raedt, R., & Van den Bussche, E. (2021). The impact of the COVID-19 pandemic on wellbeing and cognitive functioning of older adults. *Scientific Reports*, 11(1), 4636. <https://doi.org/10.1038/s41598-021-84127-7>
- de Zylva, P., Gordon-Smith, C., & Childs, M.(2020). Englands Green Space Gap. Friends of the Earth. Retrieved from: <https://policy.friendsoftheearth.uk/insight/englands-green-space-gap>
- DEFRA. (2011). Natural Environment White Paper: Stakeholder Workshops, 1–5. Retrieved from [www.gov.uk/defra](http://www.gov.uk/defra)
- Delamothe, T. (2008). Founding principles. *BMJ (Clinical Research Ed.)*, 336(7655), 1216–1218. <https://doi.org/10.1136/bmj.39582.501192.94>
- Dennis, M., Barlow, D., Cavan, G., Cook, P., Gilchrist, A., Handley, J., ... Lindley, S. (2018). Mapping Urban Green Infrastructure: A Novel Landscape-Based Approach to Incorporating Land Use and Land Cover in the Mapping of Human-Dominated Systems. *Land*, 7(1), 17. <https://doi.org/10.3390/land7010017>
- Dennis, M., Beesley, L., Hardman, M., & James, P. (2020). Ecosystem (Dis)benefits Arising from Formal and Informal Land-Use in Manchester (UK); a Case Study of Urban Soil Characteristics



- Associated with Local Green Space Management. *Agronomy*. <https://doi.org/10.3390/agronomy10040552>
- Dennis, M., Cook, P. A., James, P., Wheeler, C. P., & Lindley, S. J. (2020). Relationships between health outcomes in older populations and urban green infrastructure size, quality and proximity. *BMC Public Health*, *20*(1), 626. <https://doi.org/10.1186/s12889-020-08762-x>
- Desouza, R. (2004). Motherhood, migration and methodology: Giving voice to the “other.” Retrieved from <https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=1919&context=tqr>
- Devaney, L., & Davies, A. R. (2016). Disrupting household food consumption through experimental HomeLabs: Outcomes, connections, contexts. *Journal of Consumer Culture*, *17*(3), 823–844. <https://doi.org/10.1177/1469540516631153>
- DeWalt, K. M., & DeWalt, B. R. (2002). Participant observation: A guide for fieldworkers. Walnut Creek, CA: AltaMira.
- Dewey, J. (1988). *The Middle Works of John Dewey*. Carbondale, IL.: SIU Press.
- Dewi, N. S., Komatsuzaki, M., Yamakawa, Y., Takahashi, H., Shibamura, S., Yasue, T., ... Sasaki, S. (2017). Community gardens as health promoters: Effects on mental and physical stress levels in adults with and without mental disabilities. *Sustainability (Switzerland)*, *9*(1). <https://doi.org/10.3390/su9010063>
- Diaz, J. M., Webb, S. T., Warner, L. A., & Monaghan, P. (2018). Barriers to community garden success: Demonstrating framework for expert consensus to inform policy and practice. *Urban Forestry & Urban Greening*, *31*, 197–203. <https://doi.org/10.1016/J.UFUG.2018.02.014>
- Dickinson, H., & Glasby, J. (2010). The personalisation agenda: implications for the third sector. Working Paper. <http://www.tsrc.ac.uk/LinkClick.aspx?fileticket=U8tazrnMZ%2bs%3d&tabid=500>
- Dingwall, R. (1980). Ethics and Ethnography. *The Sociological Review*, *28*: 871-891. <https://doi.org/10.1111/j.1467-954X.1980.tb00599.x>
- Dionne, C. E., Dunn, K. M., & Croft, P. R. (2006). Does back pain prevalence really decrease with increasing age? A systematic review. *Age and Ageing*, *35*(3), 229–234. <https://doi.org/10.1093/ageing/afj055>
- Donalek, J. G., & Soldwisch, S. (2004). An introduction to qualitative research methods. *Urologic Nursing : Official Journal of the American Urological Association Allied*, *24*(4), 354–356. <https://doi.org/10.2307/590191>
- Donovan, G. H., Gatziolis, D., Longley, I., & Douwes, J. (2018). Vegetation diversity protects against childhood asthma: results from a large New Zealand birth cohort. *Nature Plants*, *4*(6), 358–364. <https://doi.org/10.1038/s41477-018-0151-8>
- Dorling, D. (2014). Class segregation. In C. Lloyd, I. Shuttleworth, & W. Wong (Eds.), *Social-Spatial Segregation: Concepts, Processes and Outcomes* (pp. 363–388). Bristol: Policy Press.
- Dorling, D. (2019). *Inequality and the 1%: Why we cannot afford the rich in post Brexit Britain*. (Second). London: Verso Books.
- Dorling, D., & Ballas, D. (2008). Spatial divisions of poverty and wealth. In T. Ridge & S. Wright (Eds.), *Understanding Poverty, Wealth and Inequality: Policies and Prospects*. (pp. 103–134). Bristol: Policy Press.
- Douglas, A. S., Strachan, D. P., & Maxwell, J. D. (1996). Seasonality of tuberculosis: the reverse of other respiratory diseases in the UK. *Thorax*, *51*(9), 944–946. <https://doi.org/10.1136/thx.51.9.944>
- Draper, B., & Browne, E. (1993). Behavioural problems in the elderly. *Australian Social Work*, *46*(4), 19–28. <https://doi.org/10.1080/03124079308411101>
- Dregan, A., Rayner, L., Davis, K. A. S., Bakolis, I., Arias de la Torre, J., Das-Munshi, J., ... Hotopf, M. (2020). Associations Between Depression, Arterial Stiffness, and Metabolic Syndrome Among Adults in the UK Biobank Population Study: A Mediation Analysis. *JAMA Psychiatry*, *77*(6), 598–606. <https://doi.org/10.1001/jamapsychiatry.2019.4712>
- Duedahl, E., Blichfeldt, B., & Liburd, J. (2020). How engaging with nature can facilitate active healthy ageing. *Tourism Geographies*, 1–21. <https://doi.org/10.1080/14616688.2020.1819398>
- Dugan, E., & Kivett, V. R. (1994). The Importance of Emotional and Social Isolation to Loneliness Among Very Old Rural Adults1. *The Gerontologist*, *34*(3), 340–346. <https://doi.org/10.1093/geront/34.3.340>
- Dummer, T. J. B. (2008). Health geography: supporting public health policy and planning. *CMAJ : Canadian Medical Association Journal = Journal de l'Association Medicale Canadienne*, *178*(9), 1177–1180. <https://doi.org/10.1503/cmaj.071783>
- Durling, D., & Niedderer, K. (2007). The benefits and limits of investigating designing. In *IASDR International Conference*. Retrieved from

[https://www.researchgate.net/publication/237748768\\_THE\\_BENEFITS\\_AND\\_LIMITS\\_OF\\_INVESTIGATIVE\\_DESIGNING](https://www.researchgate.net/publication/237748768_THE_BENEFITS_AND_LIMITS_OF_INVESTIGATIVE_DESIGNING)

- Duschl, R. (2020) Practical reasoning and decision making in science: Struggles for truth, *Educational Psychologist*, 55:3, 187–192, DOI: [10.1080/00461520.2020.1784735](https://doi.org/10.1080/00461520.2020.1784735)
- Dustin, D. L., Bricker, K. S., & Schwab, K. A. (2010). People and nature: Toward an ecological model of health promotion. *Leisure Sciences*, 32(1), 3–14. <https://doi.org/10.1080/01490400903430772>
- Dwyer, Peter and Hardill, Irene (2011) Promoting social inclusion? The impact of village services on the lives of older people living in rural England. *Ageing and Society*, 31 (2). pp. 243–264. ISSN 0144-686X
- Edmonds, C. J., Foglia, E., Booth, P., Fu, C. H. Y., & Gardner, M. (2021). Dehydration in older people: A systematic review of the effects of dehydration on health outcomes, healthcare costs and cognitive performance. *Archives of Gerontology and Geriatrics*, 95, 104380. <https://doi.org/https://doi.org/10.1016/j.archger.2021.104380>
- Egli, V., Oliver, M., & Tautolo, E.-S. (2016). The development of a model of community garden benefits to wellbeing. *Preventive Medicine Reports*, 3, 348–352. <https://doi.org/10.1016/j.pmedr.2016.04.005>
- Elings, M. (2012). *Effects of care farms: Scientific research on the benefits of care farms for clients*. 585, PPO/PRI AGRO Multifunctioneel Landgebruik, : Plant Research International, Wageningen UR. Retrieved from <https://edepot.wur.nl/293755>
- Elliott, J., Gale, C. R., Parsons, S., & Kuh, D. (2014). Neighbourhood cohesion and mental wellbeing among older adults: A mixed methods approach. *Social Science & Medicine*, 107, 44–51. <https://doi.org/https://doi.org/10.1016/j.socscimed.2014.02.027>
- Elliott, S. N., Kratochwill, T. R., Littlefield Cook, J., & Travers, J. (2000). *Educational psychology: Effective teaching, effective learning* (Third). Boston: McGraw-Hill College.
- Ellis, E. M., Grimsley, E., Goyder, L., Blank, J., Peters (2007) Physical activity and health: evidence from a study of deprived communities in England, *Journal of Public Health*, 29 (1) 27 – 34 <https://doi.org/10.1093/pubmed/fdl089>
- Ellis, T., & Levy, Y. (2009). Towards a Guide for Novice Researchers on Research Methodology: Review and Proposed Methods. In E. Cohen (Ed.), *Growing Information: Part 1. Journal of Issues in Informing Science and Information Technology*. (6th ed., pp. 323–337). California: Information Science Press.
- Elsley, H., Bragg, R., Elings, M., Cade, J. E., Brennan, C., Farragher, T., ... Murray, J. (2014). Understanding the impacts of care farms on health and well-being of disadvantaged populations: a protocol of the Evaluating Community Orders (ECO) pilot study. *BMJ Open*, 4(10), e006536. <https://doi.org/10.1136/bmjopen-2014-006536>
- Elsley, H., Bragg, R., Elings, M., Brennan, C., Farragher, T., Tubeuf, S., ... Murray, J. (2018). Impact and cost-effectiveness of care farms on health and well-being of offenders on probation: a pilot study. *Public Health Research*, 6(3), 1–190. <https://doi.org/10.3310/phr06030>
- Elsley, H., Murray, J., & Bragg, R. (2016). Green fingers and clear minds: prescribing 'care farming' for mental illness. *British Journal of General Practice*, 66(643), 99 LP – 100. <https://doi.org/10.3399/bjgp16X683749>
- Elsley, S. (2004). Children's experience of public space. *Children & Society*, 18(2), 155–164. <https://doi.org/10.1002/chi.822>
- Endo, C. (2018). Creating a common world through action: what participation in community activities means to older people. <https://doi.org/10.1017/S0144686X18001587>
- Engward H, Davis G. (2015) Being reflexive in qualitative grounded theory: discussion and application of a model of reflexivity. *J Adv Nurs*.71(7):1530-8. doi: 10.1111/jan.12653. Epub 2015 Mar 31. PMID: 25825257.
- EPA. (2011). Reusing potentially contaminated landscapes: Growing Gardens in Urban Soils. Retrieved from [https://www.epa.gov/sites/default/files/2014-03/documents/urban\\_gardening\\_fina\\_fact\\_sheet.pdf](https://www.epa.gov/sites/default/files/2014-03/documents/urban_gardening_fina_fact_sheet.pdf)
- Eriksson, M., & Lindström, B. (2008). A salutogenic interpretation of the Ottawa Charter. *Health promotion international*, 23(2), 190–199. <https://doi.org/10.1093/heapro/dan014>
- Erken, A., Benomar Daniel Schensul, E., Kathleen Mogelgaard, W., Edmeades Gretchen Luchsinger William Ryan Ann M Starrs, J. A., Jensen Gretchen Luchsinger, J., Besic, M., ... Josephine Kasya, T. (2019). *UNFPA: State of World Population 2019*. Retrieved from <https://www.unfpa.org>
- Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing naturalistic enquiry: A guide to methods*. Newbury Park, CA: Sage.
- Erzen, E., & Çikrikci, Ö. (2018). The effect of loneliness on depression: A meta-analysis. *International Journal of Social Psychiatry*, 64(5), 427–435. <https://doi.org/10.1177/0020764018776349>

- European Commission. (2020). *EU Guidance on Integrating Ecosystems and their Services into Decision-Making: Summary for Policymakers in Government and Industry*. Retrieved from <https://ec.europa.eu/environment/nature/ecosystems>
- Exner, A., & Schützenberger, I. (2018). Creative Natures. Community gardening, social class and city development in Vienna. *Geoforum*, 92, 181–195. <https://doi.org/https://doi.org/10.1016/j.geoforum.2018.04.011>
- Fan, M., and Jin. Y. (2013). Obesity and self-control: Food consumption, physical activity, and weight-loss intention. *Applied Economic Perspectives and Policy* 36:125–45. doi:10.1093/aep/ppt034
- Fanzo J, Bellows AL, Spiker ML, Thorne-Lyman AL, Bloem WM, (2021). The importance of food systems and the environment for nutrition, *The American Journal of Clinical Nutrition*. 113, (1), January, Pages 7–16, <https://doi.org/10.1093/ajcn/nqaa313>
- Fat, L. N., Scholes, S., Boniface, S., Mindell, J., & Stewart-Brown, S. (2017). Evaluating and establishing national norms for mental wellbeing using the short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): findings from the Health Survey for England. *Quality of Life Research*, 26(5), 1129–1144. <http://www.jstor.org/stable/44856016>
- Ferreira, A. J. D., Guilherme, R. I. M. M., & Ferreira, C. S. S. (2018). Urban agriculture, a tool towards more resilient urban communities? *Current Opinion in Environmental Science & Health*. 5, 93-97. <https://doi.org/10.1016/j.coesh.2018.06.004>
- Fieldhouse, J. (2003). The impact of an allotment group on mental health clients' health, wellbeing and social networking. *British Journal of Occupational Therapy*, 66(7), 286–296. <https://doi.org/10.1177/030802260306600702>
- Finn, K. E., Yan, Z., & McInnis, K. J. (2018). Promoting Physical Activity and Science Learning in an Outdoor Education Program. *Journal of Physical Education, Recreation & Dance*, 89(1), 35–39. <https://doi.org/10.1080/07303084.2017.1390506>
- Firth, C., Maye, D., & Pearson, D. (2011). Developing “community” in community gardens. *Local Environment*, 16, 555–568. <https://doi.org/10.1080/13549839.2011.586025>
- Fitzgerald, J.J (1966) Peirce's Theory of Signs as Foundation for Pragmatism. The Hague: Mouton.
- Floyd, A., & Arthur, L. (2012). Researching from within: External and internal ethical engagement. *International Journal of Research and Method in Education*, 35(2), 171–180. <https://doi.org/10.1080/1743727X.2012.670481>
- FoodSync. (2021). FoodSync Impact Challenge Fund. Retrieved from <https://www.foodsync.co.uk/ficf/>
- Foote, M. Q., & Bartell, T. G. (2011). Pathways to equity in mathematics education: how life experiences impact researcher positionality. *Educational Studies in Mathematics*, 78(1), 45–68. <http://www.jstor.org/stable/41485940>
- Forrester, G., Kurth, J., Vincent, P., & Oliver, M. (2020). Schools as community assets: an exploration of the merits of an Asset-Based Community Development (ABCD) approach. *Educational Review*, 72(4), 443–458. <https://doi.org/10.1080/00131911.2018.1529655>
- Forsyth A, Molinsky, J. (2021) What Is Aging in Place? Confusions and Contradictions. *Housing Policy Debate*. 31 (40) 1-16. doi: 10.1080/10511482.2020.1793795
- Foster, A., Thompson, J., Holding, E., Ariss, S., Mukuria, C., Jacques, R., ... Haywood, A. (2021). Impact of social prescribing to address loneliness: A mixed methods evaluation of a national social prescribing programme. *Health & Social Care in the Community*, 29(5), 1439–1449. <https://doi.org/https://doi.org/10.1111/hsc.13200>
- Fountoulakis, K. N., Gonda, X., & Rihmer, Z. (2011). Suicide prevention programs through community intervention. *Journal of Affective Disorders*, 130(1–2), 10–16. <https://doi.org/10.1016/j.jad.2010.06.009>
- Fox, R. (1999). Enhancing Spiritual Experiences in Adventure Programs. In J. Miles, & S. Priest, *Adventure Programming* (pp. 455-461). State College, PA: Venture Publishing, Inc.
- Francis-Devine B. (2021). Poverty in the UK: statistics. Research Briefing for the House of Commons. Available from: <https://commonslibrary.parliament.uk/research-briefings/sn07096/>
- Fraser, S., Lagacé, M., Bongué, B., Ndeye, N., Guyot, J., Bechard, L., ... Tougas, F. (2020). Ageism and COVID-19: what does our society's response say about us? *Age and Ageing*, 49(5), 692–695. <https://doi.org/10.1093/ageing/afaa097>
- Freeman, C., Waters, D., Buttery, Y., van Heezik, Y. (2019). The impacts of ageing on connection to nature: the varied responses of older adults. *Health Place*. 56, 24-33. doi: 10.1016/j.healthplace.2019.01.010.
- Fromm, E. (1973). *The anatomy of human destructiveness* (1st ed.). Michigan: Holt, Rinehart and Winston.

- Frumkin H, Bratman GN, Breslow SJ, Cochran B, Kahn PH Jr, Lawler JJ, Levin PS, Tandon PS, Varanasi U, Wolf KL, Wood SA. (2017) Nature Contact and Human Health: A Research Agenda. *Environ Health Perspect.* Jul 31;125(7):075001. doi: 10.1289/EHP1663. PMID: 28796634; PMCID: PMC5744722.
- Fyfe, N. R., & Milligan, C. (2003). Out of the shadows: exploring contemporary geographies of voluntarism. *Progress in human geography.* 27(4), 397-413.  
<https://doi.org/10.1191/0309132503ph4350a>
- Galardi, M., De Santis, M., Moruzzo, R., Mutinelli, F., & Contalbrigo, L. (2021). Animal Assisted Interventions in the Green Care Framework: A Literature Review. *International Journal of Environmental Research and Public Health* . <https://doi.org/10.3390/ijerph18189431>
- Gale, C. R., Dennison, E. M., Cooper, C., & Sayer, A. A. (2011). Neighbourhood environment and positive mental health in older people: The Hertfordshire Cohort Study. *Health and Place*, 17(4), 867–874. <https://doi.org/10.1016/j.healthplace.2011.05.003>
- Gallo, T., Fidino, M., Lehrer, E. W., & Magle, S. B. (2017). Mammal diversity and metacommunity dynamics in urban green spaces: implications for urban wildlife conservation. *Ecological Applications*, 27(8), 2330–2341. <https://doi.org/https://doi.org/10.1002/eap.1611>
- Garcia, M. T., Ribeiro, S. M., Germani, A. C. C. G., & Bógus, C. M. (2018). The impact of urban gardens on adequate and healthy food: a systematic review. *Public Health Nutrition*, 21(2), 416–425. <https://doi.org/DOI: 10.1017/S1368980017002944>
- García-Llorente, M., Rubio-Olivar, R., & Gutierrez-Briceño, I. (2018). Farming for Life Quality and Sustainability: A Literature Review of Green Care Research Trends in Europe. *International Journal of Environmental Research and Public Health*, 15(6).  
<https://doi.org/10.3390/ijerph15061282>
- Geary, R. S., Wheeler, B., Lovell, R., Jepson, R., Hunter, R., & Rodgers, S. (2021). A call to action: Improving urban green spaces to reduce health inequalities exacerbated by COVID-19. *Preventive Medicine*, 145, 106425.  
<https://doi.org/https://doi.org/10.1016/j.ypmed.2021.106425>
- Geronimus, A. T., Pearson, J. A., Linnenbringer, E., Schulz, A. J., Reyes, A. G., Epel, E. S., ... Blackburn, E. H. (2015). Race-Ethnicity, Poverty, Urban Stressors, and Telomere Length in a Detroit Community-based Sample. *Journal of Health and Social Behavior*, 56(2), 199–224.  
<https://doi.org/10.1177/0022146515582100>
- Gesler, W., Bell, M., Curis, S., Hubbard, P., Francis, S. (2004) Therapy by design: evaluating the UK hospital building programme. *Health and Place*. 10(2) pg. 117 – 128. ISSN: 1353-8292
- Ghose, R. and Pettygrove, M. (2014), Urban Community Gardens as Spaces of Citizenship. *Antipode*, 46: 1092-1112. <https://doi.org/10.1111/anti.12077>
- Gianferrara, E., & Boshoff, J. (2018). *The multiple benefits of green infrastructure*. INTERREG Europe PERFECT. London. Available from: <https://www.permaculture.org.uk/books/health-wealth-and-happiness-multiple-benefits-green-infrastructure>
- Gibbons, A., Hardman, M., Howarth, M., & James, C. (2017). *Care Farming and Green Care in Salford*, (September). Manchester: The University of Salford.
- Gibbs, L. M. (2011). *Love Canal: and the birth of the environmental health movement* (3rd ed.). Island Press.
- Gibson, K., Pollard, T. M., & Moffatt, S. (2021). Social prescribing and classed inequality: A journey of upward health mobility? *Social Science & Medicine*, 280, 114037.  
<https://doi.org/https://doi.org/10.1016/j.socscimed.2021.114037>
- Gidlow, C. J., & Ellis, N. J. (2011). Neighbourhood green space in deprived urban communities: Issues and barriers to use. *Local Environment*, 16(10), 989–1002.  
<https://doi.org/10.1080/13549839.2011.582861>
- Gillham, B. (2000). *Case Study Research Methods* (1st ed.). London: Continuum.
- Gillis, K. (2020). Nature-based restorative environments are needed now more than ever. *Cities & Health*, 1–4. <https://doi.org/10.1080/23748834.2020.1796401>
- Ginn, F. (2014). Death, absence and afterlife in the garden. *Cultural Geographies*, 21(2), 229–245. Retrieved from <http://www.jstor.org/stable/26168565>
- Glaser, B. (1988). Grounded theory methodology. In *Strategies of qualitative inquiry*. Retrieved from <https://qut.rl.talis.com/items/5349DBAE-5EE4-3B20-1D1B-D5EAE1A3D8F6.html>
- Glaser BG, Holton J. (2004). Remodeling grounded theory. *The Grounded Theory Review*. 4, 1–24
- Glaser, B. G. (1998). *Doing Grounded Theory: Issues and Discussions*. Mill Valley, CA: Sociology Press.
- Glaser, B., & Strauss, A. (1965). *Awareness of dying*. Transaction Publishers.



- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: strategies for qualitative research*. New York: Aldine de Gruyter.
- Glover, T. D., Parry, D. C., & Shinew, K. J. (2005). Building Relationships, Accessing Resources: Mobilizing Social Capital in Community Garden Contexts. *Journal of Leisure Research*, 37(4), 450–474. <https://doi.org/10.1080/00222216.2005.11950062>
- GMCA: Greater Manchester Combined Authority (2019a). *Greater Manchester Infrastructure Framework 2040*. Manchester. Retrieved from <https://greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/strategic-infrastructure/>
- GMCA: Greater Manchester Combined Authority. (2019b). Five-Year Environment Plan. Retrieved October 17, 2021, from <https://www.greatermanchester-ca.gov.uk/what-we-do/environment/five-year-environment-plan/>
- GMCA: Greater Manchester Combined Authority. (2018). Ageing . Retrieved October 17, 2021, from <https://www.greatermanchester-ca.gov.uk/what-we-do/ageing/>
- GMCA: Greater Manchester Combined Authority. (2017). *The future of ageing in Greater Manchester* (Vol. 10). <https://doi.org/10.1017/S1062798702000261>
- GMCA: Greater Manchester Combined Authority. (2017). *Greater Manchester Population Health Plan*. Retrieved from <http://www.gmhsc.org.uk/assets/GM-Population-Health-Plan-Full-Plan.pdf>
- GMCA: Greater Manchester Combined Authority. (n.d.). Join Older People's Groups. Retrieved from <https://www.ageuk.org.uk/get-involved/social-groups/>
- GMHSC (2021) Green social prescribing funding boost for Greater Manchester mental health. Available from: <https://www.gmhsc.org.uk/news/green-social-prescribing-funding-boost-for-greater-manchester-mental-health/>
- Goins, R.T., Williams, K.A., Carter, M.W., Spencer, S.M. and Solovieva, T. (2006), Perceived Barriers to Health Care Access Among Rural Older Adults: A Qualitative Study. *The Journal of Rural Health*, 21: 206-213. doi:[10.1111/j.1748-0361.2005.tb00084.x](https://doi.org/10.1111/j.1748-0361.2005.tb00084.x)
- Gold, R. L. (1958). Roles in Sociological Field Observations\*. *Social Forces*, 36(3), 217–223. <https://doi.org/10.2307/2573808>
- Goldman, L., Paigen, B., Magnant, M., & Highland, J. (1985). Low Birth Weight, Prematurity and Birth Defects in Children Living Near the Hazardous Waste Site, Love Canal. *Hazardous Waste and Hazardous Materials*, 2, 209–223. <https://doi.org/10.1089/hwm.1985.2.209>
- Gomm, R., & Hammersley, M. (2000). Case Study Method: Key Issues, Key Texts. In Roger Gomm, M. Hammersley, & P. Foster (Eds.) (1st ed.). London: SAGE Publications Ltd.
- Gonzalez, M. T., Hartig, T., Patil, G. G., Martinsen, E. W., & Kirkevold, M. (2010). Therapeutic horticulture in clinical depression: A prospective study of active components. *Journal of Advanced Nursing*, 66(9), 2002–2013. <https://doi.org/10.1111/j.1365-2648.2010.05383.x>
- Good to Grow & Capital Growth (2020). Community Food Growing and Covid-19: early impact survey. April 2020. Available from: <https://www.capitalgrowth.org/coronavirus/>
- Gordon, A. L., Goodman, C., Achterberg, W., Barker, R. O., Burns, E., Hanratty, B., ... Spilsbury, K. (2020). Commentary: COVID in care homes—challenges and dilemmas in healthcare delivery. *Age and Ageing*, 49(5), 701–705. <https://doi.org/10.1093/ageing/afaa113>
- Gorman, R. (2017). Smelling therapeutic landscapes: Embodied encounters within spaces of care farming. *Health and Place*, 47(May), 22–28. <https://doi.org/10.1016/j.healthplace.2017.06.005>
- Gorman, R. (2019). Thinking critically about health and human-animal relations: Therapeutic affect within spaces of care farming. *Social Science & Medicine*, 231, 6–12. <https://doi.org/10.1016/J.SOCSCIMED.2017.11.047>
- Gorman, R., & Cacciatore, J. (2020). Care-farming as a catalyst for healthy and sustainable lifestyle choices in those affected by traumatic grief. *NJAS-Wageningen Journal of Life Sciences*, 92, 100339.
- Gorman, R., & Cacciatore, J. (2017). Cultivating our humanity: A systematic review of care farming & traumatic grief. *Health & Place*, 47, 12–21. <https://doi.org/https://doi.org/10.1016/j.healthplace.2017.06.006>
- Government Office of Science. (2021). *Trend Deck 2021: Demographics*. London. Retrieved from <https://www.gov.uk/government/publications/trend-deck-2021-demographics/trend-deck-2021-demographics>
- Grabbe, L., Ball, J., & Goldstein, A. (2013). Gardening for the Mental Well-Being of Homeless Women. *Journal of Holistic Nursing*, 31(4), 258–266. <https://doi.org/10.1177/0898010113488244>
- Greater Manchester Age Friendly (2016). *Age-Friendly Manchester work plan*.
- Greater Manchester Health and Social Care Partnership. (2019). Latest mental health access and waiting times published - GMHSC. Retrieved October 5, 2021, from <https://www.gmhsc.org.uk/news/latest-mental-health-access-and-waiting-times-published/>

- Grey, S., & Kellas, A. (2020, July 3). Covid-19 has highlighted the inadequate, and unequal, access to high quality green spaces - The BMJ. Retrieved October 5, 2021, from <https://blogs.bmj.com/bmj/2020/07/03/covid-19-has-highlighted-the-inadequate-and-unequal-access-to-high-quality-green-spaces/>
- Grossmann, M., & Creamer, E. (2017). Assessing diversity and inclusivity within the Transition movement: an urban case study. *Environmental Politics*, 26(1), 161–182. <https://doi.org/10.1080/09644016.2016.1232522>
- Gruenewald, T. L., Karlamangla, A. S., Greendale, G. A., Singer, B. H., & Seeman, T. E. (2007). Feelings of Usefulness to Others, Disability, and Mortality in Older Adults: The MacArthur Study of Successful Aging. *The Journals of Gerontology: Series B*, 62(1), P28–P37. <https://doi.org/10.1093/geronb/62.1.P28>
- Guetzkow, J., Lamont, M., & Mallard, G. (2004). What is Originality in the Humanities and the Social Sciences? *American Sociological Review*, 69(2), 190–212. <https://doi.org/10.1177/000312240406900203>
- Guion, L. A., Diehl, D. C., & McDonald, D. (2011). Triangulation: Establishing the validity of qualitative studies. *University of Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, EDIS., Gainesville.*
- Guitart, D. A., Pickering, C. M., & Byrne, J. A. (2014). Color me healthy: Food diversity in school community gardens in two rapidly urbanising Australian cities. *Health & Place*, 26, 110–117. <https://doi.org/https://doi.org/10.1016/j.healthplace.2013.12.014>
- Guitart, D., Pickering, C., & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban Forestry and Urban Greening*, 11(4), 364–373. <https://doi.org/10.1016/j.ufug.2012.06.007>
- Gunderson, R. (2014). Erich Fromm's Ecological Messianism: The First Biophilia Hypothesis as Humanistic Social Theory. *Humanity & Society*, 38(2), 182–204. <https://doi.org/10.1177/0160597614529112>
- Guzman-Castillo, M., Ahmadi-Abhari, S., Bandosz, P., Capewell, S., Steptoe, A., Singh-Manoux, A., ... O'Flaherty, M. (2017). Forecasted trends in disability and life expectancy in England and Wales up to 2025: a modelling study. *The Lancet Public Health*, 2(7), e307–e313. [https://doi.org/10.1016/S2468-2667\(17\)30091-9](https://doi.org/10.1016/S2468-2667(17)30091-9)
- Haaland, C., & van den Bosch, C. K. (2015). Challenges and strategies for urban green-space planning in cities undergoing densification: A review. *Urban Forestry & Urban Greening*, 14(4), 760–771. <https://doi.org/10.1016/J.UFUG.2015.07.009>
- Hackshaw, A. (2008). Small studies: strengths and limitations. *European Respiratory Journal*, 32(5), 1141 LP – 1143. <https://doi.org/10.1183/09031936.00136408>
- Hagget, C., Creamer, E., Harnmeijer, J., Parsons, M & Bomberg, E. (2013). *Community energy in Scotland: The Social Factors for Success. Edinburgh Centre for Carbon Innovation, Edinburgh. In: ClimateXChange Event, Edinburgh.* [Conference Materials] <https://www.climatechange.org.uk/research/projects/community-energy-in-scotland-the-social-factors-for-success/>
- Hakim, C. (2000). *Research Design: Successful designs in social and economic research.* Abingdon: Routledge.
- Hale, J., Knapp, C., Bardwell, L., Buchenau, M., Marshall, J., Sancar, F., & Litt, J. S. (2011). Connecting food environments and health through the relational nature of aesthetics: Gaining insight through the community gardening experience. *Social Science & Medicine*, 72(11), 1853–1863. <https://doi.org/10.1016/J.SOCSCIMED.2011.03.044>
- Hall, S., Longhurst, S., & Higginson, I. J. (2009). Challenges to conducting research with older people living in nursing homes. *BMC geriatrics*, 9, 38. <https://doi.org/10.1186/1471-2318-9-38>
- Hamat, A., & Embi, M. A. bin. (2010). Constructivism in the design of online learning tools. *European Journal of Educational Studies*, 2(3), 237–246.
- Hammersley, M., & Gomm, R. (2000). Introduction. In R. Gomm, M. Hammersley & P. Foster (Eds.), *Case study method: key issues, key texts* (pp. 1-16). London; Thousand Oaks, California: Sage.
- Hanlon, H. M., Bernie, D., Carigi, G., & Lowe, J. A. (2021). Future changes to high impact weather in the UK. *Climatic Change*, 166(3), 50. <https://doi.org/10.1007/s10584-021-03100-5>
- Hansen, K. V. (2019). Healthy Older Adults' Motivation and Knowledge Related to Food and Meals. *The Qualitative Report*, 24(11), 2815-2831. Retrieved from <https://nsuworks.nova.edu/tqr/vol24/iss11/10>
- Hanson, N. . (1965). *Patterns of discovery: An inquiry into the conceptual foundations of science.* Cambridge: CUP Archive. Retrieved from <https://lordgadesqui1977.files.wordpress.com/2018/07/pdf-756759.pdf>

- Hanzl, M. (2020). Urban forms and green infrastructure – the implications for public health during the COVID-19 pandemic. *Cities & Health*, 1–5. <https://doi.org/10.1080/23748834.2020.1791441>
- Hao, L., Xu, X., Dupre, M. E., Guo, A., Zhang, X., Qiu, L., ... Gu, D. (2020). Adequate access to healthcare and added life expectancy among older adults in China. *BMC Geriatrics*, 20(1), 129. <https://doi.org/10.1186/s12877-020-01524-9>
- Hardman, M., Larkham, P. (2014) *Guerrilla Urban Agriculture: Unearthing the Hidden Movement. Informal Urban Agriculture.* Springer, Cham.
- Hardman, M. (2016) Urban farms won't feed our cities, but they're still a great idea – here's why. The Conversation. Available from: <https://theconversation.com/urban-farms-wont-feed-our-cities-but-theyre-still-a-great-idea-heres-why-66107>
- Hardman, M., Lovemore, C., Magidimisha, H., Larkham, P. J., Scott, A. ., & Armitage, R. (2018). Guerrilla gardening and green activism : rethinking the informal urban growing movement Title Guerrilla gardening and green activism : rethinking the informal urban growing movement. *Landscape and Urban Planning*, 170, 6–14. <https://doi.org/10.1016/j.landurbplan.2017.08.015>
- Harris, B., & Helgertz, J. (2019). Urban sanitation and the decline of mortality. *The History of the Family*, 24(2), 207–226. <https://doi.org/10.1080/1081602X.2019.1605923>
- Hashim, SM., Eng, TC., Tohit N., Wahab, S. (2013). Bereavement in the elderly: the role of primary care. *Ment Health Fam Med.* 2013;10(3):159–162.
- Hart, L. A. (2006). Psychosocial Benefits of Animal Companionship. *Handbook on Animal-Assisted Therapy*, 59–78. <https://doi.org/10.1016/B978-012369484-3/50006-2>
- Hartig, T., Evans, G. W., Jamner, L. D., Davis, D. S., & Gärling, T. (2003). Tracking restoration in natural and urban field settings. *Journal of Environmental Psychology*, 23(2), 109–123. [https://doi.org/10.1016/S0272-4944\(02\)00109-3](https://doi.org/10.1016/S0272-4944(02)00109-3)
- Hartig, T., Mitchell, R., de Vries, S., & Frumkin, H. (2014). Nature and Health. *Annual Review of Public Health*, 35(1), 207–228. <https://doi.org/10.1146/annurev-publhealth-032013-182443>
- Hassink, J., De Bruin, S. R., Berget, B., & Elings, M. (2017). Exploring the Role of Farm Animals in Providing Care at Care Farms. *Animals* . <https://doi.org/10.3390/ani7060045>
- Hassink, J., Elings, M., Zweekhorst, M., van den Nieuwenhuizen, N., & Smit, A. (2010). Care farms in the Netherlands: Attractive empowerment-oriented and strengths-based practices in the community. *Health and Place*, 16(3), 423–430. <https://doi.org/10.1016/j.healthplace.2009.10.016>
- Hassink, J., Hulsink, W., & Grin, J. (2014). Farming with care: The evolution of care farming in the Netherlands. *NJAS - Wageningen Journal of Life Sciences*, 68, 1–11. <https://doi.org/10.1016/j.njas.2013.11.001>
- Hassink, J., & Van Dijk, M. (2006). Farming for Health across Europe: comparison between countries, and recommendations for a research and policy agenda. In J. Hassink & M. Van Dijk (Eds.), *Farming for Health* (pp. 345–357). Springer Netherlands. [https://doi.org/10.1007/1-4020-4541-7\\_22](https://doi.org/10.1007/1-4020-4541-7_22)
- Hassink, J., Zwartbol, C., Agricola, H. J., Elings, M., & Thissen, J. T. N. M. (2007). Current status and potential of care farms in the Netherlands. *NJAS - Wageningen Journal of Life Sciences*, 55(1), 21–36. [https://doi.org/10.1016/S1573-5214\(07\)80002-9](https://doi.org/10.1016/S1573-5214(07)80002-9)
- Hastings, A., Flint, J., McKenzie, C., & Mills, C. (2005). *Cleaning up neighbourhoods. Environmental problems and service provision in deprived areas.* Water. Bristol. Retrieved from <https://www.jrf.org.uk/report/environmental-problems-and-service-provision-deprived-and-more-affluent-neighbourhoods>
- Hatzenbuehler, M. L., Phelan, J. C., & Link, B. G. (2013). Stigma as a fundamental cause of population health inequalities. *American Journal of Public Health*, 103(5), 813–821. <https://doi.org/10.2105/AJPH.2012.301069>
- Heal, M. R., Heaviside, C., Doherty, R. M., Vieno, M., Stevenson, D. S., & Vardoulakis, S. (2013). Health burdens of surface ozone in the UK for a range of future scenarios. *Environment International*, 61, 36–44.
- Heale, R., & Twycross, A. (2018). What is a case study? *Evidence-Based Nursing*, 21(1), 7–8. <https://doi.org/10.1136/eb-2017-102845>
- Health Education England, 2016. Social prescribing at a glance: North West England. A scoping report of activity for the North West. (online) Available from: <https://www.hee.nhs.uk/>
- Heathcote, E. (2011). Old age and the city. *BMJ*, 343. <https://doi.org/10.1136/bmj.d4418>
- Heid AR, Cartwright F, Wilson-Genderson M, Pruchno R. (2021). Challenges Experienced by Older People During the Initial Months of the COVID-19 Pandemic. *Gerontologist*. 2021 Jan 21;61(1):48-58. doi: 10.1093/geront/gnaa138. PMID: 32955079; PMCID: PMC7543473.

- Heilmayr, D., & Friedman, H. S. (2018). Cultivating healthy trajectories: An experimental study of community gardening and health. *Journal of Health Psychology*, 135910531880078. <https://doi.org/10.1177/1359105318800784>
- Heintzman, P. (2009). The spiritual benefits of leisure. *Leisure/Loisir*, 33(1), 419–445. <https://doi.org/10.1080/14927713.2009.9651445>
- Heise, T. L., Romppel, M., Molnar, S., Buchberger, B., Berg, A. van den, Gartlehner, G., & Lhachimi, S. K. (2017). Community gardening, community farming and other local community-based gardening interventions to prevent overweight and obesity in high-income and middle-income countries: protocol for a systematic review. *BMJ Open*, 7(6), e016237. <https://doi.org/10.1136/bmjopen-2017-016237>
- Helbich, M., Klein, N., Roberts, H., Hagedoorn, P., & Groenewegen, P. P. (2018). More green space is related to less antidepressant prescription rates in the Netherlands: A Bayesian geospatial quantile regression approach. *Environmental Research*, 166, 290–297. <https://doi.org/https://doi.org/10.1016/j.envres.2018.06.010>
- Heminway, D. (2001). Environmental Social Movements Since Love Canal: Lessons Learned. *Buffalo Environmental Law Journal*, 8(2). Retrieved from <https://digitalcommons.law.buffalo.edu/belj>
- Henderson, B. R., & Hartsfield, K. (2009). Is getting into the community garden business a good way to engage citizens in local government? *National Civic Review*, 98(4), 12–18.
- Hennink M, Hutter I, Bailey A. (2010) Qualitative Research Methods. SAGE Publications
- Herrick, C. (2016). Global Health, Geographical Contingency, and Contingent Geographies. *Annals of the American Association of Geographers*, 106(3), 672–687. <https://doi.org/10.1080/24694452.2016.1140017>
- Herrmann, S. D., Heumann, K. J., Der Ananian, C. A., & Ainsworth, B. E. (2013). Validity and Reliability of the Global Physical Activity Questionnaire (GPAQ). *Measurement in Physical Education and Exercise Science*, 17(3), 221–235. <https://doi.org/10.1080/1091367X.2013.805139>
- Hess, D., & Winner, L. (2007). Enhancing Justice and Sustainability at the Local Level: Affordable Policies for Urban Governments. *Local Environment*, 12(4), 379–395. <https://doi.org/10.1080/13549830701412489>
- Hicks, J, Ison, N. (2018), An exploration of the boundaries of 'community' in community renewable energy projects: Navigating between motivations and context, *Energy Policy*, 113, issue C, p. 523-534.
- Hochbaum, G. M. (1958) *Public Participation in Medical Screening Programs: A Socio-Psychological Study*. Washington, D.C.: U.S. Dept. of Health, Education, and Welfare, 1958.
- Hine, R., Peacock, J., & Pretty, J. (2008). *Care farming in the UK: Evidence and Opportunities. Report for the National Care Farming Initiative (UK)*. Retrieved from <https://www.carefarminguk.org/sites/carefarminguk.org/files/Care Farming in the UK - Essex Uni Report.pdf>
- Hockenull, J., Squibb, K., & Cameron, A. (2021). How Has the COVID-19 Pandemic Affected the Way We Access and Interact with the Countryside and the Animals within It? *Animals*. <https://doi.org/10.3390/ani11082281>
- Hoffman, A. (2018). Community Gardening, Volunteerism and Personal Happiness: “Digging In” to Green Space Environments for Improved Health. *Psychiatry, Depression & Anxiety*, 4, 1–7. <https://doi.org/10.24966/PDA-0150/100015>
- Holdsworth C. 2018. Generic distinctiveness and the entrepreneurial self: a case study of English Higher Education. *Journal of Youth Studies*, 21, (9), 1216-1231. <https://doi.org/10.1080/13676261.2018.1459524>
- Holland, L. (2004). Diversity and connections in community gardens: A contribution to local sustainability. *Local Environment*, 9(3), 285–305. <https://doi.org/10.1080/1354983042000219388>
- Holloway, I., & Freshwater, D. (2007). Vulnerable story telling: narrative research in nursing. *Journal of Research in Nursing*, 12(6), 703–711. <https://doi.org/10.1177/1744987107084669>
- Holmes, A. G. D. (2020). Researcher Positionality -A Consideration of Its Influence and Place in Qualitative Research-A New Researcher Guide. *Shanlax International Journal of Education*, 8(4), 1–10. <https://doi.org/10.34293/education.v8i4.3232>
- Honey-Rosés, J., Anguelovski, I., Chireh, V. K., Daher, C., Konijnendijk van den Bosch, C., Litt, J. S., ... Nieuwenhuijsen, M. J. (2020). The impact of COVID-19 on public space: an early review of the emerging questions – design, perceptions and inequities. *Cities & Health*, 1–17. <https://doi.org/10.1080/23748834.2020.1780074>

- Hooper, L., Bunn, D., Jimoh, F. O., & Fairweather-Tait, S. J. (2014). Water-loss dehydration and aging. *Mechanisms of Ageing and Development*, 136–137, 50–58. <https://doi.org/10.1016/j.mad.2013.11.009>
- Hoover, J. (2016). *Reconstructing Human Rights: A Pragmatist and Pluralist Inquiry into Global Ethics*. OUP Oxford. Retrieved from <https://books.google.co.uk/books?id=uKZHDAAAQBAJ>
- Horton, C. (2021). Blooms of hope: the gardening groups delivering smiles during lockdown. *The Guardian*. Retrieved from <https://www.theguardian.com/society/2021/jan/27/blooms-of-hope-the-gardening-groups-delivering-smiles-during-lockdown>
- Hothersall, S. J. (2019). Epistemology and social work: enhancing the integration of theory, practice and research through philosophical pragmatism. *European Journal of Social Work*, 22(5), 860–870. <https://doi.org/10.1080/13691457.2018.1499613>
- Howarth, M., Brettle, A., Hardman, M., & Maden, M. (2017). What evidence is there to support the impact of gardens on health outcomes? A systematic scoping review of the evidence. Project Report, University of Salford. Available from: <https://www.salford.ac.uk/research/care/research-groups/shusu>
- Howarth, M., Brettle, A., Hardman, M., & Maden, M. (2020). What is the evidence for the impact of gardens and gardening on health and well-being: a scoping review and evidence-based logic model to guide healthcare strategy decision making on the use of gardening approaches as a social prescription. *BMJ Open*, 10(7), e036923. <https://doi.org/10.1136/bmjopen-2020-036923>
- Howarth, M., Griffiths, A., Silva, A., & Green, R. (2016). Social prescribing : a ' natural ' community-based solution.
- Howarth, M., Lawler, C., & da Silva, A. (2021). Creating a transformative space for change: A qualitative evaluation of the RHS Wellbeing Programme for people with long term conditions. *Health & Place*, 71, 102654. <https://doi.org/https://doi.org/10.1016/j.healthplace.2021.102654>
- Howarth, M., & Lister, C. (2019). Social prescribing in cardiology: rediscovering the nature within us. *British Journal of Cardiac Nursing*, 14(8), 1-9.
- Howarth, M., Mello, M., & Kershaw, M. (2021). Personalised solutions through social prescribing. *British Journal of Nursing*, 30(3), 140. <https://doi.org/10.12968/bjon.2021.30.3.140>
- Howarth, M., McQuarrie, C., Withnell, N., & Smith, E. (2016). The influence of therapeutic horticulture on social integration. *Journal of Public Mental Health*, 15(3), 136–140. <https://doi.org/10.1108/JPMH-12-2015-0050>
- Howarth, M., McQuarrie, C., Withnell, N., & Smith, E. (2018). Growing spaces: an evaluation of the mental health recovery programme using mixed methods. *Journal of Research in Nursing*, 23(6), 476–489. <https://doi.org/10.1177/1744987118766207>
- Hoyles, M. (1991). *The story of gardening* (1st ed.). Staffordshire: Journeyman Press.
- HTA. (2011). *The Great British gardener: a profile of gardeners and their needs from gardening*. Reading, UK: The Horticultural Trades Association. Retrieved from <https://thehta.org.uk/file.php?fileid=1141>
- Hubbard, G., Daas, C. D., Johnston, M., Murchie, P., Thompson, C. W., & Dixon, D. (2021). Are Rurality, Area Deprivation, Access to Outside Space, and Green Space Associated with Mental Health during the COVID-19 Pandemic? A Cross Sectional Study (CHARIS-E). *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph18083869>
- Hubbard, R., & Lindsay, R. M. (2002). How the Emphasis on 'Original' Empirical Marketing Research Impedes Knowledge Development. *Marketing Theory*, 2(4), 381–402. <https://doi.org/10.1177/147059310200200408>
- Hunter, R. F., Cleland, C., Cleary, A., Droomers, M., Wheeler, B. W., Sinnett, D., ... Braubach, M. (2019). Environmental, health, wellbeing, social and equity effects of urban green space interventions: A meta-narrative evidence synthesis. *Environment International*, 130, 104923. <https://doi.org/https://doi.org/10.1016/j.envint.2019.104923>
- Husk, K., Blockley, K., Lovell, R., Bethel, A., Lang, I., Byng, R., & Garside, R. (2020). What approaches to social prescribing work, for whom, and in what circumstances? A realist review. *Health Soc Care Community*, 18, 309–324. <https://doi.org/https://doi.org/10.1111/hsc.12839>
- Husk, K., Blockley, K., Lovell, R., Bethel, A., Bloomfield, D., Warber, S., ... Garside, R. (2016). What approaches to social prescribing work, for whom, and in what circumstances? A protocol for a realist review. *Systematic Reviews*, 5(1), 93. <https://doi.org/10.1186/s13643-016-0269-6>
- Husk, K., Elston, J., Gradinger, F., Callaghan, L., & Asthana, S. (2019). Social prescribing: where is the evidence? *British Journal of General Practice*, 69(678), 6–7. <https://doi.org/10.3399/BJGP19X700325>



- Husk, K., Lovell, R., & Garside, R. (2018). Prescribing gardening and conservation activities for health and wellbeing in older people. *Maturitas*, 110, A1-A2. <https://doi.org/10.1016/j.maturitas.2017.12.013>
- Ibsen, T. L., Eriksen, S., & Patil, G. G. (2018). Farm-based day care in Norway &ndash; a complementary service for people with dementia. *Journal of Multidisciplinary Healthcare*, 11, 349–358. <https://doi.org/10.2147/JMDH.S167135>
- Ignition. (2020). *IGNITION Nature-Based Solutions Evidence Base Headline Findings Report*. Manchester. Retrieved from <https://www.greatermanchester-ca.gov.uk/what-we-do/environment/natural-environment/ignition/>
- Ihlebaek, C., Ellingsen-Dalskau, L. H., & Berget, B. (2016). Motivations, experiences and challenges of being a care farmer –results of a survey of Norwegian care farmers. *Work*, 53, 113–121. <https://doi.org/10.3233/WOR-152220>
- International Longevity Centre UK. (2020). Advantage GM: Unlocking the longevity economy for Greater Manchester - ILCUK. Retrieved October 17, 2021, from <https://ilcuk.org.uk/advantage-gm-unlocking-the-longevity-economy-for-greater-manchester/#>
- Islam, M. M. (2020). Social Prescribing—An Effort to Apply a Common Knowledge: Impelling Forces and Challenges . *Frontiers in Public Health* . Retrieved from <https://www.frontiersin.org/article/10.3389/fpubh.2020.515469>
- ITV Reports. (2020). Gardeners turning to “grow your own” during coronavirus crisis.
- Jacob, M., & Rocha, C. (2021). Models of governance in community gardening: administrative support fosters project longevity. *Https://Doi.Org/10.1080/13549839.2021.1904855*, 26(5), 557–574. <https://doi.org/10.1080/13549839.2021.1904855>
- James, W. (1975) *Pragmatism*. Cambridge, Mass. : Harvard University Press, 1975.
- Jarrott, S. E., & Gigliotti, C. M. (2010). Comparing responses to horticultural-based and traditional activities in dementia care programs. *American Journal of Alzheimer's Disease and Other Dementias*, 25(8), 657–665. <https://doi.org/10.1177/1533317510385810>
- Jennings, V., & Bamkole, O. (2019). The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion. *International Journal of Environmental Research and Public Health* . <https://doi.org/10.3390/ijerph16030452>
- Jerome, G. (2017). Defining community-scale green infrastructure. *Landscape Research*, 42(2), 223–229. <https://doi.org/10.1080/01426397.2016.1229463>
- Jivraj, S., Goodman, A., Pongiglione, B., & Ploubidis, G. B. (2020a). Living longer but not necessarily healthier: The joint progress of health and mortality in the working-age population of England. *Population Studies*, 74(3), 399–414. <https://doi.org/10.1080/00324728.2020.1767297>
- Jivraj, S., Murray, E. T., Norman, P., & Nicholas, O. (2020b). The impact of life course exposures to neighbourhood deprivation on health and well-being: a review of the long-term neighbourhood effects literature. *European Journal of Public Health*, 30(5), 922–928. <https://doi.org/10.1093/eurpub/ckz153>
- Johnson, M., O'Hara, R., Hirst, E., Weyman, A., Turner, J., Mason, S., ... Siriwardena, A. N. (2017). Multiple triangulation and collaborative research using qualitative methods to explore decision making in pre-hospital emergency care. *BMC Medical Research Methodology*, 17(1), 11. <https://doi.org/10.1186/s12874-017-0290-z>
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33(7), 14–26. <https://doi.org/10.3102/0013189X033007014>
- Johnston, A. (2014), "Rigour in research: theory in the research approach", *European Business Review*, Vol. 26 No. 3, pp. 206-217.
- Johnstone, P. L. (2004). Mixed methods, mixed methodology health services research in practice. *Qualitative Health Research*, 14(2), 259–271. <https://doi.org/10.1177/1049732303260610>
- Jones, A., Hillsdon, M., & Coombes, E. (2009). Greenspace access, use, and physical activity: understanding the effects of area deprivation. *Preventive Medicine*, 49(6), 500–505. <https://doi.org/10.1016/j.ypmed.2009.10.012>
- Jones, A. H. (2005). Mary Seacole: an epic life. *The Lancet*, 365(9465), 1129–1130. [https://doi.org/10.1016/S0140-6736\(05\)71862-6](https://doi.org/10.1016/S0140-6736(05)71862-6)
- Jones, M., & Alony, I. (2011). Guiding the Use of Grounded Theory in Doctoral Studies – An Example from the Australian Film Industry. *International Journal of Doctoral Studies*, 6. <https://doi.org/10.28945/1429>

- Jones, N. L., Gilman, S. E., Cheng, T. L., Drury, S. S., Hill, C. V., & Geronimus, A. T. (2019). Life Course Approaches to the Causes of Health Disparities. *American Journal of Public Health, 109*(S1), S48–S55. <https://doi.org/10.2105/AJPH.2018.304738>
- Jones, R.L. Fonseca, J. De Martin Silva, Davies, G. Morgan, K. & Mesquita, I. (2015) The promise and problems of video diaries: building on current research, *Qualitative Research in Sport, Exercise and Health, 7*:3, 395-410, DOI: 10.1080/2159676X.2014.938687
- Jorvand, R., Ghofranipour, F., HaeriMehrizi, A. & Tavousi, M. (2020). Evaluating the impact of HBM-based education on exercise among health care workers: the usage of mobile applications in Iran. *BMC Public Health 20*, 546. <https://doi.org/10.1186/s12889-020-08668-8>
- Joyce, J., & Warren, A. (2016). A case study exploring the influence of a gardening therapy group on well-being. *Occupational Therapy in Mental Health, 32*(2), 203-215.
- Kabisch, N., & Kraemer, R. (2020). Physical activity patterns in two differently characterised urban parks under conditions of summer heat. *Environmental Science and Policy, 107*, 56–65. <https://doi.org/10.1016/j.envsci.2020.02.008>
- Kabisch N, van den Bosch M, Laforteza R. (2017) The health benefits of nature-based solutions to urbanization challenges for children and the elderly - A systematic review. *Environ Res.* 2017 Nov;159:362-373. doi: 10.1016/j.envres.2017.08.004. Epub 2017 Sep 18. PMID: 28843167.
- Kahn, P. H., Severson, R. L., & Ruckert, J. H. (2009). The Human Relation With Nature and Technological Nature. *Current Directions in Psychological Science, 18*(1), 37–42. <https://doi.org/10.1111/j.1467-8721.2009.01602.x>
- Kaley A, Hatton C, Milligan C. (2019). Therapeutic spaces of care farming: Transformative or ameliorating? *Soc Sci Med.* 2019 Apr;227:10-20. doi: 10.1016/j.socscimed.2018.05.011.
- Kanamori, S., Kai, Y., Aida, J., Kondo, K., Kawachi, I., Hirai, H., ... Group, T. J. (2014). Social Participation and the Prevention of Functional Disability in Older Japanese: The JAGES Cohort Study. *PLOS ONE, 9*(6), e99638. Retrieved from <https://doi.org/10.1371/journal.pone.0099638>
- Kaplan, R. (1977). Patterns of Environmental Preference. *Environment and Behavior, 9*(2), 195–216. <https://doi.org/10.1177/001391657792003>
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology, 15*(3), 169–182. [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2)
- Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. Cambridge University Press.
- Katzmarzyk, P. T., Friedenreich, C., Shiroma, E. J., & Lee, I.-M. (2021). Physical inactivity and non-communicable disease burden in low-income, middle-income and high-income countries. *British Journal of Sports Medicine, bjsports-2020-103640*. <https://doi.org/10.1136/bjsports-2020-103640>
- Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a Research Paradigm and Its Implications for Social Work Research. *Social Sciences* . <https://doi.org/10.3390/socsci8090255>
- Kearns, A., Whitley, E., Tannahill, C., & Ellaway, A. (2015). Loneliness, social relations and health and well-being in deprived communities. *Psychology, Health and Medicine, 20*(3), 332–344. <https://doi.org/10.1080/13548506.2014.940354>
- Kearns, R. ., & Gesler, W. . (1998). *Putting Health intoPlace: Landscape, Identity, and Well-Being*. Syracuse University Press. Syracuse, NY.
- Kearns, R., & Moon, G. (2002). From medical to health geography: Novelty, place and theory after a decade of change. *Progress in Human Geography - PROG HUM GEOGR, 26*, 605–625. <https://doi.org/10.1191/0309132502ph389oa>
- Keen, D. L. (2017). Enhancing the Well-being of Older Adults and Young Adults with Developmental Disabilities through Participation in an Intergenerational Community Garden: Participatory Action Research CORE View metadata, citation and similar papers at core. *Digital Commons @ Kennesaw State University*. Retrieved from [http://digitalcommons.kennesaw.edu/dns\\_etdhttp://digitalcommons.kennesaw.edu/dns\\_etd/4](http://digitalcommons.kennesaw.edu/dns_etdhttp://digitalcommons.kennesaw.edu/dns_etd/4)
- Kelemen, M., & Rumens, N. (2012). Pragmatism and heterodoxy in organization research. *International Journal of Organizational Analysis, 20*(1), 5–12. <https://doi.org/10.1108/19348831211215704>
- Kellezi, B., Wakefield, J. R. H., Stevenson, C., McNamara, N., Mair, E., Bowe, M., ... Halder, M. M. (2019). The social cure of social prescribing: a mixed-methods study on the benefits of social connectedness on quality and effectiveness of care provision. *BMJ Open, 9*(11), e033137. <https://doi.org/10.1136/bmjopen-2019-033137>
- Kelly, L. M., & Cordeiro, M. (2020). Three principles of pragmatism for research on organizational processes. *Methodological Innovations, 13*(2), 2059799120937242. <https://doi.org/10.1177/2059799120937242>

- Keniger, L. E., Gaston, K. J., Irvine, K. N., & Fuller, R. A. (2013). What are the Benefits of Interacting with Nature? *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph10030913>
- Kenkre, J., & Howarth, M. (2018). Guest Editorial: Social Prescribing. *Journal of Research in Nursing*, 23(8), 640–645. <https://doi.org/10.1177/1744987118816127>
- Kenny, M., & Fourie, R. (2015). The Qualitative Report Contrasting Classic, Straussian, and Constructivist Grounded Theory: Methodological and Philosophical Conflicts. *The Qualitative Report*, 20(8), 1270–1289. Retrieved from <http://nsuworks.nova.edu/tqr/vol20/iss8/9>
- Keune H, Martens P, Kretsch C, Prieur-Richard A-h (2013) Chapter 16 - the natural relation between biodiversity and public health: an ecosystem services perspective. In: Ecosystem services. Elsevier, Boston, pp 181–189. <https://doi.org/10.1016/B978-0-12-419964-4.00016-0>
- Khodyakov, D., Mikesell, L., & Bromley, E. (2017). Trust and the Ethical Conduct of Community-Engaged Research. *European Journal for Person Centered Healthcare*, 5(4), 522–526. <https://doi.org/10.5750/ejpc.v5i4.1263>
- Khoshkar, S., Balfors, B., & Wärnbäck, A. (2018). Planning for green qualities in the densification of suburban Stockholm – opportunities and challenges. *Journal of Environmental Planning and Management*, 61(14), 2613–2635. <https://doi.org/10.1080/09640568.2017.1406342>
- Kim, B. F., Poulsen, M. N., Margulies, J. D., Dix, K. L., Palmer, A. M., & Nachman, K. E. (2014). Urban Community Gardeners' Knowledge and Perceptions of Soil Contaminant Risks. *PLOS ONE*, 9(2), e87913. Retrieved from <https://doi.org/10.1371/journal.pone.0087913>
- Kim, D., & Song, S. K. (2019). The multifunctional benefits of green infrastructure in community development: An analytical review based on 447 cases. *Sustainability (Switzerland)*. Multidisciplinary Digital Publishing Institute. <https://doi.org/10.3390/su11143917>
- Kim, J., & Moen, P. (2002). Retirement Transitions, Gender, and Psychological Well-Being: A Life-Course, Ecological Model. *The Journal of Gerontology*, 57(3), 212–222. <https://doi.org/https://doi.org/10.1093/geronb/57.3.P212>
- Kimberlee, R. (2016). What is the Value of Social & Prescribing?, 3(3), 29–35.
- Kimberlee, R. (2018). Prescribing social activities to lonely people prompts ethical questions for GPs.
- Kimberlee, R. H. (2013). *Developing a Social Prescribing approach for Bristol*. Bristol. Retrieved from <https://core.ac.uk/download/pdf/323895448.pdf>
- Kingsley, J., Bailey, A., Torabi, N., Zardo, P., Mavoa, S., Gray, T., ... Foenander, E. (2019). A systematic review protocol investigating community gardening impact measures. *International Journal of Environmental Research and Public Health*, 16(18). <https://doi.org/10.3390/ijerph16183430>
- Kingsley, J., Egerer, M., Nuttman, S., Keniger, L., Pettitt, P., Frantzeskaki, N., ... Marsh, P. (2021). Urban agriculture as a nature-based solution to address socio-ecological challenges in Australian cities. *Urban Forestry & Urban Greening*, 60, 127059. <https://doi.org/https://doi.org/10.1016/j.ufug.2021.127059>
- Kingsley J, Townsend M, Henderson-Wilson C. (2009) Cultivating health and wellbeing: members' perceptions of the health benefits of a Port Melbourne community garden, *Leisure Studies*, 28:2, 207-219, DOI: [10.1080/02614360902769894](https://doi.org/10.1080/02614360902769894)
- Kingsley, J., Foenander, E., & Bailey, A. (2019). "You feel like you're part of something bigger": exploring motivations for community garden participation in Melbourne, Australia. *BMC Public Health*, 19(1), 745. <https://doi.org/10.1186/s12889-019-7108-3>
- Kingsley, J., & Townsend, M. (2006). 'Dig In' to Social Capital: Community Gardens as Mechanisms for Growing Urban Social Connectedness. *Urban Policy and Research*, 24, 525–537. <https://doi.org/10.1080/08111140601035200>
- Kivinen, O., & Ristelä, P. (2003). From Constructivism to a Pragmatist Conception of Learning. *Oxford Review of Education*, 29(3), 363–375. Retrieved from <http://www.jstor.org/stable/3595447>
- Kleiber, D. A., Hutchinson, S. L., & Williams, R. (2002). Leisure as a Resource in Transcending Negative Life Events: Self-Protection, Self-Restoration, and Personal Transformation. *Leisure Sciences*, 24(2), 219–235. <https://doi.org/10.1080/01490400252900167>
- Kleinschroth, F., & Kowarik, I. (2020). COVID-19 crisis demonstrates the urgent need for urban greenspaces. *Frontiers in Ecology and the Environment*, 18(6), 318–319. <https://doi.org/10.1002/fee.2230>
- Klimova, B., Toman, J., & Kuca, K. (2019). Effectiveness of the dog therapy for patients with dementia - a systematic review. *BMC Psychiatry*, 19(1), 276. <https://doi.org/10.1186/s12888-019-2245-x>
- Knox, S. S., Adelman, A., Ellison, R. C., Arnett, D. K., Siegmund, K., Weidner, G., & Province, M. A. (2000). Hostility, social support, and carotid artery atherosclerosis in The National Heart, Lung,



- and Blood Institute Family Heart Study. *American Journal of Cardiology*, 86(10), 1086–1089. [https://doi.org/10.1016/S0002-9149\(00\)01164-4](https://doi.org/10.1016/S0002-9149(00)01164-4)
- Koay, W. I., & Dillon, D. (2020). Community Gardening: Stress, Well-Being, and Resilience Potentials. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph17186740>
- Kole, JJ & de Ruyter DJ. (2009) Nothing Less than Excellence: Ideals of Professional Identity, Ethics and Social Welfare, 3:2, 131-144, DOI: [10.1080/17496530902951889](https://doi.org/10.1080/17496530902951889)
- Kolt, G. S., Schofield, G. M., Kerse, N., Garrett, N., Schluter, P. J., Ashton, T., & Patel, A. (2009). The Healthy Steps Study: A randomized controlled trial of a pedometer-based Green Prescription for older adults. Trial protocol. *BMC Public Health*, 9(1), 404. <https://doi.org/10.1186/1471-2458-9-404>
- Kondo, M. C., Oyekanmi, K. O., Gibson, A., South, E. C., Bocarro, J., & Hipp, J. A. (2020). Nature Prescriptions for Health: A Review of Evidence and Research Opportunities. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph17124213>
- Kononova, A., Li, L., Kamp, K., Bowen, M., Rikard, R. V., Cotten, S., & Peng, W. (2019). The Use of Wearable Activity Trackers Among Older Adults: Focus Group Study of Tracker Perceptions, Motivators, and Barriers in the Maintenance Stage of Behavior Change. *JMIR mHealth and uHealth*, 7(4), e9832. <https://doi.org/10.2196/mhealth.9832>
- Kortright, R., & Wakefield, S. (2011). Edible backyards: a qualitative study of household food growing and its contributions to food security. *Agriculture and Human Values*, 28(1), 39–53. <https://doi.org/10.1007/s10460-009-9254-1>
- Krasny, M., & Doyle, R. (2002). Participatory Approaches to Program Development and Engaging Youth in Research: The Case of an Inter-Generational Urban Community Gardening Program. *Journal of Extension*. Retrieved from <https://archives.joe.org/joe/2002october/a3.php>
- Krekel, C., & MacKerron, G. (2020). *How Environmental Quality Affects Our Happiness | The World Happiness Report*. London. Retrieved from <https://worldhappiness.report/ed/2020/how-environmental-quality-affects-our-happiness/>
- Kriewald, S., Pradhan, P., Costa, L., Ros, A. G. C., & Kropp, J. P. (2019). Hungry cities: how local food self-sufficiency relates to climate change, diets, and urbanisation. *Environmental Research Letters*, 14(9), 94007. <https://doi.org/10.1088/1748-9326/ab2d56>
- Krishnan, S., Nandwani, D., Smith, G., & Kankarta, V. (2016). Sustainable Urban Agriculture: A Growing Solution to Urban Food Deserts BT - Organic Farming for Sustainable Agriculture. In D. Nandwani (Ed.) (pp. 325–340). Cham: Springer International Publishing. [https://doi.org/10.1007/978-3-319-26803-3\\_15](https://doi.org/10.1007/978-3-319-26803-3_15)
- Kroll, T., Neri, M. T., & Miller, K. (2005). Using mixed methods in disability and rehabilitation research. *Rehabilitation Nursing: The Official Journal of the Association of Rehabilitation Nurses*, 30(3). <https://doi.org/10.1002/j.2048-7940.2005.tb00372.x>
- Kuddus, M. A., Tynan, E., & McBryde, E. (2020). Urbanization: a problem for the rich and the poor? *Public Health Reviews*, 41(1), 1. <https://doi.org/10.1186/s40985-019-0116-0>
- Kunpeuk, W., Spence, W., Phulkerd, S., Suphanchaimat, R., & Pitayarangsarit, S. (2020). The impact of gardening on nutrition and physical health outcomes: a systematic review and meta-analysis. *Health Promotion International*, 35(2), 397–408. <https://doi.org/10.1093/heapro/daz027>
- Kvale, S. (1996). *InterViews: An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.
- Kwack, H., Relf, P. D., Rudolph, J. (2005) Adapting Garden Activities for Overcoming Difficulties of Individuals with Dementia and Physical Limitations, *Activities, Adaptation & Aging*, 29:1, 1-13, DOI: [10.1300/J016v29n01\\_01](https://doi.org/10.1300/J016v29n01_01)
- Laborde, D., Herforth, A., Headey, D. & de Pee, S. (2021). COVID-19 pandemic leads to greater depth of unaffordability of healthy and nutrient-adequate diets in low- and middle-income countries. *Nat Food* 2, 473–475. <https://doi.org/10.1038/s43016-021-00323-8>
- Lai, S., Zhou, Y., & Yuan, Y. (2021). Associations between Community Cohesion and Subjective Wellbeing of the Elderly in Guangzhou, China—A Cross-Sectional Study Based on the Structural Equation Model. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph18030953>
- Lake, B., Milfont, T. L., & Gavin, M. . (2012). The relative influence of psycho-social factors on urban edible gardening. *New Zealand Journal of Psychology*. Retrieved from <https://www.psychology.org.nz/journal-archive/Lake-Milfont-Gavin.pdf>
- Lallé, B. (2003). The Management Science Researcher between Theory and Practice. *Organization Studies*, 24(7), 1097–1114. <https://doi.org/10.1177/01708406030247005>

- Lambie-Mumford, H., & Loopstra, R. (2020). Food banks and the UK welfare state. In *The rise of food charity in Europe* (pp. 191–218).
- Lamont, M. (2009). *How professors think: inside the curious world of academic judgment*. Cambridge, MA: Harvard University Press.
- Lampert T, Costa J, Santos O, Sousa J, Ribeiro T, & Freire, E. (2021) Evidence on the contribution of community gardens to promote physical and mental health and well-being of non-institutionalized individuals: A systematic review. *PLOS ONE* 16(8): e0255621. <https://doi.org/10.1371/journal.pone.0255621>
- Landsberger, H. A. (1958). Hawthorne Revisited. Management and the Worker, its Critics and Developments in Human Relations in Industry. *Bulletin de l'Institut de Recherches Économiques et Sociales*, 25(2), 164. <https://doi.org/DOI:10.1017/S1373971900078768>
- Langmaid, G., Patrick, R., Kingsley, J., & Lawson, J. (2020). Applying the Mandala of Health in the Anthropocene. *Health Promotion Journal of Australia*, n/a(n/a). <https://doi.org/https://doi.org/10.1002/hpja.434>
- Lassell, R., Wood, W., Schmid, A. A., & Cross, J. E. (2021). A comparison of quality of life indicators during two complementary interventions: adaptive gardening and adaptive riding for people with dementia. *Complementary Therapies in Medicine*, 57, 102658. <https://doi.org/https://doi.org/10.1016/j.ctim.2020.102658>
- Lawton, M. (1970). Assessment, integration and environments for older people. *Gerontologist*, 9, 15–19.
- Leavell, M. A., Leiferman, J. A., Gascon, M., Braddick, F., Gonzalez, J. C., & Litt, J. S. (2019). Nature-Based Social Prescribing in Urban Settings to Improve Social Connectedness and Mental Well-being: a Review. *Current Environmental Health Reports*, 6(4), 297–308. <https://doi.org/10.1007/s40572-019-00251-7>
- Lechuga, V. M. (2012). Exploring culture from a distance: The utility of telephone interviews in qualitative research. *International Journal of Qualitative Studies in Education*, 25(3), 251–268. <https://doi.org/10.1080/09518398.2010.529853>
- Lecic-Tosevski, D. (2019). Is urban living good for mental health? *Current Opinion in Psychiatry*, 32(3). Retrieved from [https://journals.lww.com/co-psychiatry/Fulltext/2019/05000/Is\\_urban\\_living\\_good\\_for\\_mental\\_health\\_.11.aspx](https://journals.lww.com/co-psychiatry/Fulltext/2019/05000/Is_urban_living_good_for_mental_health_.11.aspx)
- Leck, C. (2013). The impact of care farming in the UK. Retrieved from [http://www.carefarminguk.org/sites/carefarminguk.org/files/Leck PhD final publish 09 13.pdf](http://www.carefarminguk.org/sites/carefarminguk.org/files/Leck%20PhD%20final%20publish%2009%2013.pdf)
- Leck, C., Evans, N., & Upton, D. (2014). Agriculture - Who cares? An investigation of “care farming” in the UK. *Journal of Rural Studies*. <https://doi.org/10.1016/j.jrurstud.2014.01.012>
- Leck, C., Upton, D., & Evans, N. (2015). Growing well-beings: The positive experience of care farms. *British Journal of Health Psychology*, 20(4), 745–762. <https://doi.org/https://doi.org/10.1111/bjhp.12138>
- Lee, A. C. K., & Maheswaran, R. (2011). The health benefits of urban green spaces: a review of the evidence. *Journal of Public Health*, 33(2), 212–222. <https://doi.org/10.1093/pubmed/fdq068>
- Lee, H. J., Lee, D. K., & Song, W. (2019). Relationships between social capital, social capital satisfaction, self-esteem, and depression among elderly urban residents: Analysis of secondary survey data. *International Journal of Environmental Research and Public Health*, 16(8). <https://doi.org/10.3390/ijerph16081445>
- Lee, J., Park, B. J., Tsunetsugu, Y., Ohira, T., Kagawa, T., & Miyazaki, Y. (2019). Corrigendum to “Effect of forest bathing on physiological and psychological responses in young Japanese male subjects” [Public Health 125 (2) (February 2011), 93–100](S0033350610003203)(10.1016/j.puhe.2010.09.005). *Public Health*, 169, 201. <https://doi.org/10.1016/j.puhe.2019.03.002>
- Lee, J., Li, Q., Tyrväinen, L., Tsunetsugu, Y., Park, B.-J., Kagawa, T., & Miyazaki, Y. (2012). Nature Therapy and Preventive Medicine. *Public Health-Social and Behavioral Health*, 16, 325–350. <https://doi.org/10.5772/37701>
- Leedy, P. D., & Ormrod, J. E. (2001). *Practical Research* (7th ed.). New Jersey: Prentice Hall, Thousand Oaks: SAGE Publications.
- Lemmey, T. (2020). *Connection with Nature in the UK during the COVID-19 Lockdown*. Carlisle. Retrieved from [https://insight.cumbria.ac.uk/id/eprint/5639/1/Nature Connection and Covid TL.pdf](https://insight.cumbria.ac.uk/id/eprint/5639/1/Nature%20Connection%20and%20Covid%20TL.pdf)
- Lenferna De La Motte, K.-A. (2021). Communication: the key to successful community gardens. *Undergraduate Journal of Service Learning & Community-Based Research*, 12, 1-16. Retrieved from <https://ujslcbr.org/index.php/ujslcbr/article/view/359>

- Lêng, C. H., & Wang, J.-D. (2016). Daily home gardening improved survival for older people with mobility limitations: An 11-year follow-up study in Taiwan. *Clinical Interventions in Aging*, 2016, 947–959. <https://doi.org/10.2147/CIA.S107197>
- Leslie, W., & Hankey, C. (2015). Aging, Nutritional Status and Health. *Healthcare*, 3(3), 648–658. <https://doi.org/10.3390/healthcare3030648>
- Leung, F. H., & Savithiri, R. (2009). Spotlight on focus groups. *Canadian family physician Medecin de famille canadien*, 55(2), 218–219. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2642503/?report=classic>
- Levinger P, Cerin E, Milner C, Hill K-D. (2021) Older people and nature: the benefits of outdoors, parks and nature in light of COVID-19 and beyond– where to from here?, *International Journal of Environmental Health Research*, DOI: [10.1080/09603123.2021.1879739](https://doi.org/10.1080/09603123.2021.1879739)
- Leviton, L. C., Snell, E., & McGinnis, M. (2000). Urban issues in health promotion strategies. *American Journal of Public Health*, 90(6), 863–866. <https://doi.org/10.2105/ajph.90.6.863>
- Lewis, A., Cromarty, H., & Barton, C. (2021). *Housing an ageing population. The House of Commons*. London. Retrieved from <https://commonslibrary.parliament.uk/research-briefings/cbp-9239/>
- Lewis, D. (2020). Why schools probably aren't COVID hotspots. *Nature*, 587(7832), 17. <https://doi.org/10.1038/D41586-020-02973-3>
- Lewis, C.A. (1996) *Green Nature, Human Nature: The meaning of plants in our lives*. United States: University of Illinois
- Li, X., Wang, C., Zhang, G., Xiao, L., & Dixon, J. (2012). Urbanisation and human health in China: spatial features and a systemic perspective. *Environmental Science and Pollution Research*, 19(5), 1375–1384. <https://doi.org/10.1007/s11356-011-0718-7>
- Lieven, T. (2021). Has COVID-19 Strengthened Environmental Awareness? <https://doi.org/10.21203/rs.3.rs-408314/v1>
- Light, D. W. (2003). Universal health care: lessons from the British experience. *American Journal of Public Health*, 93(1), 25–30. <https://doi.org/10.2105/ajph.93.1.25>
- Lin, B., Philpott, S., Jha, S., & Liere, H. (2017). Urban Agriculture as a Productive Green Infrastructure for Environmental and Social Well-Being (pp. 155–179). [https://doi.org/10.1007/978-981-10-4113-6\\_8](https://doi.org/10.1007/978-981-10-4113-6_8)
- Lindley S.J., Cook P.A., Dennis M., Gilchrist A. (2019) Biodiversity, Physical Health and Climate Change: A Synthesis of Recent Evidence. In: Marselle M., Stadler J., Korn H., Irvine K., Bonn A. (eds) *Biodiversity and Health in the Face of Climate Change*. Springer, Cham. [https://doi.org/10.1007/978-3-030-02318-8\\_2](https://doi.org/10.1007/978-3-030-02318-8_2)
- Litt, J. S., Soobader, M.-J., Turbin, M. S., Hale, J. W., Buchenau, M., & Marshall, J. A. (2011). The Influence of Social Involvement, Neighborhood Aesthetics, and Community Garden Participation on Fruit and Vegetable Consumption. *American Journal of Public Health*, 101(8), 1466–1473. <https://doi.org/10.2105/AJPH.2010.300111>
- Littke, H. (2015). Planning the green walkable city: Conceptualizing values and conflicts for urban green space strategies in Stockholm. *Sustainability (Switzerland)*, 7(8), 11306–11320. <https://doi.org/10.3390/su70811306>
- Litwin, H., & Meir, A. (2013). Financial worry among older people: Who worries and why? *Journal of Aging Studies*, 27(2), 113–120. <https://doi.org/10.1016/j.jaging.2012.12.003>
- Liu, W. M., Forbat, L., & Anderson, K. (2019). Death of a close friend: Short and long-term impacts on physical, psychological and social well-being. *PLoS ONE*, 14(4), 1–17. <https://doi.org/10.1371/journal.pone.0214838>
- Lloyd-Sherlock, P., Kalache, A., Kirkwood, T., McKee, M., & Prince, M. (2019). WHO's proposal for a decade of healthy ageing. *The Lancet*, 394(10215), 2152-2153. [https://doi.org/10.1016/S0140-6736\(19\)32522-X](https://doi.org/10.1016/S0140-6736(19)32522-X)
- Locality. (2018). The Great British Sell Off. Retrieved from <https://locality.org.uk/wp-content/uploads/2018/06/The-Great-British-Sell-Off-FINAL.pdf>
- Locher, J. L., Ritchie, C. S., Roth, D. L., Baker, P. S., Bodner, E. V., & Allman, R. M. (2005). Social isolation, support, and capital and nutritional risk in an older sample: ethnic and gender differences. *Social Science & Medicine*, 60(4), 747–761. <https://doi.org/https://doi.org/10.1016/j.socscimed.2004.06.023>
- Looy, T. (2015). *Action for sustainability through community gardening: The role of adult learning by*. The University of Manitoba, Winnipeg. Retrieved from [https://umanitoba.ca/institutes/natural\\_resources/pdf/theses/Looy, Teresa.MNRM 2016.pdf](https://umanitoba.ca/institutes/natural_resources/pdf/theses/Looy, Teresa.MNRM 2016.pdf)

- Lopez, R., & Hynes, P. (2006). Obesity, physical activity, and the urban environment: public health research needs. *BioMed Central Health Services Research*, 5(25), 1–10.  
<https://doi.org/10.1186/1476-069X-5-Received>
- Lord, A. J., Field, S., & Smith, I. C. (2017). The experiences of staff who support people with intellectual disability on issues about death, dying and bereavement: A metasynthesis. *Journal of Applied Research in Intellectual Disabilities*, 30(6), 1007–1021.  
<https://doi.org/https://doi.org/10.1111/jar.12376>
- Loue, S., Karges, R. R., & Carlton, C. (2014). The Therapeutic Farm Community: An Innovative Intervention for Mental Illness. *Procedia - Social and Behavioral Sciences*, 149, 503–507.  
<https://doi.org/10.1016/j.sbspro.2014.08.298>
- Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin books.
- Lovethegarden (2021). Advice and Inspiration. Available from: <https://www.lovethegarden.com/>
- Lovell, R., Husk, K., Bethel, A., & Garside, R. (2014a). What are the health and well-being impacts of community gardening for adults and children: A mixed method systematic review protocol. *Environmental Evidence*. <https://doi.org/10.1186/2047-2382-3-20>
- Lovell, R., Wheeler, B. W., Higgins, S. L., Irvine, K. N., & Depledge, M. H. (2014b). A Systematic Review of the Health and Well-Being Benefits of Biodiverse Environments. *Journal of Toxicology and Environmental Health, Part B*, 17(1), 1–20. <https://doi.org/10.1080/10937404.2013.856361>
- Lucke, S., Mamo, E., & Koenigstorfer, J. (2019). Exploring the meaning of growing food in community gardens to South African township residents: A photovoice study. *Health & Place*, 55, 165–176.  
<https://doi.org/https://doi.org/10.1016/j.healthplace.2018.11.009>
- Luetz, J. M., & Beaumont, S. (2019). Community Gardening: Integrating Social Responsibility and Sustainability in a Higher Education Setting—A Case Study from Australia BT - Social Responsibility and Sustainability: How Businesses and Organizations Can Operate in a Sustainable and Socially . In W. Leal Filho (Ed.) (pp. 493–519). Cham: Springer International Publishing. [https://doi.org/10.1007/978-3-030-03562-4\\_26](https://doi.org/10.1007/978-3-030-03562-4_26)
- Lynch, H., Moore, A., Edwards, C., & Horgan, L. (2019). Advancing play participation for all: The challenge of addressing play diversity and inclusion in community parks and playgrounds. *British Journal of Occupational Therapy*, 83(2), 107–117. <https://doi.org/10.1177/0308022619881936>
- Ma, M. (2020). Dose of nature at home could help mental health, well-being during COVID-19 | UW News. *University of Washington*. Retrieved from <https://medicalxpress.com/news/2020-04-dose-nature-home-mental-health.html>
- Machado, M. M., & Swank, J. M. (2019). Therapeutic gardening: A counseling approach for bereavement from suicide. *Death Studies*, 43(10), 629–633.  
<https://doi.org/10.1080/07481187.2018.1509908>
- Machida, D. (2019). Relationship between Community or Home Gardening and Health of the Elderly: A Web-Based Cross-Sectional Survey in Japan. *International Journal of Environmental Research and Public Health* . <https://doi.org/10.3390/ijerph16081389>
- Macias, T. (2008). Working Toward a Just, Equitable, and Local Food System: The Social Impact of Community-Based Agriculture\*. *Social Science Quarterly*, 89: 1086-1101. doi:10.1111/j.1540-6237.2008.00566.x
- Magle, S. B., Fidino, M., Lehrer, E. W., Gallo, T., Mulligan, M. P., Ríos, M. J., ... Drake, D. (2019). Advancing urban wildlife research through a multi-city collaboration. *Frontiers in Ecology and the Environment*, 17(4), 232–239. <https://doi.org/https://doi.org/10.1002/fee.2030>
- Mahr, R., Hanlon, J., & Hajjar, E. (2013). Clinical Consequences of Polypharmacy in Elderly. *National Institute for Health*, 13(1), 1–11. <https://doi.org/10.1517/14740338.2013.827660>.Clinical
- Mancebo, F. (2018). Gardening the City: Addressing Sustainability and Adapting to Global Warming through Urban Agriculture. *Environments* . <https://doi.org/10.3390/environments5030038>
- Manchester City Council. (2015). Manchester’ s Great Outdoors a Green and Blue Infrastructure Strategy for Manchester Stakeholder Implementation Plan: Working together to improve Manchester’s GI, (July).
- Manchester City Council. (2009). Manchester: A Great Place to Grow Older 2010-2020. Retrieved from [http://www.manchester.gov.uk/downloads/file/11899/manchester\\_a\\_great\\_place\\_to\\_grow\\_older\\_2010-2020](http://www.manchester.gov.uk/downloads/file/11899/manchester_a_great_place_to_grow_older_2010-2020)
- Manchester City Council. (n.d.). *Living in Manchester – our age-friendly city*. Available from:[https://doi.org/https://secure.manchester.gov.uk/downloads/download/6534/living\\_in\\_manchester\\_our\\_age-friendly\\_city](https://doi.org/https://secure.manchester.gov.uk/downloads/download/6534/living_in_manchester_our_age-friendly_city)



- Manchester City Council (2019) Deprivation: data and intelligence. Available from: [https://secure.manchester.gov.uk/info/200088/statistics\\_and\\_intelligence/2168/deprivation](https://secure.manchester.gov.uk/info/200088/statistics_and_intelligence/2168/deprivation)
- Mangles, E. (2017, April 5). Millennials aren't too impatient to garden - we just don't have the space | Gardens | The Guardian. Retrieved October 5, 2021, from <https://www.theguardian.com/lifeandstyle/gardening-blog/2017/apr/05/millennials-arent-too-impatient-to-garden-we-just-dont-have-the-space>
- Manniche, L. (1989). *An Ancient Egyptian Herbal* (1st ed.). University of Texas Press.
- Mantantzis, K., Drewelies, J., Duzel, S., Steinhagen-Thiessen, E., Demuth, I., Wagner, G. G., ... Gerstorf, D. (2020). Dehydration Predicts Longitudinal Decline in Cognitive Functioning and Well-Being Among Older Adults. *Psychology and Aging, 35*(4). <https://doi.org/10.1037/pag0000471>
- Mantzoukas, S., Kotrotsiou, S., Mentis, M., Paschou, A., Diamantopoulos, E., Kotrotsiou, E., & Gouva, M. (2021). Exploring the Impact of Shame on Health-Related Quality of Life in Older Individuals. *Journal of Nursing Scholarship, 53*(4), 439–448. <https://doi.org/https://doi.org/10.1111/jnu.12663>
- Mapes, N., Milton, S., Nicholls, V., & Williamson, T. (2016). *Is it Nice Outside? - Consulting people living with dementia and carers about engaging with the natural environment*.
- Mapes, N., & Hine, R. (2011). Research Project: Living with dementia and connecting with nature – looking back and stepping forwards living with dementia. *Dementia*, (February). Essex: Dementia Adventure CIC.
- Marmot, M. (2020). Health equity in England: The Marmot review 10 years on. *The BMJ, 368*(February), 1–4. <https://doi.org/10.1136/bmj.m693>
- Marmot, M. & Allen, J. (2020). COVID-19: exposing and amplifying inequalities. *J Epidemiol Community Health, 74*, 681-682. <http://dx.doi.org/10.1136/jech-2020-214720>
- Martuzzi, M., Ward Thompson, C., Wolf, T., Braubach, M., Egorov, A., & Mudu, P. (2017). Effects of Urban Green Space on Environmental Health, Equity and Resilience (pp. 187–205). Springer, Cham. [https://doi.org/10.1007/978-3-319-56091-5\\_11](https://doi.org/10.1007/978-3-319-56091-5_11)
- Mason, P., Kearns, A., & Bond, L. (2011). Neighbourhood walking and regeneration in deprived communities. *Health and Place, 17*(3), 727–737. <https://doi.org/10.1016/j.healthplace.2011.01.010>
- Mathison, S. (1988). Why triangulate? *Educational Researcher, 17*(2), 13-17. <https://doi.org/10.3102/0013189X017002013>
- Max-Neef, M. A. (2005). Foundations of transdisciplinarity. *Ecological Economics, 53*(1), 5–16. <https://doi.org/10.1016/j.ecolecon.2005.01.014>
- Maxwell, S. (1996). Food security: a post-modern perspective. *Food Policy, 21*(2), 155–170. [https://doi.org/https://doi.org/10.1016/0306-9192\(95\)00074-7](https://doi.org/https://doi.org/10.1016/0306-9192(95)00074-7)
- McAlister, A. L., Perry, C. L., & Parcel, G. S. (2008). Chapter 8: How individuals, environments, and health behaviors interact. Glanz, K., Rimer, B., Viswanath, K. *In Health Behavior and Health Education*, (4<sup>th</sup> ed). 169 – 188. San Francisco, Jossey-Bass.
- McAlister, A., Perry, C., & Parcel, G. (2002). Part three: Models of interpersonal health behaviour. In K. Glanz, B. Rimer, & K. Viswanath (Eds.) (4th ed., pp. 167–237). San Francisco: Jossey-Bass.
- McAlister, R. (2010), Putting the 'Community' into Community Planning: Assessing Community Inclusion in Northern Ireland. *International Journal of Urban and Regional Research, 34*: 533-547. [doi:10.1111/j.1468-2427.2010.00967.x](https://doi.org/10.1111/j.1468-2427.2010.00967.x)
- McCambridge, J., Witton, J., & Elbourne, D. R. (2014). Systematic review of the Hawthorne effect: new concepts are needed to study research participation effects. *Journal of Clinical Epidemiology, 67*(3), 267–277. <https://doi.org/10.1016/j.jclinepi.2013.08.015>
- McCausland, D., Luus, R., McCallion, P., Murphy, E., & McCarron, M. (2021). The impact of COVID-19 on the social inclusion of older adults with an intellectual disability during the first wave of the pandemic in Ireland. *Journal of Intellectual Disability Research, 65*(10), 879–889. <https://doi.org/https://doi.org/10.1111/jir.12862>
- McCunn, L. J. (2020). The importance of nature to city living during the COVID-19 pandemic: Considerations and goals from environmental psychology. *Cities & Health, 1*–4. <https://doi.org/10.1080/23748834.2020.1795385>
- McCurdy, L. E., Winterbottom, K. E., Mehta, S. S., & Roberts, J. R. (2010). Using nature and outdoor activity to improve children's health. *Current Problems in Pediatric and Adolescent Health Care*. Mosby Inc. <https://doi.org/10.1016/j.cppeds.2010.02.003>
- McDonald, L. (2016). Mary Seacole and claims of evidence-based practice and global influence. *Nursing Open, 3*(1), 5–18. <https://doi.org/https://doi.org/10.1002/nop2.32>

- McDonald, L. (2020). Florence Nightingale's Influence on Hospital Design, Hospitalism, Hospital Diseases, and Hospital Architects. *Health Environments Research and Design Journal*, 1–6. <https://doi.org/10.1177/1937586720931058>
- McEwan, K., Giles, D., Clarke, F. J., Kotera, Y., Evans, G., Terebenina, O., ... Weil, D. (2021). A Pragmatic Controlled Trial of Forest Bathing Compared with Compassionate Mind Training in the UK: Impacts on Self-Reported Wellbeing and Heart Rate Variability. *Sustainability*. <https://doi.org/10.3390/su13031380>
- McGarry, P., & Morris, J. (2011). A great place to grow older: A case study of how Manchester is developing an age-friendly city. *Working with Older People*, 15(1), 38–46. <https://doi.org/10.5042/wwop.2011.0119>
- McGrath, C., Palmgren, P. J., & Liljedahl, M. (2019). Twelve tips for conducting qualitative research interviews. *Medical Teacher*, 41(9), 1002–1006. <https://doi.org/10.1080/0142159X.2018.1497149>
- McIlvaine-Newsad, H., & Porter, R. (2013). How Does Your Garden Grow? Environmental Justice Aspects of Community Gardens. *J3ea*, 16, 69–75.
- McKee, M., Dunnell, K., Anderson, M., Brayne, C., Charlesworth, A., Johnston-Webber, C., ... Watt, R. G. (2021). The changing health needs of the UK population. *The Lancet*, 397(10288), 1979–1991. [https://doi.org/10.1016/S0140-6736\(21\)00229-4](https://doi.org/10.1016/S0140-6736(21)00229-4)
- McKinney, M. L., & VerBerkmoes, A. (2020). Beneficial health outcomes of natural green infrastructure in cities. *Current Landscape Ecology Reports*, 5(2), 35–44.
- McLean, I. (2018). What is social science? Available from: <https://www.thebritishacademy.ac.uk/blog/what-social-science>
- McMurdo ME, Roberts H, Parker S, Wyatt N, May H, Goodman C, Jackson S, Gladman J, O'Mahony S, Ali K, Dickinson E, Edison P, Dyer C; Age and Ageing Specialty Group, NIHR, Comprehensive Clinical Research Network. Improving recruitment of older people to research through good practice. *Age Ageing*. 2011 Nov;40(6):659-65. doi: 10.1093/ageing/afr115. Epub 2011 Sep 11. PMID: 21911335.
- McNeely, J. A. (2021). Nature and COVID-19: The pandemic, the environment, and the way ahead. *Ambio*, 50(4), 767–781. <https://doi.org/10.1007/s13280-020-01447-0>
- McPherson, K. E., McAloney-Kocaman, K., McGlinchey, E., Faeth, P., & Armour, C. (2021). Longitudinal analysis of the UK COVID-19 Psychological Wellbeing Study: Trajectories of anxiety, depression and COVID-19-related stress symptomology. *Psychiatry Research*, 304, 114138. <https://doi.org/10.1016/j.psychres.2021.114138>
- McVey, D., Nash, R., & Stansbie, P. (2018). The motivations and experiences of community garden participants in Edinburgh, Scotland. *Regional Studies, Regional Science*, 5(1), 40–56. <https://doi.org/10.1080/21681376.2017.1409650>
- Mead, B. R., Davies, J. A. C., Falagán, N., Kourmpetli, S., Liu, L., & Hardman, C. A. (2021). Urban agriculture in times of crisis: the role of home food growing in perceived food insecurity and well-being during the early COVID-19 lockdown [version 1; peer review: 2 approved]. *Emerald Open Research*, 3(7). <https://doi.org/10.35241/emeraldopenres.14186.1>
- Mead, B. R., Christiansen, P., Davies, J. A. C., Falagán, N., Kourmpetli, S., Liu, L., ... Hardman, C. A. (2021). Is urban growing of fruit and vegetables associated with better diet quality and what mediates this relationship? Evidence from a cross-sectional survey. *Appetite*, 163, 195–6663. <https://doi.org/10.1016/J.APPET.2021.105218>
- Mejia, A., Bhattacharya, M., Nigon-Crowley, A., Kirkpatrick, K., & Katoch, C. (2020). Community gardening during times of crisis: Recommendations for community-engaged dialogue, research, and praxis. *Journal of Agriculture, Food Systems, and Community Development*, 10(1 SE-Voces from the Grassroots), 13–19. <https://doi.org/10.5304/jafscd.2020.101.006>
- Mell, I., & Whitten, M. (2021). Access to Nature in a Post Covid-19 World: Opportunities for Green Infrastructure Financing, Distribution and Equitability in Urban Planning. *International Journal of Environmental Research and Public Health*, 18(4), 1527. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/ijerph18041527>
- Mell, I. (2020). The impact of austerity on funding green infrastructure: A DPSIR evaluation of the Liverpool Green & Open Space Review (LG&OSR), UK. *Land Use Policy*, 91, 104284. <https://doi.org/https://doi.org/10.1016/j.landusepol.2019.104284>
- Melbourne P. (2021) Growing Public Spaces in the City: Community gardening and the making of new urban environments of publicness. School of Geography and Planning, Cardiff University. Available from: <https://core.ac.uk/download/334952839>
- Men's Sheds Association. (2020). Men's Shed Toolkit for the development and sustainability of Sheds in the UK and Ireland. Retrieved from <https://menssheds.org.uk/shed-support/#available-support>

- Mercado L (2021) The Role of Community Gardens During the COVID-19 Pandemic. Food Policy and Obesity, Infectious disease. Available from: <https://www.publichealth.columbia.edu/public-health-now/news/role-community-gardens-during-covid-19-pandemic>
- Meredith, G. R., Rakow, D. A., Eldermire, E. R. B., Madsen, C. G., Shelley, S. P., & Sachs, N. A. (2020). Minimum Time Dose in Nature to Positively Impact the Mental Health of College-Aged Students, and How to Measure It: A Scoping Review. *Frontiers in Psychology, 0*, 2942. <https://doi.org/10.3389/FPSYG.2019.02942>
- Merriam, S. B. (2009). *Qualitative Research: A Guide to Design and Implementation*. San Francisco, CA: John Wiley & Sons.
- Methorst, J., Arbieu, U., Bonn, A., Böhning-Gaese, K., & Mueller, T. (2020). Non-material contributions of wildlife to human well-being: a systematic review. *Environmental Research Letters, 15*(9), 093005.
- Mielke, H. W., Anderson, J. C., Berry, K. J., Mielke, P. W., Chaney, R. L., & Leech, M. (1983). Lead concentrations in inner-city soils as a factor in the child lead problem. *American Journal of Public Health, 73*(12), 1366–1369. <https://doi.org/10.2105/ajph.73.12.1366>
- Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *Maturitas, 106*(August), 48–56. <https://doi.org/10.1016/j.maturitas.2017.09.003>
- Milbourne, P. (2021). Growing public spaces in the city: Community gardening and the making of new urban environments of publicness. *Urban Studies, 0042098020972281*. <https://doi.org/10.1177/0042098020972281>
- Milligan, C., Gatrell, A., & Bingley, A. (2004). “Cultivating health”: Therapeutic landscapes and older people in northern England. *Social Science and Medicine, 58*(9), 1781–1793. [https://doi.org/10.1016/S0277-9536\(03\)00397-6](https://doi.org/10.1016/S0277-9536(03)00397-6)
- Ministry of Housing. (2019). National Planning Policy Framework. Retrieved October 17, 2021, from <https://www.gov.uk/government/publications/national-planning-policy-framework--2>
- Ministry of Housing Communities & Local Government. (2019). English indices of deprivation 2019: research report, (September), 87. Retrieved from <https://www.gov.uk/government/publications/english-indices-of-deprivation-2019-research-report>
- Mitchell, L. M., Houston, L., Hardman, M., Howarth, M. L., & Cook, P. A. (2021). Enabling Urban Social Farming: the need for radical green infrastructure in the city. *Cogent Social Sciences, 7*(1), 1976481. <https://doi.org/10.1080/23311886.2021.1976481>
- Mitchell, R., & Popham, F. (2007). Greenspace, urbanity and health: Relationships in England. *Journal of Epidemiology and Community Health, 61*(8), 681–683. <https://doi.org/10.1136/jech.2006.053553>
- Mitchell, R., & Popham, F. (2008). Effect of exposure to natural environment on health inequalities: an observational population study. *The Lancet, 372*(9650), 1655–1660. [https://doi.org/10.1016/S0140-6736\(08\)61689-X](https://doi.org/10.1016/S0140-6736(08)61689-X)
- Mittelmark, M. B., & Bull, T. (2013). The salutogenic model of health in health promotion research. *Global Health Promotion, 20*(2), 30–38. <https://doi.org/10.1177/1757975913486684>
- Moffatt, S., Steer, M., Lawson, S., Penn, L., & O'Brien, N. (2017). Link Worker social prescribing to improve health and well-being for people with long-term conditions: qualitative study of service user perceptions. *BMJ Open, 7*(7), e015203. <https://doi.org/10.1136/bmjopen-2016-015203>
- Moore, S., & Statham, E. (2006). Can Intergenerational Practice Offer a Way of Limiting Anti-Social Behaviour and Fear of Crime? *The Howard Journal of Criminal Justice, 45*(5), 468–484. <https://doi.org/https://doi.org/10.1111/j.1468-2311.2006.00438.x>
- Moore, R. C., & Hancock, J. T. (2020). Older Adults, Social Technologies, and the Coronavirus Pandemic: Challenges, Strengths, and Strategies for Support. *Social Media + Society*. <https://doi.org/10.1177/2056305120948162>
- Moore, T. H. M., Kesten, J. M., López-López, J. A., Ijaz, S., McAleenan, A., Richards, A., ... Audrey, S. (2018). The effects of changes to the built environment on the mental health and well-being of adults: Systematic review. *Health and Place, 53*, 237–257. <https://doi.org/10.1016/j.healthplace.2018.07.012>
- Morales-López, E. (2019). Discourse analysis: The constructivist perspective and transdisciplinarity. In M.-B. Å., G. Bel-Enguix, & A. B. T.-C. applications in language and communication sciences Bastardas-Boada (Eds.). Cham: Springer. Retrieved from <https://cepa.info/5972>
- Moran, M., Van Cauwenberg, J., Hercky-Linnewiel, R., Cerin, E., Deforche, B., & Plaut, P. (2014). Understanding the relationships between the physical environment and physical activity in older adults: A systematic review of qualitative studies. *International Journal of Behavioral Nutrition and Physical Activity, 11*(1), 1–12. <https://doi.org/10.1186/1479-5868-11-79>

- Morgan, D. L. (2014). Pragmatism as a Paradigm for Social Research. *Qualitative Inquiry*, 20(8), 1045–1053. <https://doi.org/10.1177/1077800413513733>
- Morgan, T., Wiles, J., Williams, L., & Gott, M. (2021). COVID-19 and the portrayal of older people in New Zealand news media. *Journal of the Royal Society of New Zealand*, 51(sup1), S127–S142. <https://doi.org/10.1080/03036758.2021.1884098>
- Morgan-Trimmer, S., Wood, F. (2016). Ethnographic methods for process evaluations of complex health behaviour interventions. *Trials* 17, 232. <https://doi.org/10.1186/s13063-016-1340-2>
- Morland, K., & Filomena, S. (2007). Disparities in the availability of fruits and vegetables between racially segregated urban neighbourhoods. *Public Health Nutrition*, 10(12), 1481–1489. <https://doi.org/DOI: 10.1017/S1368980007000079>
- Morrow-Howell, N., Galucia, N., & Swinford, E. (2020). Recovering from the COVID-19 Pandemic: A Focus on Older Adults. *Journal of Aging & Social Policy*, 32(4–5), 526–535. <https://doi.org/10.1080/08959420.2020.1759758>
- Morton, T., Wong, G., Atkinson, T., & Brooker, D. (2021). Sustaining community-based interventions for people affected by dementia long term: the SCI-Dem realist review. *BMJ Open*, 11(7), e047789. <https://doi.org/10.1136/bmjopen-2020-047789>
- Moruzzo, R., Di Iacovo, F., Funghi, A., Scarpellini, P., Diaz, S. E., & Riccioli, F. (2019). Social Farming: An Inclusive Environment Conducive to Participant Personal Growth. *Social Sciences* . <https://doi.org/10.3390/socsci8110301>
- Moruzzo, R., Riccioli, F., Galasso, A., Troccoli, C., Espinosa Diaz, S., & Di Iacovo, F. (2020). Italian Social Farming: the Network of Coldiretti and Campagna Amica. *Sustainability* . <https://doi.org/10.3390/su12125036>
- Mullins, L., Charlebois, S., Finch, E., & Music, J. (2021). Home Food Gardening in Canada in Response to the COVID-19 Pandemic. *Sustainability* . <https://doi.org/10.3390/su13063056>
- Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, 18(1), 143. <https://doi.org/10.1186/s12874-018-0611-x>
- Murray, J., Coker, J. F., & Elsey, H. (2019). Care farming: Rehabilitation or punishment? A qualitative exploration of the use of care farming within community orders. *Health and Place*, 58. <https://doi.org/10.1016/j.healthplace.2019.102156>
- Murray, J., Wickramasekera, N., Elings, M., Bragg, R, Brennan, C., Richardson, Z., ... Elsey, H. (2019b). The impact of care farms on quality of life, depression and anxiety among different population groups: A systematic review. <https://doi.org/10.1002/cl2.1061>
- Music, J., Finch, E., Gone, P., Toze, S., Charlebois, S., & Mullins, L. (2021). Pandemic Victory Gardens: Potential for local land use policies. *Land Use Policy*, 109, 105600. <https://doi.org/10.1016/J.LANDUSEPOL.2021.105600>
- Nabulo, G., Black, C. R., Craigon, J., & Young, S. D. (2012). Does consumption of leafy vegetables grown in peri-urban agriculture pose a risk to human health?. *Environmental pollution*. 162, 389-398. <https://doi.org/10.1016/j.envpol.2011.11.040>
- Naderi, I., & Van Steenburg, E. (2018). Me first, then the environment: young Millennials as green consumers. *Young Consumers*, 19(3), 280–295. <https://doi.org/10.1108/YC-08-2017-00722>
- NAO. (2021). *Local government finance in the pandemic*. London. Retrieved from <https://www.nao.org.uk/report/local-government-finance-in-the-pandemic/>
- National Academics of Sciences Engineering and Medicine. (2020). *Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25663>
- National Farmers Union for England and Wales. (2020). Seasonal workers exempt from quarantine requirement. Retrieved from <https://www.nfuonline.com/news/coronavirus-updates-and-advice/coronavirus-news/coronavirus-update-seasonal-workers-exempt-from-quarantine-requirement/>
- National Health Service England. (2014). *Five Year Forward View*. National Health Service England. Retrieved from <https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf>
- National Health Service England. (2019). *Social prescribing and community-based support: summary guide*. Retrieved from <https://www.england.nhs.uk/wp-content/uploads/2019/01/social-prescribing-community-based-support-summary-guide.pdf>
- National Institute for Health and Care Excellence. (2017). Quality statement 3: Identifying community assets | Community engagement: improving health and wellbeing. Retrieved October 17, 2021, from <https://www.nice.org.uk/guidance/qs148/chapter/quality-statement-3-identifying-community-assets>



- Natural England. (2019). Launching the Growing Care Farming project - Natural England. Retrieved October 17, 2021, from <https://naturalengland.blog.gov.uk/2019/05/30/launching-the-growing-care-farming-project/>
- Natural Portrait Gallery. (n.d.). A Picture of Health - A Picture of Health. Retrieved October 17, 2021, from <https://www.npg.org.uk/learning/a-picture-of-health/>
- NatureScot (2020) More people spending time outdoors. New survey reveals importance of nature to Scotland's recovery from Covid-19. Available from: <https://www.nature.scot/more-people-spending-time-outdoors-new-survey-reveals-importance-nature-scotlands-recovery-covid-19>
- Nestle, M. (2002). *Food politics: how the food industry influences nutrition and health*. Berkeley, CA: University of California Press.
- Nettle, C. (2016). *Community Gardening as Social Action* (1st ed.). London: Routledge. <https://doi.org/10.4324/9781315572970>
- Nettle, C, Catney, P, & Doyle, T. (2014). *Community Gardening as Social Action*. Routledge. Retrieved from <https://ebookcentral-proquest-com.salford.idm.oclc.org/lib/salford/reader/action?docID=1589603&query=>
- Newman, K., & Lake, R. W. (2006). Democracy, bureaucracy and difference in US community development politics since 1968. *Progress in Human Geography*, 30(1), 44–61. <https://doi.org/10.1191/0309132506ph590oa>
- NHS England. (2019). NHS Long Term Plan » Overview and summary. Retrieved March 25, 2019, from <https://www.england.nhs.uk/long-term-plan/>
- NHS Mental Health Task Force. (2016). *The five year forward view mental health taskforce: Public engagement findings*. Retrieved from <https://www.england.nhs.uk/mentalhealth/wp-content/uploads/sites/29/2015/09/fyfv-mental-hlth-taskforce.pdf>
- NHSE. (2019). What is personalised care?
- Nicolosi, A., Laganà, V. R., Di Gregorio, D., & Privitera, D. (2021). Social Farming in the Virtuous System of the Circular Economy. An Exploratory Research. *Sustainability*. <https://doi.org/10.3390/su13020989>
- Nightingale, A. J. (2020). Triangulation. In *International Encyclopedia of Human Geography* (pp. 477–480). Elsevier. <https://doi.org/10.1016/b978-0-08-102295-5.10437-8>
- Nind, M. (2017). The practical wisdom of inclusive research. *Qualitative Research*, 17(3), 278–288. <https://doi.org/10.1177/1468794117708123>
- Nind, M. (2014). *What is inclusive research?* (1st ed.). London: Bloomsbury Academic. <https://doi.org/10.5040/9781849668149>
- Noble, H., & Heale, R. (2019). Triangulation in research, with examples. *Evidence Based Nursing*, 22(3), 67 LP – 68. <https://doi.org/10.1136/ebnurs-2019-103145>
- Noone, S., & Jenkins, N. (2018). Digging for Dementia: Exploring the experience of community gardening from the perspectives of people with dementia. *Aging & Mental Health*, 22(7), 881–888. <https://doi.org/10.1080/13607863.2017.1393793>
- Nørreklit, L., Norreklit, H., & Israelsen, P. (2006). The validity of management control topoi: Towards constructivist pragmatism. *Management Accounting Research*, 17, 42–71. <https://doi.org/10.1016/j.mar.2005.04.002>
- Northern Roots (2020) The Northern Roots Story. Available from: <https://northern-roots.uk/>
- Norwood, M. F., Lakhani, A., Maujean, A., Downes, M., Fullagar, S., McIntyre, M., ... Kendall, E. (2019). Assessing emotional and social health using photographs: An innovative research method for rural studies and its applicability in a care-farming program for youth. *Evaluation and Program Planning*, 77, 101707. <https://doi.org/https://doi.org/10.1016/j.evalprogplan.2019.101707>
- Nova, P., Pinto, E., Chaves, B., & Silva, M. (2020). Urban organic community gardening to promote environmental sustainability practices and increase fruit, vegetables and organic food consumption. *Gaceta Sanitaria*, 34(1), 4–9. <https://doi.org/https://doi.org/10.1016/j.gaceta.2018.09.001>
- Novick, G. (2008). Is there a bias against telephone interviews in qualitative research? *Research in Nursing and Health*, 31(4), 391–398. <https://doi.org/10.1002/nur.20259>
- Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science: knowledge and the public in an age of uncertainty*. Cambridge: Polity Press.
- NPC. (2020) Briefing: Britain's largest charities still face income hole. Available at <https://www.thinknpc.org/resource-hub/briefing-britains-largest-charities-still-face-gaping-hole/>
- O'Connor, R. C., Wetherall, K., Cleare, S., McClelland, H., Melson, A. J., Niedzwiedz, C. L., ... Robb, K. A. (2021). Mental health and well-being during the COVID-19 pandemic: longitudinal analyses

- of adults in the UK COVID-19 Mental Health & Wellbeing study. *The British Journal of Psychiatry*, 218(6), 326–333. <https://doi.org/DOI: 10.1192/bjp.2020.212>
- OCSI. (2021). Data Dive – The early impact of COVID-19 in ‘left-behind’ neighbourhoods. Retrieved from <https://ocsi.uk/2020/11/24/data-dive-the-early-impact-of-covid-19-in-left-behind-neighbourhoods/>
- Office for National Statistics. (2021a). Health state life expectancies by national deprivation deciles, Wales - Office for National Statistics. Retrieved from: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/healthstatelifeexpectanciesuk/2017to2019>
- Office for National Statistics (2021b). Household income inequality, UK: financial year ending 2020. Retrieved from: <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householdincomeinequalityfinancial/financialyearending2020>
- Office for National Statistics (2020) Coronavirus and shielding of clinically extremely vulnerable people in England: 28 May to 3 June 2020. Retrieved from: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronavirusandshieldingofclinicallyextremelyvulnerablepeopleinengland/28mayto3june2020>
- Oksanen, T., Vahtera, J., Westerlund, H., Pentti, J., Sjösten, N., Virtanen, M., ... Kivimäki, M. (2011). Is retirement beneficial for mental health? antidepressant use before and after retirement. *Epidemiology*, 22(4), 553–559. <https://doi.org/10.1097/EDE.0b013e31821c41bd>
- Okvat, H. A., & Zautra, A. J. (2011). Community Gardening: A Parsimonious Path to Individual, Community, and Environmental Resilience. *American Journal of Community Psychology*, 47(3–4), 374–387. <https://doi.org/https://doi.org/10.1007/s10464-010-9404-z>
- Olafsdottir, G., Cloke, P., Schulz, A., van Dyck, Z., Eysteinnsson, T., Thorleifsdottir, B., & Vögele, C. (2018). Health Benefits of Walking in Nature: A Randomized Controlled Study Under Conditions of Real-Life Stress. *Environment and Behavior*, 52(3), 248–274. <https://doi.org/10.1177/0013916518800798>
- Ong, M., Baker, A., Aguilar, A., & Stanley, M. (2019). The meanings attributed to community gardening: A qualitative study. *Health and Place*, 59(August), 102190. <https://doi.org/10.1016/j.healthplace.2019.102190>
- ONS. (2021a). How has lockdown changed our relationship with nature? Retrieved from <https://www.ons.gov.uk/economy/environmentalaccounts/articles/howhaslockdownchangedourrelationshipwithnature/2021-04-26>
- ONS. (2021b). Overview of the UK population: January 2021. Retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/january2021>
- ONS. (2018). Living longer - Office for National Statistics. ONS. Retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/livinglongerhowourpopulationischangingandwhyitmatters/2018-08-13>
- ONS - Public Health England. (2020). Local Health - data on life expectancy. Retrieved October 17, 2021, from <https://www.localhealth.org.uk/#c=home>
- Onwuegbuzie, A. J., & Frels, R. (2016). *Seven Steps to a Comprehensive Literature Review: A Multimodal and Cultural Approach*. (M. Steel, Ed.) (Reprint Ed). London: SAGE Publications Ltd.
- Ottersen, O. P., & Engebretsen, E. (2020). COVID-19 puts the Sustainable Development Goals center stage. *Nature Medicine*, 26(11), 1672–1673. <https://doi.org/10.1038/s41591-020-1094-y>
- Oyama, H., Ono, Y., Watanabe, N., Tanaka, E., Kudoh, S., Sakashita, T., ... Yoshimura, K. (2006). Local community intervention through depression screening and group activity for elderly suicide prevention. *Psychiatry and Clinical Neurosciences*, 60(1), 110–114. <https://doi.org/10.1111/j.1440-1819.2006.01468.x>
- Özkan Tuncay, F., Fertelli, T., & Mollaoğlu, M. (2018). Effects of loneliness on illness perception in persons with a chronic disease. *Journal of Clinical Nursing*, 27(7–8), e1494–e1500. <https://doi.org/https://doi.org/10.1111/jocn.14273>
- Paital, B. (2020). Nurture to nature via COVID-19, a self-regenerating environmental strategy of environment in global context. *The Science of the Total Environment*. Elsevier. <https://doi.org/10.1016/j.scitotenv.2020.139088>
- Park S.A., Shoemaker C.A., Haub, M. (2009). A Preliminary investigation on exercise intensities of Gardening tasks in older adults. *Perceptual and Motor Skills*, 107(7), 974. <https://doi.org/10.2466/pms.107.3.974-980>

- Park, S. A., Shoemaker, C., & Haub, M. (2008). Can older gardeners meet the physical activity recommendation through gardening? *HortTechnology*, 18(4), 639–643.
- Park, S.A., Lee, A.Y., Park, H.G., Son, K.C., Kim, D.S., & Lee, W.L. (2017). Gardening Intervention as a Low- to Moderate-Intensity Physical Activity for Improving Blood Lipid Profiles, Blood Pressure, Inflammation, and Oxidative Stress in Women over the Age of 70: A Pilot Study. *HortScience*, 52(1), 200–205. <https://doi.org/10.21273/HORTSCI11232-16>
- Parker, J., & Simpson, G. D. (2020). A Theoretical Framework for Bolstering Human-Nature Connections and Urban Resilience via Green Infrastructure. *Land*, 9(8), 252. <https://doi.org/10.3390/land9080252>
- Parker, J., & Zingoni de Baro, M. E. (2019). Green Infrastructure in the Urban Environment: A Systematic Quantitative Review. *Sustainability*. <https://doi.org/10.3390/su11113182>
- Parkinson, S., Lowe, C., & Vecsey, T. (2011). The therapeutic benefits of horticulture in a mental health service. *British Journal of Occupational Therapy*, 74(11), 525–534. <https://doi.org/10.4276/030802211X13204135680901>
- Patel P, Thomas C and Quilter-Pinner H (2021) State of health and care: The NHS Long Term Plan after Covid-19, IPPR. Available from <https://www.ippr.org/research/publications/state-of-health-and-care>
- Patel, J. A., Nielsen, F. B. H., Badiani, A. A., Assi, S., Unadkat, V. A., Patel, B., ... Wardle, H. (2020). Poverty, inequality and COVID-19: the forgotten vulnerable. *Public Health*, 183, 110–111. <https://doi.org/10.1016/j.puhe.2020.05.006>
- Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3), 663–706. <https://doi.org/10.1080/03066150903143079>
- Patton, M. Q. (2002). *Qualitative and Evaluation Research Methods*. (D. . Laughton, Ed.) (3rd ed.). Thousand Oaks; California: SAGE. Retrieved from <https://aulasvirtuales.files.wordpress.com/2014/02/qualitative-research-evaluation-methods-by-michael-patton.pdf>
- Pauleit, S., Ennos, R., & Golding, Y. (2005). Modeling the environmental impacts of urban land use and land cover change - A study in Merseyside, UK. *Landscape and Urban Planning*, 71, 295–310. <https://doi.org/10.1016/j.landurbplan.2004.03.009>
- Pearce, J, Cherrie, M, Shortt, N, Deary, I, Ward Thompson, C. Life course of place: A longitudinal study of mental health and place. *Trans Inst Br Geogr*. 2018; 43: 555– 572. <https://doi.org/10.1111/tran.12246>
- Pelicioni, P. H. S., & Lord, S. R. (2020). COVID-19 will severely impact older people's lives, and in many more ways than you think! *Brazilian Journal of Physical Therapy*, 24(4), 293–294. <https://doi.org/10.1016/j.bjpt.2020.04.005>
- Peschery, J.V., Pappas, Y. & Randhawa, G. (2018) Facilitators and barriers of implementing and delivering social prescribing services: a systematic review. *BMC Health Serv Res* 18, 86. <https://doi.org/10.1186/s12913-018-2893-4>
- Peters, K., Elands, B., & Buijs, A. (2010). Social interactions in urban parks: Stimulating social cohesion? *Urban Forestry & Urban Greening*, 9(2), 93–100. <https://doi.org/https://doi.org/10.1016/j.ufug.2009.11.003>
- Pfeiffer, B. A., Clay, S. W., & Conatser, R. R. (2001). A Green Prescription Study: Does Written Exercise Prescribed by a Physician Result in Increased Physical Activity among Older Adults? *Journal of Aging and Health*, 13(4), 527–538. <https://doi.org/10.1177/089826430101300405>
- Philipson, C. (2007). The “elected” and the “excluded”: Sociological perspectives on the experience of place and community in old age. *Ageing and Society*, 27(3), 321–342. <https://doi.org/10.1017/S0144686X06005629>
- Philo, C. (2013) 'A great space of murmurings': madness, romance and geography. *Progress in Human Geography*, 37(2), pp. 167-194. doi: 10.1177/0309132512460980
- Picard, L. (2019). Health and hygiene in the 19th century. The British Library. Retrieved from <https://www.bl.uk/victorian-britain/articles/health-and-hygiene-in-the-19th-century>
- Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., ... Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *The Lancet Psychiatry*, 7(10), 883–892. [https://doi.org/10.1016/S2215-0366\(20\)30308-4](https://doi.org/10.1016/S2215-0366(20)30308-4)
- Pilcher, K., Martin, W., & Williams, V. (2016) Issues of collaboration, representation, meaning and emotions: utilising participant-led visual diaries to capture the everyday lives of people in mid to later life, *International Journal of Social Research Methodology*, 19:6, 677-692, DOI: 10.1080/13645579.2015.1086199

- Pilgrim, A. L., Robinson, S. M., Sayer, A. A., & Roberts, H. C. (2015). An overview of appetite decline in older people. *Nursing older people*, 27(5), 29–35. <https://doi.org/10.7748/nop.27.5.29.e697>
- Pillai, J. A., & Verghese, J. (2009). Social networks and their role in preventing dementia. *Indian journal of psychiatry*, 51 Suppl 1(Suppl1), S22–S28.
- Pitt, H. (2021). What knowledge is required to grow food? A framework for understanding horticulture's skills 'crisis.' *Journal of Rural Studies*, 85, 59–67. <https://doi.org/10.1016/j.jrurstud.2021.05.001>
- Pitt, H. (2014). Therapeutic experiences of community gardens: Putting flow in its place. *Health and Place*, 27, 84–91. <https://doi.org/10.1016/j.healthplace.2014.02.006>
- Poey, J. L., Burr, J. A., & Roberts, J. S. (2017). Social Connectedness, Perceived Isolation, and Dementia: Does the Social Environment Moderate the Relationship between Genetic Risk and Cognitive Well-Being? *Gerontologist*, 57(6), 1031–1040. <https://doi.org/10.1093/geront/gnw154>
- Pokorska-Bocci, A., Kroese, M., Sagoo, G. S., Hall, A., & Burton, H. (2014). Personalised medicine in the UK: challenges of implementation and impact on healthcare system. *Genome Medicine*, 6(4), 28. <https://doi.org/10.1186/gm545>
- Pollard CM, Booth S. (2019). Food Insecurity and Hunger in Rich Countries-It Is Time for Action against Inequality. *International journal of environmental research and public health* vol. 16,10 1804. 21 May. doi:10.3390/ijerph16101804
- Polley, M., Fleming, J., Anfilogoff, T., & Carpenter, A. (2017a). *Making sense of social prescribing*. Retrieved from <https://www.westminster.ac.uk/patient-outcomes-in-health-research-group/projects/social-prescribing-network>
- Polley, M., Bertotti, M., Kimberlee, R., Pilkington, K., & Refsum, C. (2017b). A review of the evidence assessing impact of social prescribing on healthcare demand and cost implications. *University of Westminster*, (June), 8. <https://doi.org/10.1038/nn0204-95>
- Polley, M., Whiteside, J., Elnaschie, S., & Fixsen, A. (2020). *What does successful social prescribing look like? Mapping meaningful outcomes*. London.
- Pollock, R. M., & Whitelaw, G. S. (2005). Community-Based Monitoring in Support of Local Sustainability. *Local Environment*, 10(3), 211–228. <https://doi.org/10.1080/13549839.2005.9684248>
- Poulsen, M. N., Hulland, K. R., Gulas, C. A., Pham, H., Dalglisch, S. L., Wilkinson, R. K., & Winch, P. J. (2014). Growing an urban Oasis: a qualitative study of the perceived benefits of community gardening in Baltimore, Maryland. *Culture, Agriculture, Food and Environment*, 36(2), 69–82. <https://doi.org/10.1111/cuag.12035>
- Pouso, S., Borja, Á., Fleming, L. E., Gómez-Baggethun, E., White, M. P., & Uyarra, M. C. (2021). Contact with blue-green spaces during the COVID-19 pandemic lockdown beneficial for mental health. *Science of The Total Environment*, 756, 143984. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2020.143984>
- Powell, M. (2021). Framing Beveridge. *Social Policy & Administration*, n/a(n/a). <https://doi.org/https://doi.org/10.1111/spol.12764>
- Powell, M. (2019). The English National Health Service in a cold climate: a decade of austerity. In *the Social Policy Review*. Heins, E., Rees, J., & Needham, C (Eds). 31: Analysis and Debate in Social Policy, 2019, 7. Policy Press.
- Power. (2019). Allotments Archives - Power Sheds. Retrieved October 5, 2021, from <https://www.powersheds.com/category/allotments/>
- Power, A. (2001). Social Exclusion and Urban Sprawl: Is the Rescue of Cities Possible? *Regional Studies*, 35(8), 731–742. <https://doi.org/10.1080/00343400120084713>
- Power, M., Doherty, B., Pybus, K., & Pickett, K. (2020). How COVID-19 has exposed inequalities in the UK food system: The case of UK food and poverty. *Emerald Open Research*, 2, 11. <https://doi.org/10.35241/emeraldopenres.13539.2>
- Prasad, M. (2021). Pragmatism as Problem Solving. *Socius*, 7, 2378023121993991. <https://doi.org/10.1177/2378023121993991>
- Pretorius, L., & Ford, A. (2016). Reflection for Learning: Teaching Reflective Practice at the Beginning of University Study. *The International Journal of Teaching and Learning in Higher Education*, 28, 241–253.
- Pretty, J. (2004). How nature contributes to mental and physical health. *Spirituality Health*, 5: 68–78. <https://doi.org/10.1002/shi.220>
- Pretty, J., Barton, J., Pervez Bharucha, Z., Bragg, R., Pencheon, D., Wood, C., & Depledge, M. H. (2016). Improving health and well-being independently of GDP: Dividends of greener and prosocial economies. *International Journal of Environmental Health Research*, 26(1), 11–36. <https://doi.org/10.1080/09603123.2015.1007841>



- ProBono Economics. (2020). November 15-20 Covid Charity Tracker Survey results, 2020. Available at <https://www.probonoeconomics.com/november-15-20-covid-charitytracker-survey-results>
- Prosekov, A. Y., & Ivanova, S. A. (2018). Food security: The challenge of the present. *Geoforum*, 91, 73–77. <https://doi.org/https://doi.org/10.1016/j.geoforum.2018.02.030>
- Prüss-Ustün, A., Wolf, J., Corvalán, C., Neville, T., Bos, R., & Neira, M. (2017). Diseases due to unhealthy environments: an updated estimate of the global burden of disease attributable to environmental determinants of health. *Journal of Public Health*, 39(3), 464–475. <https://doi.org/10.1093/pubmed/fdw085>
- Public Health England. (2019). *Ageing and health expenditure*. London. Retrieved from <https://publichealthmatters.blog.gov.uk/2019/01/29/ageing-and-health-expenditure/>
- Public Health England. (2020a). *Improving access to greenspace: A new review for 2020 About Public Health England*. London. Retrieved from [www.facebook.com/PublicHealthEngland](http://www.facebook.com/PublicHealthEngland)
- Public Health England. (2020b). *Disparities in the risk and outcomes of COVID-19*. Retrieved from [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/889195/disparities\\_review.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/889195/disparities_review.pdf)
- Puigdueta, I., Aguilera, E., Cruz, J. L., Iglesias, A., & Sanz-Cobena, A. (2021). Urban agriculture may change food consumption towards low carbon diets. *Global Food Security*, 28, 100507. <https://doi.org/https://doi.org/10.1016/j.gfs.2021.100507>
- Punch, M. (1994). Politics and ethics in qualitative research. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of qualitative research*. Newbury Park, CA: Sage
- Purcell M, Tyman S (2015). Cultivating food as a right to the city, *Local Environment*, 20:10, 1132-1147, DOI: [10.1080/13549839.2014.903236](https://doi.org/10.1080/13549839.2014.903236)
- Purdam, K. (2017). The devolution of health funding in Greater Manchester in the UK: A travel map of life expectancy. *Environment and Planning A*, 49(7), 1453–1457. <https://doi.org/10.1177/0308518X17697701>
- Raento, P. (2020). Interdisciplinarity. In *international Encyclopedia of Human Geography* (2nd ed., Vol. 7, pp. 357–363). Elsevier. <https://doi.org/10.1016/B978-0-08-102295-5.10659-6>
- Råheim, M., Magnussen, L. H., Sekse, R. J. T., Lunde, Å., Jacobsen, T., & Blystad, A. (2016). Researcher–researched relationship in qualitative research: Shifts in positions and researcher vulnerability. *International Journal of Qualitative Studies on Health and Well-Being*, 11(1), 30996. <https://doi.org/10.3402/qhw.v11.30996>
- Raingruber, B. (2016). Health promotion theories. In *Contemporary health promotion in nursing practice*. 2nd Ed. 53, 53-94. Jones & Bartlett Learning.
- Raleigh, V. (2019). What is happening to life expectancy in the UK? Retrieved from <https://www.kingsfund.org.uk/publications/whats-happening-life-expectancy-uk>
- Ralph, J. (2018). What Should Be Done? Pragmatic Constructivist Ethics and the Responsibility to Protect. *International Organization*, 72(1), 173–203. <https://doi.org/DOI:10.1017/S0020818317000455>
- Ramirez-Andreotta, M. D., Tapper, A., Clough, D., Carrera, J. S., & Sandhaus, S. (2019). Understanding the Intrinsic and Extrinsic Motivations Associated with Community Gardening to Improve Environmental Public Health Prevention and Intervention. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph16030494>
- Ramsden, S. (2021). “It’s one of the few things that ... pulls us together when the outside world is really tough.” Exploring the outcomes and challenges of a charity-led community garden in a disadvantaged English city. *Local Environment*, 26(2), 283–296. <https://doi.org/10.1080/13549839.2021.1886067>
- Rao, T. S., & Shaji, K. S. (2007). Demographic aging: Implications for mental health. *Indian Journal of Psychiatry*, 49(2), 78–80. <https://doi.org/doi.org/10.4103/0019-5545.33251>
- Rappe, E., Kivelä, S. L., & Rita, H. (2006). Visiting outdoor green environments positively impacts self-rated health among older people in long-term care. *HortTechnology*, 16(1), 55–59.
- Razani, N., Morshed, S., Kohn, M. A., Wells, N. M., Thompson, D., Alqassari, M., ... Rutherford, G. W. (2018). Effect of park prescriptions with and without group visits to parks on stress reduction in low-income parents: SHINE randomized trial. *PLOS ONE*, 13(2), e0192921. Retrieved from <https://doi.org/10.1371/journal.pone.0192921>
- Reed G, Dagli W, & Hambly Odame H. (2020) Co-production of knowledge for sustainability: an application of reflective practice in doctoral studies, *Reflective Practice*, 21:2, 222-236, DOI: [10.1080/14623943.2020.1733954](https://doi.org/10.1080/14623943.2020.1733954)
- Reimer, M., & Rusche, K. (2019). Green infrastructure under pressure. A global narrative between regional vision and local implementation. *European Planning Studies*, 27(8), 1542–1563. <https://doi.org/10.1080/09654313.2019.1591346>

- Rémillard-Boilard, S., Buffel, T., & Phillipson, C. (2021). Developing Age-Friendly Cities and Communities: Eleven Case Studies from around the World. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph18010133>
- RHS: Royal Horticultural Society (2020). RHS Launches 'Grow at Home' to provide even more support to a growing number of gardeners during lockdown. Available from: <https://www.rhs.org.uk/press/releases/RHS-Launches-Grow-at-Home>
- Richards, L., Dalbey, M. (2009) Creating Great Places: The Role of Citizen Participation, *Community Development*, 37:4, 18-32, DOI: [10.1080/15575330609490193](https://doi.org/10.1080/15575330609490193)
- Richardson, E. A., & Mitchell, R. (2010). Gender differences in relationships between urban green space and health in the United Kingdom. *Social Science and Medicine*, 71(3), 568–575. <https://doi.org/10.1016/j.socscimed.2010.04.015>
- Richardson, S. J., Carroll, C. B., Close, J., Gordon, A. L., O'Brien, J., Quinn, T. J., ... Witham, M. D. (2020). Research with older people in a world with COVID-19: identification of current and future priorities, challenges and opportunities. *Age and Ageing*, 49(6), 901–906. <https://doi.org/10.1093/ageing/afaa149>
- Rieger, K. L. (2019). Discriminating among grounded theory approaches. *Nursing Inquiry*, 26(1), e12261. <https://doi.org/10.1111/nin.12261>
- Rivas, V. A., & Biana, H. T. (2021). Plants, public health and the pandemic. *Journal of Public Health*. <https://doi.org/10.1093/pubmed/fdab244>
- Robinson, A. (2009). A Picture of health. *Australian Doctor*, (22/MAY), 37–38. <https://doi.org/10.1258/jrsm.99.8.422>
- Robinson, J., & Breed, M. (2019). Green Prescriptions and Their Co-Benefits: Integrative Strategies for Public and Environmental Health. *Challenges*, 10(1), 9. <https://doi.org/10.3390/challe10010009>
- Robinson, L., Hale, B. (2011). Interviewing Older People; Relationships in Qualitative Research. *The Internet Journal of Allied Health Sciences and Practice*. 9, (3). <https://nsuworks.nova.edu/ijahsp/>
- Robinson, S. M. (2018). Improving nutrition to support healthy ageing: What are the opportunities for intervention? *Proceedings of the Nutrition Society*, 77(3), 257–264. <https://doi.org/10.1017/S0029665117004037>
- Rocha, V., Ribeiro, A. I., Severo, M., Barros, H., & Fraga, S. (2017). Neighbourhood socioeconomic deprivation and health-related quality of life: A multilevel analysis. *PLOS ONE*, 12(12), e0188736. Retrieved from <https://doi.org/10.1371/journal.pone.0188736>
- Rogerson, M., Colbeck, I., Bragg, R., Dosumu, A., & Griffin, M. (2020). Affective Outcomes of Group versus Lone Green Exercise Participation. *International Journal of Environmental Research and Public Health*, 17(2), 624. <https://doi.org/10.3390/ijerph17020624>
- Rojas-Rueda, D., Nieuwenhuijsen, M. J., Gascon, M., Perez-Leon, D., & Mudu, P. (2019). Green spaces and mortality: a systematic review and meta-analysis of cohort studies. *The Lancet Planetary Health*, 3(11), e469-e477.
- Rollin, H. R. (2003). Psychiatry in Britain one hundred years ago. *British Journal of Psychiatry*, 183(4), 292–298. <https://doi.org/10.1192/bjp.183.4.292>
- Rollin, H. R., & Reynolds, E. H. (2018). Yorkshire's influence on the understanding and treatment of mental diseases in Victorian Britain: The golden triad of York, Wakefield, and Leeds. *Journal of the History of the Neurosciences*, 27(1), 72–84. <https://doi.org/10.1080/0964704X.2017.1370801>
- Rosol, M. (2012). Community volunteering as neoliberal strategy? Green space production in Berlin. *Antipode*, 44(1), 239-257. <https://doi.org/10.1111/j.1467-8330.2011.00861.x>
- Ross, P. T., & Bibler Zaidi, N. L. (2019). Limited by our limitations. *Perspectives on Medical Education*, 8(4), 261–264. <https://doi.org/10.1007/s40037-019-00530-x>
- Rousseau, S., & Deschacht, N. (2020). Public Awareness of Nature and the Environment During the COVID-19 Crisis. *Environmental and Resource Economics*, 76(4), 1149–1159. <https://doi.org/10.1007/s10640-020-00445-w>
- Rowe, Wendy E. (2014). Positionality. In *The Sage Encyclopedia of Action Research*. (editors) Coghlan D, Brydon-Miller M. Sage, London.
- Rudnicka E, Napierała P, Podfigurna A, Męczekalski B, Smolarczyk R, Grymowicz M. (2020). The World Health Organization (WHO) approach to healthy ageing. *Maturitas*.139: 6-11. doi: [10.1016/j.maturitas.2020.05.018](https://doi.org/10.1016/j.maturitas.2020.05.018).
- Ruck, K. (2020). The health benefits of community gardening. *Kai Tiaki Nursing New Zealand*, 26(6), 30–31. Retrieved from

- <https://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db=rzh&AN=144531970&site=ehost-live&scope=site&custid=s6281220>
- Ryen, A. (2010). Ethics and qualitative research. Chapter 23 In Silverman, D. (Ed.) *Qualitative Research* (3rd ed., pp. 416–438). London: SAGE Publications.  
<https://doi.org/10.4337/9781788977159.00017>
- Saadat, S., Rawtani, D., & Hussain, C. M. (2020). Environmental perspective of COVID-19. *Science of The Total Environment*, 728, 138870.  
<https://doi.org/https://doi.org/10.1016/j.scitotenv.2020.138870>
- Salomon, R. E., Salomon, A. D., & Beeber, L. S. (2018, May 17). Green Care as Psychosocial Intervention for Depressive Symptoms: What Might Be the Key Ingredients? *Journal of the American Psychiatric Nurses Association*. SAGE PublicationsSage CA: Los Angeles, CA.  
<https://doi.org/10.1177/1078390317723710>
- Salvatore MA, Grundy E. (2021). Area deprivation, perceived neighbourhood cohesion and mental health at older ages: A cross lagged analysis of UK longitudinal data. *Health Place*. 2021 Jan;67:102470. doi: 10.1016/j.healthplace.2020.102470.
- Samaritans. (2019). Suicide statistics report for the UK and. *Samaritans Suicide Statistics Report 2019*, (September). Retrieved from  
[https://www.samaritans.org/documents/402/SamaritansSuicideStatsReport\\_2019\\_AcMhRyF.pdf](https://www.samaritans.org/documents/402/SamaritansSuicideStatsReport_2019_AcMhRyF.pdf)
- Same, A., Lee, E. A. L., McNamara, B., & Rosenwax, L. (2016). The Value of a Gardening Service for the Frail Elderly and People With a Disability Living in the Community. *Home Health Care Management and Practice*, 28(4), 256–261. <https://doi.org/10.1177/1084822316652575>
- Sandifer, P. A., Sutton-Grier, A. E., & Ward, B. P. (2015). Exploring connections among nature, biodiversity, ecosystem services, and human health and well-being: Opportunities to enhance health and biodiversity conservation. *Ecosystem Services*, 12, 1–15.  
<https://doi.org/https://doi.org/10.1016/j.ecoser.2014.12.007>
- Santienello, N. (2002). *A new life for the everglades*. Sun-Sentinel.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). Understanding research philosophies and approaches to theory development. *Research Methods for Business Students*, Chapter 4, (pp. 122–161). Pearson Education. 2009 Edition. Retrieved from  
[https://www.researchgate.net/publication/309102603\\_Understanding\\_research\\_philosophies\\_and\\_approaches](https://www.researchgate.net/publication/309102603_Understanding_research_philosophies_and_approaches)
- Schilling, I., & Gerhardus, A. (2017). Methods for Involving Older People in Health Research-A Review of the Literature. *International journal of environmental research and public health*, 14(12), 1476. <https://doi.org/10.3390/ijerph14121476>
- Schmelzkopf, K. (1995). Urban Community Gardens as Contested Space. *Geographical Review*, 85, 364. <https://doi.org/10.2307/215279>
- Schoen, V, Caputo, S and Blythe, C. (2020). Valuing Physical and Social Output: A Rapid Assessment of a London Community Garden. *In Sustainability* 12, (13), 5452.  
<https://doi.org/10.3390/su12135452>
- Scholes, S., Taylor, R., Cheshire, H., Cox, K., & Lessof, C. (2008). Retirement, health and relationships of the older population in England: The 2004 English Longitudinal Study of Ageing Technical Report. *London*. Retrieved from: [http://www.elsa-project.ac.uk/uploads/elsa/report06/elsa\\_w2.pdf](http://www.elsa-project.ac.uk/uploads/elsa/report06/elsa_w2.pdf)
- Schrempft, S., Jackowska, M., Hamer, M., & Steptoe, A. (2019). Associations between social isolation, loneliness, and objective physical activity in older men and women. *BMC Public Health*, 19(1), 74. <https://doi.org/10.1186/s12889-019-6424-y>
- Science Museum. (2019). Cholera in Victorian London. Retrieved October 17, 2021, from <https://www.sciencemuseum.org.uk/objects-and-stories/medicine/cholera-victorian-london#>
- Scott, M. (2020). Covid-19, Place-making and Health. *Planning Theory & Practice*, 21(3), 343–348. <https://doi.org/10.1080/14649357.2020.1781445>
- Scott, T. L., Masser, B. M., & Pachana, N. A. (2020). Positive aging benefits of home and community gardening activities: Older adults report enhanced self-esteem, productive endeavours, social engagement and exercise. *SAGE Open Medicine*, 8, 2050312120901732.  
<https://doi.org/10.1177/2050312120901732>
- Sebastian, K. (2019). Distinguishing Between the Strains Grounded Theory | Journal for Social Thought. *Journal for Social Thought*, 3(1). Retrieved from  
<https://ojs.lib.uwo.ca/index.php/jst/article/view/4116>
- Sempik, J., & Aldridge, J. (2006). Care farms and care gardens: horticulture as therapy in the UK. In J. Hassink & M. van Dijk (Eds.), *FARMING FOR HEALTH* (pp. 147–161). Netherlands: Springer.  
[https://doi.org/10.1007/1-4020-4541-7\\_12](https://doi.org/10.1007/1-4020-4541-7_12)

- Sempik, J., Hine, R., & Wilcox, D. (2010). *Green Care: A Conceptual Framework*. Retrieved from [http://www.agrarumweltpaedagogik.ac.at/cms/upload/bilder/green\\_care\\_a\\_conceptual\\_framework.pdf](http://www.agrarumweltpaedagogik.ac.at/cms/upload/bilder/green_care_a_conceptual_framework.pdf)
- Sempik, J., Rickhuss, C., & Beeston, A. (2014). The effects of social and therapeutic horticulture on aspects of social behaviour. *British Journal of Occupational Therapy*, 77(6), 313–319. <https://doi.org/10.4276/030802214X14018723138110>
- Serhal, L., Lwin, M., Holroyd, C., & Edwards, C. (2020). Rheumatoid arthritis in the elderly: Characteristics and treatment considerations. *Journal of Controlled Release*, 103140. <https://doi.org/10.1016/j.jconrel.2019.11.006>
- Shaer, A., & Haghshenas, H. (2021). Evaluating the effects of the COVID-19 outbreak on the older adults' travel mode choices. *Transport Policy*, 112, 162–172. <https://doi.org/10.1016/j.tranpol.2021.08.016>
- Shah, N., Cader, M., Andrews, W. P., Wijesekera, D., & Stewart-Brown, S. L. (2018). Responsiveness of the Short Warwick Edinburgh Mental Well-Being Scale (SWEMWBS): Evaluation a clinical sample. *Health and Quality of Life Outcomes*, 16(1), 4–10. <https://doi.org/10.1186/s12955-018-1060-2>
- Shanahan, D. F., Bush, R., Gaston, K. J., Lin, B. B., Dean, J., Barber, E., & Fuller, R. A. (2016). Health Benefits from Nature Experiences Depend on Dose. *Scientific Reports*, 6(1), 28551. <https://doi.org/10.1038/srep28551>
- Sharkey, A., & Sharkey, N. (2012). Granny and the robots: Ethical issues in robot care for the elderly. *Ethics and Information Technology*, 14(1), 27–40. <https://doi.org/10.1007/s10676-010-9234-6>
- Sharp, J. L., Mobley, C., Hammond, C., Withington, C., Drew, S., Stringfield, S., & Stipanovic, N. (2012). A Mixed Methods Sampling Methodology for a Multisite Case Study. *Journal of Mixed Methods Research*, 6(1), 34–54. <https://doi.org/10.1177/1558689811417133>
- Shaw-Taylor, L. (2020). An introduction to the history of infectious diseases, epidemics and the early phases of the long-run decline in mortality †. Retrieved from <https://data.worldbank.org/indicator/SP.DYN.IMRT.IN>,
- Shipman, M. (2014). *The limitations of social research*. (4th ed.). Routledge.
- Shisanya, S. O., & Hendriks, S. L. (2011). The contribution of community gardens to food security in the Maphephetheni uplands. *Development Southern Africa*, 28(4), 509–526. <https://doi.org/10.1080/0376835X.2011.605568>
- Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: John Wiley & Sons, Ltd.
- Shorten, A., & Smith, J. (2017). Mixed methods research: Expanding the evidence base. *Evidence-Based Nursing*, 20(3), 74–75. <https://doi.org/10.1136/eb-2017-102699>
- Shusterman, R. (2002). Intellectualism and the field of aesthetics: The return of the repressed? *Revue Internationale de Philosophie*, 327–342. Retrieved from ISSN 0048-8143
- Siewell, N., & Thomas, M. (2015). Building Sustainable Neighborhoods through Community Gardens: Enhancing Resident Well-being through University Community Engagement Initiative.
- Silverman, D. (2010). *Doing Qualitative Research* (3RD ed.). London: SAGE.
- Sim, J., Waterfield, J. (2019) Focus group methodology: some ethical challenges. *Qual Quant* 53, 3003–3022. Retrieved from: <https://doi.org/10.1007/s11135-019-00914-5>
- Singh, A. & Dangmei, J. (2016). Understanding the generation Z: The future workforce. *Asian Journal of Multidisciplinary Studies (SAJMS)*, 3, 1–5. Retrieved from <http://repositorio.unan.edu.ni/2986/1/5624.pdf>
- Singh, I. (2012). Human development, nature and nurture: Working beyond the divide. *BioSocieties*, 7(3), 308–321. <https://doi.org/10.1057/biosoc.2012.20>
- Singh, S., & Estefan, A. (2018). Selecting a Grounded Theory Approach for Nursing Research. *Global Qualitative Nursing Research*, 5, 2333393618799571. <https://doi.org/10.1177/2333393618799571>
- Singu, S., Acharya, A., Challagundla, K., & Byrareddy, S. N. (2020). Impact of Social Determinants of Health on the Emerging COVID-19 Pandemic in the United States . *Frontiers in Public Health* . Retrieved from <https://www.frontiersin.org/article/10.3389/fpubh.2020.00406>
- Sithole, M., Nkala, P., & Dube, N. (2012). Do Urban Community Gardens Matter? The Case of Bulawayo Metropolitan Province in Zimbabwe. *Mediterranean Journal of Social Sciences*, 3(6 SE-Articles), 77. Retrieved from <https://www.richtmann.org/journal/index.php/mjss/article/view/11441>
- Sixsmith, A., & Sixsmith, J. (2008). Ageing in Place in the United Kingdom. *Ageing International*, 32(3), 219–235. <https://doi.org/10.1007/s12126-008-9019-y>



- Skinner, M. ., & Winterton, R. (2018). Rural ageing. In M. W. Skinner, G. J. Andrews, & M. P. Cutchin (Eds.), *Geographical Gerontology. Perspectives, Concepts, Approaches* (pp. 136–148). London: Routledge.
- Skivington, K., Smith, M., Chng, N. R., Mackenzie, M., Wyke, S., & Mercer, S. W. (2018). Delivering a primary care-based social prescribing initiative: a qualitative study of the benefits and challenges. *British Journal of General Practice*, *68*(672), e487 LP-e494. <https://doi.org/10.3399/bjgp18X696617>
- Slater, S. J., Christiana, R. W., & Gustat, J. (2020). Recommendations for Keeping Parks and Green Space Accessible for Mental and Physical Health During COVID-19 and Other Pandemics. *Preventing Chronic Disease*, *17*, E59. <https://doi.org/10.5888/pcd17.200204>
- Slee, B., & Harnmeijer, J.P. (2017). Community Renewables: Balancing Optimism with Reality. In A Critical Review of Scottish Renewable and Low Carbon Energy Policy (pp. 35-64). Palgrave Macmillan, Cham.
- Smith, C. M., & Kurtz, H. E. (2003). Community Gardens and Politics of Scale in New York City. *Geographical Review*, *93*(2), 193–212. <https://doi.org/10.1111/j.1931-0846.2003.tb00029.x>
- Smith-Carrier, T. A., Béres, L., Johnson, K., Blake, C., & Howard, J. (2019). Digging into the experiences of therapeutic gardening for people with dementia: An interpretative phenomenological analysis. *Dementia*, *20*(1), 130–147. <https://doi.org/10.1177/1471301219869121>
- Sobel, D. (2020). School Outdoors: The Pursuit of Happiness as an Educational Goal. *Journal of Philosophy of Education*, *54*(4), 1064–1070. <https://doi.org/https://doi.org/10.1111/1467-9752.12458>
- Social Farms and Gardens. (2020). *Scale of the Sector*. Retrieved from <https://www.farmgarden.org.uk/gcf/scale-of-sector>
- Social Farms and Gardens (2021). What is the scale of care farming in the UK? Available from: <https://www.farmgarden.org.uk/knowledge-base/article/what-scale-care-farming-uk>
- Soga, M., Cox, D. T. C., Yamaura, Y., Gaston, K. J., Kurisu, K., & Hanaki, K. (2017a). Health Benefits of Urban Allotment Gardening: Improved Physical and Psychological Well-Being and Social Integration. *International Journal of Environmental Research and Public Health* . <https://doi.org/10.3390/ijerph14010071>
- Soga, M., Evans, M. J., Cox, D. T. C., & Gaston, K. J. (2021a). Impacts of the COVID-19 pandemic on human–nature interactions: Pathways, evidence and implications. *People and Nature* , *3*(3), 518–527. <https://doi.org/https://doi.org/10.1002/pan3.10201>
- Soga, M., Evans, M. J., Tsuchiya, K., & Fukano, Y. (2021b). A room with a green view: the importance of nearby nature for mental health during the COVID-19 pandemic. *Ecological Applications*, *31*(2), e2248. <https://doi.org/https://doi.org/10.1002/eap.2248>
- Soga, M., Gaston, K. J., & Yamaura, Y. (2017b). Gardening is beneficial for health: A meta-analysis. *Preventive Medicine Reports*. <https://doi.org/10.1016/j.pmedr.2016.11.007>
- Sonnino, R. (2016). The new geography of food security: exploring the potential of urban food strategies. *The Geographical Journal*, *182*(2), 190–200. <https://doi.org/https://doi.org/10.1111/geoj.12129>
- Sorkin, D., Rook, K., S., Lu, J.L., (2002) Loneliness, lack of emotional support, lack of companionship, and the likelihood of having a heart condition in an elderly sample, *Annals of Behavioral Medicine*, Volume 24, Issue 4, November 2002, Pages 290–298, [https://doi.org/10.1207/S15324796ABM2404\\_05](https://doi.org/10.1207/S15324796ABM2404_05)
- Sorrell, K. (2013). Pragmatism and moral progress: John Dewey’s theory of social inquiry. *Philosophy & Social Criticism*, *39*(8), 809–824. <https://doi.org/10.1177/0191453713494967>
- Soulsbury, C. D., & White, P. C. L. (2015). Human-wildlife interactions in urban areas: a review of conflicts, benefits and opportunities. *Wildlife Research*, *42*, 541–553.
- South, J., Bagnall, A. M., Stansfield, J. A., Southby, K. J., & Mehta, P. (2019). An evidence-based framework on community-centred approaches for health: England, UK. *Health Promotion International*, *34*(2), 356–366. <https://doi.org/10.1093/heapro/dax083>
- South, J., Higgins, T. J., Woodall, J., & White, S. M. (2008). Can social prescribing provide the missing link? *Primary Health Care Research and Development*, *9*(4), 310–318. <https://doi.org/10.1017/S146342360800087X>
- Sow the City (n.d) About us. Available from: <https://www.sowthecity.org/>
- Spano, G., D’Este, M., Giannico, V., Carrus, G., Elia, M., Laforzezza, R., ... Sanesi, G. (2020). Are Community Gardening and Horticultural Interventions Beneficial for Psychosocial Well-Being? A Meta-Analysis. *International Journal of Environmental Research and Public Health*, *17*(10), 3584. <https://doi.org/10.3390/ijerph17103584>

- Specht, K., Siebert, R., Hartmann, I., Freisinger, U. B., Sawicka, M., Werner, A., ... Dierich, A. (2014). Urban agriculture of the future: an overview of sustainability aspects of food production in and on buildings. *Agriculture and Human Values*, 31(1), 33–51. <https://doi.org/10.1007/s10460-013-9448-4>
- Spector, A., Thorgrimsen, L., Woods, B., Royan, L., Davies, S., Butterworth, M., & Orrell, M. (2003). Efficacy of an evidence-based cognitive stimulation therapy programme for people with dementia: Randomised controlled trial. *British Journal of Psychiatry*, 183(3), 248–254. <https://doi.org/DOI: 10.1192/bjp.183.3.248>
- Spittler, T. M., & Feder, W. A. (1979). A study of soil contamination and plant lead uptake in Boston urban gardens. *Communications in Soil Science and Plant Analysis*, 10(9), 1195–1210. <https://doi.org/10.1080/00103627909366973>
- Spohn, W. (2018). Epistemic justification: its subjective and its objective ways. *Synthese*, 195(9), 3837–3856. <https://doi.org/10.1007/s11229-017-1393-0>
- St Clair, R., Hardman, M., Armitage, R. P., & Sherriff, G. (2020). Urban Agriculture in shared spaces: The difficulties with collaboration in an age of austerity. *Urban Studies*, 57(2), 350–365. <https://doi.org/10.1177/0042098019832486>
- Steele, W., Hillier, J., MacCallum, D., Byrne, J., & Houston, D. (2021). *Quiet Activism. Quiet Activism*. Switzerland: Springer International Publishing. <https://doi.org/10.1007/978-3-030-78727-1>
- Steels, S. (2015). Key characteristics of age-friendly cities and communities: A review. *Cities*, 47, 45–52. <https://doi.org/10.1016/j.cities.2015.02.004>
- Steffens, N. K., Cruwys, T., Haslam, C., Jetten, J., & Haslam, S. A. (2016). Social group memberships in retirement are associated with reduced risk of premature death: Evidence from a longitudinal cohort study. *BMJ Open*, 6(2), 1–9. <https://doi.org/10.1136/bmjopen-2015-010164>
- Steppacher, I., & Kissler, J. (2018). A problem shared is a problem halved? Comparing burdens arising for family caregivers of patients with disorders of consciousness in institutionalized versus at home care. *BMC Psychology*, 6(1), 1–13. <https://doi.org/10.1186/s40359-018-0272-x>
- Stern, R. (2005). Peirce on Hegel: Nominalist or Realist? *Transactions of the Charles S. Peirce Society*, 41(1), 65–99. Retrieved from [www.jstor.org/stable/40358949](http://www.jstor.org/stable/40358949)
- Stewart, A. G., & Hursthouse, A. S. (2018). Environment and Human Health: The Challenge of Uncertainty in Risk Assessment. *Geosciences*. <https://doi.org/10.3390/geosciences8010024>
- Stewart-Brown, S., Tennant, A., Tennant, R. Platt, S., Parkinson, J. & Weich, S. (2009). Internal construct validity of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS): a Rasch analysis using data from the Scottish Health Education Population Survey. *Health Qual Life Outcomes* 7, 15. <https://doi.org/10.1186/1477-7525-7-15>
- Stalker, K. (1998) Some Ethical and Methodological Issues in Research with People with Learning Difficulties, *Disability & Society*, 13:1, 5-19, DOI: 10.1080/09687599826885
- Strawbridge, W. J., Cohen, R. D., Shema, S. J., Kaplan, G., A. (1996) Successful Aging: Predictors and Associated Activities, *American Journal of Epidemiology*, Volume 144, Issue 2, 15 July 1996, Pages 135 141, <https://doi.org/10.1093/oxfordjournals.aje.a008900>
- Strömmer, S., Barrett, M., Woods-Townsend, K. et al. (2020). Engaging adolescents in changing behaviour (EACH-B): a study protocol for a cluster randomised controlled trial to improve dietary quality and physical activity. *Trials* 21, 859. <https://doi.org/10.1186/s13063-020-04761-w>
- Stuckler, D. (2008). Population causes and consequences of leading chronic diseases: A comparative analysis of prevailing explanations. *Milbank Quarterly*, 86(2), 273–326. <https://doi.org/10.1111/j.1468-0009.2008.00522.x>
- Sundström, M., Edberg, A.-K., Ränggård, M., & Blomqvist, K. (2018). Encountering existential loneliness among older people: perspectives of health care professionals. *International Journal of Qualitative Studies on Health and Well-Being*, 13. <https://doi.org/10.1080/17482631.2018.1474673>
- Sunga, A. B., & Advincula, J. L. (2021). The “plantito/plantita” home gardening during the pandemic. *Community Psychology in Global Perspective*, 7(1), 88–105. <https://doi.org/10.1285/i24212113V711P88>
- Sustain (2020) Why it's critical to keep our community gardens and allotments growing during Coronavirus. Available from: [https://www.sustainweb.org/blogs/apr20\\_growing\\_coronavirus/](https://www.sustainweb.org/blogs/apr20_growing_coronavirus/)
- Suto, M. J., Smith, S., Damiano, N., & Channe, S. (2021). Participation in Community Gardening: Sowing the Seeds of Well-Being: Participation au jardinage communautaire :

- pour semer les graines du bien-être. *Canadian Journal of Occupational Therapy*, 88(2), 142–152. <https://doi.org/10.1177/0008417421994385>
- Swift, H. J., & Chasteen, A. L. (2021). Ageism in the time of COVID-19. *Group Processes & Intergroup Relations*, 24(2), 246–252. <https://doi.org/10.1177/1368430220983452>
- Szreter, S. (2004). Industrialization and health. *British Medical Bulletin*, 69(1), 75–86. <https://doi.org/10.1093/bmb/ldh005>
- Takano, T., Nakamura, K., & Watanabe, M. (2002). Urban residential environments and senior citizens' longevity in megacity areas: the importance of walkable green spaces. *Journal of Epidemiology and Community Health*, 56(12), 913 LP – 918. <https://doi.org/10.1136/jech.56.12.913>
- Tan, L. H. H., & Neo, H. (2009). "Community in Bloom": local participation of community gardens in urban Singapore. *Local Environment*, 14(6), 529–539. <https://doi.org/10.1080/13549830902904060>
- Tarrant, M. A. (1996). Attending to Past Outdoor Recreation Experiences: Symptom Reporting and Changes in Affect. *Journal of Leisure Research*, 28(1), 1–17. <https://doi.org/10.1080/00222216.1996.11949757>
- Tashakkori, A., & Teddlie, C. (2003). *Handbook of Mixed Methods in Social and Behavioural Research* (1st ed.). California: SAGE.
- Taylor, A. (2002). I'll call you back on my mobile: A critique of the telephone interview with adolescent boys. *Westminster Studies in Education*, 25(1), 19–34.
- Teddlie, C., & Tashakkori, A. (2009). *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences* (1st ed.). California: SAGE Publications.
- Teig, E., Amulya, J., Bardwell, L., Buchenau, M., Marshall, J. A., & Litt, J. S. (2009). Collective efficacy in Denver, Colorado: Strengthening neighborhoods and health through community gardens. *Health & Place*, 15(4), 1115–1122. <https://doi.org/https://doi.org/10.1016/j.healthplace.2009.06.003>
- Tharrey, M., Sachs, A., Perignon, M., Simon, C., Mejean, C., Litt, J., & Darmon, N. (2020). Improving lifestyles sustainability through community gardening: results and lessons learnt from the JArDinS quasi-experimental study. *BMC Public Health*, 20(1), 1798. <https://doi.org/10.1186/s12889-020-09836-6>
- Thayer, H. S., & Rosenthal, S. (2017). Pragmatism Philosophy. From <https://www.britannica.com/topic/pragmatism-philosophy>
- The Academy of Medical Science. (2009). *Rejuvenating ageing research*. London. Retrieved from <https://acmedsci.ac.uk/file-download/35180-ageingwe.pdf>
- The European Commission. (2018). What is Horizon 2020? Retrieved from <https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020>
- The European Commission (2013). Green Infrastructure (GI) — Enhancing Europe's Natural Capital. *Communication from the Commission to the European Parliament, The council, The European Economic and Social Committee and The Committee of the Regions*. Procedure number: 202629. Text number: 52013DC0249. Available from <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52013DC0249>
- The Guardian. (2015). RHS head: 'Why Britain faces a horticultural timebomb'. Retrieved from <https://www.theguardian.com/society/2015/jul/01/sue-biggs-rhs-horticultural-timebomb>
- The Health Foundation (2020) Emerging evidence on COVID-19's impact on mental health and health inequalities. Available from: <https://health.org.uk/news-and-comment/blogs/emerging-evidence-on-covid-19s-impact-on-mental-health-and-health>
- The Institute of Cancer Research. (2020). Coronavirus. Available from: <https://www.icr.ac.uk/blogs/science-talk/page-details/cancer-and-covid-19-how-coronavirus-has-delayed-vital-cancer-treatments>
- The Kings Fund. (2018). What is social prescribing? | The King's Fund. From <https://www.kingsfund.org.uk/publications/social-prescribing>
- Theofanidis, D., & Fountouki, A. (2018). Limitations and delimitations in the research process. *Perioperative nursing*, 7(3), 155–163.
- Thieleman, K., Cacciatore, J., & Gorman, R. (2021). "Perhaps something of beauty can grow:" experiences of care farming for grief. *Death Studies*, 1–10. <https://doi.org/10.1080/07481187.2021.1964108>
- ThirdSector. (2018). Social prescribing is not always a win- win. Available from: <https://www.thirdsector.co.uk/social-prescribing-not-always-win-win/local-action/article/1460014>

- Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8(1), 45. <https://doi.org/10.1186/1471-2288-8-45>
- Thomas, E., & Magilvy, J. K. (2011). Qualitative rigor or research validity in qualitative research. *Journal for Specialists in Pediatric Nursing*, 16(2), 151–155. <https://doi.org/10.1111/j.1744-6155.2011.00283.x>
- Thompson, R. (2018). Gardening for health: A regular dose of gardening. *Clinical Medicine, Journal of the Royal College of Physicians of London*, 18(3), 201–205. <https://doi.org/10.7861/clinmedicine.18-3-201>
- Thomson, L. J., Morse, N., Elsdon, E., & Chatterjee, H. J. (2020). Art, nature and mental health: assessing the biopsychosocial effects of a 'creative green prescription' museum programme involving horticulture, artmaking and collections. *Perspectives in Public Health*, 140(5), 277–285. <https://doi.org/10.1177/1757913920910443>
- Thorlby, R. (2013). Reclaiming a population health perspective. Future challenges for primary care. *Nuffield Trust*, (April), 1–24. Retrieved from [www.nuffieldtrust.org.uk/publications/reclaiming-](http://www.nuffieldtrust.org.uk/publications/reclaiming-)
- Thurmond, V.A. (2001), The Point of Triangulation. *Journal of Nursing Scholarship*, 33: 253-258. <https://doi.org/10.1111/j.1547-5069.2001.00253.x>
- Thurston, W. E., Cove, L., & Meadows, L. M. (2008). Methodological congruence in complex and collaborative mixed method studies. *International Journal of Multiple Research Approaches*, 2(1), 2-14.
- Tidball, K. G., & Krasny, M. E. (2007). Greening and Civic Ecology in Cities ?, (1), Chapter 7; 149-164. Retrieved from [http://sci-links.com/files/From\\_Risk\\_to\\_Resilience-Community\\_Greening\\_and\\_Civic\\_Ecology\\_in\\_Cities-Social\\_Learning.pdf](http://sci-links.com/files/From_Risk_to_Resilience-Community_Greening_and_Civic_Ecology_in_Cities-Social_Learning.pdf)
- Tidball, K. G., & Aktipis, C. A. (2018). Feedback enhances greening during disaster recovery: A model of social and ecological processes in neighborhood scale investment. *Urban Forestry and Urban Greening*, 34, 269-280. <https://doi.org/10.1016/j.ufug.2018.07.005>
- Timans, R., Wouters, P., & Heilbron, J. (2019). Mixed methods research: what it is and what it could be. *Theory and Society*, 48(2), 193–216. <https://doi.org/10.1007/s11186-019-09345-5>
- Timmins N. (n.d.). What if William Beveridge were reporting today? | The NHS if | The King's Fund. Retrieved October 9, 2021, from <https://www.kingsfund.org.uk/reports/thenhsif/what-if-beveridge-reporting-today/>
- Timonen, V., Foley, G., & Conlon, C. (2018). Challenges When Using Grounded Theory: A Pragmatic Introduction to Doing GT Research. *International Journal of Qualitative Methods*, 17(1), 1609406918758086. <https://doi.org/10.1177/1609406918758086>
- Tomioka, K., Iwamoto, J., Saeki, K., & Okamoto, N. (2011). Reliability and Validity of the International Physical Activity Questionnaire (IPAQ) in Elderly Adults: The Fujiwara-kyo Study. *Journal of Epidemiology*, 21(6), 459–465. <https://doi.org/10.2188/jea.je20110003>
- Tong, K. K., Chen, J. H., Yu, E. W. Y., & Wu, A. M. (2020). Adherence to COVID-19 Precautionary Measures: Applying the health belief model and generalised social beliefs to a probability community sample. *Applied Psychology: Health and Well-Being*, 12(4), 1205-1223
- Townsend, T., Pisapia, J., & Razzaq, J. (2015). Fostering interdisciplinary research in universities: a case study of leadership, alignment and support. *Studies in Higher Education*, 40(4), 658–675. <https://doi.org/10.1080/03075079.2013.842218>
- Tracey, D., Gray, T., Sweeting, J., Kingsley, J., Bailey, A., & Pettitt, P. (2020). A Systematic Review Protocol to Identify the Key Benefits and Associated Program Characteristics of Community Gardening for Vulnerable Populations. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph17062029>
- Trammell, J. P. (2019). Therapy Dogs Improve Student Affect but Not Memory. *Anthrozoös*, 32(5), 691–699. <https://doi.org/10.1080/08927936.2019.1645514>
- Tse, T. and Linsey, H. (2005), Adult day groups: addressing older people's needs for activity and companionship. *Australasian Journal on Ageing*, 24: 134-140. doi:10.1111/j.1741-6612.2005.00117.x
- Tulla, A. F., Vera, A., Guirado, C., & Valldeperas, N. (2020). The Return on Investment in Social Farming: A Strategy for Sustainable Rural Development in Rural Catalonia. *Sustainability*. <https://doi.org/10.3390/su12114632>
- Tulodziecki, D. (2011). A case study in explanatory power: John Snow's conclusions about the pathology and transmission of cholera. *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 42(3), 306–316. <https://doi.org/https://doi.org/10.1016/j.shpsc.2011.02.001>



- Turner, B. (2011). Embodied connections: Sustainability, food systems and community gardens. *Local Environment*, 16(6), 509–522. <https://doi.org/10.1080/13549839.2011.569537>
- Turner, P., & Turner, S. (1970). Triangulation In Practice 2 . Triangulation in Presence Research. *Triangulation In Practice*, 1–13. Retrieved from [p.turner@napier.ac.uk](mailto:p.turner@napier.ac.uk), [s.turner@napier.ac.uk](mailto:s.turner@napier.ac.uk)
- Tyrväinen, L., Ojala, A., Korpela, K., Lanki, T., Tsunetsugu, Y., & Kagawa, T. (2014). The influence of urban green environments on stress relief measures: A field experiment. *Journal of Environmental Psychology*, 38, 1–9. <https://doi.org/10.1016/j.jenvp.2013.12.005>
- Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźmierczak, A., Niemela, J., & James, P. (2007, June 20). Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. *Landscape and Urban Planning*. Elsevier. <https://doi.org/10.1016/j.landurbplan.2007.02.001>
- Ugolini, F., Massetti, L., Pearlmutter, D., & Sanesi, G. (2021). Usage of urban green space and related feelings of deprivation during the COVID-19 lockdown: Lessons learned from an Italian case study. *Land Use Policy*, 105, 105437. <https://doi.org/10.1016/j.landusepol.2021.105437>
- UK Government. (2018a). VCSE health and wellbeing funding 2019 - 2020: How to apply.
- UK Government. (2018b). Social Prescribing schemes to be funded by the Health and Wellbeing Fund. Retrieved from <https://www.gov.uk/government/publications/socialprescribing-schemes-to-be-funded-by-the-healthand-wellbeing-fund-2018>
- UK Government. (2020a). Government announces £40 million green jobs challenge fund. From <https://www.gov.uk/government/news/government-announces-40-million-green-jobs-challenge-fund>
- UK Government. (2018c). *A Green Future: Our 25 Year Environment Plan*. Retrieved from [www.gov.uk/government/publications](http://www.gov.uk/government/publications).
- UK Government (2020b). Guidance on shielding and protecting the vulnerable. Retrieved from <https://www.gov.uk/government/publications/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19>
- UK Parliament. (n.d.). Start of the suffragette movement - UK Parliament. Retrieved October 17, 2021, from <https://www.parliament.uk/about/living-heritage/transformingsociety/electionsvoting/womenvote/overview/startsofsuffragette/>
- Ulmer, J. M., Wolf, K. L., Backman, D. R., Tretheway, R. L., Blain, C. J., O'Neil-Dunne, J. P., & Frank, L. D. (2016). Multiple health benefits of urban tree canopy: The mounting evidence for a green prescription. *Health and Place*, 42, 54–62. <https://doi.org/10.1016/j.healthplace.2016.08.011>
- Ulrich, R. S. (2002). Health Benefits of Gardens in Hospitals. *Plants for People: International Exhibition Floriade*, (June), 1–10.
- Ulrich, R. S. (2000). Evidence Based Environmental Design for Improving Medical Outcomes. *Design*, 3.1-3.10. Retrieved from [http://www.brikbase.org/sites/default/files/Evidence Based Environmental Design for Improving Medical.pdf](http://www.brikbase.org/sites/default/files/Evidence%20Based%20Environmental%20Design%20for%20Improving%20Medical.pdf)
- Ulrich, R. S. (1984). View Through a Window May Influence Recovery from Surgery. *Science*, 224(420). <https://doi.org/10.1126/science.6143402>.
- Ulrich, R. S., Cordoza, M., Gardiner, S. K., Manulik, B. J., Fitzpatrick, P. S., Hazen, T. M., & Perkins, R. S. (2020). ICU Patient Family Stress Recovery During Breaks in a Hospital Garden and Indoor Environments. *Health Environments Research and Design Journal*, 13(2), 83–102. <https://doi.org/10.1177/1937586719867157>
- Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, 11(3), 201–230. [https://doi.org/10.1016/S0272-4944\(05\)80184-7](https://doi.org/10.1016/S0272-4944(05)80184-7)
- Ulrich, R. S. (1979). Visual landscapes and psychological well-being. *Landscape research*, 4(1), 17-23.
- United Nations. (2020). The Impact of COVID-19 on older persons M AY 2 0 2 0. Retrieved from <https://apps.who.int/iris/handle/10665/186463>
- United Nations. (2019). *World Population Prospects 2019. Department of Economic and Social Affairs. World Population Prospects 2019*. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/12283219>
- United Nations. (2015). *World Population Ageing 2015. Department of Economic and Social Affairs (Vol. 9)*. <https://doi.org/10.5860/CHOICE.40-1307>
- Unruh, A., & Hutchinson, S. (2011). Embedded spirituality: gardening in daily life and stressful life experiences. *Scandinavian Journal of Caring Sciences*, 25(3), 567–574. <https://doi.org/10.1111/j.1471-6712.2010.00865.x>

- Unsworth, R., Ball, S., Bauman, I., Chatterton, P., Goldring, A., Hill, K., & Julier, G. (2011). Building resilience and well-being in the Margins within the City: Changing perceptions, making connections, realising potential, plugging resources leaks. *City*, 15(2), 181–203. <https://doi.org/10.1080/13604813.2011.568697>
- Ura, C., Okamura, T., Yamazaki, S., Ishiguro, T., Ibe, M., Miyazaki, M., ... Kawamuro, Y. (2018). The development of care farming for elderly people with cognitive impairment to enhance social inclusion: A feasibility study of rice-farming care for elderly people with cognitive impairment. *Japanese Journal of Geriatrics*, 55(1), 106–116. <https://doi.org/10.3143/geriatrics.55.106>
- Urban Health. (n.d.). What is urban health? - Impact on Urban Health. Retrieved October 17, 2021, from <https://urbanhealth.org.uk/our-work/urban-health>
- Urquhart, C. (2013). *Grounded Theory for Qualitative Research: A Practical Guide*. 55 City Road, London. <https://doi.org/10.4135/9781526402196>
- Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016). Theme development in qualitative content analysis and thematic analysis. *Journal of Nursing Education and Practice*, 6(5). <https://doi.org/10.5430/jnep.v6n5p100>
- van den Berg, A. E. (2017). From green space to green prescriptions: Challenges and opportunities for research and practice. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2017.00268>
- van Den Berg, A. E., Van Winsum-Westra, M., De Vries, S., & Van Dillen, S. M. (2010). Allotment gardening and health: A comparative survey among allotment gardeners and their neighbors without an allotment. *Environmental Health: A Global Access Science Source*, 9(1), 74. <https://doi.org/10.1002/slct.201703000>
- van den Bosch, M., & Ode Sang, Å. (2017). Urban natural environments as nature-based solutions for improved public health – A systematic review of reviews. *Environmental Research*, 158, 373–384. <https://doi.org/https://doi.org/10.1016/j.envres.2017.05.040>
- van den Hoonaard, D. K. (2018). Learning to Be Old: How Qualitative Research Contributes to Our Understanding of Ageism. *International Journal of Qualitative Methods*, 17(1), 1609406918810556. <https://doi.org/10.1177/1609406918810556>
- van Hoof, J., Kazak, J. K., Perek-Białas, J. M., & Peek, S. T. M. (2018). The challenges of urban ageing: Making cities age-friendly in Europe. *International Journal of Environmental Research and Public Health*, 15(11), 1–17. <https://doi.org/10.3390/ijerph15112473>
- van der Jagt, A. P., Szaraz, L. R., Delshammar, T., Cvejić, R., Santos, A., Goodness, J., & Buijs, A. (2017). Cultivating nature-based solutions: The governance of communal urban gardens in the European Union. *Environmental Research*, 159, 264-275.
- Vant Riet, A., Berg, M., Hiddema, F., & Sol, K. (2001). Meeting patients' needs with patient information systems: Potential benefits of qualitative research methods. *International Journal of Medical Informatics*, 64(1), 1–14. [https://doi.org/10.1016/S1386-5056\(01\)00185-X](https://doi.org/10.1016/S1386-5056(01)00185-X)
- Vardoulakis S, Dear K, Wilkinson P. Challenges and Opportunities for Urban Environmental Health and Sustainability: the HEALTHY-POLIS initiative. *Environ Health*. 2016 Mar 8;15 Suppl 1(Suppl 1):30. doi: 10.1186/s12940-016-0096-1. PMID: 26960714; PMCID: PMC4895271.
- Veen, E. J., Bock, B. B., Van den Berg, W., Visser, A. J., & Wiskerke, J. S. C. (2016). Community gardening and social cohesion: different designs, different motivations. *Local Environment*, 21(10), 1271–1287. <https://doi.org/10.1080/13549839.2015.1101433>
- Venter, Z. S., Barton, D. N., Gundersen, V., Figari, H., & Nowell, M. (2020). Urban nature in a time of crisis: Recreational use of green space increases during the COVID-19 outbreak in Oslo, Norway. *Environmental Research Letters*, 15(10), 104075. <https://doi.org/10.1088/1748-9326/abb396>
- Verschuren, P., & Doorewaard, H. (2010). *Designing a Research Project* (Second). Eleven International Publishing. Retrieved from [https://www.boomhogeronderwijs.nl/media/6/9789059315723\\_inkijkexemplaar.pdf](https://www.boomhogeronderwijs.nl/media/6/9789059315723_inkijkexemplaar.pdf)
- Vitiello D, Nairn, M., & Planning, P. (2009). *Community Gardening in Philadelphia: Harvest Report*. Philadelphia. Retrieved from <https://farmlandinfo.org/publications/community-gardening-in-philadelphia2008-harvest-report/>
- Voigt, A., Latkowska, M., Rutecka, A., Ponizy, L., Mizgajski, A., Breuste, J., ... Costa, H. (2015). *Environmental Behaviour of Urban Allotment Gardeners in Europe*.
- Vreke, J., J.L. Donders, F. Langers, I.E. Salverda, F.R. Veeneklaas (2006) Potenties van groen! De invloed van groen in en om de stad op overgewicht bij kinderen en op het bin- den van huishoudens met midden- en hoge inkomens aan de stad. Wageningen: Alterra. [translated] <https://edepot.wur.nl/97699>

- Vujcic, M., Tomicevic-Dubljevic, J., Grbic, M., Lecic-Tosevski, D., Vukovic, O., & Toskovic, O. (2017). Nature based solution for improving mental health and well-being in urban areas. *Environmental Research*, 158, 385–392. <https://doi.org/https://doi.org/10.1016/j.envres.2017.06.030>
- Wakefield, J. R. H., Kellezi, B., Stevenson, C., McNamara, N., Bowe, M., Wilson, I., ... Mair, E. (2020). Social Prescribing as 'Social Cure': A longitudinal study of the health benefits of social connectedness within a Social Prescribing pathway. *Journal of Health Psychology*, 1359105320944991. <https://doi.org/10.1177/1359105320944991>
- Wakefield, S., Yeudall, F., Taron, C., Reynolds, J., & Skinner, A. (2007). Growing urban health: Community gardening in South-East Toronto. *Health Promotion International*, 22(2), 92–101. <https://doi.org/10.1093/heapro/dam001>
- Walford, N. S. (2020). Demographic and social context of deaths during the 1854 cholera outbreak in Soho, London: a reappraisal of Dr John Snow's investigation. *Health & Place*, 65, 102402. <https://doi.org/https://doi.org/10.1016/j.healthplace.2020.102402>
- Walker, A. (2007). Why involve older people in research? *Age and Ageing*, 36(5), 481–483. <https://doi.org/10.1093/ageing/afm100>
- Wallington, J. (2016, September 22). "Big up Monty D": what young people think about gardening | Gardens | The Guardian. Retrieved October 5, 2021, from <https://www.theguardian.com/lifeandstyle/gardening-blog/2016/sep/22/big-up-monty-d-what-young-people-think-about-gardening>
- Wandersman, A., & Nation, M. (1998). Urban Neighborhoods and Mental Health: Psychological Contributions to Understanding Toxicity, Resilience, and Interventions. *The American Psychologist*, 53, 647–656. <https://doi.org/10.1037/0003-066X.53.6.647>
- Wang, D., & MacMillan, T. (2013). The Benefits of Gardening for Older Adults: A Systematic Review of the Literature. *Activities, Adaptation and Aging*, 37(2), 153–181. <https://doi.org/10.1080/01924788.2013.784942>
- Wang, Q., & Su, M. (2020). A preliminary assessment of the impact of COVID-19 on environment – A case study of China. *Science of The Total Environment*, 728, 138915. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2020.138915>
- Ward, R., Clark, A., Campbell, S., Graham, B., Kullberg, A., Manji, K., ... Keady, J. (2018). The lived neighborhood: Understanding how people with dementia engage with their local environment. *International Psychogeriatrics*, 30(6), 867–880. <https://doi.org/10.1017/S1041610217000631>
- Webb C, Schwartz S. (2012). *Unobtrusive Measures*. Revised Edition. SAGE Publications.
- Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality*, 43(3), 374–385. <https://doi.org/10.1016/j.jrp.2008.12.008>
- Weinstein, N. D. (1993). Testing four competing theories of health-protective behavior. *Health psychology*, 12(4), 324.
- Weiss, R. S. (1994). *Learning from strangers: The art and method of qualitative interview studies*. Free Press.
- Wenger, G. C. (2002). *Handbook of Interview Research*. SAGE Publications, Inc. <https://doi.org/10.4135/9781412973588>
- Wesener, A., Fox-Kämper, R., Sondermann, M., & Munderlein, D. (2020). Placemaking in Action: Factors That Support or Obstruct the Development of Urban Community Gardens. *Sustainability*. <https://doi.org/10.3390/su12020657>
- Westwater, H. (2021). *UK poverty: the facts, figures and effects*. Retrieved from <https://www.bigissue.com/news/social-justice/uk-poverty-the-facts-figures-and-effects/>
- White, M. P., Alcock, I., Grellier, J., Wheeler, B. W., Hartig, T., Warber, S. L., ... Fleming, L. E. (2019). Spending at least 120 minutes a week in nature is associated with good health and wellbeing. *Scientific Reports*, 9(1), 1–11. <https://doi.org/10.1038/s41598-019-44097-3>
- Whitehead, M., & Dahlgren, G. (1991). What can be done about inequalities in health? *The Lancet*, 338 (8774), 1059 – 1063.
- Whitmee, S., Haines, A., Beyrer, C., Boltz, F., Capon, A. G., de Souza Dias, B. F., ... Yach, D. (2015). Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation & Lancet Commission on planetary health. *The Lancet*, 386(10007), 1973–2028. [https://doi.org/10.1016/S0140-6736\(15\)60901-1](https://doi.org/10.1016/S0140-6736(15)60901-1)
- WHO. (2020a). Decade of Healthy Ageing. *World Health Organization*, 1–24. Retrieved from [https://cdn.who.int/media/docs/default-source/decade-of-healthy-ageing/final-decade-proposal/decade-proposal-final-apr2020-en.pdf?sfvrsn=b4b75ebc\\_25&download=true](https://cdn.who.int/media/docs/default-source/decade-of-healthy-ageing/final-decade-proposal/decade-proposal-final-apr2020-en.pdf?sfvrsn=b4b75ebc_25&download=true)
- WHO. (2007). *Global Age-friendly Cities: A Guide*. Retrieved from [www.who.int/ageing/en](http://www.who.int/ageing/en) Fax:+41



- WHO (2007) Global Age-friendly Cities: A guide. Available from: [https://www.who.int/ageing/publications/Global\\_age\\_friendly\\_cities\\_Guide\\_English.pdf](https://www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf)
- WHO. (2021). *Drawing light from the pandemic: A new strategy for health and sustainable development (2021)*. World Health Organization. Retrieved from <https://www.euro.who.int/en/health-topics/health-policy/european-programme-of-work/pan-european-commission-on-health-and-sustainable-development/publications/drawing-light-from-the-pandemic-a-new-strategy-for-health-and-sustainable-development-2021>
- WHO. (2017). Nutrition: Nutrition for older persons. Retrieved from <https://www.who.int/nutrition/topics/ageing/en/index1.html>
- WHO. (2016). Mental health: strengthening our response.
- WHO. (2020b). WHO Manifesto for a healthy recovery from COVID-19. *WHO, World Health Organization*. Retrieved from <https://www.who.int/news-room/feature-stories/detail/who-manifesto-for-a-healthy-recovery-from-covid-19>
- WHO.(2020c). Decade of Healthy Ageing: Plan of Action. Retrieved October 17, 2021, from <https://www.who.int/publications/m/item/decade-of-healthy-ageing-plan-of-action>
- Wichrowski, M., Whiteson, J., Haas, F., Mola, A., & Rey, M. J. (2005). Effects of horticultural therapy on mood and heart rate in patients participating in an inpatient cardiopulmonary rehabilitation program. *Journal of Cardiopulmonary Rehabilitation*, 25(5), 270–274. <https://doi.org/10.1097/00008483-200509000-00008>
- Wickramasinghe, K., Mathers, J. C., Wopereis, S., Marsman, D. S., & Griffiths, J. C. (2020). From lifespan to healthspan: The role of nutrition in healthy ageing. *Journal of Nutritional Science*. <https://doi.org/10.1017/jns.2020.26>
- Wiles, J. L., Leibling, A., Guberman, N., Reeve, J., & Allen, R. E. S. (2012). The Meaning of “Aging in Place” to Older People. *The Gerontologist*, 52(3), 357–366. <https://doi.org/10.1093/geront/gnr098>
- Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., ... & Murray, C. J. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*, 393(10170), 447–492.
- Williams, A., Giles, H., (1996) Intergenerational Conversations: Young Adults’ Retrospective Accounts, *Human Communication Research*, 23 (2) 220 -250. <https://doi.org/10.1111/j.1468-2958.1996.tb00393.x>
- Williams, C. (2007). Research methods. *Journal of Business & Economics Research (JBER)*, 5(3).
- Williams, F. (2017). *The Nature Fix*. London: W.W. Norton & Company.
- Williams, S. A., & Hipp, J. R. (2019). How great and how good?: Third places, neighbor interaction, and cohesion in the neighborhood context. *Social Science Research*, 77, 68–78. <https://doi.org/https://doi.org/10.1016/j.ssresearch.2018.10.008>
- Williams, T. G., Logan, T. M., Zuo, C. T., Liberman, K. D., & Guikema, S. D. (2020). Parks and safety: a comparative study of green space access and inequity in five US cities. *Landscape and urban planning*, 201, 103841.
- Wilson, C. (2014). Semi-Structured Interviews. In *Interview Techniques for UX Practitioners* (pp. 23–41). Morgan Kaufmann. <https://doi.org/10.1016/b978-0-12-410393-1.00002-8>
- Wilson, E. (2004). *On Human Nature*. Harvard University Press.
- Wilson, E.O.(1993) ‘Biophilia and the Conservation Ethic’ in Kellert, SR & Wilson, EO (eds) Washington: The Biophilia Hypothesis Island Press
- Wilson, J. F., & Christensen, K. M. (2011). The Relationship between Gardening and Depression among Individuals with Disabilities. *Journal of Therapeutic Horticulture*, 21(2), 28–41. Retrieved from <http://www.jstor.org/stable/24865203>
- Wise, P. (2014). *The potential value and impacts of residential and community food gardening Poppy Wise*. Canberra. Retrieved from <https://www.tai.org.au>
- Wo, J. C. (2014). Community Context of Crime: A Longitudinal Examination of the Effects of Local Institutions on Neighborhood Crime. *Crime & Delinquency*, 62(10), 1286–1312. <https://doi.org/10.1177/0011128714542501>
- Wolch, J. R., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities ‘just green enough.’ *Landscape and Urban Planning*, 125, 234–244. <https://doi.org/https://doi.org/10.1016/j.landurbplan.2014.01.017>
- Wolgemuth, J. R., Erdil-Moody, Z., Opsal, T., Cross, J. E., Kaanta, T., Dickmann, E. M., & Colomer, S. (2015). Participants’ experiences of the qualitative interview: considering the importance of research paradigms. *Qualitative Research*, 15(3), 351–372. <https://doi.org/10.1177/1468794114524222>
- Wood, C. (2021). The impact of the Covid-19 pandemic on the charitable sector, and its prospects for recovery. Demos. Available from: [www.demos.co.uk](http://www.demos.co.uk)

- Wood, C. J., Pretty, J., & Griffin, M. (2016). A case-control study of the health and well-being benefits of allotment gardening. *Journal of Public Health (United Kingdom)*, 38(3), e336–e344. <https://doi.org/10.1093/pubmed/fdv146>
- Woodall, J., Trigwell, J., Bunyan, A. M., Raine, G., Eaton, V., Davis, J., ... Wilkinson, S. (2018). Understanding the effectiveness and mechanisms of a social prescribing service: A mixed method analysis. *BMC Health Services Research*, 18(1), 604. <https://doi.org/10.1186/s12913-018-3437-7>
- Work for Good. (2017). Federation of City Farms and Community Gardens | Work for Good. Retrieved from <https://workforgood.co.uk/charities/federation-of-city-farms-and-community-gardens/>
- World Health Organisation and World Bank (2017). World Bank and WHO: Half the world lacks access to essential health services, 100 million still pushed into extreme poverty because of health expenses. Retrieved October 9, 2021, from <https://www.who.int/news/item/13-12-2017-world-bank-and-who-half-the-world-lacks-access-to-essential-health-services-100-million-still-pushed-into-extreme-poverty-because-of-health-expenses>
- Worth, A., & Tierney, A. J. (1993). Conducting research interviews with elderly people by telephone. *Journal of Advanced Nursing*, 18(7), 1077–1084. <https://doi.org/10.1046/j.1365-2648.1993.18071077.x>
- Worthman, C.M. and Stallings, J.F. (1997), Hormone measures in finger-prick blood spot samples: New field methods for reproductive endocrinology. *Am. J. Phys. Anthropol.*, 104: 1-21. [https://doi.org/10.1002/\(SICI\)1096-8644\(199709\)104:1<1::AID-AJPA1>3.0.CO;2-V](https://doi.org/10.1002/(SICI)1096-8644(199709)104:1<1::AID-AJPA1>3.0.CO;2-V)
- Wortzel, J. D., Wiebe, D. J., DiDomenico, G. E., Visoki, E., South, E., Tam, V., ... Barzilay, R. (2021). Association Between Urban Greenspace and Mental Wellbeing During the COVID-19 Pandemic in a U.S. Cohort. *Frontiers in Sustainable Cities*, 3, 686159. <https://doi.org/10.3389/frsc.2021.686159>
- Wright, H. (2011). Understanding green infrastructure: The development of a contested concept in England. *Local Environment*, 16(10), 1003–1019. <https://doi.org/10.1080/13549839.2011.631993>
- Wu, Y. T., Prina, A. M., & Brayne, C. (2015). The association between community environment and cognitive function: a systematic review. *Social Psychiatry and Psychiatric Epidemiology*, 50(3), 351–362. <https://doi.org/10.1007/s00127-014-0945-6>
- Yakimicki, M. L., Edwards, N. E., Richards, E., & Beck, A. M. (2018). Animal-Assisted Intervention and Dementia: A Systematic Review. *Clinical Nursing Research*, 28(1), 9–29. <https://doi.org/10.1177/1054773818756987>
- Yamaguchi, M., Kanemori, T., Kanemaru, M., Takai, N., Mizuno, Y., & Yoshida, H. (2004). Performance evaluation of salivary amylase activity monitor. In *Biosensors and Bioelectronics* (Vol. 20, pp. 491–497). Elsevier. <https://doi.org/10.1016/j.bios.2004.02.012>
- Yeh, S. J., & Liu, Y. (2003). Influence of social support on cognitive function in the elderly. *BioMed Central Health Services Research*, 3, 1–9. <https://doi.org/10.1186/1472-6963-3-9>
- Yeung, J. W. K., Zhang, Z., & Kim, T. Y. (2018). Volunteering and health benefits in general adults: Cumulative effects and forms. *BMC Public Health*, 18(1), 1–8. <https://doi.org/10.1186/s12889-017-4561-8>
- Young Minds. (2019). Lack of early support for young people’s mental health puts pressure on GPs. Retrieved from <https://www.youngminds.org.uk/about-us/media-centre/press-releases/lack-of-early-support-for-young-people-s-mental-health-puts-pressure-on-gps/>
- Yuan, Y., Huang, F., Lin, F., Zhu, P., & Zhu, P. (2021). Green space exposure on mortality and cardiovascular outcomes in older adults: a systematic review and meta-analysis of observational studies. *Aging Clinical and Experimental Research*, 33(7), 1783–1797. <https://doi.org/10.1007/s40520-020-01710-0>
- Zaitsu, M., Kawachi, I., Ashida, T., Kondo, K., & Kondo, N. (2018). Participation in Community Group Activities Among Older Adults: Is Diversity of Group Membership Associated with Better Self-rated Health? *Journal of Epidemiology*, 28(11), 452–457. <https://doi.org/10.2188/jea.JE20170152>
- Zambrano-Monserrate, M. A., Ruano, M. A., & Sanchez-Alcalde, L. (2020). Indirect effects of COVID-19 on the environment. *Science of The Total Environment*, 728, 138813. <https://doi.org/10.1016/j.scitotenv.2020.138813>
- Zarotis, G., & Tokarski, W. (2020). Leisure time: Behavioural Factors, Course of Life and Lifestyle. *European Journal of Business and Management Research*, 5(2 SE-Articles). <https://doi.org/10.24018/ejbmr.2020.5.2.290>

- Zheng, C. (2020). Caring for the self and others: a reflection on everyday commoning amid the COVID-19 pandemic. *Socio-Ecological Practice Research*, 2(3), 243–251. <https://doi.org/10.1007/s42532-020-00062-3>
- Zhou, Q., Konijnendijk van den Bosch, C. C., Chen, Z., Wang, X., Zhu, L., Chen, J., ... Dong, J. (2021). China's Green space system planning: Development, experiences, and characteristics. *Urban Forestry & Urban Greening*, 60, 127017. <https://doi.org/https://doi.org/10.1016/j.ufug.2021.127017>
- Zick, C. D., Smith, K. R., Kowaleski-Jones, L., Uno, C., & Merrill, B. J. (2013). Harvesting More Than Vegetables: The Potential Weight Control Benefits of Community Gardening. *American Journal of Public Health*, 103(6), 1110–1115. <https://doi.org/10.2105/AJPH.2012.301009>
- Ziegler, F. (2012). “You have to engage with life, or life will go away”: An intersectional life course analysis of older women's social participation in a disadvantaged urban area. *Geoforum*, 43(6), 1296–1305. <https://doi.org/10.1016/j.geoforum.2012.03.013>
- Ziter, C. (2016). The biodiversity–ecosystem service relationship in urban areas: a quantitative review. *Oikos*, 125(6), 761–768. <https://doi.org/https://doi.org/10.1111/oik.02883>
- Zoellner, J., Zanko, A., Price, B., Bonner, J., & Hill, J. L. (2012). Exploring Community Gardens in a Health Disparate Population: Findings from a Mixed Methods Pilot Study. *Progress in Community Health Partnerships: Research, Education, and Action*, 6(2), 153–165. <https://doi.org/10.1353/CPR.2012.0014>
- Zuniga-Teran, A. A., Gerlak, A. K., Mayer, B., Evans, T. P., & Lansey, K. E. (2020). Urban resilience and green infrastructure systems: towards a multidimensional evaluation. *Current Opinion in Environmental Sustainability*, 44, 42–47. <https://doi.org/https://doi.org/10.1016/j.cosust.2020.05.001>
- Zurawik, M. A. (2020). Socio-environmental influences on Nordic walking participation and their implications for well-being. *Journal of Outdoor Recreation and Tourism*, 29, 100285.