

Supporting each other: Older adults' experiences empowering food security and social inclusion in rural and food desert communities

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ABSTRACT

Older adults vulnerable to food insecurity are at risk of poor psychological and physical health. Poor public infrastructure or proximity to food sources can exacerbate risk of food insecurity. Reduced statutory services for social care has heightened the responsibility on third sector organisations and community-led volunteering, essential to supporting healthy ageing in place and reducing the inequalities of ageing. The aim of this qualitative study was to explore how older adults' volunteering with a third sector organisation focused on food access supports food security and builds social capital for socially or economically marginalised older adults within rural and food desert communities. The study aims to bridge the knowledge gap of how volunteering in vulnerable geographies affects food insecurity and community. Semi-structured interviews were conducted with seven older (55+) volunteer 'meal makers' working with the third sector organisation Food Train and its 'Meal Makers' project. Interview recordings were transcribed and thematically analysed. Ecomap methodology was used to illustrate the lived experiences of older adult volunteers as told through the interviews. Two themes were identified by Thematic Analysis: (1) Networks, connectedness, and exposure to social capital, and (2) Supplementary support. This study finds that older adult volunteers are well placed within community interventions supporting food insecure older adults in rural or food desert communities. Ecomaps demonstrated that high social capital volunteers can mediate food access barriers and highlighted points of local knowledge and social connection. Volunteer engagement provides opportunities for food secure older adults to share local knowledge and build networks of food support and social inclusion for food insecure older adults. Older age volunteering should be advocated as a multi-faceted intervention promoting mutual health and wellbeing in volunteer and beneficiary.

1. Introduction

1.1. Overview

Food security is a basic provision of healthy ageing, impacting physical and mental wellbeing (Pool & Dooris, 2021). Food insecurity is defined in this study as "the limited or uncertain availability of nutritionally adequate or safe foods or limited or uncertain ability to acquire foods in socially acceptable ways" (Pollard & Booth, 2019, p. 2). There is currently no domestic United Kingdom (UK) law supporting the right to secure food access in the UK (Human Rights Watch, 2019). Social factors such as social network quality and sense of belonging can be key factors in food related habits for older adults, which can impact on food security even in the absence of economic constraints (Bloom et al., 2017; Robinson, 2018). Researching food security for older adults through this

social lens can benefit from exploring older adults 'in place', at home, within the range of resources and social capital available to them.

1.2. Ageing in scotland

Older adults in Scotland can face vulnerabilities to healthy ageing, including long-term health conditions, living alone (Scottish Government, 2019a), and loneliness (Scottish Government, 2022a). A worsening social care crisis, driven by under-investment, funding cuts and challenges in requirement (Oliver, 2017), and in particular adult social care which has been significantly underfunded over the past decade (Rocks et al., 2021), and cost of living in 2023 is exacerbating the vulnerabilities of older adults who are more likely to rely on social care. One in ten older adults in the UK are likely to have their existing social care services disrupted or withdrawn in the coming months, and one in

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seven are already, or plan to, skip meals due to the cost of living (Age UK, 2022). In Scotland, as with elsewhere in the UK, households are struggling to keep up with inflation and are making difficult decisions between food and heating (Age Scotland, 2022), in particular the estimated 150,000 pensioners living in relative poverty (Scottish Government, 2020a).

1.3. Volunteering in older age

The experience of healthy ageing is patterned unequally across sociodemographic lines (Giebel et al., 2020). Over recent decades, governments have put emphasis on volunteers and their contribution to society, including as a means to deliver social care to alleviate the difficulties faced by an overwhelmed social care sector, however, current research suggests that volunteer recruitment faces many challenges itself, relating to ageing and retirement (Cameron et al., 2022). For those older adults who have relatively good health and financial security, many offer their time to engage in volunteering within their local communities, where retired older adults make up a significant portion of the volunteering population (Fox, 2019). However, only 11 per cent of older adults with limiting health conditions felt they could rely on their neighbours for help if they needed to (Scottish Government 2019a) indicating that there is potential for more community members to offer support to older aged people. A Fairer Scotland for Older People: A Framework for Action (Scottish Government, 2019b) indicated that older people wanted sustained opportunities to engage with their communities. The 'Five Ways to Wellbeing' (Aked et al., 2008) framework promotes the psychological benefits of volunteering and the development of social connections which can build meaningful relationships. Literature supports that volunteering promotes social connection (Same et al., 2020) and psychological benefits (Forward et al., 2021).

The concept of social capital (Bourdieu, 1986) offers a useful interlocutor to examine the relationship between connection, volunteering, and food insecurity. This research frames social capital as a multi-dimensional concept which "mediates development opportunities and outcomes" (Dudwick et al., 2006, iv) and considers dimensions including networks, trust, collective action and social inclusion (Dudwick et al., 2006). Substantial social capital can be generated across a lifetime when people meaningfully engage with their community through activities such as volunteering and informal befriending. This has the potential to benefit the health and wellbeing of the volunteer, beneficiary, and community (Buck-Mcfadyen et al., 2019; Ehsan et al., 2019; Fox, 2019) acting as a protective factor in older age (Dickinson et al., 2021).

1.4. Food insecurity in older adults

According to a survey conducted by The Food Foundation (2022), household food insecurity in the UK (in homes without children) has doubled from May 2020 (eight per cent) to September 2022 (16 per cent). The study also found compounding risks associated with rising energy costs and for people with disabilities. In Scotland, the number of people reporting food insecurity was 24 per cent in 2022 (The Food Foundation, 2022).

The Food Insecurity and Poverty report (Scottish Government, 2021a) states that the right to food is inclusive of availability, access, and quality of food. The Scottish Health Survey (Scottish Government, 2022b, p. 67) indicates that only one per cent of adults over the age of 65 were worried that they would run out of food. However, food insecurity in older adults can be underreported due to the social stigma of associated with requesting assistance (Purdam et al., 2019). Moreover, policy and literature often rely on food bank use data, focusing on food poverty (Jenkins et al., 2021), neglecting "psychosocial" contributions to food insecurity. It is doubtful that older adults are proportionately represented in these samples. This could be due to the interactions between a lack of agency or ability to self-refer or operate e-referral or

digital voucher systems for food banks (Giebel et al., 2020). Consequently, many older adults are situated within a 'care gap' where the full extent of food insecurity is not accurately monitored in order to mobilise appropriate governmental and/or local authority response.

Austerity measures have further impacted the provision of services which support food security. For example, local authority budget cuts have led to the decline of the Meals on Wheels service, which on top of providing vital access to food, provides opportunities for social connection and welfare checks (Dickinson & Wills, 2022). In Scotland, austerity measures are recognised as having exacerbated food insecurity (Scottish Government, 2021a). Third sector organisations (such as non-profits, charities, social enterprises and voluntary organisations which often rely on donations, grants and voluntary support) and volunteering within these organisations are now critical to fill the gaps left by statutory services, particularly in social care, which have been reduced or cut entirely to support many of the daily needs of older adults living at home (Abendstern et al., 2017).

Older people generally rely less on government food provision than younger food insecure people, instead depending on third sector volunteer driven efforts of support (Mook et al., 2020). In rural areas of Scotland up to 30 per cent of over 65s volunteer in their communities (Scottish Government, 2021c). Exploring volunteer engagement with food insecurity within rural and food desert communities will help to bridge the knowledge gap of how volunteering in vulnerable geographies affects food insecurity and community, particularly as Covid-19 still impacts on the health and welfare of society's most socially and economically marginalised.

1.5. Rural and food desert communities

There is limited research regarding the geographic factors which may be pertinent when establishing patterns of social inequalities contributing to food insecurity (Pollard & Booth, 2019; Pool & Dooris, 2021). The proposed study here is geographically situated in areas of vulnerability: namely, rural and food desert communities. Food deserts can be defined as areas where there is limited access to healthy and nutritious food (Furey et al., 2001) and sources of nutrition in food deserts are less varied and more expensive (Power et al., 2017). Food insecurity research is heavily focused on poverty and food bank usage in urban landscapes, leading to an underestimation of the problems facing those living rurally or in food deserts (May et al., 2020). Rural areas in Scotland have higher populations of older people (Scottish Government, 2021b) and 26 per cent of rural areas in the UK fall into the category of food deserts, compared to 17 per cent of urban areas (Corfe, 2018). Availability and access to food for older adults in rural areas has deteriorated due to COVID-19 pandemic isolation measures (Henning-Smith, 2020; Loopstra, 2020), leading to restricted access to services, such as public transport (Nelson & Caulfield, 2022) and drop-in day centres (Power et al., 2020; Scottish Government, 2021a). This disruption has hit rural communities disproportionately, where alternative shopping methods such as food delivery options are less readily available due to limited infrastructure (Henning-Smith, 2020; Nelson & Caulfield, 2022). Despite government commitments to improve and restore local transportation, many bus routes have not been reinstated or continue to be cut (Goodier & Otte, 2023; Nelson & Caulfield, 2022).

1.6. Theoretical frameworks of vulnerability, volunteering, and social capital

This study frames vulnerabilities to food insecurity in a way which contextualises experiences of risk and considers how volunteer led interventions located in communities might mitigate these. For example, many older adults use food shopping within their own community as an opportunity to interact and connect (Dickinson et al., 2021; Hansen, 2020) and it is not known how older adults experience these opportunities to connect in rural or food desert communities. Little research has

explored how methods of accessing food impact on loneliness, when ability or infrastructure may be disrupted, as in Covid-19 lockdown period and or when restricted in shopping options.

Literature exploring food insecurity and social capital in food desert and rural landscapes is well-established in North America (May et al., 2020). Less is known about these interactions in the UK. This study considers the broad contextual influences of networks, geographies, and vulnerabilities in which older volunteers are situated, framing their lived experiences and perceptions of food insecurity in the community. In particular, this study highlights the disparities of ageing whereby older adults with more social capital are supporting older adults who have less social capital.

1.7. Rationale for approach

The present study examines the role of third sector volunteer ‘meal makers’ over the age of 55, working on behalf of the organisation Food Train, in addressing food insecurity in their rural or food desert communities in Scotland. Meal makers volunteer to regularly deliver and share their own home cooked meals with older adults living in their community. Qualitative research was deemed suited to this study for its capabilities to capture nuanced data regarding the lived experiences of participants. The aim of the research is to offer insight into community-led intervention and how social capital is enacted through linking the older age adult (in receipt of meal making service) to the older age volunteer (cooking and facilitating the meal making) in rural and food desert environments.

This research will explore how older volunteer meal makers view their role in connecting communities and explore food shopping experiences within their rural food desert communities, with the aim to answer the following questions.

- 1 What role do older volunteers living in rural or food desert communities play in addressing food insecurity in vulnerable older adults?
 - 1.1 How do older volunteers experience and address food access barriers within their community?
 - 1.2 How do older volunteers generate social capital and connection within their community?

2. Methodology

The lead researcher (RD) acknowledges her active role in knowledge production (constructionism), with an emphasis on co-production with the participants supported through the selection of methodologies such as ecomapping.

2.1. Sampling and participants

Seven older adult (55+) volunteers living in rural or food desert communities were recruited (see Table 1) from a pool of 592 meal maker volunteers. Participants were recruited if they had been volunteering with Meal Makers for at least six months, this allowed for richer

Table 1 Demographic information.

Participant	Age	Gender	Time as a meal maker	Number of Diners	E-food Desert Index (EFDI) ranking ¹	Urban-rural classification ranking ²
Florence	63	Woman	6 months	2	6	2
Nancy	58	Woman	6 months	2	2	5
Lillian	56	Woman	10 months	1	6	1
Mary	58	Woman	3 years	1	6	2
Rose	61	Woman	4 years	1	9	5
Sarah	56	Woman	6 years	1	4	1
Margret	73	Woman	3 years	1	1	5

Notes: 1. EFDI ranking: 1 = highest deprivation, 10 = lowest deprivation. 2. Urban-rural classification ranking: 1 = large urban, 2 = other urban, 3 = accessible small town, 4 = remote small town, 5 = accessible rural.

explorations of experiences over time with the service. The age requirement of diners with Food Train is 55, informing the inclusion criteria for this study to help frame participants’ experiences in context with their diners. However, it should be noted that many of the diners are over the age of 70 (Meal Makers). Diners were not included in the target sample, as the focus of the research lies in the role of the volunteer.

The inclusion criteria of the study limited the accessibility of the population, as well as the priority of in-depth online interviewing, therefore the findings of this study may not be representative of the wider population. In particular, recruiting participants from specific geographic areas notably limited the population, but aims to capture the unique dynamics of these settings. However, analysis of in-depth interviews, as described in section 2.3.4, demonstrates there is a recurrence of experiences. This indicates that while the sample size is limited, the insights gained meaningfully contribute to an understanding of the experiences of the target sample.

2.2. Design and materials

This qualitative study collected data via semi-structured interviews, supplemented with visual data in the form of ecomaps which were generated from participant responses during interviews. Semi-structured interviews were developed by the lead researcher prior to the interview and were intentionally targeted to enable open ended discussion of experiences as well as descriptive information relating to their community. Audiovisual and transcription data were recorded using Microsoft Teams, transcribed using Microsoft Stream, and stored on a GDPR compliant database, OneDrive. NVivo 12 was used to support manual coding.

2.3. Procedure

2.3.1. Ethics

Ethical approval was granted by the College of Science and Engineering at the University of Glasgow. Written consent from participants was received prior to online meetings by the author and confirmed at the start of each meeting. Any identifiable data, such as location and the names of meal makers, diners, or others referenced during interviews, were changed or removed to deindividualise participants and their associates. Non-formal ethical practice included the preparation of personalised maps by the lead researcher, enabling familiarity and supporting positive rapport building (McGrath et al., 2018).

Throughout the study, efforts were made to acknowledge and address potential biases. Steps taken to mitigate bias in volunteer recruitment and responses, due to their ongoing involvement in the third sector organisation, included the implementation of strict inclusion criteria, transparent recruitment and data collection processes, ensuring informed consent and deindividualisation. These measures promoted the authenticity of participant responses. Additionally, triangulation of responses from all participants as well as the literature review further ensured the credibility of the study. Moreover, epistemological reflection by the lead researcher considered their subjectivity and how their

embedded perspectives and understanding of theoretical frameworks used in the study might influence the interviews and analysis process.

2.3.2. Recruitment

Recruitment flyers were distributed via email by Food Train to their pool of volunteers over the age of 55. From a potential pool of 592 meal makers, 41 respondents came forward. Postcodes were used to assign a 1) E-Food Desert Index score (EFDI) (Scotland) (Consumer Data Research Centre) and an 2) Scottish Index of Multiple Deprivation (SIMD) (Scottish Government, 2020b) (see Table 1). This procedure was undertaken by Food Train to maintain the anonymity of volunteers. This information was used to recruit participants living in rural or food desert communities with the understanding that living in one or the other would have impacted infrastructure and services related to food security. Participants living in rural food deserts (scoring 1–6 on the EFDI) or living rurally (scoring over 5 in urban-rural classification) were recruited (see Table 1). After applying all inclusion criteria, nine respondents were invited by Food Train to take part and seven participants responded and were interviewed for this study. Participants were not paid/rewarded for their involvement in this study.

2.3.3. Data collection

Participants were emailed consent forms by the lead researcher, as well as participant information sheets. Upon receipt of consent, participants were emailed simple geographical maps (with pinned locations of supermarkets, smaller convenience shops, and major transportation links such as train stations) of the area located within their postcodes. This was used as an optional visual aid to enhance the discussions during the interviews. The interviews ranged between 30 min and 1 h and were conducted online. The format of questioning included an exploration of the participant's own food shopping experiences and infrastructure around this and how their own experiences compared to that of their diners. The questions extended across domains of social capital and connection, infrastructure and involvement, and their role in the community. These discussions were used to inform a visual representation in the form of a personalised ecomap, co-constructed by the researcher and participants during the interview, an example of which can be seen in Fig. 1. To facilitate co-construction of the eco-maps, participants were asked to review the map prior to the interview and consider their interaction with key sites of food-access. Traditionally, ecomaps would be constructed by the participant in a physical meeting between participant and researcher, however as the interviews took place online, the researcher used verbal cues and descriptions provided by the participants and prompted from the questions to physically draw on the maps. Following the interviews, a digital rendering of each co-constructed ecomap was made by the lead researcher with

supplemented information gathered from the interview to illustrate connections between meal makers and their community, food related infrastructure, and services. Digitally rendered ecomaps took the form of more traditional ecomaps (described below) and were used to inform the Thematic Analysis of this study. Ecomaps of all participants are labelled and shown in Fig. 2.

Ecomaps use various lines, symbols, and arrows to indicate different types or strengths of relationships and connections. For example, Florence's ecomap, shown in Fig. 2, demonstrates that the meal maker relies on a vehicle to visit food access points (indicated in the legend as a double dashed line) and that they have exposure to social interaction through food related activities, such as shopping or church lunches (shown via a double ended arrow). In this way, ecomaps were used to provide insights into food shopping and support the situating of participant's experiences and document spatial knowledge.

2.3.4. Data analysis and guidelines

Auto-generated verbatim transcription was corrected where necessary by the lead researcher. A Thematic Analysis (Braun & Clarke, 2006) supported the development of coding and onward themes. The six stages of analysis were applied by the lead researcher, including manually identifying codes, using NVivo to construct them into relevant themes, and ensuring that verbatim quotes indicating evidence of the themes could support the analysis and provide an in-depth account of the data. As part of this process, an initial 67 codes were identified in the data and were more broadly grouped under two relevant themes (see Table 2). The analysis was conducted by the lead researcher and independently reviewed by the co-author to ensure accuracy and consistency and to enhance the inter-rater reliability of the analysis. The co-constructed ecomaps generated during each interview were further supplemented with any relevant comments regarding community and shopping experiences made during the interviews. Digitally rendered ecomaps were then rendered for each participant, which enabled a clear visual representation of engagement and social capital and supported the Thematic Analysis.

3. Results

After applying a Thematic Analysis across the entire data set, two themes were identified (see Table 2). These were analysed in turn, supported with verbatim excerpts which best evidence each theme. Ecomap data is presented in Fig. 2 and will support the analysis to schematically contextualise the meal maker volunteer's experiences accessing food as viewed from the perspective of the meal maker.

3.1. Theme 1: networks, connectedness, and exposure to social capital

When discussing experiences of volunteering and interacting with their community, older volunteer participants spoke of expanding their social networks and enhancing their community connections. Importantly, it was highlighted that knowledge garnered through involvement in third sector organisations or exposure to formal care services enhances awareness of available resources which is transferrable from those with high social capital to those with lower social capital who do not have the same level of exposure. Of her volunteering experience, Florence commented how third sector organisations "are interconnected" [Florence: 318] and can facilitate exposure to other services:

"both of them [diners] have family members who are involved in the third sector ... So that's, I think, how they got involved, but I'm not sure, you know. Gosh it's a bit of chance sometimes how people come across things isn't it?" [Florence: 331–337]

Florence's comment suggests that sharing informal knowledge about community volunteer services connected her diners to the meal making service. Florence's use of the word "chance" to describe access routes to services indicates she perceives access to be challenging for those who

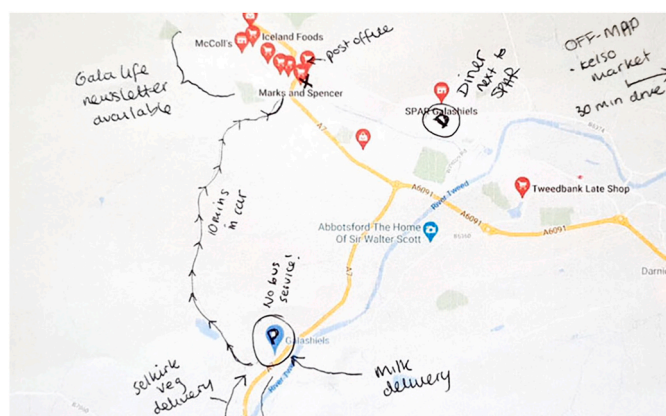


Fig. 1. Co-constructed annotated map of local services and points of food access and transport used by meal maker in their community, as described during an interview.

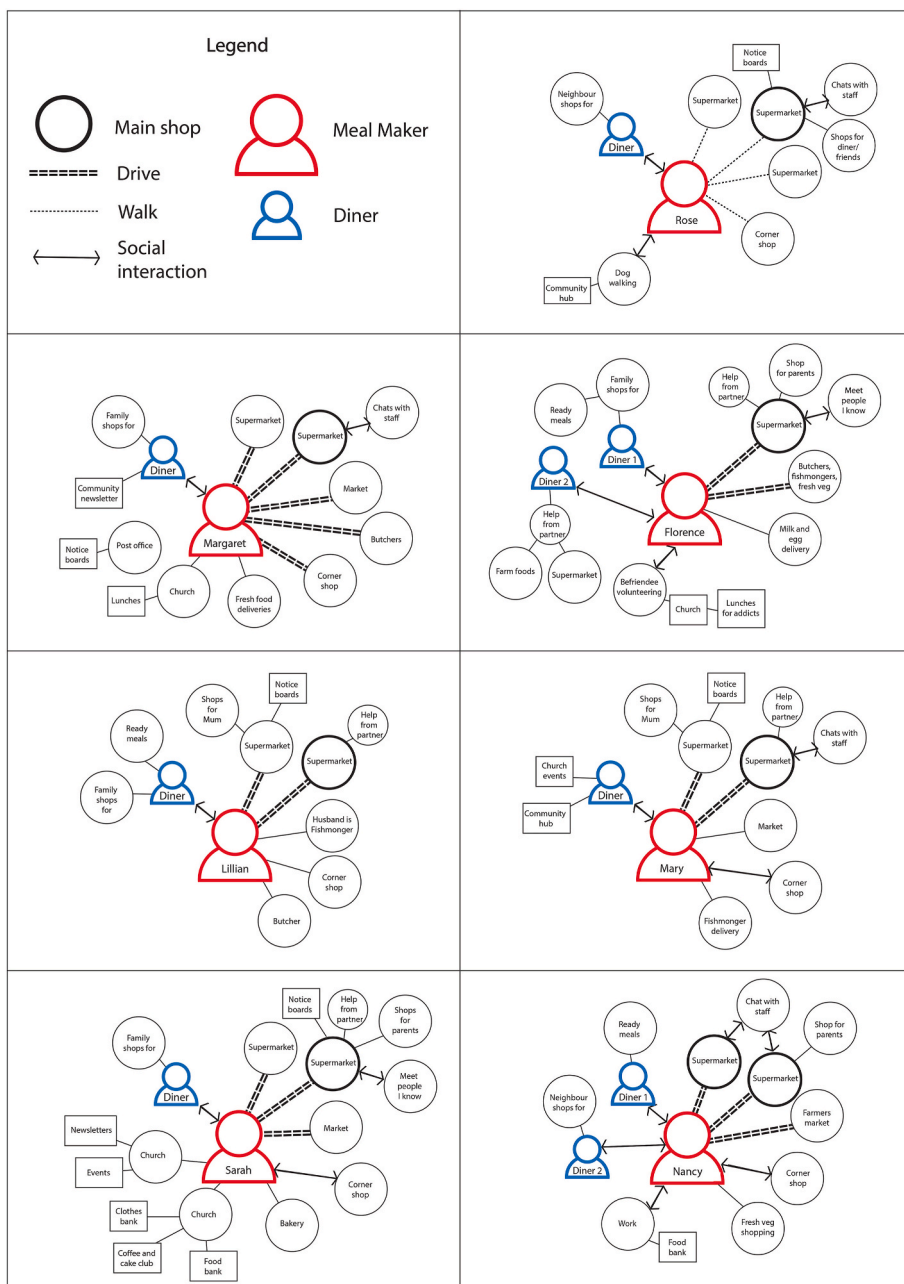


Fig. 2. Participant ecomaps.

Table 2
List of themes and definitions.

Theme	Description
1. Networks, connectedness, and exposure to social capital	Volunteering builds network links, expanding social capital and social connectedness for meal makers and diners.
2. Supplementary support	Volunteers bridge gaps in social care with diners who lack statutory or informal support.

are not well connected, illuminating inequalities faced by isolated older adults. Florence’s ecomap further illustrates how as an active older adult she engages in additional volunteer befriending, expanding her knowledge of services, such as lunches held at her local church.

Florence’s active engagement with third sector services increases her social capital and network knowledge. Without such exposure it can be challenging to identify or access available services, and opportunities for

assistance can be lost, as described by Margaret:

“I never fail to be amazed that the amount of people that dropped through the loops, and how many people I’ve picked up over my life.” [Margaret: 595–604]

Margaret’s words demonstrate how volunteer led efforts address gaps in formal services. Margaret indicates existing barriers and bureaucratic challenges faced by people without specific knowledge in accessing services. Margaret’s frustration is expressed by her ‘amazement’ that so many socially or economically marginalised people are not aware, or more importantly, being made aware, of the health and social services available to them, including community and volunteer led initiatives. For example, the ecomaps of three participants (Margaret, Rose, and Sarah) demonstrate that their connection with their local church exposed them to other food related community activities (lunches, coffee clubs, and food banks), and one participant (Nancy) was exposed to their local food bank through their work.

The participants in this sample showed numerous opportunities for engagement through their local networks, as illustrated in the ecomaps. These opportunities provide essential gateways to access knowledge and increase networking and social connections. Opportunities for engagement are particularly highlighted in Sarah's ecomap which shows how her involvement with two churches provides access to newsletters and events, such as coffee and cake clubs, as well as local services like clothes and food banks.

"I think the people who are going out and about and still able to be active and stuff, they'll have much better access to what's available" [Lillian:456–460]

Lillian's comment reinforces that community engagement is essential to gaining local knowledge for vulnerable older adults who may not be active within their communities. Lillian's ecomap demonstrates that she herself can access local knowledge through notice boards she encounters at the supermarket, indicating the ways in which knowledge can be gained through shopping experiences. This was also illustrated in the ecomaps of Mary and Sarah who also encounter notice boards at their local supermarkets, and Margaret who highlighted the notice board at their post office. While not all examples are related to food access points, the ecomaps demonstrate that participants are exposed to community knowledge through their visits to these places. As well as providing access to knowledge, many meal makers described their own shopping experiences as sociable, with opportunities to interact with staff, new people, or people they already know in the community.

"They're [supermarket staff] really nice, but because I'm in there all the time you know you get to know them as well." [Mary: 136–140]

Mary's account highlights how sociable relationships are built through frequent interactions, reinforced when shopping; this is reflected in her ecomap which demonstrates the social connection she experiences when shopping for food. Social interactions when shopping are also represented in all but one of the participant's ecomap data. For example, Nancy's ecomap shows that her use of a car enables her to shop in several different food outlets where she engages in some form of social interaction. The ecomaps of Florence and Sarah also show that while shopping they meet people that they already know, offering an opportunity to maintain the community connections they have built. Moreover, the ecomaps of all interviewed meal makers highlight their use of local shops and services (corner shops, butchers, fishmongers, and fresh food deliveries), showing their integration within the local community and contributions to local businesses. This opportunity for connection is lost to most diners, who have a limited capacity to fulfil shopping needs themselves and lose out on the potential to meaningfully connect outside the home. The ecomap data support this, highlighting that, according to participants, most of their diners' shopping is carried out by their family or neighbours. This suggests that they have a diminished capacity for connection which is available to those who carry out their own shopping.

Participants consistently described their meal making role as a vessel for connection, both for them and for their diners, facilitating new social connections in their communities. When discussing how volunteering might build connections in community, Nancy and Sarah expressed the value of their volunteering in generating feelings of inclusion, from the perspective of volunteer and diner, which extend beyond the provision of food:

"I feel more part of this community now ... I'm delighted to be here [in the community with diners] and I feel very much at home ... and I've got two new pals." [Nancy: 504–519]

"His [diners] daughter's both say that it's more about the social connection rather than the food." [Sarah: 227–229]

These sentiments demonstrate that food can act as a powerful proxy to connect people through social interactions. Importantly, enhancing

social inclusion also plays a pivotal role in mental health and wellbeing for the meal makers, diners, and wider networks, such as family. Sentiments expressed by Florence and Sarah illustrate this well, elaborating on how they perceive social interactions from their meal making visits have positively impacted the wellbeing of their diners and their family members:

"And that [Florence's visits] definitely has an impact on her mental health. And I say that quite confidently that it has been a positive experience for her." [Florence: 257–258]

"It gives his [Florence's diner] daughters' peace of mind as well because they're both probably an hour and a half drive away, so they know that there's somebody going in every week." [Sarah: 418–421]

Sarah highlights the additional food security provided to her diner who does not have family nearby. Additional support links can be protective against risks of food insecurity and isolation in relation to ageing at home. Evidenced throughout the sample is the intersection of food with social interaction which generates positive experiences for both volunteers and diners, reducing isolation, and increasing wellbeing, access to social capital, and food security.

3.2. Theme 2: Supplementary support

All participants indicated that through their volunteering role they had become integrated into their diners' social support system. For some, this support had supplemented or replaced lost physical and relational resources which had enabled food security in the past. Ecomaps support this, by highlighting the challenges and facilitating factors to shopping from the perspective of the meal makers. Importantly, this element was related to the volunteer's own capacity to undertake shopping themselves, or with the help of their partners, and by driving to various supermarkets or other food produce shops or their capacity to walk and carry food shopping themselves. For example, most participants in this sample indicated that without access to a car they would struggle to carry out their regular shopping. Moreover, the ecomaps of four participants show that they use their car to drive to markets, butchers, corner shops, fishmongers, as well as supermarkets, greatly increasing their access to local and fresh produce. Margaret's account supports that access to reliable transport in her rural area is vital to maintaining her food security and connecting to local services such as supermarkets (see Margaret's ecomap in Fig. 2).

"We're in the country so we've got to go in the car to do anything really." [Margaret: 111]

Her statement implies that public transport provision in this area does not meet these needs. As a meal maker with access to appropriate transportation, in an area lacking transportation infrastructure, such as reliable bus services, Margaret has the capacity to maintain her food security and supplement some of her diner's needs. This contrasts in the perceived experiences of the diners, who often do not have the same capabilities. One example of this was expressed by Rose:

"when I first met her, she was driving, her husband had got dementia, and she was the one that was going out and she was driving and shopping and doing all of that stuff. Unfortunately, now she's housebound, so uhm, it's a neighbour across the road and me that does all the shopping for her." [Rose: 216–221]

Rose's comment shows how changes to her diners' circumstances had threatened her diners' food security and limited her coping capacities to protect herself. Rose describes her diner as being 'housebound' which contrasts with Rose herself, whose ecomap shows her as having high mobility, walking regularly to supermarkets, and walking her dog. Moreover, Rose's ecomap demonstrates that she favours one supermarket in particular but that her mobility allows her to 'shop around' and visit several supermarkets if needed (further strengthening her food

security).

Further facilitating the participant's ability to effectively shop, most meal makers indicated that they could draw on extra support from household family members to facilitate their food shopping. This is visible in the ecomap data of four participants, Florence, Lillian, Mary, and Sarah, who all receive help from their partners or other family members while food shopping. Lillian indicated:

"Generally, my husband comes along, and if my husband is not there, my daughter will be with me." [Lillian: 163–164]

Comparatively, most meal makers indicated that their diners were living alone, with no support from partners and with no family close by. Lillian's ecomap demonstrates that as a volunteer with more available social capital she can support the needs of her own Mother by shopping for her, as well as facilitating meals for her diner. Several participants perceived their diners to be reliant on external networks to shop and provide meals for them. For example, Rose's diner's network links, in this case, a neighbour and volunteer, helped to bolster her coping capacity by introducing new access routes to food. To further illustrate this, Florence's ecomap shows the disparities between two of her diners' food and shopping access; one benefits from support from a live-in partner, increasing access routes to regular fresh food, while the other is dependent on family and relies on car transported ready meals.

Several participants also expressed how meal making had supplemented formal support in their communities. More than this, it is perceived by participants that their volunteering as meal makers has highlighted that additional support needs are not being met. When asked about their roles as meal makers, Rose and Nancy both indicate gaps in service provision to vulnerable older adults:

"There used to be a Meals on Wheels for people who couldn't you know? So, it sort of helps with the shortfall, I think that stuff isn't happening anymore. It helps plug some of those gaps I think." [Rose: 429–435]

"Support, it's other support other than I that they really both need, and whether that's a befriender or shopper, and I'm not sure that's out with being the food train." [Nancy: 767–769]

Rose's words show how volunteering supplements formal service gaps. Rose's use of the word "shortfall" recognises the needs of vulnerable older people in the community, in her experience, are not being met by formal services and her volunteering role supplements these resources. Similarly, the comment from Nancy highlights her belief that meal making alone is not sufficient to meet all the needs of her diner. The ecomaps of this sample further support this sentiment, demonstrating that the participants perceive their diners' to be receiving food related support in various forms, including the meal making service, receiving ready meals, and shopping deliveries.

The awareness of service gaps was expressed across the sample, and meal makers described various ways in which they adapted their roles to provide additional support. This additional support provided by meal makers also acts as an essential connection with the potential to alert to more urgent needs. Nancy speaks of how time spent with her diner enlightens her to food status cues which might indicate more severe food insecurity risks. Nancy also references how she has advocated for the needs of her diner:

"When I've been there and looking for bits and pieces in their cupboards ... there is nothing of any substance in the fridge that you would say at all, so you've been to the shops, right?" [Nancy: 334–337]

"I have just raised a concern [with Food Train] about Ruth at the moment, so she's calling me a bit more often." [Nancy: 512–515]

This demonstrates how meal makers act as advocates for further intervention when their diners may be missing key support links which would otherwise address these concerns.

4. Discussion

The purpose of this study was to explore how older adult volunteers living rurally or in food deserts address food insecurity in their communities. This discussion will present the two themes identified by Thematic Analysis (see Table 2) in context of the research questions exploring the role of community in addressing food insecurity, how volunteers view their role in overcoming barriers to food security, and how volunteering creates connections in the community. This study finds that older adult volunteers build and share social capital, increasing the capacities of their older adult diners to maintain food security and improve wellbeing. The findings support existing research which promotes the importance of community-led intervention (Garthwaite, 2017; Pollard and Booth, 2019) and in particular, that which supports ageing in place (Cameron et al., 2022; Giebel et al., 2020; Mook et al., 2020).

This research contributes toward a limited number of qualitative studies regarding volunteering and food insecurity in the UK situated within food vulnerable geographies. Increased risks of food insecurity have been previously documented in rural areas with limited access to transportation (Shim et al., 2019). Ecomap data in this study captured additional complexities that contribute to social inclusion, notably, access to a vehicle. A key mode of transportation for the majority of this sample, driving supported the shopping activities of volunteers, increasing opportunities for social interactions at multiple locations and demonstrates how infrastructure and mobility can influence networking capabilities. Inadequate transportation restricts avenues to support and increases isolation (Henning-Smith, 2020).

The theme "Networks, connectedness, and exposure to social capital" demonstrated how food acted as a proxy for social connection. Ageing is associated with heightened risk of food insecurity (Somers et al., 2014) as well as loneliness and social exclusion (Teuton, 2018), which has been linked to worsened psychological and physical wellbeing (Seifert et al., 2019), known threats to food security (Hansen, 2020). Meal makers engage in a process that promotes food security and social inclusion, and these factors strongly influence each other (Giebel et al., 2020).

It was shown how active community engagement increased social connections and enabled access to local food related knowledge. The bi-directional relationship between meal maker and diner aids the building of community knowledge and may act to promote food related services threatened by closures (Dickinson et al., 2021). Vesnaver and Keller (2011, p. 17) suggested "smaller social networks reduce the opportunities for access to social resources." Meal makers' capacities to connect community can be a vital tool for supporting socially excluded older adults, safeguarding against food insecurity (Dickinson et al., 2021).

It is thought older volunteers are likely to have more time and resources (Fox, 2019); in this study, most participants drew upon established existing social capital. In this instance, this was indicated through access to knowledge of services, a vehicle, and a support network of their own to facilitate food shopping, which in turn better enabled the participants to support their diners. Volunteers represent a significant link in the community whose engagement with diners exposes them to situational health or wellbeing cues which help to mitigate vulnerabilities and bad outcomes. Transferable capital, as described by Bourdieu (1986), in the form of civic engagement, situates meal makers in a space where they can operationalise social capital and improve access to food resources (Leddy et al., 2020), such as additional third sector organisational support, with their diners. Ecomap data supports this, demonstrating that volunteers can act as a key node in a social network, having wide access to a variety of food shopping sites and food related community events which could be transferred to their diners. Volunteering positively impacted volunteers' feelings of inclusion within their communities. Fox (2019) demonstrated social capital is more likely to be positively impacted in people with 'higher' neighbourhood connection. High capital communities can exclude members who are unable to engage, negatively impacting health and wellbeing (Villalonga-Olives &

Kawachi, 2017). Saeed et al. (2020) qualitatively explored barriers to social eating in older adults (59–89) living in the UK and found that many participants felt their anxiety would be lessened if they went to social eating events with someone they knew. Older adults with high neighbourhood connection might be well placed to lead community interventions for those who are less engaged with community.

The theme “Supplementary support” reflected that volunteers became integrated into support systems and that social inclusion provides diners with a trusted link and point of advocacy. Trust and solidarity are foundational to structures of social capital (Dudwick et al., 2006). Lower rates of social participation and trust have been previously associated with increased loneliness in older urban residents in Europe (Tobiasz-Adamczyk & Zawisza, 2017); less is known about older adults’ experiences of trust and community in rural or food desert communities. This study adds to existing literature which states that social isolation is a crucial factor restricting food access in older adults (Vilar-Compte et al., 2017), finding that social exclusion can be alleviated through reliable engagement with community.

Despite the decline of formal services, such as Meals on Wheels, from austerity measures (Dickinson & Wills, 2022) there are limited qualitative studies which explore how volunteers address services gaps in rural or food desert communities. The COVID-19 pandemic has further highlighted the value of community responses as vulnerable older adults have faced increased isolation and restricted food access (Loopstra, 2020). The ecomap data from this study reveals that high capital volunteers have advantageous access to food sites and serve as important links to socially isolated diners. This study highlights community-led efforts to reduce food insecurity in older adults and shows how third sector organisations such as Food Train can supplement a lack of or inadequate response to serious threats in communities, where there are gaps in social care provision, which are disproportionately impacted by burdens of austerity measures and the social care crisis.

The provision of home cooked, nutritious food, in response to reduced food access on the part of the volunteer highlights the need for established food rights in the UK. Prominent food justice movements in Scotland advocate for new legislation which ensures the right to food and builds in transparent accountability (Coulson & Milbourne, 2020). Coulson and Milbourne (2020, p. 51) apply a critique to these efforts suggesting policy amendments fail to challenge the “structures of power that reproduce inequality” and that “institutionalising the right to food will not guarantee that people are nourished in practice.” The authors suggest collective responses which integrate multiple organisations and groups to facilitate food justice. A collective and collaborative approach to food justice, policy, and food security could alleviate the burden placed upon community volunteers in the absence of state support.

4.1. Limitations and recommendations

Data collection occurred 15 months from the first COVID-19 lockdown announcement, potentially framing participant experiences, 43 per cent of which had been volunteering with Food Train for less than 1 year at the time. Future research should consider longer-term volunteer and diner relationships.

By prioritising inclusion criteria and online in-depth interviewing, the resulting smaller sample of seven participants was limiting in terms of size and diversity, potentially favouring volunteers with more digital literacy. Detailed demographic information, such as socio-economic status or cultural background, was not collected and may have impacted volunteering experiences. A larger, more diverse sample, collected through alternative sampling methods, would provide a broader range of perspectives, particularly regarding gender and demographic factors, enhancing the credibility and transferability of the findings and better mitigate potential participant response bias by presenting more diverse perspectives.

Ecomaps helped in identifying disparities between meal makers and their diners in accessing food resources in rural or food dessert

communities, alongside networks associated with higher social capital. Future research should build on this, particularly by considering the experiences and networks of diners or other socially or economically marginalised people in comparison to volunteers, a limitation of this study. This would enhance the richness of the data collected and in the function of ecomaps to illustrate the transference of social capital. The integration of quantitative data would also provide additional depth and improve the robustness of future findings.

Exploring transportation and infrastructure challenges in rural communities and their impact on food insecurity in older adults is recommended. This research could also provide insights applicable to various settings, to explore preventative measures through community engagement for healthy ageing in place. Moreover, comparative research on rural and urban settings would contribute to the literature and allow for more nuanced understanding of distinct challenges. It should be considered how volunteering in communities with limited access to food might employ a multi-dimensional intervention, combating food insecurity in older adults, enhancing the wellbeing of older volunteers, and reducing healthcare costs. Food insecurity literature should aim to explore the place of volunteers in mediating food access inequalities in the context of the food rights and justice movement.

4.2. Conclusion

This qualitative study aimed to investigate older adult volunteers’ capacities to address food insecurity in rural and food desert communities, and further explore how volunteer meal makers address food access barriers and promote social capital and community connection. Volunteer meal makers were found to facilitate larger social networks in the community and access to local knowledge and services, promoting social capital. Food acted as a proxy for social connections, reducing the threat of social exclusion for isolated older adults. Meal makers supported food security for their diners, and in some instances supplemented formal state support which was no longer in place in their communities. This is in line with current research which highlights the negative impact of cost cutting austerity measures and contributes knowledge about community-led interventions in rural and food desert communities.

In response to the research question, the findings of this study suggest that older volunteers living rurally or in food deserts are crucial in addressing food insecurity in vulnerable older adults by providing home-cooked meals and sharing local knowledge.

High social capital volunteers can use accrued social capital to mediate food access barriers faced by socially and economically marginalised older adults in their communities, such as transportation or physical limitations of shopping. Isolation is a known risk factor for food security (Whitelock & Ensaff, 2018), and can be mitigated through social connectedness formed between meal maker and diner.

Volunteer engagement provides both food secure and food insecure older adults with the opportunity to generate and build a reliable network of food support and social inclusion. Sharing experiences with food insecure older adults enabled both parties to connect with their communities, as defined in the Five Ways Well framework, by building social connections, self-worth, and feelings of value (Aked et al., 2008).

The current study provides an alternative qualitative contribution to existing literature which finds regular meal provision benefits wellbeing and social capital in older adults (O’Leary et al., 2020). Improved social connectedness is multi-faceted in its benefits, with the potential to improve psychological wellbeing, physical health, and food security (Wright et al., 2015). The findings of this study point to the efficacy of mobilising the increasing number of older adults in Scotland to support each other and safeguard healthy ageing in place for vulnerable older adults in the community.

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Statement of ethical approval

Ethical approval was granted by the College of Science and Engineering at the University of Glasgow.

Statement of ethics

Ethical approval was granted by the College of Science and Engineering at the University of Glasgow. Informed written consent was received prior to online meetings and confirmed at the start of each meeting. Any identifiable data, such as location or diners' names, were changed or removed to deindividualise participants. Non-formal ethical practice included the researcher's preparation of personalised maps, enabling familiarity and supporting positive rapport building.

The study included the recruitment of seven older adult (55+) volunteers, with at least six months experience as meal makers for Food Train, living in rural or food desert communities were recruited from a pool of 592 meal maker volunteers. The findings of this study may not be representative of the wider population, however, analysis of in-depth interviews demonstrates there is a recurrence of experiences.

CRediT authorship contribution statement

Rebecca Davies: Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Kate Reid:** Writing – review & editing, Supervision, Resources, Methodology, Conceptualization.

Declaration of competing interest

The author(s) (Rebecca Davies and Dr. Kate Reid) declare none.

Data availability

The data, in the form of de-individualised interview transcripts and digitally rendered ecomaps, is available via the Open Science Framework, available at: DOI 10.17605/OSF.IO/4F76P.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.appet.2024.107353>.

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