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Dynamics of volunteering amongst English older adults: exploring associations with life-course factors and policy implications.

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Abstract

In response to population ageing in the UK, there has been increased policy and sector efforts to promote volunteering. Despite this, overall volunteering has been stable or falling. In older adults, this could be due to policy changes which extend working lives, alongside existing age-related roles, and responsibilities. In light of this, this thesis draws upon longitudinal data from the English Longitudinal Study of Ageing to address two key research aims: to explore life-course factors that are associated with volunteering in older age and to explore how changes in employment and state pension age (SPA) policy may be associated with volunteering.

Multi-level models revealed that having more resources, and coming from highly skilled, non-manual occupations increased the likelihood of volunteering, suggesting an inequality underlying who is volunteering. Retirement is positively associated with volunteering, with males participating at a higher frequency than females in retirement. While widowhood had an overall negative relationship with volunteering, random slopes analysis revealed individual variability over time, suggesting widowhood may not have the same influence for all. Working beyond SPA, and for financial reasons, reduced the likelihood of volunteering. Survival analysis revealed no significant difference between experiencing a change in SPA or not on volunteering in retirement, however, microsimulation models forecast that increasing the SPA could decrease the volunteer population in the future.

From these findings, suggestions for policy makers and voluntary organisations include reaching out to under-represented populations and working to reduce barriers to participation, encouragement of volunteering within workplaces, and promotion of flexible types of volunteering (e.g. online) which could better incorporate those with limited time and resources into volunteering. This thesis therefore contributes to a better understanding of the dynamics of volunteering amongst English older adults, contributing to debates around employment policies in later life, and in the recruitment practices of voluntary organisations.

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1 Introduction

1.1 Background

1.1.1 Ageing Population

Due to increases in life expectancy, and declining fertility, there has been a shift in demographics worldwide (Gordon et al, 2021). Increased medical knowledge, improved standards of living, and low birth rates have resulted in a shifting demographic structure that will bring about changes to our economy, social security systems, health care systems, and labour market (Wendin, 2014). Alongside increases in life expectancy, for the last four decades in the UK, the fertility rate has been below the level needed to maintain a population size of 2.1 children (Walker, 2018).

Widespread population ageing has seen the number of people aged 60 and over rise, and it is expected to reach 2 billion by 2050, an increase from 900 million in 2015 (WHO, 2018). In the UK, mid-2020 population estimates indicated that 1.7 million people were aged 85 years and over, making up 2.5% of the UK population. This is projected to be 4.3% of the population by mid-2045, with numbers nearly doubling to 3.1 million aged 85 and over (ONS, 2022). This transformation in the demographic makeup of countries poses several social and economic challenges, for example in relation to health care costs (Jongenelis et al, 2020) and in the re-evaluation of existing arrangements for age-related entitlements (Zaidi et al, 2017). The notion of an "earned retirement" that is associated with a period of leisure is now being weighed against a "moral-economic imperative" for older people to stay productively engaged or contributing to society (Foster & Walker, 2021 p.1). This perspective has influenced policy approaches, particularly those aimed at addressing demographic challenges, for example, the idea of "active ageing" (see section 1.2) and the extension of working lives. The move to extend working lives in particular has been key to both the European Union (EU) and United Kingdoms' (UK) policy response to population ageing, and the potential impact on the existing structure of pension systems (Finch, 2014; Foster, 2022).

The ONS (2022) estimate the working population in the UK will increase from 42.5 million in mid-2020 to around 44.4 million in mid-2030, with projections to mid-2045

to be roughly the same (44.6 million). However, estimates of pensionable age population are set to steadily increase, going from 11.9 million in mid-2020 to 13.2 million in mid-2030, and further to 15.2 million in mid-2045 – a 28% increase on 2020 estimates (ONS, 2022). These numbers are important when considering dependency ratios, which inform government financial planning. A common measure is the old-age-dependency ratio (OADR) - the OADR is designed to capture the economic burden of ageing, assuming that older people do not work and hence must be financially supported by the working population (Skirbekk et al, 2022). In the UK this is the number of people of pensionable age for every 1,000 people of working age (ONS, 2022). It is projected that the OADR will increase from 280 in mid-2020 to 298 in mid-2030, reaching 341 by mid-2045 (ONS, 2022). Many governments have fostered policies to defer retirement age in efforts to mitigate against the costs of population ageing (Parker et al, 2020). For example, in the UK the pension age for women has risen from 60 to 66 for those born from 1955 and is set to further rise for both men and women in the coming years (Di Gessa & Grundy, 2017; Ginn, 2013; Hammond et al, 2016).

While discussion around the implications of an ageing population has focussed on potential difficulties, a growing base of literature stresses the benefits related to this growing demographic, especially their productive potential (Strauss & Trommer, 2016). Through its Ageing Society Grand Challenge, the UK government has committed to "invest in harnessing the power of innovation" to "help meet the diverse needs of an ageing society" (GOV, 2018). The government reports they will invest over £300 million to ensure the UK is able to meet the demands of the ageing population, with £98 million for a "healthy ageing programme" (GOV, 2018). One of the aims of this programme includes working towards everyone remaining active, productive, independent, and socially connected across generations for as long as possible (UKRI 2021). In 2019, Public Health England (PHE) released their "Consensus on Healthy Ageing" in partnership with the Centre for Ageing Better (Centre for Ageing Better, n.d). In their vision for England to be "the best place in the world to grow older" (PHE, 2019), they commit to ensuring timely access to services, removing barriers to opportunities for older adults to contribute to society – in particular, volunteering, and challenging ageism. These commitments echo the World Health Organization's Decade of Healthy Ageing 2020-2030 (Public Health

England, 2019). They also align with policies introduced over the previous decades by the United Nations (2002) and European Commission (2012) which prioritised civic participation as a means to promote active and successful ways of ageing.

In 2015, the WHO report on ageing and health detailed a framework for healthy ageing, promoting health and wellbeing in later life not only to maintain physical and mental health, but to create an environment that enables older adults to live "full" lives (Dixon, 2021). Healthy ageing, like active ageing before it, emphasises the need for action across multiple sectors and enabling older people to remain a resource to their families, communities, and economies (WHO, 2020). Initiatives such as these have sought to respond to the ageing population and have driven policy and health promotions, all centring around "ageing well", and particularly "active ageing" (Foster & Walker, 2021).

1.1.2 "Ageing well" and policy to tackle the effects of an ageing population.

For the past two decades, policies to promote active ageing and to tackle the effects of an ageing population can be categorised in two ways: a productivism approach which focusses on extending working lives and the more comprehensive approach supported by WHO and the UN (Foster & Walker, 2015). It can be argued that to date, policy makers have focussed on the former, mainly by seeking to increase state pension ages (Foster & Walker, 2015). For example, in the UK, the pension age has risen in recent years from 60 to 65 in women in 2010 (Hammond et al, 2015). The state pension age is further set to increase to 66 for both men and women by 2026, to 67 by 2028 and to 68 by 2037-2039 in accordance with the Pension Act of 2014 (Hammond et al, 2015). Regarding the second approach, Foster and Walker (2021) outline a plethora of concepts under the idea of "ageing well", such as healthy ageing, productive ageing, successful ageing, positive ageing, and active ageing. While there are some differences in where emphasis is placed, all seek to promote productivity amongst older adults, and to work against the "decline and loss" paradigm which is associated with what they call "normal ageing". While "normal ageing" focusses on the biological decline across the lifecourse, "ageing well" approaches seek to improve the health and wellbeing of older adults, while they remain engaged and active in civil, and even working, life (Foster & Walker, 2021).

One of the "ageing well" iterations propagated by the WHO was "healthy ageing". Healthy ageing initiatives acknowledge the diversity of older adults and that policies must be set up to improve the functional ability of all older adults (WHO, 2023). WHO define "functional ability" as a person's ability to meet their basic needs, make decisions, be mobile, build and maintain relationships, and contribute to society (WHO, 2020). They acknowledge that diversity in the experience of older adults is largely due to the advantages and disadvantages they experience (WHO, 2020). Such advantages and disadvantages, linked to factors such as gender and socioeconomic status, may influence our environments and the opportunities available to us, impacting upon individuals' ability to age "healthily" (WHO, 2020). WHO argue that all older adults should have access to the same services and opportunities to age "healthily" and contribute to society (WHO, 2015). One way encouraged by WHO to contribute and engage with society is to participate in volunteering (WHO, 2015).

The World Health Organisation also focussed on the concept of "active ageing". Coming to prominence in the 2000s, active ageing focuses on older adults remaining active in society as they age, with a strong focus on improving wellbeing (Walker, 2002). The idea of active ageing was integral in their "healthy ageing" initiative, which emphasised the need for action across multiple sectors to enable older adults to remain active in their families, communities, and the economy (WHO, 2020). The idea of active ageing can be seen throughout different "ageing well" initiatives, with active ageing being at the forefront of both EU and UK policy making. Active ageing is concerned with older adults remaining healthy, in employment, and to continue participation in civil life (Foster & Walker, 2015). It is perceived as a "holistic" approach to the issue of population ageing, as opposed to an economic approach, focussing on issues such as quality of life, mental wellbeing, physical wellbeing, and social participation (Foster & Walker, 2015).

Promotion of "active ageing" through engagement in volunteering has been another key policy area. Volunteering is seen as one way for older adults to participate in society, one of the key facets of active ageing, bringing both benefits to the individual in terms of health and wellbeing, and to society (Lakomy, 2021). For individuals, it is said to build up our health, wellbeing, and connection with others, as well as developing and passing on skills (NCVO, 2021). For society, volunteering is

valuable, particularly at the local and community level, where volunteer collaboration can be used to drive positive change and improve community quality of life (ibid). This is seen across different sectors such as health and social care and policing (ibid). The benefit of volunteers to society, in filling in where the government may fall short, is particularly seen in times of crisis, notably the during the outbreak of the COVID-19 pandemic and recent humanitarian efforts such as the "Homes for Ukraine" scheme (ibid). In short, volunteers are a vital resource to organisations and for community development, with the individual benefits of improved health and wellbeing and social connectedness fitting with an "active ageing" agenda. Given its promotion as a part of "active ageing", volunteering has received increasing attention, particularly around the profile of volunteers.

1.1.3 Volunteering and older adults: trends and benefits

As outlined above there has been increased policy and sector efforts to increase volunteering participation in the past years due to its alleged benefits to both the individual and society. It is viewed as a "win-win", having both social and wellbeing benefits to volunteers, and it promotes "active ageing" by engaging older adults in society, keeping them as active and productive members within their communities, which is argued to lessen the burden of population ageing (Okun et al, 2016).

There is a growing evidence base that suggests volunteering is positively associated with the wellbeing of older adults and the slowing of cognitive decline (Lum & Lightfoot, 2005; Tabassum et al, 2016; Pliavin & Siegl, 2007; Oman et al, 1999). Researchers have also explored the underlying socio-cultural factors that influence volunteering and aimed to identify those who were most likely to miss the positive effects of volunteering. This research has explored gender (Zaninotto et al, 2013; Wemlinger & Berlan, 2016; Helms & McKenzie, 2014), socioeconomic status (Lee, 2018; Hackl et al, 2007; Son & Wilson, 2015), and race (Mesch & Rooney, 2008; Musick et al, 2000; Choi, 2003) in regard to associations with volunteering amongst older adults. A picture has emerged of the "profile" of older adult volunteering, with the "young-old" more likely than the oldest old to volunteer, likely related to findings that suggest a relationship between health and volunteering, with volunteers more likely to be "healthier" than non-volunteers. Whether this is an outcome of volunteering, or that it is the healthiest that select into volunteering, will be discussed

in chapter 3 (3.2) of this thesis. Females, the retired, married, more highly educated, and wealthier adults have been found to volunteer at higher rates, suggesting there could be certain characteristics which predict volunteering, and potential barriers such as socioeconomic status, to participating in volunteering in older adulthood. These characteristics, amongst others, will be discussed in the literature review section of this thesis (3.2).

Despite this growing evidence base, and increased policy in the area to encourage volunteering, there is a significant turnover in older volunteers (McNamara & Gonzales, 2011). Participation in volunteering has been found to vary across the lifecourse, with different life transitions such as retirement and widowhood (Tang, 2015; Tang et al, 2010; Utz et al, 2002) impacting upon participation. Research to date has sought to understand why people are more or less likely to volunteer in response to life events, and which life event may precipitate or hinder volunteering (McNamara & Gonzalez, 2011). This potential impact should be of importance to policy makers and volunteer involving organisations, given the importance of volunteering within a "healthy ageing" framework for older adults, and the individual/community/societal benefits that are derived from participation.

This thesis seeks to address this by improving understanding of volunteering amongst older adults, particularly around times of transition and the potential impact social policies may have. Below key terms and the scope of the study are discussed, followed by discussion of the main aims and research questions which will be answered in this thesis. Finally, there will be an outline of the thesis.

1.2   Definition of Key Terms

1.2.1   Volunteering

What is meant by 'volunteering' can be complex to define, with terms and definitions used struggling to reflect the multitude of characteristics and concepts associated with volunteer participation. Furthermore, these characteristics, concepts and terminology can vary in the four nations of the United Kingdom, as can relevant policy. This section aims to outline some of the discussion around terminology relating to volunteering, reflecting on the multitude of ways in can be defined, what it means in the four-nations context, and specify how "volunteering" will be defined and used in this thesis.

1.2.1.1 Volunteering: a complex phenomenon

The NCVO define volunteering as "any activity that involves spending time, unpaid, doing something that aims to benefit the environment or someone (individuals or groups) other than, or in addition to, close relatives" (NCVO, 2019). A key element of this definition is that volunteering is a freely made choice on behalf of the participant (NCVO, 2019). The NCVO (2019) state that this may include "formal activity undertaken through public, private and volunteer involving organisations as well as informal community participation and social action". Everyone has a right to participate in volunteering and prior work suggests volunteering can have significant benefits on well-being (Hansen et al, 2018; McMunn et al, 2009; Tabassum et al, 2016). The United Nations also follow a similar definition, though specifying that volunteering should be for "general public good" (Grotz & Leonard, 2022: p.4). Despite varying wording, it can be argued that most definitions used in the literature follow three components: the activity is unpaid, the individuals own choice, and makes a difference out with the individual's family (Grotz & Leonard, 2022). However, volunteering is a complex phenomenon, with different typologies, paradigms, and with multiple terms being used interchangeably e.g. voluntary work, voluntary action, social action, or volunteering participation.

An influential, and early, discussion comes from Lord William Beveridge, one of the architects of the Welfare State. His seminal work on 'Voluntary Action' was published in 1948 and introduced his thoughts on the 'mutual aid motive' and the 'philanthropic motive' driving volunteering. From this perspective, volunteering can be viewed as a mode for individuals to help others and society, while benefiting in return e.g. through self-help groups. The second motive discussed by Beveridge (1948, cited in Rochester et al, 2010), the 'philanthropic motive', links with what Rochester et al (2010) describe as the dominant paradigm of volunteering in recent times: volunteering 'as service'. In this paradigm, motivation for volunteering is altruistic in nature, looking to help others through organised and structured activity, typically in the domain of social welfare (e.g. befriending services or hospital drivers). Alongside this dominant paradigm, Rochester et al (2010) also outline two other volunteer paradigms: 'as activism' and as 'serious leisure'.

Where volunteering 'as service' is rooted more in philanthropy, volunteering 'as activism' is more embedded in forms of mutual aid and self-help, including advocacy

and campaigning by grass-roots organisations (ibid). Forms of mutual aid can also be seen to fit more closely with informal types of volunteering (Dean, 2022). Distinctions between formal and informal activity bring up arguments about what "counts" as volunteering (Dean, 2022). Dean (2022) argues that despite occurring more frequently that formal volunteering, informal volunteering is often sidelined in the research, with much of the focus on formally organised forms of participation. Though some argue this is due to ambiguity about what these activities are and when they are performed (Taniguchi, 2012). Others have also suggested that differentiating between the two, rather than talking of overall involvement or participation, can be misleading. Activities that could be classed as 'informal' may have formal aspects such as unwritten rules, where formal volunteering in organisations can have informal aspects where no sign up or training is necessary (Grotz & Leonard, 2022). Grotz and Leonard (2022) also point to an edition of the Community Life Survey from 2020 which found those involved in mutual aid groups identified themselves as formal volunteers, where mutual aid is more typically defined as an informal form of participation. This further highlights the complex nature of a round view definition of volunteering.

Finally, volunteering 'as serious leisure' has a more intrinsic motivation, with individuals enthused to participate due to a particular personal interest and is more in the domain of the arts and culture (e.g. coaching, park run volunteers, performers), with links to both smaller local organisations and wider structures (ibid). Though, in presenting these different paradigms, Rochester et al (2010) argue that while each paradigm encapsulates part of what it is to volunteer, individually they do not capture the complexity of volunteering which can be a combination of one or more of these in relation to motivation, place, and structure (See Figure 1-1).

Figure 1-1: Perspectives on volunteering – source: Rochester et al (2010) p. 15.
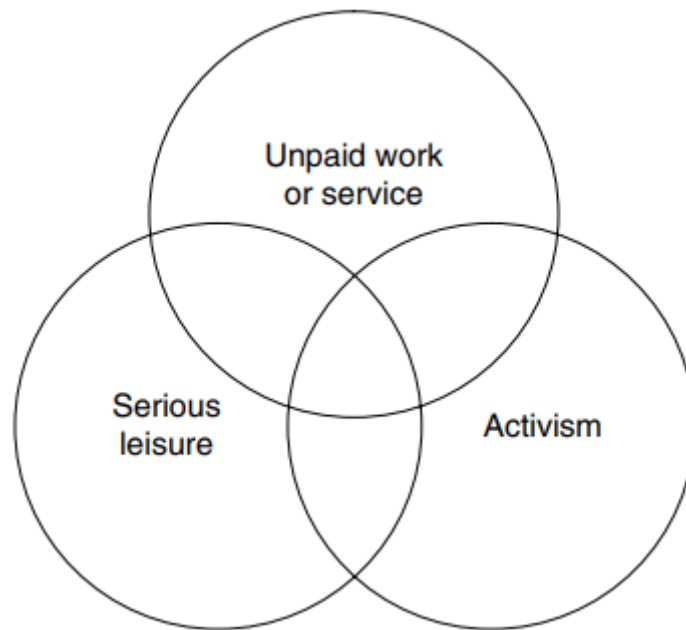
Overall, it can be accepted that volunteering takes place in a multitude of ways, in a multitude of areas within society, with the argued outcome that it adds value to individual lives and to society (Grotz & Leonard, 2022). Within the UK it is well acknowledged that volunteering is a valuable activity which takes place across society to the benefit of our communities (ibid). This has made its promotion a policy point for successive UK governments, from the inception of the Volunteer Centre UK in the 1970s, to the 'Make a difference' initiative in the 1990s, to the idea of 'Big Society' in the 2010s, and now 'Levelling up' with the current Government.

1.2.1.2 Volunteering in the UK: The four nations

In the UK, the voluntary sector plays a formalised part in society, being conceptualised by the dominant paradigm as service, or a form of unpaid work rather than mutual aid and/or activism (Rochester et al, 2010). Rochester et al (2010) argue it operates in a similar fashion to those in the public and private sectors, which links in with the idea of a 'third sector' within society. Volunteering has been used by both governments and individuals to fill in gaps in public spending, such as the effective delivery of welfare programmes, and to developing employability among young people (Dean, 2022). The role of volunteering in the UK, and the extent to which it is linked with Government differs between the four nations of the UK, with powers relating to volunteering having been devolved (Hardill et al. 2022).

Given this devolution, there are some policy differences between the four nations. While Northern Ireland can be seen as a 'special case' given the relatively recent political instability, there is more agreement between Northern Ireland, Wales, and Scotland that with England in regard to volunteering policy (Acheson et al, 2022). These three nations are also argued to be similar regarding their commitment to ensuring a diverse range of volunteering opportunities and how they can be accessed (ibid). In Northern Ireland, particularly due to its troubled past, volunteering can be seen as a source of social stability, focussing on community building (Hardill et al, 2022). Due to continued tensions, focussing on other aspects of community development, there has been no updated policy in Northern Ireland since 2012 when they released an action plan entitled 'A Volunteering Strategy and Action Plan for Northern Ireland' (Department for Social Development, 2012). In line with the similarities between Scotland, Wales, and Northern Ireland outlined above, the action plan aimed to recognise the value of volunteering, promoting its perceived benefits, enhance accessibility and diversity of volunteers, improve the volunteering experience, and to support and strengthen volunteering infrastructure (ibid). Similarly in Wales in 2015, a policy was introduced with the aims of improving access to volunteering, promote and improve its image and encourage more effective use of volunteers' time (Welsh Government, 2015). These aims are also echoed in a more recent initiative by the Scottish Government with the release of 'Scotland's volunteering action plan' (Scottish Government, 2022) whose aims include creating conditions where everyone can volunteer, volunteer more often, and volunteer throughout their lives. Designed as a living plan over a 10-year period, it seeks to raise the profile of volunteering and its impact on society (ibid).

Overall, despite varying degrees of recency in their volunteering policy, Scotland, Wales, and Northern Ireland appear on the same page regarding the social value of volunteering in the implementation of policy, focussing on the benefits to society and aiming to promote its value.

On the other hand, in England, there has been a shift to a more 'hands-off' approach (Hardill et al, 2022). This results in an arguably more transactional approach to promoting volunteering, where increasing volunteering is implicit to enable charities and volunteers to play a bigger role in the provision of public services, filling in where public spending is missing (Chapman, 2022; Dawson et al, 2019; Hardill et al, 2022;

Kelemen et al, 2017). This kind of approach, seen in Government policies like the 'Big Society' and the 'Civil society strategy', seeks to replace a top-down government intervention with a bottom-up community intervention which promotes social action within communities and supports the voluntary sector as a service provider (Hardill et al, 2022). Post-Covid initiative has focussed on the idea of 'levelling up'. As part of this agenda to reduce economic differences between regions, volunteering will play a role, with an aim to reduce barriers to volunteering, making it more accessible for all (GOV, 2021). This idea of accessibility is one aspect where the four nations are on the same page. Though, the initiative has been criticised for lack of clarity surrounding funding and specific policy (Rees et al, 2021).

To conclude, despite differing definitions of volunteering, changes to the relationship between volunteering and the Government both within, and between, the devolved nations, the role of volunteering in the UK has broadly remained unchanged (Dean, 2022). This is despite a push from Government across the UK in terms of a multitude of volunteer enhancing policies, with the number of volunteers has remained relatively stable over the last half a century. Dean (2022) argues that a "discursive rather than quantitative" change has taken place regarding the meaning of volunteering (Dean, 2022: pp 531). It is argued there has been a shift from volunteering as a free-form activity to a more formalised activity (Dean, 2022; Musick & Wilson, 2008).

The range of classifications of volunteers/volunteering activities/motivations is evidence of the complexity of the phenomenon, and the variety of perspectives that can be taken to explore and explain it (Rochester et al, 2010).

1.2.1.3 Volunteering as defined in this thesis

As the analysis in this thesis will use data from ELSA, it is ELSA's definition that will be at the core of this study. Lindsey and Mohan (2018) note that within social surveys which collect data on volunteering, most define it as "help given, or work done, without remuneration that is of benefit to people beyond one's immediate family", with some variation in phrasing, framing, and sequencing (Lindsey & Mohan, 2018: pp 6). ELSA follows this pattern, using the term 'volunteer work' to include any unpaid work either formal or informal. They give the example of volunteering in a charity shop as 'formal' and as helping out the local village hall or serving on a

committee as examples of 'informal' activity (user guides available at User guides | ELSA (elsa-project.ac.uk)).

From here, this thesis will use the terms 'volunteering', 'volunteering participation', and 'volunteer work'/'voluntary work' interchangeably to refer to the act of giving time unpaid to formal and/or informal activities per the definition by ELSA. While this definition will not allow for the untangling of the motivation for volunteering, or whether the act is for service, activism, serious leisure, or a mix of all three, it will allow for the exploration of how and whether lifecourse factors, lifecourse events, and Government policy are associated with participation in any volunteering, which is the overarching aim of the thesis. Other language may be used when discussing prior work in line with the language used by the authors reviewed.

1.2.2 Older adults

This thesis will define "older adults" as those aged 50 and over. The term "older adults" varies within the literature, but according to the office of national statistics it is defined by most developed countries as 65+ (GOV, 2019). However, this study aims to look at people over time leading up to transitions associated with ageing such as retirement, as such it will include those younger than 65. Other studies in the area have also included those leading up to retirement age, and some European studies focus on those as young as 50 in their studies (Haski-Leventhal, 2009). ELSA covers this age group, having taken a sample of participants from the now defunct Health Survey for England aged 50 and over. From here, "older adults" in this analysis will refer to those aged 50 and over, unless otherwise stated (e.g., when discussing other studies).

1.2.3 Scope of study

The scope of this study is limited to English older adults aged 50+ at the time of interview. This sample limitation is due the nature of the data used. The sample is a representative sample and as such results will be generalizable to the English population (Study documentation | ELSA (elsa-project.ac.uk)). Any attempt to generalise the findings to the rest of the UK, outside of England, will have to take into consideration the different policy landscapes and impact of devolution. There will be variation in the analysis sample in each chapter, with different sampling restrictions based on the question that is being answered. The sample used in each analysis will

be fully described and justified in the "methods" section of a given chapter (5.3.1; 6.1.2.1; 6.2.2.1; 7.2.1; 8.2.1) and potential limitations of sample restrictions will be discussed in the limitations section (9.4).

1.3   Aims of the Research/Research Questions

1.3.1   Main aims of study

This thesis aims to improve understanding of volunteering amongst older adults, particularly around times of transition. It also investigates the effect that social policies may have on volunteering. Firstly, it explores factors that might explain volunteering participation in old age particularly in relation to transitional life events such as widowhood and retirement, and from a lifecourse perspective, how past occupation can influence participation. Secondly, it aims to explore how changes in employment and retirement policy might impact volunteering participation in older age. In particular, it will focus on state pension age policy, and how increases to the SPA and different working patterns around SPA may be associated with volunteering participation.

1.3.2   Research questions

To understand the factors that explain volunteering participation in older age the research questions are as follows:

- RQ1: What is the relationship between occupation earlier in life and volunteering participation in later life?

- RQ2: What life events are associated with volunteering status in older age?

To explore how changes in employment and retirement policy may be associated with volunteering participation in older age there are a further three research questions:

- RQ3: Are changing retirement policies associated with volunteer participation?

- RQ4: How are changes in employment and propensities in older age related to volunteering participation?

- RQ5: How might policy makers and volunteer involving organisations encourage participation amongst older people?

1.4   Ethical considerations

This thesis conducted secondary analysis on an existing data set, as such the ethical implications are minimal. The English Longitudinal Study of Ageing is an archived data set, available for free from https://www.data-archive.ac.uk. Ethical approval was granted for each wave by the National Research and Ethics Committee with participants signing a paper consent form, meaning no ethical approval is needed from the participants for this thesis (Di Gessa et al, 2016; Steptoe et al, 2012).

Ethical approval was granted by the General University Ethics Panel (GUEP) in September 2019 (See appendix 1-1).

1.5   Thesis outline

Chapter 1 has provided background information on the rationale for this thesis, particularly the ageing population, policies developed to tackle it, and the promotion and need for older adult volunteers. It has also defined the key terms and scope of the study in terms of sample remit and research aims and questions.

Chapter 2 provides the theoretical framework for the thesis. The overarching perspective as well as specific theories to guide the research will be outlined and explained.

Chapter 3 explores and critically discusses the existing literature in the field, first volunteering more generally, before discussing determinants of volunteering and other literature relating to the specific aims and research questions of this thesis.

Chapter 4 outlines the methodological approach, including the data set used, the specific measures that will be used in the analysis, the analytical strategy with regards to descriptive statistics and modelling approaches taken.

Chapter 5 provides analysis in relation to the first research question, exploring whether occupation earlier in life is related to post-retirement volunteering participation. A brief introduction followed by an outline of the analysis specific sample and analysis used. There is brief discussion of results and a short conclusion.

Chapter 6 is split into two sections in order to explore the association between life transitions and volunteering participation, first looking at retirement, and then widowhood. Each section included a brief introduction with background, followed by analysis specific description of the sample and analysis strategy, brief discussion of the results and concluding remarks.

Chapter 7 explores propensities for work in older age, particularly around state pension age. Work status around state pension age, and work pattern (full-time/part-time) is explored to answer whether working beyond state pension age is associated with volunteering participation. Reasons for continued work are also explored. These results are then discussed in light of pension policy reforms and potential implications for policy makers and organisations ahead of the final analysis chapter.

Chapter 8 further explores working around state pension age and its association with volunteering. An exploratory microsimulation model is created and used to explore different policy scenarios surrounding the SPA to examine their potential impact on number of volunteers through their association with retirement decisions. The creation of the microsimulation model is outlined in detail, as well as initial findings regarding numbers of volunteers in each category.

Chapter 9 concludes the thesis, summarising the key findings from each analysis chapter and the unique contributions to the field. Implications of the main findings for policy makers and volunteer organisations are discussed. Finally, limitations of the analysis and potential future avenues and areas to take forward are outlined.

2 Theoretical framework

In this chapter, the theoretical perspectives which underpin this thesis are outlined. It is recognised that there can be no single overarching theory of volunteering because of the complexity of the phenomenon (Hustinx et al, 2010; Pettigrew et al, 2019). As discussed in section 1.2.1, volunteering is a complex phenomenon that can be difficult to define, with 'volunteering' including a wide variety of types of activities, organisations, places, and sectors (Grotz & Leonard, 2022; Hustinx et al, 2010; Rochester et al, 2010). In their effort to create an integrated theory of volunteering, Hustinx et al (2010) outline three key theoretical approaches to researching volunteering, in line with DiMaggio (1995; cited in Hustinx et al, 2020). The first perspective discussed by Hustinx et al (2010) puts emphasis on explanation, generally dealing with determinants of volunteering and why people volunteer (motivations/benefits). Second is a process-oriented approach, seeking to understand how people volunteer, conceptualising the complex nature of volunteering including how it evolves over time (ibid). Third is perspectives which aim to question the dominant paradigms (ibid). This thesis aims to explore volunteering from a mixture of the first two perspectives, aiming to understand life course determinants of volunteering, how this can change over time in response to life events, and related to this, how changing policies may impact volunteering, based on an understanding of who volunteers. To this end, a multitude of theories have been proposed, and several can be useful in trying to explain volunteering in older adulthood.

Overarching more specific issues, two established theories that take a life-course perspective will be used: resource theory and role theory. From a resource perspective, it is expected that individual resources (human, social, and cultural capital) amassed over the lifecourse could impact on a person's likelihood of volunteering, as those who are empowered by resources may be more likely to volunteer (Cheng et al, 2021). It is also expected from this approach, that life-course transitions change people's capacities, opportunities, and incentives to volunteer (Lancee & Radl, 2014), meaning participation in volunteering can be more or less likely during different life events. Secondly, role theory will be used since it has become a prominent theory within the volunteer literature. Role theory, as

conceptualised by Biddle (1986), sought to understand variations in individuals' behaviour as a function of their identity and circumstance. As it has gained prominence as a theory in the area, researchers have used several aspects of the theory including role enhancement, role strain, and role extension, to provide a conceptual framework for examination of volunteering participation and how it may vary by circumstance (Cho et al, 2018). It is particularly useful in potentially explaining why volunteering participation may change around life-course transitions such as retirement.

2.1 Life-course perspective

The life course perspective proposes that the choices and actions of people depend on their personal history and circumstances. Research has shown that during the working life, volunteering is highly dependent on experiences earlier in the life course, such as education and occupation (McPherson & Rotolo, 1996; Wilson, 2000). People's lives are dynamic, and their ability, availability, and motivation for volunteering can change over the life-course, meaning that a life-course perspective can help in understanding why volunteering may be more or less likely at different times in older adult's lives (Gray et al, 2012).

2.2 Resource theory

Resource theory is very much central in research surrounding volunteering participation, the notion being that high levels of capital enable individuals to invest their time in the volunteer role (Overgaard et al, 2018). Resource theories generally identify three categories of capital that are integral to volunteer participation: human, social, and cultural capital (Cheng et al, 2021). Wilson and Musick (1997) argue that this is because volunteering is a productive activity, requiring human capital (e.g., education, monetary resources, time, health), a collective action that requires social capital (e.g., social links), and an ethical behaviour which requires cultural capital (e.g. links to religious organisations).

2.2.1 Human capital

First, human capital represents individual resources, such as education, which contribute to an individual's ability to participate in volunteering. It is argued that factors which increase human capital such as education or a prestigious occupation,

can provide knowledge and skills that drive volunteering participation (Cheng et al, 2021). Individuals with more human capital are also argued to be more likely to seek new opportunities and to use the knowledge and skills they have garnered. The skills and knowledge they possess make them more qualified for volunteer work and make them appealing to organisations who are seeking volunteers (Forbes & Zampelli, 2014). Research has come to a general consensus that occupation, education, wealth, and health are the main variables which constitute the 'human capital' that enables individuals to volunteer (Morow-Howell, 2010; Tang, 2006; Wilson, 2000). Research regarding this, and the role they will play in the analyses presented in this thesis will be discussed further in the literature review (chapter 3).

2.2.2 Social capital

Social capital concerns social connections. Research has found that social connections can increase volunteering as they provide resources including information, pooled labour, and trust that may make someone more likely to volunteer (Cheng et al, 2021; Papa et al, 2019). Social capital has been operationalised in many ways but is generally related to the relationships which connect us to society and provide opportunities (Cheng et al, 2021). These relationships have included, but are not limited to marital status, work status, organisation membership, and caregiving. These relationships are all thought to add to an individual's "social capital" and to precipitate volunteering through the opportunities they create – for example, work-place networking (Butricia et al, 2009; McNamara & Gonzalez, 2011; Morrow-Howell, 2010; Papa et al, 2019). The role of these relationships and their association with volunteering participation, as well as how they will add to the analyses in this thesis, will be discussed further within the literature review (chapter 3).

2.2.3 Cultural capital

Cultural capital, as it relates to volunteering, includes a moral aspect, and seeks to get at an underlying "culture of benevolence" that precipitates volunteering (Principi et al, 2016). First posited in the context of volunteering by Wilson and Musick in 1997, the idea of cultural capital and its relationship with volunteering focussed mainly on religion as an avenue of accumulating this type of capital. The idea being that those who are members of religious organisations might be expected to

volunteer because of their religious beliefs, which may propagate helping others and the community, and through their social connectedness, participate in church related volunteer activities (Cheng et al, 2021). Putnam (2000) has argued that religious organisations provide an institutional and philosophical base for volunteering. This aspect will be further discussed throughout the thesis, particularly in the variable of interest and discussion sections. Research to date which uses cultural capital in its conceptual framework typically focusses on religion, either as participation or organisation membership, and have consistently found a positive relationship between cultural capital and volunteering (McNamara & Gonzales, 2011; Tang, 2006; Wilson & Musick, 1997). This aspect of capital and how it relates to the analyses and interpretation of results in this thesis will be discussed further in the literature review (chapter 3).

2.3   Role theory

While there have been several theories proposed to understand volunteering, role theory is a particularly dominant framework in the field (Choi et al, 2007; Cho et al, 2018; Eibich et al, 2020; Eibich et al, 2022; Greenfield & Marks, 2004; Lum & Lightfoot, 2005; Tang, 2016). This theory posits that within the roles we take on in life, there are associated expectations for behaviour that align with the particular positions or statuses within society (Morrow-Howell & Greenfield, 2015). Volunteer researchers have often conceptualised volunteering as another 'role' one takes on during the life-course, and used this theoretical framework to explore how this role can influence individual outcomes such as wellbeing, and reasons why older adults may pick up the role at different times across the life course (Morrow-Howell & Greenfield, 2015). It is a multifaceted theory, made up of several components such as role enhancement, role substitution, and role strain. Outlined below are the main components of role theory which will serve as part of the theoretical framework of this thesis.

2.3.1   Role enhancement

Role enhancement is one key component which makes up 'role theory'. The role enhancement component states that the roles we accumulate can enhance our power and status (Haski-Leventhal, 2009). Proponents argue that a productive role, in this context - volunteering, provides older adults with more resources, a larger

social network, more power, and more prestige which can be beneficial to wellbeing (Lum & Lightfoot, 2005). This has been used to explain why individuals may select into volunteering, and why they may continue to volunteer, as they benefit from enhanced self-esteem and increased wellbeing (Greenfield & Marks, 2004; Haski-Leventhal, 2009; Lum & Lightfoot, 2005). It has also been argued that the role enhancing aspect of volunteering can be more pronounced in older adults, increasing their perceived power and status, and improving wellbeing as the roles an individual has reduces with age (Cho et al, 2018). It has also been suggested that we take on roles that enhance our sense of self-esteem and status particularly around times of transition where we may experience role loss – times like this may include retirement or widowhood. However, taking on too many roles can result in "role-strain" – another component of the theory.

2.3.2 Role strain

Role-strain has been a common explanation for why individuals may be less likely to volunteer, or why they may give up volunteering. It is argued that the enhancing aspects of some roles only continue up until a point where an individual has taken on too many roles. Role-strain can burden individuals, leading to negative outcomes in health and wellbeing and can cause cessation of some roles (Haski-Leventhal, 2009). Another component is "role context" which considers both the number of roles and their setting or context (Haski-Leventhal, 2009). This is often used to aid in understanding the intensity of volunteering, and how occupation of multiple roles and what the roles entail can lead to different levels of intensity. This has been used to explain a potential negative relationship between paid work and volunteering (Mutchler et al, 2003). It is suggested that the relationship between productive activities in competitive – competing for the time and energy of older adults (Mergenthaler et al, 2019). Therefore, an individual may experience role strain if they are committed to too many roles, resulting in stress and decreased wellbeing (Choi et al, 2007). This may cause older adults to drop roles or withdraw from non-compulsory activities. Burr et al (2007) suggests that there is a competitive relationship between compulsory and discretionary activities, which has been used as an explanation for why work may hinder volunteering (Mergenthaler et al, 2019). It has also been used to explain some barriers in volunteering in relation to socioeconomic status – with indirect costs (e.g., time) and direct costs (e.g. travel)

placing potential strain on the volunteer and leading to potential cessation or reduced likelihood of volunteering (Cho et al, 2018; McBride et al, 2009).

2.3.3 Role substitution

A third component of interest in this thesis is 'role substitution'. It has been previously used to explain why individuals may start volunteering or increase intensity of volunteering across the life-course (Lancee & Radl, 2014). As other roles are dropped or lost, it is argued that individuals will seek new roles to fill the time spent in the old role, and the social and emotional fulfilment they received. One example is in leaving the workforce where, as discussed above, the role enhancing nature of volunteering could replace the prestige and status lost with the job role. It is argued that the odds of volunteering increase as volunteering is a social role that fills both time, social and emotional needs (Lancee & Radl, 2014). This could be used to explain volunteering around life events such as widowhood and retirement. It has been found in the literature that volunteer work increases in intensity as it becomes a substitute for the role of the paid worker or the role of the spouse (Tang, 2016). Along with its role enhancing properties, volunteering also provides social networks that can replace the ones lost through the other roles (Eibich et al, 2022).

The complementary hypothesis opposes this, considering paid work and volunteering to be complementing activities (Eibich et al, 2020; Tang, 2015). This also aligns with key concepts from the role theory perspective, where role extension suggests complementary associations between activities (Choi et al, 2007; Mergenthaler et al, 2019). To expand, role extension hypothesis states that engaging in multiple activities provides informal networks that provide opportunities for this multiple engagement (Mergenthaler et al, 2019). Some studies have found evidence of this complementary relationship with volunteering and caring, as well as between volunteering and paid work (Burr et al, 2005; Burr et al, 2007; Dury et al, 2016; Mergenthaler et al, 2019; Wilson & Musick, 1997). It has been suggested from this angle that leaving the work force decreases social networks, reducing the chance of being asked to volunteer (Tang, 2015). While the role substitution perspective will be taken in this thesis, the complementary hypothesis could explain differences in propensity for volunteering, perhaps explaining how different work patterns (part-time vs full-time) could be different. The above suggests that the relationship between

volunteering and retirement, and potential theories to explain it, is complex and may be compounded by several factors. This will further be explored in this analysis conducted in this thesis (chapter 6.2; chapter 7).

These aspects will be discussed further in both the literature review (chapter 3) and in discussion of analysis results.

2.4   Concluding remark

As outlined above, volunteering is a complex and dynamic activity which the life course perspective can be useful in explaining. Figure 2-1 summarises the conceptual framework which underpins this thesis, both in the identification of variables which are of importance to the analysis conducted and how the findings will be interpreted through the life-course lens. Through different resources individuals have, some amassed across the life-course, participation in volunteering can be more or less likely. Role theory provides a multifaceted approach to evaluate factors that are associated with volunteering participation in older age and how changes in employment and retirement policy might influence participation. Through these theories, the life-course framework provides multifaceted perspective that will aid in evaluating the existing literature of factors that may explain volunteering participation in older age and how changes in employment and retirement policy might influence participation.

Figure 2-1: Overview of theoretical framework – source: authors own work.
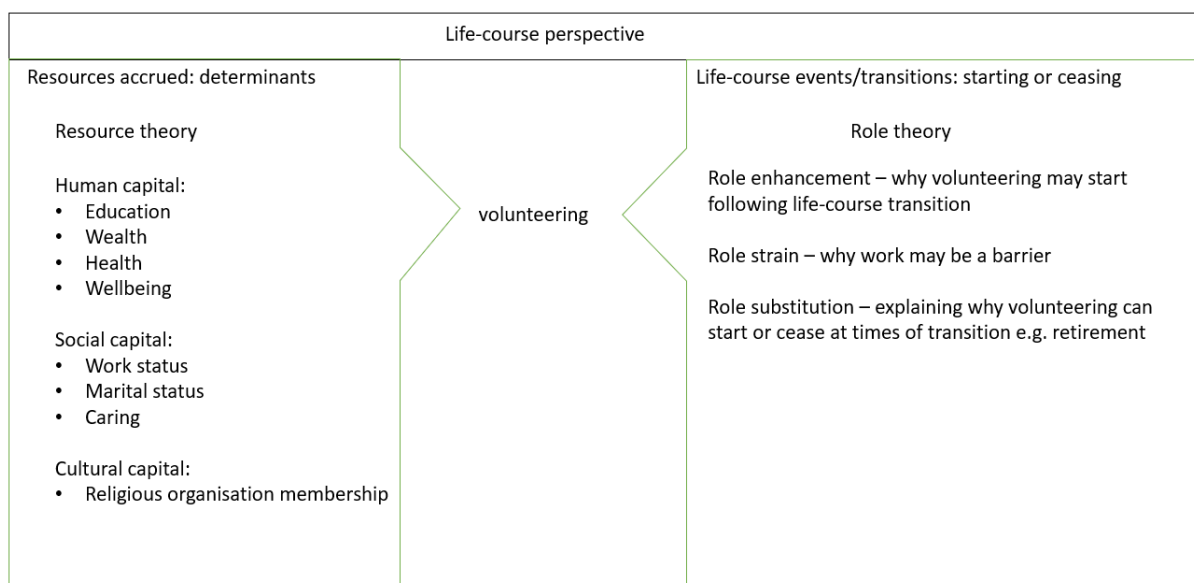
Chapter 3 will now explore the existing literature on factors influencing volunteering and the potential impact of extending working lives and state pension changes on volunteering to identify the gaps in the existing literature that this thesis will fill.

3 Literature review

This chapter reviews existing literature in the field, with reference to literature in line with the aims of this thesis. As set out in the theoretical framework defined in chapter 2, discussion will focus on determinants of volunteering in line with a resource perspective, which will identify key covariates and gaps in the existing literature which this research aims to fill. For this part of the review, the focus will be on the first research aim to understand the factors that explain volunteering in older age, particularly in regard to pre-retirement occupation. From a role theory perspective, literature related to life-course transitions associated with ageing including caring, widowhood, retirement, and later-life working will also be explored. This will allow for gaps in the current research to be established, and to formulate research hypotheses in line with both theory and existing literature. Secondly, research related to the extension of working lives and potential impacts on volunteering are reviewed.

Searches were conducted through numerous sources (e.g., ProQuest and Google Scholar). Preliminary searches were conducted to become familiarised with the different subject terms employed by researchers and the diverse ways that key search terms could be employed and written about. For example, when searching for literature surrounding widowhood the search string "volunteer* OR voluntary AND widow* OR spousal loss AND older adults" was initially used. After preliminary searches, the search strings became more complex to return more studies, and studies of greater relevance. Papers were then downloaded if deemed of relevance (either for in depth review or for background information) and included in the review. When reading papers any relevant references were downloaded and added. The searches were rerun periodically to ensure the review was as up to date as possible at the time of writing.

3.1 Existing research on volunteering

Since the 1990's, the study of volunteering has moved from the periphery to become a core aspect of social research (Wilson, 2012). Wilson (2012) points out in a review of volunteering research, that over the last several decades more sophisticated theories of volunteering have been developed, methods have become more refined, and there is now more access to reliable, and representative, data. Given this, increasing scholarly attention has been given to volunteering, with research found in

a range of scholarly journals (ibid). Aside from scholarly pursuits, there have been numerous policy interventions both in the UK and internationally, to encourage volunteering. In the UK context, for example, despite the move away from the idea of "Big Society" policies, UK Government policy remains committed to the promotion and increase of volunteering participation (John et al, 2020). However, as discussed in section 1.2.1.2, devolution has meant that the different governments that make up the UK employ different policies and approaches (Fox, 2019; Grotz & Leonard, 2022; Hardill et al, 2022).

While all nations see volunteering as important, allocating public spending to its promotion, they also have different approaches to doing so (see section 1.2.1.2), meaning that there may be different levels of volunteering across the UK (Fox, 2019). This can be noted in comparison of findings from the Community Life Survey in England and the Scottish Household Survey in Scotland, where participation in volunteering at least once a year is 40% and 27% respectively (Fox, 2019). However, it is argued that this may be more to do with measurement, than actual differences, with evidence from the UK wide Understanding Society survey indicating that there is little significant difference (ibid). Fox (2019) reports, using Understanding society, that roughly a fifth (19%) of adults across the UK volunteered. Breaking down into regions, volunteering was lowest in Northern Ireland (14%), followed by Wales (16%), the north of England (19%) and Scotland (also 19%), with participants from the south of England volunteering in the highest proportions (22%) indicating no substantial difference from the UK average (Fox, 2019). Fox (2019) also suggests that other factors such as education and age may be more influential in the decision to volunteer that national policy. An interesting notion given that, despite promotion of volunteering from organisations and Governments, research has shown that volunteering rates have remained relatively stable over the years (Kendall et al, 2018), at around a third of the population.

To this end, there have been several national studies, though with a focus on England (Lindsey & Mohan, 2018), that aimed to create a picture of volunteering in the UK. These include the National Survey of Volunteering (1981; 1991; 1997; 2001 cited in Low et al, 2007), Citizenship Surveys (2003; 2005 cited in Low et al, 2007), and the Helping Out survey (Low et al, 2007). Per Kendall et al (2018), these surveys all found regular formal volunteering is performed by around 30% of

participants, though was slightly higher in the Helping Out survey at 39% which may be attributed to difference in survey methodology (Low et al, 2007). More recently, the Time Well Spent series (2019-2023) sought to share the direct experiences of volunteers, aiming to fill in a perceived gap in the existing research base regarding these experiences (McGarvey et al 2019; Kanemura et al, 2023). In the original survey of around 10,000 individuals, it is estimated that around 70% of people have volunteered at some point in their lives, with the proportion doing this in the year prior to study being 38%. While they do not report a headline figure from their more recent survey, Kanemura et al (2023) report that, in line with other surveys on the 2020/2021 period (see below), numbers volunteering in key activities (fundraising, event organising, campaigning) fell in the period between surveys. They argue that this could be part of the impact of the COVID-19 pandemic, or perhaps a wider trend in reduction of those spending time volunteering.

This was also corroborated by the NCVO Civil Society Almanac which, first published in 1996, gives an overview of the voluntary sector including characteristics, finances, workforce, and volunteers (NCVO, 2022). They note drops in levels of volunteering in 2020/2021, however, it still remails at around a third of the population (30% formal; 33% informal), illustrating relative stability in estimates of volunteering over time (Lindsey & Mohan, 2018; NCVO, 2022). This is further reflected in findings from the Community Life Survey, a leading household survey that has provided robust information to government and the public on key social measures such as charity services, volunteering, and community engagement (UK Data Service, n.d.). They record that the number of people who formally volunteered at least once a month fell from 23% to 17% in the 2021/22 period (Gov, 2022). Although, there was an increase in informal volunteering, with 33% of respondents stating they had volunteered informally at least once a month, suggesting it may be the type of volunteering that matters (ibid).

Findings from the Community Life Survey also suggest that despite the dip in formal volunteering, it was still more prevalent amongst those who were economically inactive versus in employment, and amongst those from the least deprived areas in the country suggesting variations in participation across socio-demographic factors. It was also found to be more prevalent amongst those aged 50 and above for both formal and informal volunteering. This is of interest as,

against the background of rapid population ageing, studying volunteering participation in later life has become an important research topic in recent years. This increase in interest around older adults' volunteering reflects a growing interest in academic research to promote active and successful ways of ageing, in line with the policy developments outlined in section 1.1.2 (Serrat et al, 2020).

Research has explored what constitutes "volunteering", with debate surrounding different activity (Cnaan et al, 1996; Grotz & Leonard, 2022; Hardill et al, 2022; Rochester, 2006; Rochester et al, 2010; Sheard, 1995; Smith et al, 2016), it has delved into the underlying socio-economic and demographic factors that may influence volunteering, and associations with gender (Zaninotto et al, 2013; Wemlinger & Berlan, 2016; Helms & McKenzie, 2014), age, marital status, socioeconomic status (Lee, 2018; Hackl et al, 2007; Son & Wilson, 2015), health, and race (Mesch & Rooney, 2008; Musick et al, 2000; Choi, 2003). A recent review of the literature surrounding civic participation (of which volunteering is a component), identifies key gaps in the existing literature related to older adult volunteering including who participates, which is key to addressing potential inequality in the volunteering population (Serrat et al, 2020). Further, how does participation develop, and how do transitional life events impact on volunteering.

Below is a discussion of the existing literature focussing on factors that explain volunteering in older age, including earlier life experiences and life transitions, as well as the impact of public policies around employment on volunteering. As discussed, the literature is examined through a lifecourse lens, with the expectation that human, social, and cultural capital will be associated with volunteering participation, and that propensity for volunteering will differ around significant life events.

3.2 Sociodemographic factors

3.2.1 Age

From a life-course perspective, age is an important variable to consider. As we age there are certain life events that may make someone more or less likely to volunteer, which may suggest that volunteer could fluctuate with age. For example, Van Groenou and Van Tilburg (2012) found that time volunteering increased amongst the individuals aged 55+ which is in line with several European based panel studies that

also found that volunteering increased with age, with older adults aged 60+ volunteering most across the studies (Haski-Leventhal, 2009; Hansen et al, 2018; Grizzle, 2015; Plagnol & Huppert, 2009; Tabassum et al, 2016) and with English studies including the Community Life Survey which found volunteering was highest amongst those aged 50+ (Gov, 2022). Findings from England also suggest that the most active formal volunteers are those in middle age, covering ages 35-64, which could suggest a 'peaking' at certain points in life (Brodie et al, 2009; Low et al., 2007).

Conversely, there are several studies that have found a negative relationship age, finding that as people grow older the probability of volunteering decreases (Bulanda & Jendrek, 2016). In a study about predictors of volunteering cessation volunteering amongst older adults aged 65+, Okun et al (2014) found age to be a factor, with cessation more likely as participants got older. Along with being more likely to quit, it was also found that the probability of taking up volunteering was lowest among older adults aged 75 years and older (Hank & Erlinghagen, 2009). However, despite these negative findings some suggest that when other sociodemographic factors are considered, volunteering does not necessarily wane with age (McNamara & Gonzalez, 2011). It is thus suggested that an importance should be placed on individual characteristics above the impact of age (Van Groenou & Van Tilburg, 2012).

However, some explanation for the differing directions of association found could be due to treating age as linear. If we expect, as will be discussed further down, that retirement is a time of increased volunteering, volunteering may increase around retirement before decreasing due to ill-health and other characteristics associated with old age. From this it could be expected that there is a quadratic association of age on volunteering, increasing until a point, before decreasing. This will be explored further in the analysis chapters of this thesis, where discussion can be found on the quadratic association between age and volunteering.

3.2.2 Gender

Another demographic factor that has yielded conflicting results is the gender. The relationship between gender and participation in volunteering activities varies from study to study, with some finding females volunteer more (Brodie et al, 2009;

McMunn et al, 2009; Tabassum et al, 2016), some finding males volunteer more (Dury et al, 2015; Grizzle, 2015; Haski-Leventhal, 2009) and others finding no association (Hank & Erlinghagen, 2009). There are also differences gender related patterns from country to country with women volunteering more in the UK, males volunteering more in Sweden, and no difference in Canada (Einolf, 2010).

Gender differences in volunteering tend to be analysed as a social construct. From a role theory perspective, there are set roles and expectations in society for men and women, and these differing roles lead to differences in behaviours such as volunteering (Morrow-Howell & Greenfield, 2015). It has been argued that men focus on roles that emphasise power and authority whereas females focus on roles involving human interaction and social support (Gil-Lacruz et al, 2019). These roles are diffused through society and the family, so that the associated behaviours are normalised and directed towards tasks (Gil-Lacruz et al, 2019). The female role is characterised by helping behaviours, meaning they lean more towards caring and community orientated tasks – this would lead to the assumption that females are more likely to pick up volunteer roles that serve the good of individuals and the community (Gil-Lacruz et al, 2019).

On the other hand, the male role focusses on power, ability, and authority, with such roles leading to more resources that allow them to accumulate more roles (Einolf, 2010). Men and women have different patterns of educational participation and men can have higher income than women which could lead to them volunteering more than females (Einolf, 2010).

However, Gil-Lacruz et al (2019) argue that a more thorough gender analysis required contextual factors to be considered. The relationship between gender and volunteering should not be viewed singularly but rather in the context of other socioeconomic factors. This thesis will include gender as a control variable in the analysis due to past findings from UK studies finding a significant difference between males and females in regard to volunteering participation. Based on role theory, women may be more likely to volunteer due to the social norm that women engage in caring and community benefiting tasks, while males may be more likely due to the ability to accumulate roles due to their resources. Thus, the relationship could go in

either direction or could be cancelled out when all socioeconomic variables and contextual factors are considered in the analysis.

3.2.3 Marital Status

Another socioeconomic factor to consider is marital status. It has been argued that those who are married are the ones with more resources and thus the most likely to volunteer (Grizzle, 2015). Being married provides social, emotional, and financial support as well as a wider social network as opposed to being widowed, divorced, or separated (Grizzle, 2015). This access to more resources allows individuals to accumulate more roles, such as becoming involved in volunteering. This is in line with several studies that have found that married and cohabiting individuals are more likely to volunteer (Bulanda & Jendrek, 2016; Dury et al, 2015; McNamara & Gonzalez, 2011). This is particularly interesting in the case of widowhood, where both role theory and a resource perspective could provide rationale for potential volunteer impact.

3.2.4 Widowhood

Widowhood is identified as a key life-course transition of older adults. Widowhood is one of the most stressful events in later life, being associated with increased risks of depressive symptoms and mortality (Nakagomi et al, 2020). Participation in social activities during widowhood has been associated with lower levels of loneliness (Pinquart, 2003), guilt and sadness (Sharp & Mannell, 1996), enhanced morale and reduced stress (Patterson & Carpenter, 1994), and better physical and mental health (Janke et al, 2008). This supports a role enhancement perspective where productive activities such as volunteering can provide social and emotional support, boosting self-esteem and wellbeing.

Much of the research on widowhood and volunteering characterises widowhood as a discrete event using the date of the spouse's death or compares marital status categories to explore research questions (Utz et al, 2002). However, this does not capture the complex and processual nature of becoming a widow (Utz et al, 2002). Widowhood is a life transition that incorporates more than just the event of loss and thus volunteering behaviour may vary throughout the transition. Utz et al (2002) found that, in a sample of US older adults, widowed persons' volunteering levels decreased before the death of a spouse and increased after the loss. They note that

poor spousal health results in dropping volunteer roles (also noted in a UK context by Brodie et al, 2011), whereas increased social support from family and friends after loss encourages social participation, resulting in the increase in volunteering in widowhood (Utz et al, 2002). Bolano and Arpino (2020) also found a 'U-shaped' relationship between widowhood volunteering when looking at it as a dynamic life transition spanning the time pre- and post-event. Bolano and Arpino (2020) investigate gender differences in pathways of volunteering before and after transition to widowhood. They estimate fixed effects models with lags and leads to identify pathways of volunteering. Results indicate a U-shaped pattern with a decline in volunteering before the death followed by a process of adaptation and recovery.

A study by Li (2007) analysed three waves of the American Changing Lives survey to investigate how widowhood influences volunteering, and the moderating association that volunteering may have in coping with the death of a spouse. They found that people who experienced spousal loss reported greater likelihood of pursuing volunteer roles and increases in volunteer hours (Li, 2007). They found that widowhood did not affect volunteering immediately but rather a few years after the loss (Li, 2007). They argue that volunteer roles are a compensatory resource invoked in the time of loss to help maintain social networks and facilitate social interactions, which is in line with substitution theory (Li, 2007).

On the contrary, Butricia et al (2009) using the US Health and Retirement study found that volunteers who lose a spouse are more likely to quit volunteering than those who are non-widows. They argue that widowhood can increase the costs of voluntary work as the volunteer no longer has a spouse to share other responsibilities with (Butricia et al, 2009). They suggest widowhood has a negative association on volunteering behaviour (Butricia et al, 2009). Nesbit (2013) also found that, overall, widowhood decreased both the likelihood of volunteering and the hours spent volunteering in a US based study. However, they also found a significant interaction between age and volunteering, with older widows more likely to increase their volunteering activity. Okun and Michel (2006) also note a negative association between widowhood and volunteering, finding that widows volunteered less than their married counterparts in their study on the young-old in the US. Dury et al. (2015) argue that marital disruption can negatively affect social engagement by generating emotional and financial stress: experience of resource restrictions such

as widowhood would affect individual resources, social opportunity structures, and motivational factors, which may all hamper volunteering (Dury et al, 2015).

A potential gender interaction could also be at play. Several studies indicate that men and women react differently to widowhood, with men being particularly vulnerable to the impact of widowhood. A meta-analysis by Moon et al (2011) showed that the relative risk for mortality after widowhood was significant only for men. Depression has been also reported in several studies to become more prevalent after a spouse' death in men than in women (Bennett et al, 2005; Forster et al, 2019; Perrig-Chiello et al, 2016; Stroebe & Stroebe, 1983). It has been argued that widowhood for women may be more comparable to a "retirement," especially if they fulfilled the traditional gender roles in the relationship (staying at home, cooking, cleaning, and caring for family). They are more likely to find new activities to be involved in and may be better at adapting to living alone (Jaumot-Pascual et al, 2016). Findings on widowers, are the opposite - men tend to experience more difficulties than women when confronting widowhood in older adulthood (Jaumot-Pascual et al, 2016; Lee et al, 2001; Umberson et al, 1992). Bolano and Arpino (2020) investigated gender differences in pathways of volunteering before and after transition to widowhood. They found this process to be strongly gendered, with females' odds of volunteering two years after the event being, on average, higher than the three years before widowhood. On the other hand, males' odds of volunteering were estimated to be lower than the three years prior to widowhood even after the period of adaptation where participation began to increase. This suggests that gender should also be considered when exploring the association between widowhood and volunteering.

To date there has been little work directly exploring the association between widowhood and volunteering in a UK context, with all works mentioned above focussing on the American population, with the exception of Dury et al (2015) whose study was based in Belgium. Work to date mainly uses a binary indicator as part of a larger study, with few studies exploring its association on volunteering participation over time (cf. Bolano & Arpino, 2020; Li, 2007; Utz et al 2002). There are also few studies which have taken a longitudinal approach to examining the association between widowhood and volunteering. This is an advantage of this analysis as longitudinal data is imperative to understand the processual nature of life events -

which are not one-off events, but rather dynamic processes which can affect behaviour in different ways at different times (Tang, 2016; Utz et al, 2002). This study will explore widowhood as a transition and will expect both negative and positive associations on volunteer behaviour at various times in line with Li (2007) and Utz et al (2002).

3.2.5 Caring

The resource perspective suggests that aspects of social capital such as caregiving may be associated with volunteering. It is argued that caregiving roles, rather than hinder volunteering as role strain would predict— may accumulate to confer resources that make volunteerism more likely. This is suggested by Burr et al (2005) who examined the relationship between caregiving and volunteering. Their evidence from the Americans' Changing Lives survey suggests that older adult caregivers were more likely to be volunteers than non-caregivers, with the number of hours volunteered increasing with the number caregiving hours. They also found that caregivers were more likely than non-caregivers to be asked to volunteer which provides evidence for the resource perspective that caregiving provides networks and opportunities which may make volunteering more likely (Burr et al, 2005). This was also found in a European based study by Hank and Stuck (2008), who investigated link between voluntary work, informal helping, and caring among Europeans aged 50 or older. Findings from SHARE data found a complementary and interdependent relationship between all three activities. They suggest that perhaps a general motivation for engagement in productive activities, independent of a specific domain of activity, may exist meaning that those who participate in one activity, may be more likely to participate in another. This would further support the notion that caring and volunteering are associated. However, a study by Strauss (2019) argued that, while their findings suggest caregivers were more likely to volunteer, this was only for those who cared outside their household. This could suggest that caregiving may not always be complementary to volunteering with some evidence for this coming from the spousal caregiving literature.

Using data from the 1998 and 2000 waves of the Health and Retirement Study, Choi et al (2007) evaluated two alternative hypotheses role overload and role extension, in relation to relationship between volunteering and spousal caregiving among older

married persons. They found that spousal caregiving was not significantly associated with the likelihood of volunteering for men; however, female caregivers were found to be less likely than non-caregivers to have engaged volunteering to a certain extent. This would lend support to the role overload hypothesis that suggests some roles can cause "role strain" which may lead to the dropping of other roles, or reduced likelihood of picking up another role (Choi et al, 2007).

This was also partially supported in the grandchild care literature. Arpino and Bordone (2017) aimed to assess the effect of providing grandchild care on participation in social activities for people aged 50–85 in Europe, using data from the Survey of Health, Ageing and Retirement in Europe. Arpino and Bordone (2017) found no significant negative effects of grandchild care on engagement in at least one social activity. Although, it was found that regular provision of grandchild care has a significant negative effect on the number of activities in which grandmothers participate and, for grandmothers only, there was a negative effect on volunteering. Another study by Bulanda and Jendrek (2016) examined whether grandparenting roles are related to formal volunteering among older adults. They used the US Health and Retirement Study, finding that grandparents raising coresidential grandchildren have lower odds of volunteering than grandparents providing no regular grandchild care. However, grandparents who provide non-residential grandchild care are more likely to volunteer than grandparents not providing grandchild care and those raising a coresidential grandchild. This is in line with Strauss (2019) and suggests a perhaps complex relationship between caring and volunteering, with intensity and proximity seeming to matter in line with role strain theory which suggests more intense, and resource heavy roles may hinder individuals' ability to take on other roles. Bulanda and Jendrek (2016) argue that their findings are consistent with resource theory and the accumulation of roles, as providing non-residential grandchild care may draw grandparents into volunteer activity.

Despite some mixed evidence, several studies support the idea that these roles function in a complementary fashion (Burr et al, 2007; Hank & Stuck, 2008; Mutchler et al, 2003), and other studies show that caregivers are more likely to volunteer and spend more time volunteering than non-caregivers (e.g., Burr et al, 2005; Butrica et al, 2009; Wilson & Musick, 1997). Caregiving will function as a form of social capital

in this analysis, acting as a control within models. While it will be expected that carers will be more likely to volunteer, there is a chance the relationship could be negative. This will be discussed further within individual chapters.

3.2.6 Religion

Another aspect that has been linked to volunteering through the networks it provides is religion. As discussed in the previous chapter, and in Wilson and Musick's (1997) seminal paper, cultural capital as it is related to religiosity, is one avenue for increased likelihood of volunteering. The idea being that those who are members of religious organisations might be expected to volunteer because of their religious beliefs, which typically promote helping behaviours in reference to people within society and communities more generally (Cheng et al, 2021). Like caregiving, it is argued that their social connectedness provides avenues for volunteering, particularly with opportunities to participate in church related volunteer activities (Cheng et al, 2021). Putnam (2000) has argued that religious organisations provide an institutional and philosophical base for volunteering, with previous studies finding that religion, operationalised either as participation or organisation membership, has consistently found a positive relationship between religion and volunteering (McNamara & Gonzales, 2011; Tang, 2006; Wilson & Musick, 1997).

Unlike other factors discussed above, findings regarding religiosity are consistent and it has been accepted within the literature that religion matches education as a "powerful correlate of most forms of civic engagement" (Son & Wilson, 2021., p.749). For example, Aksoy and Wiertz (2023) found using data from the British Household Panel Survey and the UK Household Longitudinal Study that frequency of religious service attendance on average has a positive impact on volunteering. Another study specific to England was the national 'Helping Out' survey which found those involved in religion volunteered in higher proportions than those who were not (Brodie et al, 2009; Low et al, 2007). This was also found in Australia, with Petrovic et al (2021) finding that, using data from the Household Income and Labor Dynamics in Australia survey greater religious service attendance is associated with an increased likelihood of volunteering, and religious importance is associated with an increase in time spent volunteering among volunteers. These finding provide further evidence for the link between religiosity and volunteering. Cheng et al (2021) also found evidence

to support a positive association between religiosity and volunteering in America. Using data from the 2006 Social Capital Community Survey, they report compelling evidence that individuals who participate in more religious/church activities are both more likely to volunteer and to engage in more volunteering as well.

Overall, the suggestion is, in line with a cultural capital perspective, religiosity is strongly related to volunteer behaviour and thus will be included in the models in this analysis. It will be expected that those who are members of religious organisations will be more likely to volunteer than those who are not, potentially due to the promotion of helping behaviours within these organisations and the networks that they may foster which could support volunteering.

3.2.7 Retirement

Consistent across types of capital in relation to volunteering is the argument that accumulation of capital can provide access to networks which may foster volunteering. From a human capital perspective, this can be related to workplace-based networks and the opportunities they can provide. It is then of interest within the volunteering literature, the potential impact that retiring and leaving the "employee" role may have on volunteering. Studies have consistently shown that retirement is a time of increased volunteering activity (Brodie et al, 2009; Choi, 2003; Hank & Erlinghagen, 2009; McGarvey et al, 2019; Principi et al, 2012), with recent studies finding a causal relationship between the two when using an instrumental variable approach (Eibich et al, 2020; Eibich et al, 2022; Lafererre, 2016; Zhu, 2021). Again, researchers suggest this may be to replace the role lost when leaving paid work, with time to fill older adults are drawn to productive activities such as volunteering (Van Den Bogaard et al, 2014; Haski-Leventhal, 2009; Morrow-Howell et al, 2003).

For example, Tang (2016) found that retirees are more likely than non-retirees to start volunteering. They found that partial/full retirees were more likely to start volunteering and full retirees more likely to cease volunteering than non-volunteers. Tang (2016) noted that those at each cluster of retirement were more likely to volunteer intensively that those who were non-retired. Tang (2016) argues that this may be due to increased free time in retirement and allows retirees to stay busy while they adjust to their new role. It is also argued that retirement allows for

socialisation meaning retirees can continue pre-retirement social lifestyle and social networks that the work role allowed (Tang, 2016).

These findings have been supported by several other studies which found retirees devote more time to voluntary work, arguably in search of compensation, consciously or not, for the loss of other productive roles (Choi, 2003; Hank & Erlinghagen, 2009; Principi et al, 2012; Van Ingen & Wilson, 2017). On the other hand, other studies have found that the relationship with retirement is relatively small in comparison to pre-retirement volunteering experience (Erlinghagen, 2010; Van Groenou & Van Tilburg, 2012). Although, it may be that, like widowhood, the relationship between retirement and volunteering can be different at different times – and thus treating it as a one-off event may yield conflicting results.

Some early work in the area suggests that older adults will be particularly receptive to volunteering in the immediate post-retirement period, as they tend to be in good health compared to their older counterparts and have fewer obligations such as caring (Caro & Bass, 1997). In their study Caro and Bass (1997) examined older adults volunteering behaviours in the immediate years following retirement. They found that overall, retirement is not associated with higher rates of volunteering although in the two years following retirement non-volunteers show a heightened receptivity to volunteering (Caro & Bass, 1997). This suggests that there may be a lag between retiring and becoming involved in voluntary work. This also suggests that the relationship with retirement may be different at different points in the process, perhaps making treating retirement as a transition a better option for exploring its nature.

Tang (2016) took a unique approach to conceptualising retirement, treating it as a transient process than can evolve over time. This is an interesting concept as it allows the researcher to look at retirement as a transition, which is related to volunteering participation in different ways at different times. While it is documented in existing UK research that retirees volunteer in higher proportion than workers and non-workers (Brodie et al, 2009; Community Life Survey – Gov, 2022; Low et al, 2007; McGarvey et al, 2019), though how this evolves through time is not explored. This dynamic approach is suited to longitudinal data and allows for deeper exploration of the complex nature of the link between retirement and volunteering

participation. Analysis in this thesis will use this approach, using 9 waves of ELSA data and treating retirement as a transition over time, as opposed to prior work which treats it as a one-off event, and uses either a cross-sectional approach or few waves of data.

3.2.8 Prior occupation

Related to retirement, there may be a relationship between pre-retirement occupation and volunteering participation in retirement. The work role and the networks and resources that are accumulated during the working life may impact upon the individual's ability to assume the volunteering role (Wilson & Musick, 1997). Also, the prestige and self-esteem that a person garners from their work role may also have an influence on the decision to volunteer post-retirement (Wilson & Musick, 1997). It has been found in previous research that those who were in occupations considered higher in status were more likely to volunteer than those in lower occupation statuses (Webb & Abzug, 2008; Wilson & Musick, 1997; Van Den Bogaard et al, 2014). This was noted in a 2011 literature review regarding volunteering in the UK which found participation in formal volunteering was more common amongst those in managerial positions volunteer more than those in intermediate and routine occupations (Brodie et al, 2009). It has been found previously in the literature that those who have more autonomy in their work, have whiter collar jobs (non-manual) and those who feel they gain self-esteem from their work are more likely to volunteer (Webb & Abzug, 2008; Wilson & Musick, 1997; Van Den Bogaard et al, 2014). From a role theory perspective, this is arguably due to these jobs providing more "prestige" and being more role enhancing. It has been argued that higher skilled and more prestigious occupations provide individuals with more resources that are likely to increase the likelihood of volunteering in retirement, as they can be considered a substitute for the role lost (Wilson & Musick, 1997).

Role theory would predict that the loss of this role will result in uptake of volunteering in the immediate post-retirement period, whereas those who are happy to retire due to an unfulfilling job or hard-manual work may not volunteer at all or will wait a period of time before starting volunteering (Caro & Bass, 1997). Van Den Bogaard et al (2014) use nationally representative cross-sectional data to investigate the relationship between retirement and volunteering among men aged 50–70 in the

Netherlands, and how this relationship is influenced by educational and occupational background. Based on a life-course perspective, they hypothesised that education, socio-economic status related to the occupation, and non-manual occupations will moderate the relationship between retirement and volunteering activities. Results indicated that retirees, the highly educated, people with high occupational status and former non-manual workers are more involved in volunteering. While no interaction between retirement and educational level is found, the characteristics of the occupation (socio-economic status and non-manual versus manual work) were found to interact with retirement, leading to higher volunteering rates for male retirees from occupations with high status, and retirees from non-manual occupations. These findings suggest that physicality of the pre-retirement occupation may play a role in the decision to volunteer in retirement. This is in line with some argument that work life "spills over" into other aspects of people's lives, with those who had hard manual jobs more likely to want to enjoy their free time in retirement rather than take on a new role of volunteering (Caro & Bass, 1997).

Marshall and Taniguchi (2011) explore the hypothesis that having a "good" job significantly promotes formal volunteering, and how this may differ between men and women. They find that, for both genders, volunteers report higher job autonomy and skill requirements, though the level of skill requirement is significantly and positively associated with hours volunteered only among women. They also found that both male and female volunteers are significantly less likely to hold manual positions. This further illustrates the link between skill level and physicality of occupation and volunteering participation. A 2016 study by Wahrendorf et al also found an association between skill level pre-retirement and volunteering in retirement. Analyses are based on the Survey of Health Ageing and Retirement in Europe (SHARE) among 11,751 retired men and women in 13 European countries. They operationalise skill as the main occupational position held during working life, in terms of skill level. For the analyses, groups were re-classified according to the four different skill levels, representing the broad hierarchical structure of ISCO. This skill level refers to skills required in the job for a competent performance of the tasks and duties, which does not necessarily correspond to the existing educational qualification of the worker (Wahrendorf et al, 2016). With regard to occupational position, higher skill levels are supposed to put worker in a more advantage situation

on the labour market, because jobs requiring higher skill levels are expected to be related to higher salary and more continuity of employment as compared to jobs with lower skill levels. The definition of skill used here is also used within other classifications such as Goldthorpe's and SOC. Amongst their results, they find those who worked in higher-skilled occupations or had higher levels of wealth were more likely to engage in volunteering, thus revealing a social gradient in the prevalence of voluntary work (Wahrendorf et al, 2016). This finding is in line with a resource perspective which would suggest that the higher level of skills required could open avenues for volunteering. This may be because their skills can be perceived as useful outside of the workplace.

Understanding the evidenced link between prior occupations and volunteering patterns amongst older adults, could help to identify sectors and occupations where more encouragement is needed. Also, the identification that those in manual and lower skilled occupations are less likely to volunteer suggests further that there are inequalities in the type of people who select into volunteering. To date, most of the research focusses on broad classifications of occupational class, focussing on differences between managerial, secretarial, and farm work for example. This is reflected in the UK in findings from both a literature review from Brodie et al (2009), and in findings from the Time Well Spent survey (McGarvey et al, 2019) which indicated most of the "civic core" who volunteer in higher proportions are from these managerial or professional roles, though this is based on current occupation and not pre-retirement occupation. While understanding these differences has provided insight into how different occupational classes impact volunteering participation, at the heart of the argument is that more highly skilled and less physical occupations are associated with higher levels of volunteering.

Therefore, as with Wahrendorf et al (2016), this analysis will seek to use the underlying measure of skill associated with these occupational classes, to measure whether being from a more highly skilled occupation pre-retirement increases the likelihood of volunteering in retirement, while controlling for other factors. This measure will be discussed further in the methods section and in the relevant chapter (4.3.3 & 5.2.2). It will also explore how physicality of pre-retirement occupation in terms of whether it is manual, standing, or sedentary, is associated with volunteering participation in later life (see 4.3.3 & 5.2.2). More work to understand the role of prior

occupation and volunteering participation would be important to make recommendations for policy and practice and is an area which needs further development.

3.2.9 Socioeconomic factors: education and wealth

The findings presented above which indicate inequalities in the type of people who select into volunteering may be due to socioeconomic factors such as education and wealth. As outlined above, those in higher status jobs were found to be more likely to volunteer, this could be due to the higher educational level needed for such jobs and the wealth they provide.

Several studies have found that higher educational attainment leads to an increase in both the likelihood of volunteering, and higher rates of volunteering (Dury et al, 2015; Hank & Erlinghagen, 2009; Okun et al, 2014; Tang et al, 2010; Van Den Bogaard et al, 2014). This has also been found in a UK context, with a literature review by Brodie et al (2009) highlighting that educational attainment is a key predictor for formal volunteering, with the likelihood of volunteering increasing as the level of qualification increases. McGarvey et al (2019) echo this with findings from the Time Well Spent survey, reporting that 48% of those educated to degree level or above had volunteered recently, compared with 20% of those with no qualifications. It is argued that higher education leads to more resources that will increase the likelihood of volunteering. For example, those with higher education are more likely to be aware of social issues, feelings of responsibility, larger networks, and valuable skills and connections (Van Den Bogaard et al, 2014). These resources also mean that those who are more highly education are likely to land job roles which are more highly skilled. These more prestigious roles further increase the likelihood of volunteering (Wahrendorf et al, 2017).

Education level has also been found to be linked to the type of volunteering individuals partake in, with individuals with higher levels of education being drawn to posts such as serving on boards, supervisory services, and professional services (Okun et al, 2014). This may be linked to the skill set they developed during their occupation, which then spills over into activities outside the occupational sphere (Musick & Wilson, 1997). Role substitution theory would suggest that this is due to older adults substituting the role that is lost for a similar role in order to maintain the

self-esteem and prestige they previously had (Haski-Leventhal, 2009). These consistent findings on the association of education would suggest that this is an important control variable needed for analysis of volunteering patterns. The steady positive association of education found further suggests inequality in the type of person who selects into volunteering.

This consistent positive association is also found for wealth. It has been regularly found that those with higher income are more likely to volunteer, and volunteer at higher rates, than those who are less wealthy (Dury et al, 2015; Hansen et al, 2018; Haski-Leventhal, 2009; Morrow-Howell, 2010; Tang et al, 2010). This again speaks to the resource's individuals need in the roles they take part in, with higher wealth being associated with more prestigious occupational roles which leads to higher participation in volunteering (Haski-Leventhal, 2009). More wealth is also linked with higher well-being (Hansen et al, 2018; Haski-Leventhal, 2009; McMunn et al, 2009), it is suggested that people with higher well-being are more likely to select into volunteering as volunteers are found consistently to have higher mental well-being than non-volunteers (Griep et al, 2017; Hansen et al, 2018; Haski-Leventhal, 2009; McMunn et al, 2009; Tabassum et al, 2016).

These findings further add to the inequality in selecting into volunteering, and also the evidence that socioeconomic status has an association on volunteering participation as those who are more highly educated and/or those who are wealthier are significantly more likely to volunteer. Theoretically, those who are more highly educated and those who are wealthier have access to more resources and more prestigious roles that will lead to higher self-esteem, more connected networks, and higher wellbeing. All three of these things are linked to volunteering participation which suggests the analysis in this thesis should be controlling for high level of education and wealth and may find that more highly educated and wealthier participants are more likely to volunteer. Based on the evidence outlined above it is important to include these socioeconomic factors as they are consistently associated with volunteering patterns amongst older adults.

3.2.10 Health and wellbeing

As discussed in the "Human capital" section of the previous chapter, health is a valuable resource that allows for participation (Komp et al, 2012; Papa et al, 2019).

Previous findings have suggested that volunteering goes hand in hand with better health as well as lower rates of depression and mortality (Papa et al, 2019), suggesting that health problems may be a barrier to volunteering in old age, preventing individuals from taking up, or continuing volunteering (Brodie et al, 2011; Papa et al, 2019).

Literature in the area also suggest that older adults, particularly the young-old who are newly retired, are a pool of potential volunteers due to being healthier than their older counterparts. Findings on health are also relatively consistent, with those in better health being more likely to volunteer than those in worse health (Dury et al, 2015; Hansen et al, 2018; Haski-Leventhal, 2009; McNamara & Gonzalez, 2011; Morrow-Howell, 2010). It is suggested that people who select into volunteering are more likely to have better health, however once they are a volunteer the association of health begins to differ.

It has been found that once older adults become consistent volunteers, declines in health do not necessarily lead to cessation up until a time where it is no longer feasible to volunteer (Dury et al, 2015). Dury et al (2015) have argued that the positive benefits of volunteering such as socialisation and better well-being outweigh the cost when an existing volunteer starts to have a decline in health, which is why poor health does not reduce likelihood of volunteering in existing volunteers in the same way it does with potential volunteers. This was also found by McNamara and Gonzalez (2011) who argued that while ill health can prevent taking up volunteering it is not necessarily a reason to withdraw. This suggests that, as with widowhood and retirement, the association of health is not necessarily one-dimensional. Papa et al (2019) in a cross-national study of thirteen European countries (SHARE – excludes UK) found that worsening health reduces the likelihood of volunteering. They suggest that those with health problems may need more support to engage with and continue volunteering. While not a main component of this analysis, health will be used as a control throughout this analysis, given that poor health could potentially be a barrier to volunteering for older adults.

Another health-related component which has been studied in relation to volunteering is wellbeing, with several studies finding a positive association with wellbeing (Hansen et al, 2018, McMunn et al, 2009; Tabassum et al, 2016). For example,

Hansen et al (2018) sought to examine the dynamics of volunteering and life satisfaction in midlife and old age across twelve European countries, not including the UK. Data was gathered from two longitudinal studies (SHARE and NorLAG) over two waves and harmonized. Hansen et al (2018) created four types/categories of volunteering (stable non-volunteer, stable volunteer, becoming a volunteer, and cessation of volunteering) and four types of volunteering intensity (stable non-volunteer, stable activity, less intense and more intense). They found that volunteering does have a positive impact on wellbeing, particularly in older participants and those who are long-term economically inactive (mostly retired), while the impact was found to be stronger in countries such as Greece where volunteering is less common and institutionally supported (Hansen et al, 2018).

McMunn et al (2009) found similar results in their UK based study examining participation in socially productive activities, reciprocity, and wellbeing in later life. McMunn et al (2009) conducted a cross-sectional analysis of social activities (categorised by paid work, volunteering and caring) and wellbeing (categorised by quality of life, life satisfaction and depression). They found that participants in paid or voluntary work had more favourable wellbeing than those not participating in these activities (McMunn et al, 2009). Tabassum et al (2016) corroborated these results, conducting a life-course analysis examining the association of volunteering with mental well-being. The study was based in the UK using data from the British Household Panel Survey (BHPS) and analysed the effect of four types of volunteering (frequent, infrequent, rare, and never) on mental wellbeing. Overall, it was found that volunteering had a positive effect on mental wellbeing, though this effect was not significant until age 40 and continued into old age; there was also variations within participants across their lives, indicating life-course effects on volunteering (Tabassum, Mohan & Smith, 2016).

Though there is also argument for "reverse causality" here. From a role theory perspective, volunteering is a role enhancer, increasing the perceived power and status of the individual and improves wellbeing, a benefit argued to be more pronounced in older populations as the roles an individual has reduces with age (Cho et al, 2018). As individual's roles change, the meaning of roles also changes which can alter the effects they have on wellbeing (Cho et al, 2018). For example, at

a young age volunteering does not illicit greater wellbeing as it may be viewed as compulsory, whereas at an older age the individual will have more time and may choose to spend it volunteering (Cho et al, 2018). Occupying multiple roles at older age, when the role-set of a person is decreasing, can improve wellbeing as multiple volunteer roles will enhance social networks, power, prestige, resources, and emotional gratification (Haski-Leventhal, 2009). This would suggest then that as wellbeing score increases, so to would the likelihood of volunteering. While the direction of the relationship cannot be ascertained, with the potential that increased wellbeing results in volunteering as well as volunteering increasing wellbeing, including it as a factor in this analysis will allow for fuller control of health and wellbeing aspects that are associated with volunteering.

3.2.11 Concluding remarks

The above literature contributes to understanding factors that explain volunteering transitions in volunteering participation in older age. That it is the aim of this research, with the first research question being: what is the relationship between occupation earlier in life and volunteering later in life? Based on the research above it appears that occupations with higher status, occupations that are non-manual and that are highly skilled mean individuals are more likely to volunteer. Role enhancement theory would suggest that these occupations bring high self-esteem and prestige to the individual meaning when moving into retirement, this role with be a high loss. Based on role substitution theory it is theorised that this loss with result in substituting the role of work with the role of volunteering. Work on this topic is sparse and no past study has used 9 waves of a large-scale study to explore it, or with a UK focus, making this an important part of the uniqueness of this thesis. This is particularly important as understanding who does not volunteer and will allow for policy makers and organisations to understand where there is underrepresentation in the profile of volunteers.

The second research question under this aim is: what life events are associated with volunteering status in older age? Based on the evidence outlined in this review, life events like widowhood and retirement may be associated with volunteering but in different ways and at different times. The papers reviewed here tended to treat retirement and widowhood as one-off event as opposed to being processual in

nature. Similar to Tang et al (2016), this thesis will take a dynamic approach to exploring the association of these life transitions on volunteering. This will allow the relationship with volunteering to be different at different times in the transition into retirement and to widowhood. Role theory would suggest that the loss of the role (work and marriage) will result in individuals substituting for volunteering, increasing their participation. However, due to the loss of resources and self-esteem from losing the roles, the immediate post-retirement and post-spousal loss period may not follow this pattern.

3.3   Association of changing retirement policy on volunteering

With a focus on altering retirement policy in response to the ageing population, an emerging area in volunteering research is around exploring how changes in employment and retirement policy might affect volunteering participation, and what organisations and policy makers can do to offset any negative impacts.

In response to population ageing, many governments across the world are adopting policies designed to extend working lives and promote late retirement (Di Gessa & Grundy, 2016; Vickerstaff, 2010). For example, in the UK the pension age for women has raised from 60 to 66 for those born from 1955 and is set to further raise for both men and women in the coming years (Di Gessa & Grundy, 2016; Ginn, 2013; Hammond et al, 2016). With these policy changes coming into play, and with older adults being encouraged to work beyond state pension age, there is growing evidence looking at the association this will have on older adults. A 2010 systematic literature review by Maimaris et al, found that of ten studies exploring the association between working beyond state pension age, none found a negative impact on wellbeing. Further, four of the studies reported a significant, positive association between working beyond state pension age and wellbeing for participants (Maimaris et al, 2010). They suggest that working beyond the traditional retirement age may be beneficial for older adults, but only for some populations such as the wealthier and healthier older adults – with complex mechanisms behind the association (Maimaris et al, 2010). They state that the association will be mediated by individual factors such as socio-economic status, with positive associations on wellbeing unlikely to be universal (Maimaris et al, 2010). For some, working beyond traditional age may be more difficult due to the nature of their occupation, Maimaris et al (2010) state that

work conditions must be improved, and workplaces adapted to the capabilities of older workers. They argue that flexible retirement strategies are needed to ensure any proposal to increase the retirement age does not increase health and social inequalities in older adults (Maimaris et al, 2010). More recent studies have found comparable results to Maimaris et al (2010) review also (Di Gessa et al, 2018; Di Gessa & Grundy, 2016; Wahrendorf et al, 2017).

Di Gessa et al (2018) found that in a sample of ELSA participants, approximately one in five respondents were in paid work after the state pension age. For those who had to continue working due to financial issues, they had significantly lower wellbeing than those who retired at the expected state pension age (Di Gessa et al, 2018). On the other hand, those who continued to work of their own volition reported higher wellbeing than those who retired at the expected age (Di Gessa et al, 2018). Di Gessa et al (2018) concluded that there are potential quality of life and wellbeing benefits for working after the state pension age, but only for those who do so by choice and not due to financial necessity. They state that their findings contribute to the body of evidence on inequalities in working longer and its association on quality of life and wellbeing (Di Gessa et al, 2018). It has been found that those from more disadvantaged backgrounds tend to work longer than anticipated, and do not yield the same benefits from extending their working lives compared to their more advantaged counterparts (Di Gessa et al, 2018). This inequality in retirement decisions and its association is particularly important given the push for longer working lives and increasing pension ages by the government (Di Gessa et al, 2018). It has been highlighted by the authors that more work is needed to understand this inequality, and individual motivations for working beyond state pension age (Di Gessa et al, 2018).

A study by Wahrendorf et al (2017) looked deeper into this issue, looking at the demographics of those who were working post-retirement age over four waves of the Survey of Health, Ageing and Retirement in Europe and comparing them to their retired counterparts. Results indicated that those who worked beyond state pension age were more likely to be self-employed, and work in advantaged occupations (Wahrendorf et al, 2017). Findings also revealed that the psychosocial conditions were better for those still in work than the retirees experienced in their last jobs, and health was worse amongst the retired compared to those who were still working

(Wahrendorf et al, 2017). This adds to the evidence that there are inequalities in working beyond state pension age, with the authors suggesting that policies to increase the pension age puts pressure on the more disadvantaged (Wahrendorf et al, 2017). This further suggests that the impact of changing retirement ages may be different for different demographics, with the more advantaged more likely to extend their working lives. This may have impacts on volunteering patterns as those of a higher socio-economic status have been found to be more likely to volunteer – if instead of retiring they are working beyond the expected age, then they may no longer be likely to volunteer. This will be explored further in Chapter 7, where the association between working patterns around SPA are analysed.

It has been a concern that extending working lives will take away from older adults' ability to take part in these activities. A study by Di Gessa and Grundy (2016) explored this, seeking to find out whether the relationship between paid work, formal and informal activities is complementary or competitive. They found that there is a negative relationship between paid work and formal (e.g., volunteering) activities, and between paid work and informal (e.g., caring) activities (Di Gessa & Grundy, 2016). This would suggest that when older adults remain in paid work beyond the state pension, they are less likely to be involved in productive activities outside the workplace such as volunteering or informal caring (Di Gessa & Grundy, 2016). This further implies that changing the retirement age will reduce the number of older adults willing to volunteer. Di Gessa & Grundy (2016) argue that in order to keep older adults participating in these non-work roles, any policy to extend working lives should ensure a balance between work and other forms of engagement.

3.3.1 Concluding remarks

The above literature gives evidence around exploring how changes in employment and retirement policy might affect volunteering participation in older age. This thesis aims to do the same with the first research question being: what is the impact on volunteering of changing retirement age? To date the above study is the only study to tackle the association of extending working lives on volunteering in the UK. It suggests that raising the retirement age would have a negative impact on volunteering. This would also be suggested by role overload theory that suggests taking on too many roles will result in burn-out and lead to cessation of volunteering.

This thesis will be able to extend this work, using several waves of ELSA data in a longitudinal analysis. In order to fully understand the association raising retirement ages may have, a micro-simulation modelling approach will be taken. This is something that, to date, has not been explored using microsimulation modelling, making prospective findings unique.

The second question under this aim is: how are changes in employment and propensities in older age related to volunteering participation? The literature above suggests that those who work in more advantaged occupations are more likely to work beyond state pension age out of choice. With findings suggesting that those who are more advantaged are more likely to volunteer, that these people are now choosing to work longer may mean that volunteering participation with decrease for this group. Those who are less advantaged may still need to work beyond retirement age due to financial reasons which could make them less likely to volunteer. There is no work which can be found to date that explores volunteer participation and working patterns around SPA, making this thesis unique and the findings important. Understanding the types of people who are working longer and their motivations, and the association this then has on volunteering participation, is a prominent issue for volunteer involving organisations and policy makers.

The final research question in the aim to understand how changes in employment and retirement policy can impact volunteering participation is: how might policy makers and volunteer involving organisations might encourage participation amongst older people? As the above literature suggests that working beyond retirement age and new propensities for working will have a negative association on volunteering, it is important to explore what policy makers and organisations can do to remedy this. Based on the findings from this longitudinal analysis and microsimulation, practical advice can be given to policy makers and organisations in order to best optimise their recruitment strategies.

4 Data and Methods

4.1 Introduction

The previous chapter reviewed existing literature around the topic of this thesis and outlined the questions this thesis will seek to answer. This chapter will discuss the data and methods use to fulfil the aims of the thesis. The data set, variables of interest, and the statistical methods that will be used will be outlined below, with more chapter specific descriptions in each analysis chapter. The following section (4.2) will describe the English Longitudinal Study of Ageing (ELSA) which will be used throughout this thesis. It will discuss sampling, how it is conducted, strategies to deal with attrition, and why it is going to be used to answer the research questions. Discussion will then move on to the key variables to be included in the analysis chapters of this thesis (4.3), including what was asked, how they were derived and coded and why that measure was chosen for each analysis. Changes to the questions and coding of variables and how this was accounted for will also be discussed. Section 4.4 will then discuss the analytical strategy, detailing what methods were chosen and why, and how they will answer the research questions.

4.2 Data – The English Longitudinal Study of Ageing (ELSA)

The English Longitudinal Study of Ageing (ELSA) is a multidisciplinary study that contains detailed information on the health, economic and social circumstances of a representative sample in England ages 50 and over (Nazroo & Matthews, 2012). Participants are from private households in England and their partners. The multidisciplinary focus of data collection gives coverage of physical health, mental health, a range of well-being measures, economics, social networks, volunteering, and social, civic, and cultural participation (Nazroo & Matthews, 2012).

ELSA began collecting data in 2002 and was a collaborative effort between University College London (UCL), the Institute for Fiscal Studies (IFS), the University of Manchester and NatCen Social Research (Closer, 2022). The sample is based on respondents who participated in the Health Survey for England (HSE). The HSE is an annual survey that collects data on the changes in the health and lifestyles of people all over the country (NHS, 2023). Around 8,000 adults and 2,000 children take part annually through an interview and, if participants agree, a visit from a

specially trained nurse. The HSE has been conducted since 1991, providing regular information on a representative sample of the population (ibid).

The original ELSA sample is comprised of HSE sample members from 1998, 1999 and 2001. These were chosen due to recency and their sufficiently large sample size. ELSA used the core samples from the three years of the HSE as they were nationally representative of English older adults (ELSA, 2022). The HSE sampling frame chose addresses at random so that every household in England had an equal chance to take part, ensuring the survey has a representative sample of those living in England (Taylor et al, 2007). Those who were aged 50 and over on March 1st, 2002, and took part in the first 3 waves of the HSE survey made up the original sample (ibid). Interviews occur at two-yearly intervals known as "waves", and measure changes in health, social and economic circumstances (ELSA, 2022). Due to attrition and an ageing sample, it was anticipated that the representativeness of the sample would decrease over time. To combat this, ELSA refreshed the sample at waves 4-6 with new respondents from the HSE survey (Banks et al, 2020). As can be seen in Table 4-1 below, refreshment samples were introduced in waves 3, 4, 6, 7, and 9. Refreshment in wave 3 was an effort to address the problem of selection bias in longitudinal surveys due to study member attrition, supplementing the sample with people born between 1st March 1952 and 29th February 1956 from the 2001–2004 HSE years. Wave 4 was further replenished with respondents from HSE 2006 born between 1st March 1933 and before 28th February 1958 (ibid). Further replenishment in waves 7 and 9 was to ensure representation of adults aged 50-52 (ibid). Core sample numbers have remained relatively stable over time, with a large, representative, sample at each two-year interval.

Table 4-1: Data collection in waves 1-9 ELSA – source: Banks et al (2020) p. 3.

Year	Modality	Sample size			Source of sample
		Full sample	Core sample	Nurse visit	
Wave 1 (2002/03)	CAPI	12,100	11,391		Original sample from HSE 1998, 1999 and 2001
Wave 2 (2004/05)	CAPI + nurse visit	9,432	8,780	7,666	
Wave 3 (2006/07)	CAPI	9,771	8,810		Refreshment from HSE 2001–2004
Wave 4 (2008/09)	CAPI + nurse visit	11,050	9,886	8,643	Refreshment from HSE 2006
Wave 5 (2010/11)	CAPI	10,274	9,090		
Wave 6 (2012/13)	CAPI + nurse visit	10,601	9,169	7,721	Refreshment from HSE 2009–2011
Wave 7 (2014/15)	CAPI	9,666	8,249		Refreshment from HSE 2011–2012
Wave 8 (2016/17)	CAPI + nurse visit	8,445	7,223	3,479	
Wave 9 (2018/19)	CAPI + nurse visit	8,736	7,289	3,069	Refreshment from HSE 2013–2015

CAPI = computer-assisted personal interview; HSE = Health Survey for England

4.2.1 Weighting in ELSA

To ensure representativeness and to reduce non-response bias a weighting strategy is employed by ELSA (Taylor et al, 2007). The use of weighting ELSA is complex. As the HSE used an equal probability sample design, and ELSA selected eligible adults from the HSE, the need for weights to account for selection probability is not needed (Taylor et al, 2007). However, non-response at HSE, refusals to be re-interviewed and non-response at wave 1 of ELSA lead to a potentially biased and unrepresentative sample (Taylor et al, 2007). Also, the original complex sample design of the HSE samples has to be incorporated (Taylor et al, 2007). To adjust for differential non-response and to calibrate to 2001 census population distributions, a weight was calculated at wave 1 of ELSA (Steptoe et al, 2012). Further weights were

added in the second wave to adjust for non-response between the waves using statistical modelling of household and individual information collected from wave 1 of ELSA and the HSE (Steptoe et al, 2012). ELSA includes both cross-sectional and longitudinal weights to be used in analysis (Banks et al, 2020). Cross-sectional weights will be used throughout this thesis to bring the sample in line with the full population. The cross-sectional weights in ELSA are created separately for the different 'cohorts' of participants (original and refreshments) and split by age (<65 and 65+). Inverse probability weighting is used to account for non-response bias and the sample is brought in line with mid-year ONS population estimates. The calibrated weights are then combined and scaled to 1 (ibid). Those living outside of England and partners of core members are given a weight of 0 – they will therefore be excluded from any analysis in this thesis. Full details of how these weights were created can be found in the ELSA data user guide (available at: https://www.elsa-project.ac.uk/study-documentation).

4.2.2 Why ELSA?

4.2.2.1 Available surveys

While there are several secondary surveys available, ELSA was chosen as the most appropriate for the purposes of the analysis in this thesis. One survey which could have been considered as it collects data on volunteering participation of English adults was the Community Life Survey (CLS). The CLS is a household survey which has measured the performance and development of social activities within communities in England since 2012 (UK Data Service, n.d.). It has been a source of information on key social measures such as charity services, volunteering, and community engagement and wellbeing since its inception (ibid). However, data is collected from those aged 16+ rather than focussing on the 50+ range which will be the sample used throughout the analysis in this thesis. This would mean a reduced sample in comparison to what ELSA can provide. This survey is also a repeated cross-sectional study rather than longitudinal, meaning participants cannot be followed through time which is key to parts of the analysis which will be presented in this thesis.

To explore the volunteering participation of older adults over time using secondary data, a longitudinal survey is necessary. Of those available, the ELSA, British

Household Panel Survey (BHPS), and Understanding Society were identified as appropriate resources. The BHPS was a yearly survey of around 10,000 adult respondents per year which ran from 1991 to 2008. Around 8,000 BHPS sample members then took part in the new, larger Understanding Society survey (Understanding Society, 2021), which interviews around 40,000 adult respondents per year. The BHPS ran for 18 waves between 1991 and 2008, with Understanding Society running for 12 waves between 2009 and present. The data are harmonised which allows for analysis across both surveys and 30 waves of data. However, these surveys are not focussed on the 50+ age range and collect data from those aged 16+. Further, information on volunteering is collected every second wave, meaning every second year in the BHPS and every fourth year in Understanding Society (ibid.). This means there is potentially 4 years between volunteering information depending on when the interview takes place in the more recent data. The decision was therefore taken to use the ELSA survey.

As outlined above, ELSA provides a large scale, representative sample of the age group of interest and its multidisciplinary approach provides a variety of socio-economic and demographic details that will be key in this thesis analyses. It captures volunteer participation and follows older adults over an 18-year period which also spans policy change relating to the SPA, which is key to the aims of this thesis.

Overall, ELSA has both appropriate coverages, and is a quality survey which will allow for the fulfilment of the aims of this thesis research.

4.2.3 Disadvantages of ELSA

There are both advantages and disadvantages of using the HSE as a sampling frame for ELSA. The advantages are, the survey is nationally representative, it provides information to screen representative households from which eligible individuals can be identified at reasonable cost, extensive data has already been collected about respondents' health, also the majority of eligible individuals have participated in a previous survey which leads to the assumption they would be more likely to take part in this new study (Taylor et al, 2007). However, there are also disadvantages.

There is the potential loss of representativeness before the first ELSA interview through non-response at HSE, refusal to be re-contacted after HSE and attrition

between HSE and ELSA, which could potentially bias the sample (Taylor et al, 2007). Another disadvantage of the HSE is that the study concentrates on participants from private household, meaning those living in institutions such as nursing homes are not included in ELSA (Taylor et al, 2007). Additionally, there is under-coverage of immigrants arriving at England after the first wave of interviewing (Taylor et al, 2007). Initially a booster sample of minority groups was included in ELSA, but this was dropped due to insufficient resources (Taylor et al, 2007). It was decided that despite these limitations, the advantages outweighed the disadvantages when it came to using sampling from the HSE (Taylor et al, 2007).

There are also some considerations regarding the measurement of volunteering in ELSA. ELSA was not created for the purpose of exploring volunteering, and as such the variables are limited, particularly ones that can be found in all available waves to make the most of the large sample. Analysis was limited to two measures, though neither show what kinds of activities are being undertaken, or the motivation for doing so. Further the main measure used throughout this thesis is based on broad categories of frequency rather than other measures such as hours spent volunteering (as used by: Carr et al, 2008; Carr & Kail, 2012; Cho et al, 2018). Measures could also potentially be biased by self-reporting, relying on the memory of participants to account for any relevant activity in either the prior month, or prior year depending on the question (see 4.3.2 for more in-depth discussion of variables). Further, it is unclear that participants are aware that it is both formal and informal volunteering that is measured – while there is a clear definition of what ELSA mean by volunteering in the questionnaire documentation (User guides | ELSA (elsa-project.ac.uk)), they do not document when or if this is communicated to participants. This also means that we are unable to disentangle formal and informal volunteering in the analysis within this thesis. Despite these limitations, ELSA provides information on a large representative sample of English older adults and whether they were involved in volunteering in any form. This will allow for analysis to explore determinants of volunteering, to explore whether volunteering changes around life events, and whether changes to policy can impact on volunteering, which is the purpose of this thesis.

Despite some disadvantages, ELSA is a large scale, representative survey that provides 9 waves of data that create an account of what it is like to grow older in the

21st century (ELSA, 2022). Its multidisciplinary and longitudinal design makes it a uniquely powerful resource to study processes in later life (Nazroo & Matthews, 2012). The coverage will allow exploration of the research questions and provide results which will be representative of the population.

4.3   Measures and Variables

4.3.1   Missing data

As with any large-scale survey, there will be some missing data in this analysis. There are several reasons why surveys can have missing data, such as respondents skipping questions, or a response may be considered invalid (Mirzaei et al, 2022).

Missing data can be classified in three different ways, with these classifications allowing decisions to be made on how to handle missing data and the considerations that are taken to mitigate missingness (Mirzaeri et al, 2022). Firstly, there is missing completely at random (MCAR), this assumes that the missingness is not related to other observable values. Secondly there is missing at random (MAR), where the missing value is related to another observed variable in the data set. These can be considered as 'ignorable missing'. Finally, there is missing not at random (MNAR) data, where the missingness is related to the missing value itself, or something we cannot observe – this is sometimes known as non-ignorable missingness (Mirzaeri et al, 2022) as it can cause bias in any estimates. There are several routines that can be used to mitigate 'non-ignorable' missing data, including complex multiple imputation methods (Mirzaeri et al, 2022). However, these methods can introduce bias in themselves, and often operate under at least a MAR assumption (Hughes et al, 2019).

This thesis will use available complete case analysis throughout. While this may introduce bias, since we are unable to ascertain the nature of the missingness, it will allow for the maximum sample size to be used without using complex procedures which may not be appropriate. It has been argued that, for most regression models, CCA can give unbiased results when the chance of being a complete case does not depend on the outcome after taking the covariates into consideration, even when data is MNAR (Hughes et al, 2019), and can be more efficient that MI when data is MNAR. Others have also suggested that under the MAR assumption, both methods have negligible bias (White & Carlin, 2010). It has also been shown that when

sample size is large (>1000) and missingness is <20%, that CCA was comparably stable in its estimates compared with other imputation methods (hotdeck, random forest, latent class, MI EMB, MICE LOG, MIMCA: Stavseth et al, 2019). This is the case for most of the variables used in the analysis (see table 4-1), with the exception of the waves widowed variable which has 28% missing. This is due to the restriction of not having been missing in the wave prior to experiencing widowhood which is justified in section 6.2.2.1. All interpretation will be made with potential bias in mind, and the impact of any potential bias will be discussed within the limitations.

Table 4-2: missing data on key variables used in analysis

variables used	chapters included	% missing
volunteers	all	3.7%
age	all	0.0%
sex	all	0.0%
marstat	all	<1%
health	all	<1%
casp19	all	19.0%
workstat	all	<1%
wealth	all	11.7%
degree	all	<1%
caring	all	<1%
memrelorg	all	16.9%
soc	5	<1%
skill	5	<1%
manual	5	<1%
retired	6.1	<1%
waves_retired	6.1	9.7%
widowed	6.2	<1%
waves_widowed	6.2	28.0%
spage	7, 8	0.0%
workspa	7	<1%
reasons	7	0%*

*This was only asked of those still working when above SPA and only those waves 4-8

4.3.2 Outcome variable:

The outcome variable that will be used throughout this thesis is volunteer participation. There are two volunteering questions in ELSA that are available at all 9 waves. The first variable concerns the question "have you done any of these activities in the last month?" where "volunteering" is one of the answers. While the question remains the same how it is coded changes slightly. In waves 1-2 all answers (work, volunteer, care etc) are in one variable and are looped for however many answers the individual gives. In waves 3 onwards each individual answer is its own variable with a binary "yes" or "no" for involvement in that activity. For consistency, a binary "volunteers" variable was generated for waves 1 and 2 which included all those who had stated they volunteered in the last month – when compared to waves 3-8 the number of volunteers in waves 1 and 2 followed the general pattern (c. 18%).

The second volunteering variable concerns the frequency of volunteering. Participants are asked "how often if at all do you do any volunteer work" with the answers being twice a month, about once a month, every few months, about once or twice a year, less than once a year and never. The question and coding are consistent across the waves.

When cross-referencing the two volunteering measures, only a few who answered yes to volunteering in the last month answered "never" to the volunteer frequency question, although many who volunteered throughout the year answered "no" to volunteering in the last month. It was decided that a new measure of volunteering based on volunteer frequency would be used to determine volunteer status, with those volunteering "once or twice a year" or more being classed as volunteers, and those who volunteered less than once a year or never being classed as non-volunteers (e.g. Nazroo & Matthews, 2012).

4.3.3 Explanatory:

The main explanatory variables used in each of the chapters will be described below. More in depth explanations and their use within models will be contained in the chapter specific methods sections.

To explore the first research questions: what is the relationship between occupation earlier in life and volunteering participation in later life? the variable "soc" will be used. Based on their occupation, participants in ELSA are given a 3 digit "SOC2000" code. The Standard Occupational Classification (2000) is an occupational taxonomy that records the type of job (ONS, 2022). There are 9 'major groups' in the SOC (2000) which relate to a broad set of categories which group together occupations which are similar in terms of qualifications, training, skills, and experience needed to perform tasks competently (ONS, 2022). These major groups are:

- 1 Managers and Senior Officials

- 2 Professional Occupations

- 3 Associate Professional and Technical Occupations

- 4 Administrative and Secretarial Occupations

- 5 Skilled Trades Occupations

- 6 Personal Service Occupations

- 7 Sales and Customer Service Occupations

- 8 Process, Plant and Machine Operatives

- 9 Elementary Occupations

There are 4 skill levels in the SOC (2000), these are defined in terms of the level of training and work experience required to fulfil the role competently and efficiently (ONS, nd). The first skill level equates with the competence associated with a general education (typically school-leavers), and short periods of work-related training. The second skill level covers a large group of occupations, all of which require the same skills as level 1, but who may have more intensive work-based training such as machine operators or caring occupations. At the third skill level, occupations typically require knowledge beyond school leaver education, but not normally to degree level. This can include vocational education or lengthy work experience and training, typically trade occupations. 'Professional' and high-level managerial positions make up the fourth skill level, usually requiring a degree level education or equivalent period of relevant work experience.

The skill breakdown will be used in chapter 5 analysis. Information on how this will be used within the models is discussed in section 5.3. Modelling the relationship between prior occupational class and volunteering will show if decisions made in earlier life are associated with decisions to participate in volunteering in later life.

To explore whether those whose pre-retirement occupations were non-manual are more likely to volunteer, the variable "manual" was used. This was based on the question "which of this best describes your work" with the options:

- 1 Sedentary occupation: You spend most of your time sitting (such as in an office)

- 2 Standing occupation: You spend most of your time standing or walking. However, the way you spend your time does not require intense physical effort (e.g., shop assistant, hairdresser, security guard etc.)

- 3 Physical work: This involves some physical effort including handling of heavy objects and use of tools (e.g., plumber, cleaner, nurse, sports instructor, electrician, carpenter etc.)

- 4 Heavy manual work: This involves very vigorous physical activity including handling of very heavy objects (e.g., docker, miner, bricklayer, construction worker etc.)

As there were few participants in the heavy manual category, it was combined with the physical work category to signify manual work. The variable therefore had three categories to signify sedentary (1), standing (2), and manual (3) pre-retirement occupations. This variable will be used in the chapter 5 analysis. Information on how this will be used within the models is discussed in section 5.3. Modelling the relationship between physicality of pre-retirement occupation and volunteering will further show if decisions made in earlier life are associated with decisions to participate in volunteering in later life.

The third research question that aims to contribute to understanding transitions in volunteering participation deals with life events. The main explanatory variables that will be used to answer these questions are indicators of retirement and widowhood. The "retired" variable was created as a binary variable for "yes" retired or "no" for non-retired. This came from the variable WPDES that asked participants what best

described their current situation with answers including retirement, employment, unemployment etc. When checking the number of hours worked variables, anyone who reported working hours was reclassified as non-retired. To explore this relationship further a second, continuous variable which captures the number of waves a participant is retired in was created. This variable is derived from the retirement and wave variables in the data set and shows the number of waves a participant has been retired for. This is only available for those who had retired in the observation window. This was also limited to those who had appeared in consecutive waves. For those who were retired for all waves in which they appear, the number of waves was defined as the number of years retired divided by two (as waves are collected every two years). This will paint a fuller picture of how retirement is associated with volunteering participation at different times in the process of retirement.

For the second life event analysis, widowhood will be operationalised in several ways. First, a binary variable which captures whether participants are widowed or not. This is derived from the marital status variable (DIMAR) in the data set giving the value of 1 for widowed and 0 otherwise (married/civil partnership, divorced/separated, single).

To allow for exploration of how volunteering changes before and after the event, several variables are created, including one which takes the wave of the event as time 0, thereby centring time around the event. As such, only those who experience the transition into widowhood within the sample are included. From this, a categorical variable is created with 11 levels characterising the time point in relation to the point of widowhood (5-8 waves before, 4-3 before, 2-1 before, event, 1-2 after, 3- 4 after, and 5-7 after). To facilitate some models, another two variables were used which differentiate time pre- and post-widowhood. This is discussed in more depth, with sample implications and model description in the chapter 6.2 analysis (section 6.2.2.1).

The second aim of this thesis is to explore how changes in employment and retirement policy might be association with volunteering participation in older age. To answer the first research question about how changes to retirement policy may impact volunteering participation a microsimulation approach is taken. The main

variable of use here is the state pension age variable (SPA). In conjunction with the SPA variable provided by ELSA, which shows whether someone is above or below, an approximate SPA is also created. SPA is highly individual, and as ELSA is collected every 2 years, and specific birth date information is not available, all SPA changes and ages of eligibility are set to the nearest birth year, with the exception of the SPA of 64 for women (see table 4-3). While this may introduce error compared to the true population, it is a simplification which will allow for the comparison of alternative SPA scenarios which is the aim of this analysis (as done by Payne, 2019). Several other demographic variables are used in the chapter 5 analysis, all of which are described below. Full details of their use are in the relevant analysis chapter, under the methods section (5.3).

Table 4-3: birth year-SPA creation

	birth years	
Spa	Female	male
60	<=1950	n/a
61	1951	n/a
62	1952	n/a
63	1953	n/a
64	1953 if below SPA at 63	n/a
65	1954	<1953
66	1955-1960	1954-1960
67	1961+	1961+

Another question under this aim is are changes in employment and propensities in older age associated with volunteering participation? In order to explore whether changes in propensity for working beyond state pension age will be associated with volunteering participation, a variable that deals with reasons for working beyond SPA will be used. This variable did not come into ELSA until wave 4 and thus only waves 4-8 can be used to answer this research question. In wave 4 the variable "WPOWK" is based on the question "What are reasons for working beyond State Pension Age?" with answers including:

1) Could not afford to retire earlier

2) Didn't know what to do after stopping work

3) Enjoyed job/working

4) To improve pension/financial position

5) To keep fit and active

6) To retire at the same time as husband/wife/partner

7) Persuaded by employer to stay on

These were then recoded in to a 3-level variable with 1 being financial reasons (1,4), 2 being for enjoyment (3) and 3 being other (2,5,6,7). This will allow for exploration of whether there are further disadvantages in who can volunteer in relation to reasons for working beyond SPA, with it expected that working beyond SPA for financial reasons will reduce the likelihood of volunteering.

4.3.4 Socio-demographic variables:

Several demographic variables will also be included in the analysis. For age, it is coded by ELSA as date at interview minus date of birth and is a continuous variable. An age-squared variable is created to explore whether there is a quadratic association between age and volunteering. Another variable used in some analysis, splits age into 10-year age groups (50-59; 60-69; 70-79; 80+).

Gender is a binary variable (male/female) which is available at all waves of ELSA data. The question and coding are consistent over time. Marital status will also be included in the analysis and comes from the variable DIMAR, which asks participants to describe their current marital status at a given wave. Answers include single, married, separated, divorced, widowed, and in a civil partnership. This is collapsed for analysis into single married/civil partnership, divorced/separated and widowed.

Whether or not participant has a degree was derived as a variable to account for the association between education level a volunteering participation. This was based on the question "what is your highest educational qualification". While this was asked at all waves, those who had no new qualifications or who were not new to the survey in that given wave did not have a valid answer. This was therefore coded so that those who recorded no new qualifications and who were given the code "not applicable" were given the value from the previous wave when a valid answer was given. This was then coded to be "has a degree"/"doesn't have a degree". Job status was also

accounted for, based on the variable WPDES that asked participants what best described their current situation with answers including retirement, employment, unemployment etc. This was coded into retired, employed and "other" for analysis.

Wealth will also be included as a control variable in the analysis. This is based on a derived financial variable that accounts for all non-pension wealth within a household, this includes wealth from businesses, property, and investments etc. This variable has been argued to be the best indicator of socioeconomic status within ELSA (Banks et al, 2006; Banks et al, 2009). It has also been argued that this measure is an important measure of social position in older age (Garfield et al, 2016). The derived variable was renamed "wealth" and kept in its original form of quintiles of wealth, with 1 being the lowest and 5 being the highest.

Health of older adults is another variable to be considered as previous work has shown that those is better health are more likely to volunteer (see literature review). Self-rated health status will be used in this analysis, self-rated health status has been used by several other studies in this area (Hansen et al, 2018; McMunn et al, 2009; Tabassum et al, 2016). The variable "health" was coded by reverse coding the existing measure and collapsing it from 5 categories to 3 categories: poor, fair/good, and excellent. At wave 1 there were two separate questions about self-rated health which were the same but were asked to different participants. This was combined into one measure for all those who had a valid response to each of the questions. As the measure was the same and those who answered one question did not answer the other there was no issues with this. At wave 3 the scale was changed meaning that there are slightly more people in the fair/good category than at the other waves, although those who were in the poor health category was consistent with the other waves. As prior work has found that poor health is a barrier to participation (see literature review) this issue is not seen to be detrimental to the analysis.

Prior work has shown a relationship between wellbeing and volunteering participation, to account for this CASP-19 score will be used. CASP-19 is a 19-item measure with a higher score denoting higher quality of life (see McMunn et al, 2019). In ELSA each of the 19 questions are coded as their own variable, they are on a scale of 1-4 from "never" to "often". In order to combine them into one measure, some of the variables had to be reverse coded so that higher score meant better

wellbeing. Combining these variables created a new continuous variable called "casp19" which runs from 0-76. This will lead to a better specified model as wellbeing is accounted for.

As religiosity has been found to be associated with volunteer participation this will also be included as a control variable. This is a binary variable based on a question from the self-report questionnaire asking if participants are a part of a religious organisation with the original labels of "mentions/not mentioned" being changed to "is a member"/"is not a member". Most prior work uses attendance at religious services as a proxy for religiosity (see Bulanda & Jendrek, 2016), however this was not present in ELSA and so membership was used as an alternative.

Whether or not the participant was involved in caring in the last month was also included as caring has been found to be associated with volunteering. The variable used comes from the question "have you done any of these activities in the last month?" where "caring" is one of the answers. While the question remains the same how it is coded changes slightly. In waves 1-2 all answers (work, volunteer, care etc) are in one variable and are looped for however many answers the individual gives. In waves 3 onwards each individual answer is its own variable with a binary "yes" or "no" for involvement in that activity. For consistency, a binary "caring" variable was generated for waves 1 and 2 which included all those who had stated they were involved in caring for other individuals in the last month – when compared to waves 3-8 the number of carers in waves 1 and 2 was consistent with the general pattern.

4.4 Analytical Strategy

4.4.1 Longitudinal approach

Most analysis in this thesis will be utilizing a longitudinal approach.

Longitudinal analysis has contributed to understanding the dynamics of the ageing process through analysis of physiological, social, and environmental variables over time (Garcia-Pena et al, 2018). ELSA is an example of a longitudinal panel survey. One weakness of this type of survey is that the responses could be subject to a "period effect" caused by circumstances such as civil unrest, epidemic or large-scale event (e.g. Olympics – though in ELSA there is no significant spike in volunteering in the related wave compared with others) which could change the responses issued

differentially amongst participants (Garcia-Pena et al, 2018). Another issue is that panel studies could have a significant decline in the number of responses in each wave, which would have an impact on the variables of interest in the study. This attrition must be given consideration in studies on ageing, as it could be related to events such as address change, death, hospitalisation of the participant, or a decision to stop participating (Garcia-Pena et al, 2018). It is thus important to minimise the impact of attrition on the analysis (Garcia-Pena et al, 2018).

Despite some limitations, taking a longitudinal approach will help advance our understanding of how experiencing transitions in older adulthood, such as moving out of the work force and into retirement or spousal loss, can impact volunteering participation (Caro & Bass, 1997; Lancee & Radl, 2014). It has been argued that longitudinal data is imperative in the understanding the processual nature of these life events – while the events themselves are one-off, the lasting, and sometimes even preceding impact makes them dynamic processes which can influence behaviour in different ways at different times (Tang, 2016; Utz et al, 2002). The ELSA data is collected every 2 years and has 9 waves available at present. A 10th wave will become available later in 2023, although that is out with the scope of this thesis. This study will therefore be able to follow participants over an 18-year period, examining these life and volunteer transitions over a longer period of time that most previous work to date.

4.4.2 Panel data structure

As ELSA is a longitudinal panel survey, the structure of the data must be considered.

Panel data can be organised as having three dimensions: the unit, waves, and variables (Andreß et al, 2013). In the case of this analysis the units are comprised of individuals, there are 8 measurement waves, and there are several time-invariant and time-variant variables to be considered (see methodology for full list of variables used). Panels can be balanced or unbalanced – an unbalanced panel occurs when some individuals are not measured at all waves (temporary unit non-response), individuals drop out altogether (panel attrition) or if individuals are late to entry such as those in a refresh sample (Andreß et al, 2013). ELSA can be classified as unbalanced as it experiences all three of the situations described above, with non-response on individual variables, people dropping out and either reappearing in a

later wave or not re-joining, and to date having three refresh samples to replenish the sample (see figure 4-2).

There are also two types of panel data – one where the number of observations is much larger than the number of time points, and one where the number of time points is larger than the number of observations (Andreß et al, 2013). This analysis will make use of the former, with ELSA containing tens of thousands of observations over a 9-wave period. This is known as a "micro-panel" as it focuses on individuals (Andreß et al, 2013).

Panel data can be organised in two formats: wide and long. Wide format gives one record for each unit that includes all measurements for all variables over time (Andreß et al, 2013). Long format on the other hand gives one record for each measurement per unit that includes values of the variables at each wave (Andreß et al, 2013). Wide format was the traditional way of inputting panel data into statistical software, particularly with small panels (T<4). In this format variables that were measured at different points in time are easily correlated (Andreß et al, 2013). Long format has become the "modern way" of organising panel data and is seen as storing the data more efficiently (Andreß et al, 2013). It also facilitates the specification of models for analysing panel data (Andreß et al, 2013).

Long format data is also a type of hierarchical data set, with observations nested within individuals over time (Andreß et al, 2013). This implies that there is a 'grouping' structure with each group containing data from one unit, which would result in a strong association within units, violating the traditional assumption of independent observations (Andreß et al, 2013). Ignoring these statistical dependencies will result in biased estimations and standard errors that are too small. This will also give too small p-values which can lead to incorrect conclusions about the results. This can be dealt with by explicitly modelling the statistical dependences (Andreß et al, 2013).

Long format data can also be thought of as "pooled" if panel data can be seen as consisting of individual time series that are "pooled" together (Andreß et al, 2013). Some have argued that this increases the statistical power of the analysis as it increases the number of cases. Instead of having 'n' units it is described as having "N=n*T" cases and it is known as time series cross sectional data (TSCS) (Andreß et

al, 2013). Treating long format data as TSCS is typical in macro-economic/sociological/political science research that are interested in macro units such as countries (Andreß et al, 2013).

This analysis will treat the data as long format and as hierarchical data as the focus is on micro rather than macro relations. Thus, methods that analyse micro-panel data and consider the serial correlation of the error terms due to nesting will be explored.

4.4.3 Multilevel Modelling

While there is a plethora of statistical techniques available to analyse longitudinal data, a multi-level modelling (MLM) approach will be utilised in all analysis chapters, with different specifications to answer the research questions. They will also be used in some of the parameter modules in the microsimulation which will be discussed in 8.2.2. MLMs involve nested data, in this instance multiple observations nested within individuals (Acock, 2016). MLM has several advantages in analysing longitudinal data. MLMs can deal with unbalanced panels and incomplete data over time, this is particularly an issue with large scale longitudinal surveys with people dropping out or not being introduced to the study until later in the panel. While this can be an issue for other analysis types, MLM can allow these patterns to occur (Hox et al, 2017). MLM is also stated to have higher statistical power that the alternative – repeated measures ANOVA (Hox, 2017). Further, it is straightforward to add a time varying and time constant explanatory variables to the model, allowing for the examination of both "within" and "between" effects (Hox et al, 2017). This is particularly useful in the case of this study as it will allow examination of the overall pattern of volunteering amongst the sample as well as individual patterns of participation over time.

Two of the most popular MLM are the fixed and random effects models. A fixed effects model treats unobserved differences between individuals as a set of fixed parameters than can be directly estimated or partialed out of the equation. In a random effects model unobserved differences are treated as random variables with a specified probability distribution (Allison, 2009). Fixed effects regression is a method that is useful for causal inference (Bruderl & Ludwig, 2014). While standard regression models provide biased estimates of causal effects if there are unobserved confounders, fixed effects regression is a method that may estimate unbiased

coefficients in this situation (Bruderl & Ludwig, 2014). Since unobserved confounders are widespread in social science applications, fixed effects regression is an important analytical approach to consider (Bruderl & Ludwig, 2014). Fixed effects are specified on the level of the units and include group specific constants – which are the "fixed effects" (Bruderl & Ludwig, 2014). The dependent variable must be measured on at least two occasions for the participants and the measures must be directly comparable (Allison, 2009). For those who have a change in the dependent variable, their observation before is subtracted from their second observation. This is then repeated for each of the participants, and then averaged to give an estimate of the "average treatment effect". This estimate controls for all stable characteristics of the participant such as gender which is time invariant (Allison, 2009).

What distinguishes fixed effects models from random effects models is the structure of the association between observed variables (x) and unobserved variables (error). While a random effects model assumes the errors are uncorrelated with the x variables, in a fixed effects model error can have any association with observed variables (Allison, 2009). This is essentially treating the unobserved variables as fixed parameters which can be included in the model. This is argued to mean that unobserved variables and controlled for in the fixed effects model, which is one attraction of this method (Allison, 2009). However, one issue of fixed effects models is that they do not produce estimates for the effect of time invariant variables on the outcome (Allison, 2009). Time-invariant variables can be included at one point in time and should be interpreted as interactions with time rather their direct effect on the outcome variable (Allison, 2009). Also, fixed effects tend to have larger standard errors than random effects estimates, leading to wider confidence intervals. This is due to the discarding of between-individual differences – if explanatory variables vary greatly across individuals but have little variation within individuals over time then fixed effects estimates will be biased (Allison, 2009). The idea of discarding between-individual variation is that it is "contaminated" by unobserved characteristics of the individual. It is thought that this reduces bias in the estimates however, it means that fixed effects cannot control for unobserved variables that change over time (Allison, 2009).

A random effects model is another example of an MLM and is used with data that contains at least two levels, such as the case here with observations (level 1) nested

in individuals (level 2) (Weiss, 2005). A basic RE model will assume that subject-specific effects account for the correlation between observations on a single individual, and that all other variability is modelled as error (Weiss, 2005). Subject-specific effects are treated as draws from a distribution as opposed to fixed parameters and thus inferences can be made about the population not included in the sample (Frees, 2004). This is an attraction of the method, particularly for the analysis in this thesis which seeks to provide findings which are generalisable to the wider population.

Random effects models can also be known as "error-components" models (Frees, 2004). The basic error-components model equation is:

$$Y_{it} = \beta_0 + \beta X_{it} + \mu_i + \varepsilon_{it}$$

This is the same error representation as the fixed effects model however, the term 'μ_i' is now a random effect rather than a fixed parameter than can be partialed out (Allison, 2009). The equation above includes both fixed (beta terms) and random (μi) effects making it an example of a mixed-effects model (Frees, 2004). Mixed effects models are a class of model that include both fixed and random effects in the model estimation (Frees, 2004). As the 'μ_i´ term represents the intercept that can vary randomly, the 'error-component' model can also be known as the 'random intercepts' model (Rabe-Hesketh & Skrondal, 2008).

This model has advantage over the fixed effects model in that much more information is available since the between effects are not discarded (Firebaugh et al, 2013). This narrows the confidence intervals as compared to the fixed effects model as there is smaller sampling variability (Firebaugh et al, 2013). Additionally, the RE models can account for time-varying variables which FE cannot do (Allison, 2009). A further extension to the RE is that it can also allow coefficients to vary from person to person as well as the intercept, known as a "random coefficients" model (Firebaugh et al, 2013). By modelling varying coefficients at each wave, growth curves can differ for each subject, showing different trajectories in the probability of volunteering (Hox et al, 2017). This approach is used in chapter 6.1, where the relationship between widowhood and probability is allowed to vary over the time leading up to, and after widowhood. This allows for a more dynamic analysis of widowhood, treating it as processual in nature.

Clark and Linzer (2015) argue that with substantial amounts of data (units or observations, as is the case with this study), the estimates between the fixed and random effects models do not differ to a discernible degree. They then go on to state that in this case, the model should be chosen based on the goal of the researcher, arguing that if the goal is to make assumptions about the underlying populations, or 'unobserved units', then the random effects model should be chosen as the fixed effects model does not account for unobserved units (Clark & Linzer, 2015). As this research aims to make assumptions about the wider older adult population, the random effects model would be an appropriate choice.

4.4.4 Application of the MLM with random effects

All analysis conducted in this thesis will use Stata 17. This thesis will utilise the mixed-effects ('me') commands within Stata. Stata also allows for data to be declared as panel and can make use of 'xt' commands such as 'xtlogit', though in practice both provide a similar story, as such the 'me' commands were chosen. Mixed-effects logistic and ordered logistic regression will be used within the analysis presented in this thesis. For most analysis, the mixed-effects logistic regression is used, this is appropriate as the outcome variable in this thesis is binary (see section 4.3.2). Also, random effects will account for residual heterogeneity between individuals across the waves, which will take the longitudinal nature of the ELSA data into consideration. It also allows for the addition of random coefficients which will be used in chapter 6.2 to explore the relationship between time to and from widowhood and volunteering participation. In chapter 6.1, a mixed-effects ordered logistic regression model will be used as the main outcome variable in part of the analysis will be the ordinal measure of volunteering (Lemeshow et al, 2013). This allows for exploration of intensity of volunteering, with the ordered logistic regression showing the probability of being further along the scale (meaning higher intensity of volunteering). This analysis will show whether within retirees, there is differing intensity in volunteer participation – this is further discussed in the relevant analysis chapter (6.2). For the employment parameter module used in the microsimulation chapter (see chapter 8), a multinomial logistic regression model was used. This is an appropriate model to use where the outcome is nominal in nature, but with more than two categories (Hosmer et al, 2013) – this is the case in the employment parameter module where participants can be employed, retired, or 'other'. The multinomial

logistic regression model allows for predictions to be made about the probability of being in one of the three outcome categories, which is the aim on that particular analysis (see chapter 8 for discussion).

Models will be built up adding in the main explanatory variables to answer each specific research question, and also the control variables. Sensitivity analysis is conducted including different iterations of included variables and inclusion of potential interaction effects, discussion of any sensitivity analysis will be found in the chapter specific methods sections, with sensitivity results found in appendices. Log-likelihood (ll) function and Bayesian Information Criterion (BIC) will be used to choose the best fitting and most parsimonious model from the nested models.

4.4.5 Survival analysis

Survival analysis is another option which could be used to explore these research questions. This method is used to analyse "time to event" data and is often used in health research to analyse all cause morality or the occurrence of a cardiovascular event. However, 'survival' times need not be actual survival, but can be any event of interest for example – time to starting volunteering after becoming widowed/retired. Or time to ceasing volunteering following widowhood/retirement (Stel et al, 2011).

Participants' time may begin when they enter the study or meet some eligibility criteria and end when the event of interest occurs, or they are censored out of the data – this duration is known as "serial time". There are three variables that participants are categorised by when setting up a KM model: their serial time, their status at the end of their serial time and the study group they are in (Stel et al, 2011). In this case serial time would be the time from the wave they first retired, their status is identified as having stopped volunteering, and the study group is whether they experienced a change in SPA or not. The serial times are arranged from shortest to longest regardless of calendar time of entry, all subjects begin analysis at the same point then and are followed until either the event of interest occurs, or they are censored out (Stel et al, 2011). Censoring occurs when the survival time cannot be accurately determined such as when a participant drops out, is not followed-up with, relevant data not available or the study ends before the event occurs (Stel et al, 2011). If the event does not occur before the end of the study period, it is not

appropriate to comment on the outcome for those individuals as "survival" is not known outside of the studied period.

Medians and nonparametric tools are preferred in analysis as long duration times may dominate means (Stel et al, 2011). The Kaplan-Meyer (KM) curves uses stepwise estimates rather than smooth functions, with estimates showing the change in the cumulative probability as the curve advances through time (Rich et al, 2010). The cumulative probability defines the probability at the beginning and throughout the interval. The log-rank test is the most common method to analyse for significant differences in survival between groups. This calculates a chi-square for each group and sum results, these are added to derive the ultimate chi-square to compare the full KM curves for each group (Stel et al, 2011). Another probabilistic method used is hazard ratios, this gives a relative event rate in the groups. This follows the same process of summing the cumulative chi-square for each event and gives an observed and expected number for the full KM curve (Stel et al, 2011).

It should be remembered that once the first case becomes censored, the survival curve becomes an estimate as the final outcome for that participant is unknown. The number of censored subjects should also be taken into consideration (Stel et al, 2011). KM curves are useful for dealing with time-to-event differences across groups, especially when not all the subjects continue in the study (right-censoring), as is the case here. Cox proportional hazard models extend these analyses by assessing the association between several variables and survival time (Stel et al, 2011). Survival analysis will be used in model 7.3 to explore the time till ceasing volunteering post-retirement between those who experience a change in state pension age and those who did not, to explore whether the window of volunteering will be narrowing (reduced volunteering due to increase in SPA) or just moving further along (no change).

4.4.6 Microsimulation

Microsimulation aids in understanding economic and social processes at the micro-level (O'Donoghue & Dekkers, 2019). The method was first developed by Guy Orcutt in America in the late 50s, and into the 60s, as a response to existing methods for forecasting and prediction being mainly focussed on the aggregate level (Orcutt, 1957). Orcutt (1957) suggests that individual level variation should be accounted for,

with aggregate measures not accounting for individual behaviour (Spielauer, 2011). Since this seminal paper, many types of microsimulation models have been developed for use in different disciplines, for various aims. They have been used to evaluate the future performance of pension arrangements, to simulate the impacts of public policies, to evaluate the potential impact of policy changes and to project life-time behaviours such as labour force participation (Marois & Aktas, 2021). Developments in computing technology, and the rise in the number of micro-data sources needed to calibrate the parameters of the microsimulation (such as large-scale panel surveys), have made it easier to develop more complex models and also increased the level of interest for such models (Marois & Aktas, 2021).

Microsimulation (MSM) is often used when forecasting about a particular issue, such as pension reform, as it is the future impact that is of importance to the researcher and as such there is no existing data (O'Donoghue, 2001). It utilises household or individual level data to make projections about the future population and the potential impact of changing policies on individuals and households (Reznik et al, 2019). The ability to model connections between policy implementation and individual decision making is a distinguishable feature of MSM (Birkin & Wu, 2012).

Microsimulation models can be split into two types: static and dynamic. Static models examine the immediate impact of a particular policy change but do not attempt to involve a behavioural change (Zaidi & Rake, 2001). On the other hand, dynamic models include time explicitly, modelling processes which drive change over time to make predictions about future behaviour (Spielauer, 2001). The latter is used in this thesis analysis.

Most microsimulation models follow a similar construction method, first selecting a representative sample to form the base population (Burgard et al, 2020). Survey data is typically used in construction of microsimulation models. Administrative data is thought to be the most accurate in constructing microsimulation models due to its large-scale nature and is typically robust due to the resources put into their data collection (Li & O'donoghue, 2012). However, large scale social surveys are often used. Given their representativeness, size, and longitudinal nature, they are thought to form a realistic base for transition and model-based probability estimates (Li & O'donoghue, 2012; Payne, 2019). Given constraints on timing for this thesis, and

that the aim is to create a simple, yet functioning model which can explore the use of microsimulation for estimating volunteer populations, ELSA will be used as the base data. ELSA is representative of the target population here (older adults due to reach SPA) and provides all the necessary variables for analysis. For survey data, Burgard et al (2020) recommend weighting strategies to account for non-response bias - as discussed in section 4.2.1 cross-sectional weights will be used at each wave of the data to account for non-response and attrition.

The next step is in designing the model. When creating microsimulations, it is recommended to use a modular structure as basis for the implementation of population dynamics as they are usually driven by multiple subprocesses that are usually organised independently (Burgard et al, 2020). Several parameter modules will be created for this analysis including a mortality module, a demographic module including marital status, health status, wellbeing, caring status, employment status, and finally volunteering. Full explanation of each module and how parameters are estimated are found in section 8.2.2. In this approach, the sequence of the modules is important in the analysis as a direction of relationship between the different modules is assumed. This will be discussed further, with justification, in section 8.2.3.

The base population is then 'simulated' forward through the parameter modules, following the transition and model-based probabilities previously estimated. This gives a hypothetical population at the end of each run of the simulation based on the assumptions made in each parameter module. After a number of models iterations, the results can be assessed, giving a possible projection of the future target population under different policy scenarios (Payne, 2019).

The main aim is to use dynamic MSM to explore how changing the state pension age would impact retirement decisions, and in turn how this will influence volunteering participation. This analysis will allow for forecasting, and prediction of the numbers of volunteers, and any change raising of the SPA could have on volunteering participation. This projection will be useful when exploring how policy makers and volunteer involving organisations could encourage volunteering amongst older adults, related specifically to retirement decisions. Adding this component to the analysis will add to the unique contribution of this thesis to the

literature as so far, no other example of using MSM to predict future volunteering generally, or specifically in UK adults, can be found.

4.5   Note on causality

This section will discuss the broad approach to the issue of causality in the analysis conducted within this thesis. First, it will adopt the conventional position that the evidence should be interpreted only as evidence about empirical associations; but in certain scenarios at certain points in the analysis or interpretation, it may be reasonable to draw causal conclusions. Some relevant scenarios and other methods that were considered are also discussed.

Within statistical analysis, to estimate the causal effect of one variable on an outcome, randomised controlled (RC) studies are often considered to be the "gold standard" (Baiocchi et al, 2014). However, RC studies are not always plausible, particularly in the case of the analysis in this thesis. Beyond the cost constraints involved in RCs, individuals cannot reasonably, or ethically, be assigned randomly to being a widow or to retirement. Observational studies, meaning not an RC or experimental design, offer an alternative source of data for exploring the effect of variables on a given outcome (ibid), though they have the drawback that the "treatment" variables (e.g., widowhood or retirement in this thesis) are not randomised. From here, discussion of the analysis conducted will refer to the association and relationship between the explanatory variables and outcome of interest. It is noted that potential confounding factors cannot be fully controlled for, and there is the potential for reverse causality (e.g., volunteering increases health/wellbeing versus being healthier/having higher wellbeing increasing likelihood of volunteering). The strong theoretical and empirical base for the analysis in this thesis means conclusions can still be drawn, though the inability to draw causal conclusions is noted through the approach taken here.

Specific to the analysis in this thesis, it can be assumed that individuals' background characteristics impact upon the explanatory variables included in the model which are hypothesised to be associated with volunteering. For example, becoming retired, individuals who may be in poorer health, or on the other hand, who are in the financial position to no longer work, may be more likely to become retired meaning it is not randomly assigned. These background characteristics which impact the

probability of being "assigned" to a group, and the outcome of interest, are known as confounders, and their effect is known as selection bias (Matthews, 2014). This issue of selection was considered in chapter 6.1 of this thesis where the sample is reduced only to widows – it is acknowledged that limiting the population could lead to selection bias, particularly with unknown confounders which could impact widowhood and also volunteering. In the above analysis chapter in this thesis, Heckman selection models are employed as a sensitivity analysis. The Heckman selection model includes two separate equations, one which addresses selection into the sample (outcome being observed – here, becoming widowed within the survey time), and the main equation linking the other explanatory variables to the volunteering outcome (Koné et al, 2019). The first part of the model – the selection equation – models the probability of being selected into the sample, then the second part models volunteer outcomes controlling for their selection probability. The selection equation in this case includes age as a quadratic term (linear age, and age-squared), gender, and whether participant was involved in caring in the previous wave. The LR test of independent equations will be used to decide whether to proceed with the selection model or the model as described in section 6.1.2 methods. A p-value > .05 suggests the models can be run separately as there is independence of equations. Results from these sensitivity analyses are discussed in section 6.1.2.

Newsom et al (2011) highlight the argument that threats to causal inference can be addressed or ruled out by the research design or statistical control. When all are accounted for, the causal argument that the independent variable causes the dependent variable can hold (ibid). Though this is a simplification of a complex problem, there can be more confidence in some circumstances than others. Newsom et al (2011) bring up a simple framework for assuming causality: (a) confirming an association between the independent and the dependent variables; (b) determining non-spuriousness (i.e., alternative causes or "third variables" have been ruled out); and (c) establishing time precedence. In the case of the analysis in this thesis, (a) can be assumed, given that the aims are to explore the association between characteristics, life events, and policy impacts on volunteering, while (c) can arguably be addressed by the longitudinal nature of the data (Menard, 2008). More complex to deal with is assumption (b). While the theoretical underpinnings and literature to date give a sound basis for having all relevant variables included, a

'third' variable effect, or endogeneity, cannot be fully ruled out. The longitudinal nature of the data does allow for the dealing of some endogeneity issues as longitudinal models allow for the exploitation of change within units over time which eliminates unobserved time-invariant heterogeneity (Allison, 2009). Discussion of how this is done in the random effects models used in this thesis can be found in section 4.4.3, specifically the discussion about random effects models and how they deal with unobserved heterogeneity over time within individuals through the error component of the model. Another way of dealing with this issue, which was considered for the retirement analysis, is an instrumental variable approach. Specifically, age thresholds for receipt of state pensions can be used as an instrumental variable for retirement. These age thresholds introduce financial incentives to retire at a certain age, therefore, a disproportionate increase in the probability of retirement would be expected at the SPA thresholds (Eibich et al, 2022). Instrumental variables need to fulfil two assumptions – (i) it should predict the treatment, and (ii) it should not influence the outcome other than through its effect on the treatment. Eibich et al (2022) argue that in the case of retirement, the first assumption holds as previous studies have reported that these age thresholds predict retirement (Bonsang et al. 2012; Bound and Waidmann 2007; Eibich et al, 2022; Zhu, 2021). Though, causal inference techniques such as this often come with a set of assumptions which can be difficult for social surveys to meet. Even the more relaxed 'selection on observables' techniques such as an instrumental variable approach outlined above have strict assumptions which can limit the sample used and conclusions that can be drawn. The main limitation of an IV approach is that it does not provide an estimate of the average treatment effect, but rather an estimate of the local average treatment effect (LATE) which refers to the treatment effect for the complier population (Eibich et al, 2022). For a potential analysis in this thesis that would mean individuals who do not retire when they are below the age threshold for state pension eligibility, but who do retire once they reach the threshold. This would exclude early and late retirees, which considering this thesis is interested in the relationship between retirement and volunteering generally, would restrict the sample unnecessarily. Another issue pointed out by Eibich et al (2022) is that for wealthier individuals, the majority of their old-age income will come from occupational and private pensions therefore, eligibility thresholds for the state pension will be less relevant making them more likely to be underrepresented in the complier population.

Due to this, the approach in this thesis was deemed more appropriate for purposes of conducting subject-specific analysis which can answer questions about the wider underlying population, something that a mixed effects model can do, where IV has strict assumptions about population discussion (Rabe-Hesketh & Skrondal, 2008).

To summarise, while other options were considered which would bring the analysis closer to causal, regression-based approaches will be utilised here. The strong theoretical and empirical basis on which the analyses in this thesis stand mean that conclusions can be drawn, though the issue of causality will be in mind when they are stated. From here, any text within the analysis chapters that refers to "effects", are referring to the effect of x on y as related to the coefficients in the model. For example, when discussing interaction terms in the models there is the "main effect" of the variable, and the "interaction effect", on the likelihood of the outcome (volunteering). This is typical language used when discussing regression-based models such as the mixed-effects models used throughout this thesis. Substantive conclusions will refer to associations and relationships in light of the discussion here.

4.6   Conclusion

This chapter has outlined the methodology of this thesis. It has described the data set, variables of interest, control variables, and analytical approach which will be used in forthcoming chapters to answer the research questions posed.

5 Factors explaining volunteering in older adults: the relationship between pre-retirement occupation and volunteering participation in retirement.

5.1 Introduction

As reported in the literature review, previous research has often found differences in volunteering participation across different occupations and skill levels. They have found that those in more highly skilled occupations are more likely to volunteer than those in lower skilled occupations (Webb & Abzug, 2008; Wilson and Musick, 1997; Van Den Bogaard et al, 2014). Wilensky (1961) argues that high skill level is one of the characteristics of "good" jobs, which have been found to have a positive relationship with volunteering participation (Marshall & Tanaguchi, 2011; Wilensky, 1961; Wilson & Musick, 1997). It is argued that "good" jobs may provide access to volunteering opportunities, for example through networks which could introduce them and through necessity of their skills within organisations, leading to those with higher skilled jobs and those in more authoritative positions volunteering more (Marshall & Tanaguchi, 2011).

It has also been identified in the literature that the physicality of the job, can also influence levels of participation with those who worked manual jobs volunteering at lower rates (Van Den Bogaard et al, 2014; Choi, 2003; Wilson & Musick, 1997). It is argued that retirement from a physically demanding job may be seen as a relief rather than a loss and thus retired manual worker will be less likely to volunteer than retired non-manual workers, who may perceive the loss of their higher-status occupation as a loss (Van Den Bogaard et al, 2014). This was explored by Lengfeld and Ordermann (2016), who suggests that the differences in volunteering after retirement across occupations is due to the perceived loss of status. Those in higher status occupations will perceive the loss of their occupational role to be higher, and thus be more likely to compensate with volunteering – an activity that has the character of a "collective good" (Lengfeld & Ordermann, 2016).

However, work linking occupations and volunteering after retirement is sparse and mainly focuses on American and German retirees. To date, no past study can be found that has a UK focus, and that focuses on several different operationalisations of 'occupation' including job physicality and skill level. This analysis utilises 9 waves of the English Longitudinal Study of Ageing to explore the relationship between past occupation and volunteering amongst older adults in the UK, making this an important part of the uniqueness of this thesis. Understanding the link between prior occupations and volunteering patterns amongst older adults, could help to identify types of occupations where policy interventions might have the most impact in efforts to increase participation.

This chapter therefore aims to answer the question: what is the relationship between occupation earlier in life and volunteering participation in later life?

Based on existing literature the hypotheses are as follows:

Table 5-1: Chapter 5 hypotheses

	Hypotheses	Model
5.1	Volunteering participation in retirement will differ by skill level with those in more highly skilled occupations being more likely to volunteer.	Model 5.1
5.2	Those whose occupations were defined as manual will be less likely to volunteer post-retirement that those from sedentary and standing occupations.	Model 5.1
5.3	Within physicality, likelihood of volunteering with vary by skill level of pre-retirement occupation.	Model 5.2; Model 5.3; Model 5.4.

5.2 Methods

5.2.1 Sample

This chapter uses waves 1-9 of ELSA (see 4.2) in the analysis. The sample is limited to those who are already retired, as the aim of the analysis is to explore the relationship between past occupation and volunteering in retirement. Those who answered that they were retired to the question regarding work status, and who did not report any working hours (either employee work hours or self-employee work hours) were classified as the 'retired' in this analysis.

To ensure that analysis is based on occupation pre-retirement and volunteering post-retirement, only those who had stated they were in work in at least one wave, and whose SOC2000 code was the same in retirement as when they were in work were included in the analysis. If a participant went back to work after a spell of retirement, their occupation from before their first retirement spell was used. It is unclear whether this is their career or 'bridge work' between career and retirement, but this is being treated as the latter for the purposes of this analysis. Therefore, those who were in the "other" category (carers, homemakers, unemployed) and those who never classed themselves as retired are excluded from the analysis. After eliminating missing values using listwise deletion and removing those aged below 50, there are 3151 individuals appearing in two or more waves, resulting in 10,127 observations.

5.2.2 Variables of interest

For detailed description of measures and variables see methods.

Outcome variable:

The volunteering variable across this analysis refers to the frequency of volunteering. Participants were asked "how often if at all do you do any volunteer work", with the answers being twice a month, about once a month, every few months, about once or twice a year, less than once a year and never. Those volunteering "once or twice a year" or more are classed as volunteers, and those who volunteered "less than once a year" or "never" are classed as non-volunteers in this analysis (as used by Nazroo & Matthews, 2012). There is an alternative volunteering question in the survey which asked whether or not participants volunteered in the month prior to the interview. Cross-referencing the response to both questions revealed that there were 1,172 observations where individuals reported they volunteered in the last year though they had not volunteered in the last month (see table 5-2). Thus, the former measure was chosen as it captures a wider range of volunteers, and not only those who had volunteered in the previous month.

Explanatory variable:

To fulfil the aim of understanding the factors that explain volunteering participation in older adults, and the impact of prior occupation, the variable "soc" will be used. Based on their occupation (or last if always retired), participants in ELSA are given a

three digit "SOC2000" score. This is then split into the 9 different 'major' occupational classifications (see 4.3.3). For the main analysis, the 4-level skill split will be used (see 4.3.3). Modelling the association between prior occupation and volunteering will show if decisions made earlier in the life-course have an impact upon decisions to participate in volunteering in later life.

Table 5-2: Cross referencing of volunteering variables (descriptive)

	last month	
last year	No	Yes
No	5,027	17
Yes	1,172	2,509

To explore whether those whose pre-retirement occupations were non-manual are more likely to volunteer, the variable "manual" was used. This was based on the question "which of this best describes your work". This was coded into three categories: sedentary (1), standing (2), and manual (3). For full breakdown of each category see section 4.3.3.

Other explanatory variables:

Several demographic and economic variables will also be included in the analysis, as identified in the literature review. A quadratic function of age is included in the model, with continuous age and age-squared variables. This will allow the age to have a non-linear function. Gender (male/female) which has been found to be associated with volunteering will be included (Zaninotto et al, 2013; Wemlinger & Berlan, 2016; Helms & McKenzie, 2014). Marital status (single, married/civil partnership, divorced/separated, widowed) will also be included as it has been repeatedly found that married individuals are more likely to volunteer (Bulanda & Jendrek, 2016; Dury et al, 2015; McNamara & Gonzalez, 2011). Whether or not participant was involved in caring in the last month was included in the model as prior work has found caring activity to be complementary to volunteer participation (Dury et al, 2015). This is in line with a resource perspective which identifies partnership and caring as forms of social capital which can open up networks and opportunities for volunteering.

As identified in the conceptual framework and review of existing literature, several measures of human capital are also included, as the resources (including financial, skill and networks) are argued to be associated with the likelihood of volunteering. Whether or not participant has a degree is also used, having been previously found to be a significant predictor of volunteering (Van Den Bogaard et al, 2014; Dury et al, 2015; Hank & Erlinghagen, 2009; Okun et al, 2014; Tang et al, 2010). Wealth (in quintiles) was used, this is a derived financial variable that accounts for all non-pension wealth within a household including wealth from businesses, property, and investments and has been found to be the be a robust indicator of socio-economic status within ELSA (Demakakos et al, 2012; Demakakos et al, 2016; Torres et al, 2016). It has also been argued that this measure is an important measure of social position in older age (Garfield et al, 2016). Self-rated health status (poor, fair/good, excellent) and CASP-19 score will be used in the analysis, as other studies have consistently found both these measures of health and wellbeing are significantly associated with volunteering (Hansen et al, 2018, McMunn et al, 2009; Tabassum et al, 2016).

Membership of a religious organisation was included as a measure of religiosity. Most prior work uses attendance at religious services as a proxy for religiosity (see Bulanda & Jendrek, 2016), however this was not present in ELSA and so membership was used as an alternative. Membership is used in prior work, and in Wilson and Musick's (1997) seminal paper which identifies it as an important form of cultural capital in the context of volunteering.

5.2.3   Data analysis

Descriptive analysis of the sample was conducted, along with cross-tabulations between volunteering and variables of interest. The main analyses comprised of a series of mixed effects logistic regression models with random effects. The random effects were specified on the unique identifier ELSA applies to each individual (idauniq) to account for clustering of responses at each wave within individuals. The random effects account for residual heterogeneity within individuals across time, after accounting for the main effects in the fixed part of the model.

Model 5.1 includes volunteering as the outcome, the explanatory variables outlined above, and skill level and physicality of the occupation in order to test hypotheses

5.1 and 5.2. This regression model was then run again three times over the different levels of physicality to explore whether the groups differed in line with hypothesis 5.3.

5.3 Results

The mean age of the sample was 67.4. Just over half of the sample were female (50.7%). Most participants were married or in a civil partnership (72.7%). 22% of participants in the sample were educated to degree level and were in the highest wealth quintile (27.8%). The majority of the sample self-reported that they were in "fair/good" health (50.4%) or "excellent" health (45.8%), with only 3.8% describing their health status as "poor".

Of those in the sample, 20% were members of religious organisations. 14.9% of the sample reported being involved in caring activities in the month prior to interview. 37% reported being involved in volunteering. The majority of participants' pre-retirement occupation fell into the second skill level (36%), breakdown of the major occupation categories can be found in table 5-3, though there is a relatively even spread amongst the categories. Most pre-retirement occupations were sedentary roles (41.4%).

Table 5-3: Descriptive statistics for all variables (chapter 5)

Variable		obs	%	% volunteers
Gender	Male	4,990	49.3%	35.3%
	Female	5,137	50.7%	38.6%
Marital status	Single	463	4.6%	32.0%
	Married	7364	72.7%	38.6%
	Separated	1311	13.0%	31.2%
	Widowed	989	9.8%	34.6%
Degree	has a degree	2,231	22.0%	56.6%
	no degree	7,896	78.0%	31.4%
Wealth	1	949	9.4%	22.6%
	2	1493	14.7%	27.2%
	3	2230	22.0%	31.2%
	4	2645	26.1%	38.9%
	5	2810	27.8%	49.6%
Physicality of pre-retirement occupation	Sedentary	4,190	41.4%	42.4%
	Standing	3,373	33.3%	38.2%
	Manual	2,564	25.3%	26.3%

		obs	%	mean if volunteers
SOC200 classification	Managers	1,201	11.9%	39.0%
	Professionals	1,554	15.4%	54.5%
	Technical	1,162	11.5%	45.3%
	Administrative	1,730	17.1%	35.5%
	Skilled Trades	1,105	10.9%	29.1%
	Personal Service	735	7.3%	33.9%
	Sales	698	6.9%	27.6%
	Machine operative	729	7.2%	28.6%
	Elementary	1,214	12.0%	25.8%
Skill	1	975	9.6%	25.4%
	2	3642	36.0%	31.6%
	3	2574	25.4%	35.3%
	4	2937	29.0%	48.9%
Health	Poor	380	3.8%	18.7%
	fair/good	5106	50.4%	33.5%
	Excellent	4641	45.8%	42.2%
Member of religious organisation	Yes	2,027	20%	65.6%
	No	8,100	80%	29.8%
Carer	Yes	1,511	14.9%	42.7%
	No	8,616	85.1%	35.9%
Volunteers	Yes	3,740	36.9%	
	No	6,387	63.1%	

	obs	mean	mean if volunteers
Age	10,127	67.4	67.6 (3,929 obs)
Casp19	10,127	65.4	66.8 (3,929 obs)

Note: 10,127 observations from 3151 respondents' waves 1-9 ELSA
Based on persons-years: retirees who were interviewed at 2+ waves throughout waves 1-9 of ELSA.
Cross sectional weights applied

A significant (p<.001, gamma=.26) association was found between skill level of pre-retirement occupation and volunteering amongst retirees (see Figure 5-1). As you move up skill levels participants volunteered more. Those in the highest skilled occupations volunteered most (50.4%), followed by those in the third skill level (37.1%), and then the second skill level (33%), with those in the lowest skilled jobs volunteering the least (26.3%). Those who held occupations in the highest skill level volunteered significantly more than the other three categories. Those who held occupations in the third skill level volunteered in significantly higher rates than those

in the lowest skill level, as did those in the second skill level. There was no significant difference between those who held occupations in skill levels 2 and 3.

Figure 5-1: Proportion of volunteering by skill level of pre-retirement occupation with 95% confidence intervals
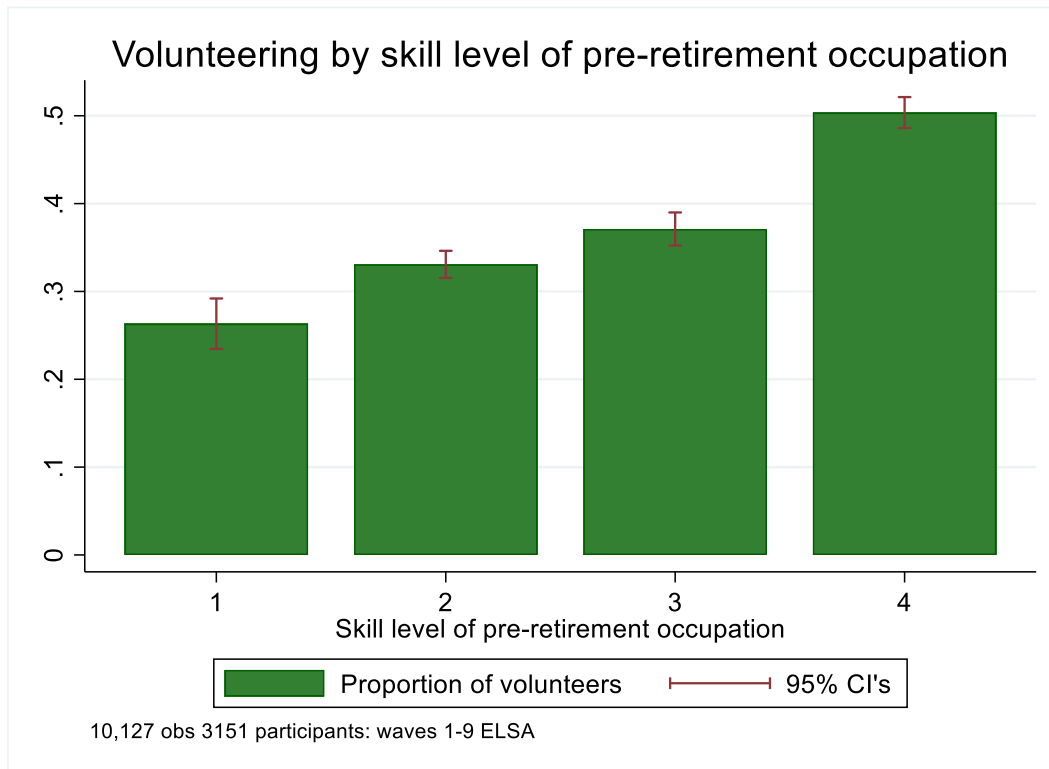
To explore a potential gender interaction in the impact of skill level of pre-retirement occupation on volunteering, a three-way cross tabulation was conducted. The general pattern held, with the proportion of retirees volunteering increasing up skill levels, though the significant association was stronger for females than for males (V=.31 vs V=.27), suggesting the relationship is gendered. Figure 5-2 shows the gradation is more apparent for females, with each skill level volunteering in significantly higher proportions that the skill level below. The main pattern of skill levels 2 and 3 not being significantly different to each other still holds for males. The graph also suggests females volunteer in higher proportion that males overall, and significantly more so in the higher skill level occupations. This will be further explored as a potential interaction effect in model 5.1.

Figure 5-2: Proportion of volunteering by skill level of pre-retirement occupation with 95% confidence intervals

Volunteering by skill level of pre-retirement occupation

10,127 observations 3151 participants: waves 1-9 ELSA
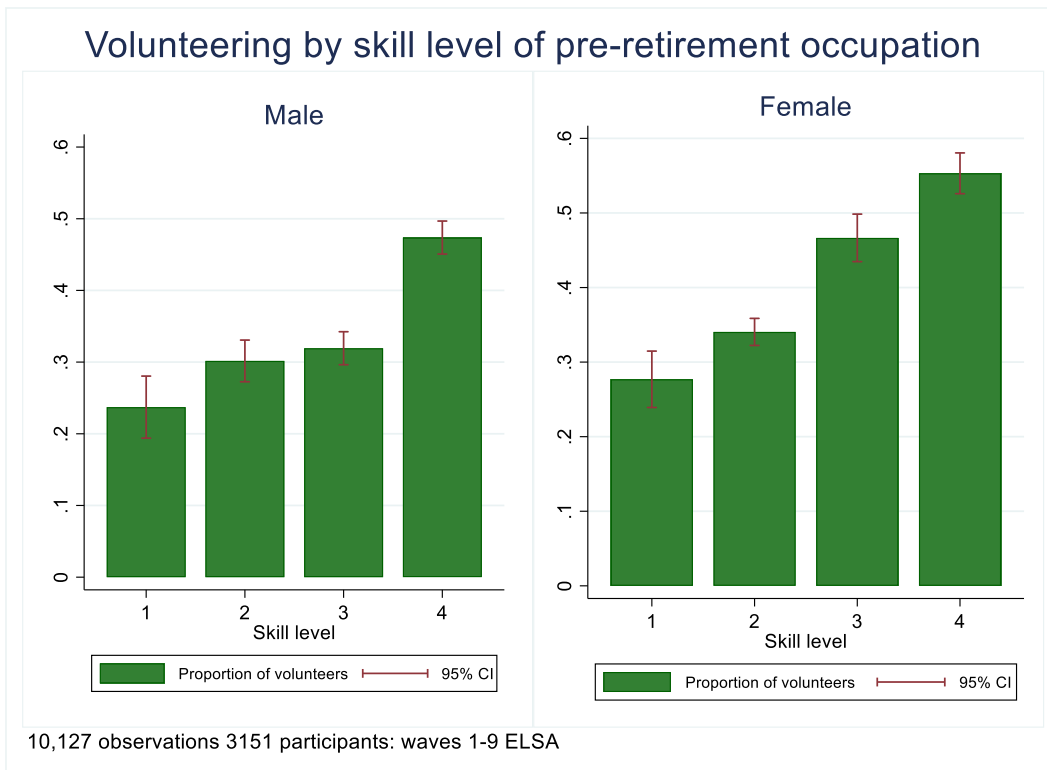
Figure 5-3: Volunteering by physicality of pre-retirement occupation

Volunteering by physicality of pre-retirement occupation

10,127 obs 3,151 participants: waves 1-9 ELSA
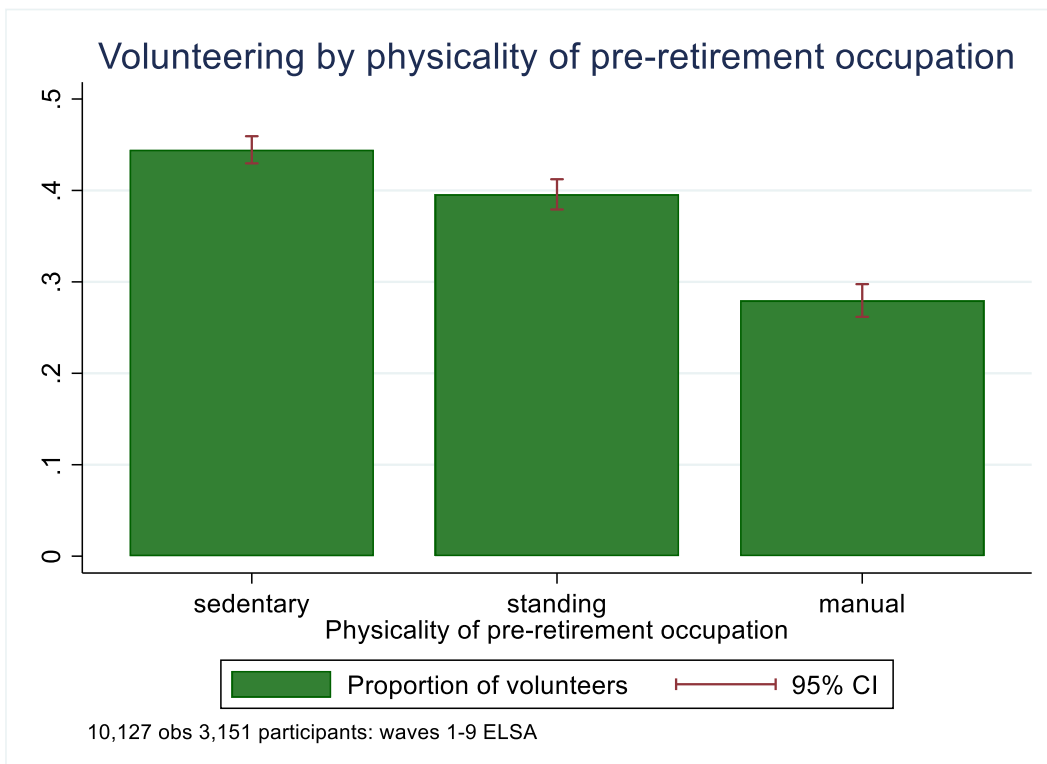
There is also a significant (p<.001, V=.13), association between type of occupation pre-retirement and volunteering (see Figure 5-3). Those who were in sedentary occupations volunteered the most (44.2%), followed by those who were in standing

occupations (39.7%), with those who were in manual occupations pre-retirement volunteering the least (27.8%).

To explore if there were any potential gender differences in the relationship, as was discovered in the skills analysis above, the analysis was rerun by gender (see Figure 5-4). The general pattern remained for both males and females with those in manual occupations volunteering in the lowest proportions, the association was stronger for males compared to females (v=.16 vs v=.10).

Figure 5-4: Volunteering by physicality of pre-retirement occupation, split by gender.
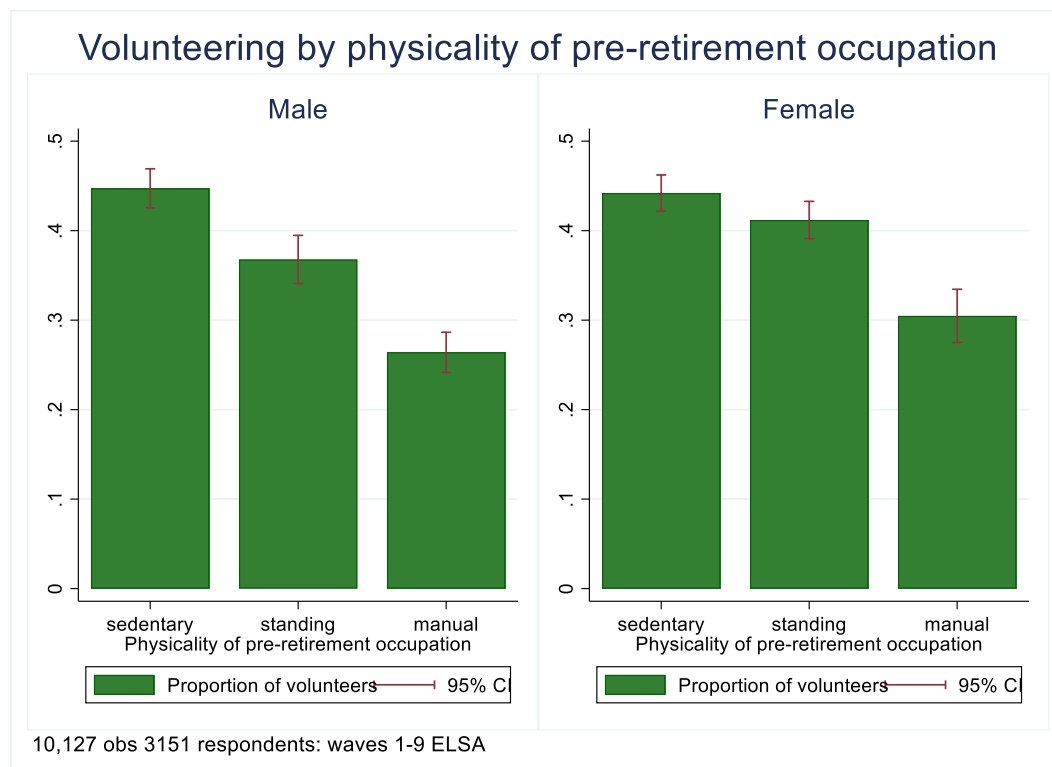
For females, there is no significant difference between those in standing and those in sedentary occupations, where for males those in sedentary occupations volunteer in significantly higher proportions that in the other categories. Compared with males, the difference between the highest volunteer category (sedentary) and the lowest (manual) for females is not as stark, highlighting the stronger association between physicality of occupation males.

This suggests that regardless of gender, pre-retirement job physicality has a significant association with volunteer participation, though the difference between manual workers and those in sedentary and standing occupations is more prominent

for males. To explore whether this relationship holds when controlling for other relevant variables, a potential interaction effect is included in model 5.1.

A further four chi-squares split by physicality were run (see Figure 5-5) to examine whether there were variations by physicality of pre-retirement occupation within skill level pre-retirement occupation. There was a significant association ($p<.001$, $v=.17$) between physicality of pre-retirement occupation and volunteering for those who were in the lowest skill level occupations. Those who were in the standing occupations (34.5%) volunteered in the highest proportions, followed by sedentary occupations (30.1%), and finally manual (18.8%).

Figure 5-5: Volunteering by physicality of pre-retirement occupation, split by skill level.

10,127 obs 3151 respondents: waves 1-9 ELSA
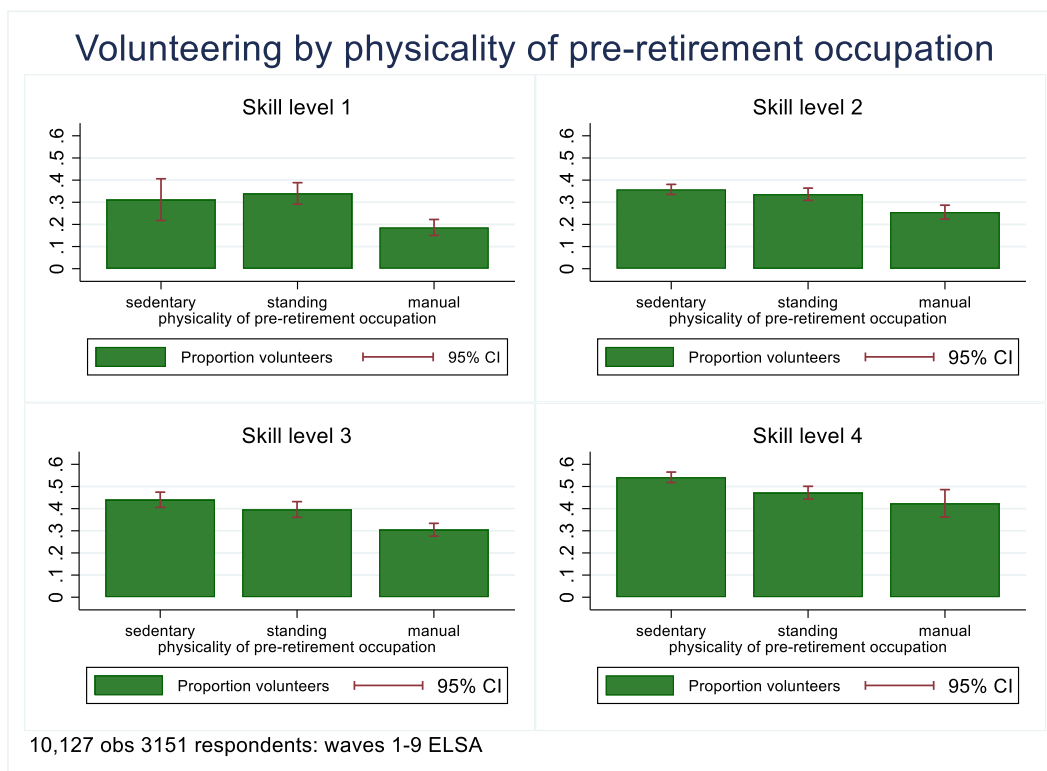
There was a significant association ($p<.001$, $v=.08$) between physicality of pre-retirement occupation and volunteering for those who were in the second lowest skill level occupations. Those who were in the sedentary standing occupations (35.7%) volunteered in the highest proportions, followed by standing occupations (33.8%), and finally manual (25.8%).

There was a significant association (p<.001, v=.12) between physicality of pre-retirement occupation and volunteering for those who were in the second highest skill level occupations. Those who were in the sedentary standing occupations (43.3%) volunteered in the highest proportions, followed by standing occupations (39.4%), and finally manual (30.5%).

There was a significant association (p<.001, v=.09) between physicality of pre-retirement occupation and volunteering for those who were in the second highest skill level occupations. Those who were in the sedentary standing occupations (53.9%) volunteered in the highest proportions, followed by standing occupations (47.4%), and finally manual (39.7%).

Figure 5-5 further shows that volunteering varies across skill level with proportion of volunteering increasing along skill levels, within these, the physicality pattern remains as discussed above. However, for those in the lowest skill level, those in standing occupations volunteering in slightly higher proportions than those in sedentary occupations – this is not significant, however. Visually, the difference between the manual and the other categories is wider for those in the lowest skill level, in line with the association being strongest for those pre-retirement occupations. That there is not much significant difference between sedentary and standing occupations by skill, but that there is variation in across skill levels for manual may suggest a relationship between manual pre-retirement occupations and skill. Models 5.2-5.4 will explore this further, examining the relationship between skill level of pre-retirement occupation and volunteering net of physicality.

For the main analysis, a multilevel logistic regression with random effects was run. Variables were systematically added in to improve the model fit (see appendix 5-1 for full nested model results). Once membership of a religious organisation and caring were accounted for in the model, there was no longer a significant difference between skill level 2 and the base skill level. Once wealth was taken into consideration, there was no longer a significant difference between standing and sedentary occupations. The final model with all explanatory variables was the best fit to the data and is outlined below in Table 5-4. Analysis was weighted using cross sectional weights for each of the 9 waves. The overall model was significant (p<.001)

with an icc statistic of .615. This suggest that 61.5% of the variation in volunteering net of the role of explanatory variables is explained by between individual variation.

Table 5-4: Relationship between physicality and skill level of pre-retirement occupation and volunteering.

Model 5.1		
Volunteering		Coefficient
age		.656***
age-squared		-.005***
female		.360**
marital status		
ref single	married/civil partnership	0.066
	separated/divorced	0.074
	Widowed	0.102
degree		1.320***
wealth		.266***
health		
ref poor	fair/good	.665**
	Excellent	.785**
casp19		.024***
member religious org		2.171***
caring		.341**
manual		
ref sedentary	Standing	-0.201
	Manual	-.463**
skill		
ref 1 (lowest)	2	0.341
	3	.661**
	4	.812**
Random intercept: id		5.266***
N		10127
Ll		-4035.50
BIC		8255.50
Data from waves 1-9 ELSA; cross-sectional weights applied		
sig: * (<.05) **(<.01) ***(<.001)		

Those who had been in manual occupations pre-retirement were significantly less likely to volunteer than those in sedentary occupations (p=.002) net of the influence of other variables in the model. This finding suggests that, in line with previous

findings and controlling for other relevant factors, those who are in manual occupations are less likely to volunteer than their non-manual counterparts (Choi, 2003; Marshall & Tanaguchi, 2011; Van den Bogaard et al, 2014; Wilson & Musick, 1997). There was no significant difference between being standing occupations compared to sedentary on volunteering. As compared to those had been in the lowest skilled occupations, those who had been in the two highest skill levels pre-retirement were significantly more likely to volunteer (p=.003 and p=.002 respectively) than those in the lowest skilled occupation. There was no significant difference being in the second lowest skill level pre-retirement as compared to the lowest skill level occupations.

Quasi-variance standard errors are used to further explore the differences between classes (see Figure 5-6). Quasi-variance standard errors remove the "reference category" issue and allow for comparisons between other categories within the categorical variable (Gayle & Lambert, 2007). Quasi-variance estimates indicate that those in the highest skill level were significantly more likely to volunteer than those in skill level two. There were no other significant differences between skill levels. As expected from the previous literature, likelihood of volunteering generally increases as you move up skill level of occupations (Webb & Abzug, 2008; Wilson and Musick, 1997; Van Den Bogaard et al, 2014). It is speculated that this could be due to the resources that are acquired in higher skilled occupations, as they can provide knowledge and skills, as well as access to networks, which drive volunteering participation (Cheng et al, 2021). Forbes and Zampelli (2014) argue that those in more prestigious, highly skilled, occupations have the skills and knowledge that can make them more qualified for voluntary work and make them appealing to organisations. However, this does suggest a barrier to volunteering for those not in highly skilled occupations, which should be of importance for those seeking to widen the volunteer pool such as volunteer policy makers and volunteer involving organisations who are reliant on volunteers.

Figure 5-6: Quasi-variance estimated for the effect of skill level on volunteering.

Quasi-variance estimates with 95% CI
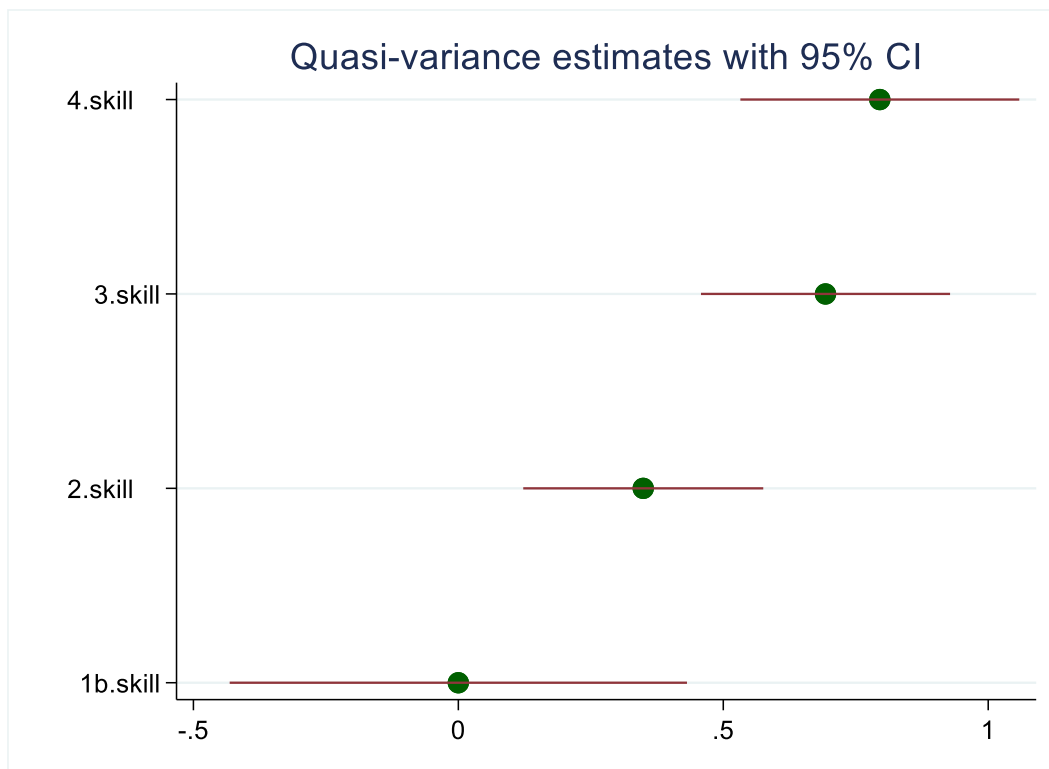
Adjusting for other factors, age is found to have a significant, inverted-U shaped association with age, increasing till around 64 before turning. For this sample, this would suggest that for most older adults (64-90+), there is a negative association between age volunteering after adjusting for other factors. Prior work in the area has been mixed, with some finding relationships in either direction – the use of a quadratic functional form here and finding an inverted U-shaped pattern may explain some of the differential findings. Further work should consider different functional forms of age, allowing the association between age and volunteering to differ across the spectrum of 'older adult'. This should be of importance when considering the "window of volunteering" where older adults may be open to volunteerism, or as an avenue for further research into why volunteerism drops off at certain age points and if there is anything that can be done to mitigate the age ceiling. Females are significantly more likely to volunteer than males (p=.003). Gil-Lacruz et al (2019) suggest a role theory perspective to explain gender differences in volunteering – they argue that the female "role" is typically more orientated towards community and service-related activities. This could explain why females may be more likely to volunteer than males.

There was no significant association between marital status and volunteering, this goes against previous literature which suggests those who are married are

significantly more likely to volunteer. This discrepancy could be due to the sample used here – only those who are retired are included in the analysis, as such the association between marital status and volunteering could vary between the retired population versus the population as a whole. Further chapters in this analysis will examine the marital status and volunteering in the full population, more on this will be discussed in chapter 6.2. Those who were involved in caring activities in the month prior to interview were significantly more likely to volunteer than those who were not. It is argued that carers also have access to networks that provide them with opportunities for volunteering (Burr et al, 2005), which could explain why a significant positive association that was found in model 5.1. Though it should also be considered that some may perceive the caring they do as voluntary work, as it is unclear whether the definition of volunteering used by ELSA is communicated clearly to participants.

There was a significant positive association between having a degree (p<.001) and wealth (p<.001) with likelihood of volunteering increasing with wealth quintile. This finding aligns with the resource perspective supporting this thesis, which suggests human capital such as higher education and wealth increases the likelihood of volunteering. Through monetary and non-monetary resources, having higher human capital can provide skills and access that other subpopulations may not have – this could suggest an economic barrier in who is likely to volunteer. The implications of this will be discussed further in the conclusion section of this chapter.

Those who were in good/fair (p=.01) and excellent (p=.01) health were significantly more likely to volunteer than those in poor health net of other factors. Having a higher wellbeing score was also found to have a significant positive association with volunteering (p=<.001). These findings align with other research in the field (Dury et al, 2015; Hansen et al, 2018; Haski-Leventhal, 2009; McNamara & Gonzalez, 2011; Morrow-Howell, 2010), though as discussed in the literature review, the issue of reverse causality stands, with a regression modelling based approach unable to disentangle whether those in better health are drawn to volunteering or volunteering itself improves health. Regardless, this finding suggests that poorer health and wellbeing could be potential barriers to volunteering – the implications of this will be discussed further in the conclusion sections of this chapter.

Those who were members of a religious organisation were significantly more likely to volunteer (p<.001) net of other factors. This aligns with prior work identified in the literature review, and the cultural capital perspective (Cheng et al, 2019). The argument being that those who are members of religious organisations might be expected to volunteer because of their religious beliefs, which may propagate helping others and the community, and through their social connectedness, participate in church related volunteer activities (Cheng et al, 2021).

To examine whether there were significant differences between skill levels in the association between physicality of pre-retirement occupation and volunteering, another three mixed logistic regressions were run, and the results compared. This revealed differences in the associations between the different explanatory variables and volunteering (see Table 5-5).

Table 5-5: Models exploring the relationship between skill level of pre-retirement occupation and volunteer by physicality of occupation.

		sedentary (5.2)	standing (5.3)	manual (5.4)
Volunteering		Coefficient	Coefficient	Coefficient
Age		.675***	.750***	0.35
age-squared		-.004***	-.005***	-0.002
Female		.434*	0.362	0.208
marital status				
ref single	married/civil partnership	-0.205	-0.037	0.6
	separated/divorced	-0.271	-0.221	1.027
	Widowed	-0.228	0.163	0.563
Degree		1.309***	1.376***	1.190**
Wealth		.316***	.215**	.278**
Health				
ref poor	fair/good	0.149	.899*	0.898
	Excellent	0.11	1.114*	1.253*
casp19		.023*	0.02	.030*
Caring		.499**	0.258	0.235

member religious org		2.071***	2.089***	2.458***
skill level				
ref 1 (lowest)	2	0.309	-0.049	0.72
	3	0.448	0.281	1.166**
	4	0.868	0.263	1.254*
Random intercept: id		4.851***	5.325***	5.919***
N		4341	3366	2420
Ll		-1763.5	-1372.5	-898.6
BIC		3677.8	2891.2	1937.5

Data from waves 1-9 ELSA; cross-sectional weights applied

sig: * (<.05) **(<.01) ***(<.001)

For those who had been in sedentary occupations pre-retirement the relationship of age, gender, wealth, casp19, caring, and membership of a religious organisation with volunteering remained the same as model 5.1. In this model, self-reported health was no longer significant There was also no significant association between skill level and volunteering for those in manual occupations when compared to the lowest skill level. Quasi-variance estimates further show no differences between other categories of skill level, suggesting that there may be something about sedentary occupations that influences volunteering net of skill level.

For standing workers, no relationship between gender or caring and volunteering was found. In this model those in excellent health were significantly more likely to volunteer than those in poor health. There was also no significant difference between being in the lowest skill level as compared to the other categories. Quasi-variance estimates did not indicate any significant differences between the other skill level categories on volunteering. As above this may suggest that there may be something else about standing occupations, beyond the skill of the job, which is related to volunteer participation.

For manual workers, age was not significant. Higher wealth, having a degree, being a member of a religious organisations, and those in excellent health were significantly more likely than those in poor health to volunteer (p<.005). As wellbeing

score increased, the likelihood of volunteering also increased (p<.05). Similar to the 3-way cross-tabulation discussed earlier, as you moved up skill level of pre-retirement occupation, participants were more likely to volunteer, though there was no significant difference between the two lowest skill levels. This supports hypothesis 5.3 that the association between skill level and volunteering would vary according to physicality of occupation, as only for manual workers was there a significant association between skill level and volunteering. This further distinguishes between manual and non-manual workers, suggesting that within physicality type, having higher skills may not always influence volunteering participation. Based on the literature discussed previously this may be due to other aspects of the job such as autonomy, satisfaction, or level of authority (Webb & Abzug, 2008; Wilson & Musick, 1997; Van Den Bogaard et al, 2014). This could suggest that while skills may be necessary to facilitate volunteering, there are also other aspects of occupation that could be influencing the decision to volunteer, and potential barriers for those in certain types of occupation could be of interest to those looking to widen volunteer participation and retain volunteers. This will be discussed further below.

5.4   Conclusion

To conclude, there are several explanatory variables than are associated with volunteering amongst older adults. Those who are older, female, more highly educated, and those who are healthier, wealthier, carers and religious are also more likely to be volunteers. This is in line with the resource perspective underlying this thesis, which suggests human, social, and cultural capital are associated with increased volunteer participation.

With existing literature suggesting that resources that are accumulated during the working life and the prestige and self-esteem that a person garners from their work role have an impact on the decision to volunteer, exploring the relationship between pre-retirement occupation and volunteering participation is arguably important. This chapter aimed to explore the association between skill level of pre-retirement occupation on volunteering, and whether this association varied according to the physicality of the occupation. It was found that those in manual occupations volunteered significantly less than those in standing occupations and that those in the highest occupation volunteered significantly more than those in the second

highest skill group. For those in the second and third skill levels, those in manual occupations were significantly less likely to volunteer. There was no significant difference between types of occupation for those who held an occupation in the highest or lowest skill level group.

These findings add to the body of evidence concerning the relationship between past occupation and volunteering, adding a UK context which is underrepresented in the literature. The main findings of this chapter support the resource perspective that increased resources in the form of human, social, and cultural capital increase volunteering participation. This suggests there are some inequalities in the profile of volunteers, with increased resources making some populations more likely to volunteer than others. This is an issue which should be addressed by volunteer policy makers and volunteer organisations to ensure a diverse volunteer population so all in society can benefit from the individual and community advantages of volunteering. Given the push for diversity in the "Vision for Volunteering" set out by the NCVO, and Public Health England's goal to remove barriers to participation by providing more flexible opportunities, access to affordable transport, and ensure people are supported to develop new skills through volunteering as part of their "Consensus on healthy ageing" (PHE, 2019).

The next chapter will focus on the association between life-course events and transitions on volunteering participation.

6 Exploring the association between life event transitions and volunteering participation.

As discussed in chapter 2, a resource perspective would suggest that life-course transitions change people's capacities, opportunities, and incentives to volunteer (Lancee & Radl, 2014), making volunteering more or less likely during different life events. Two key life events were identified within the existing literature that will make up two sub-chapters: retirement and widowhood.

Studies have consistently shown that retirement is a time of increased volunteering activity (Choi, 2003; Hank & Erlinghagen, 2009; Principi et al, 2012), with suggestions that work and volunteering have a substitutive relationship, where volunteering may replace the role lost when leaving paid work, filling time and bringing self-esteem (Bogaard et al, 2014; Haski-Leventhal, 2009; Morrow-Howell et al, 2003). This association, and how it changes overtime, and by gender will be explored in chapter 6.1 below. Widowhood is one of the most stressful events in later life, and is associated with a reduction in resources, and increased risks of depressive symptoms and mortality (Nakagomi et al, 2020). This would suggest that they may be less likely to volunteer, though given the positive association between volunteering and health and wellbeing, they could benefit from participation. The relationship between widowhood and volunteering, and the potential processual relationship between the two, will be explored in sub-chapter 6.2.

6.1 Retirement

6.1.1 Introduction

Retirement is an important life transition which can shape and alter behaviour of older adults. There has been much research exploring the relationship between retirement status and volunteering activity, with several studies finding retirement a time of increased activity (Caro & Bass, 1997; Cho et al, 2018; Dosman et al, 2006; Eibich et al, 2022; Mike et al, 2014; Mutchler et al, 2003; Tang, 2016; Van Ingen & Wilson, 2017). There are two competing hypotheses often used in research in this area: activity substitution hypothesis and activity complementary hypothesis (see section 4.2). Activity substitution hypothesis would suggest that as older adults

transition out of the labour market, they will seek to substitute this role for another. Whereas activity complementary hypothesis would suggest that the two roles complement each other, and removal from one role would predict removal from the other. Most prior work has found evidence to support the substitution hypothesis (Carr & Kail, 2012; Chambre, 1984; Dosman et al, 2006; Eibich et al, 2022; Mergenthaler et al, 2019; Mike et al, 2014; Tang, 2016).

For instance, Tang (2016) explored retirement patterns and their relationship to volunteering. Regression models show that those experiencing transition were significantly more involved in volunteering than the non-retired. Partial and full-retirees were more likely to start volunteering and full retirees were also more likely to end volunteering over a 10-year observation period. This suggests an inverted U pattern in participation across retirement. They argue that the newly retired are likely to increase their volunteer time during the transition process and thus should be targeted by organisations, supporting activity substitution theory. Mike et al (2014) also found evidence for the substitution hypothesis, exploring the relationship between conscientiousness, retirement, and volunteering. Cross-sectional and longitudinal analysis revealed that conscientious, retired individuals were more likely to volunteer than working individuals. This indicated that volunteering during retirement is a substitution for the role lost due to retirement for high-striving, conscientious individuals.

While the evidence suggests that the likelihood of participating in volunteering increases upon retirement, it is also suggested that this may vary according to gender. As with Eibich et al (2022), Dosman et al (2006) also found gender differences. They found that women were significantly more likely to volunteer if retired as opposed to employed but did not volunteer at higher levels than working volunteers. For men, there was no significant effect of retirement on overall volunteering, though retired men spent more time volunteering than working men. This suggests that volunteering post-retirement may be seen as an act of substitution, as women are more likely to volunteer post-retirement and men volunteer at higher intensity in retirement.

The extra time retirement brings can also lead to an increase in caring activities for older adults, be it grandchild or spousal care (Arpino & Bordone, 2017; Bulanda &

Jendrek, 2016; Choi et al, 2007). Findings in this area support both a complementary but also competing relationship between caregiving and volunteering for retirees. The act of caregiving itself can open opportunities for volunteering such as involvement in school activities with grandchildren and being exposed to opportunities through support networks when caring for a spouse (Arpino & Bordone, 2017; Bulanda & Jendrek, 2016; Burr et al, 2005). Contrary to this, full-time caring such as that for an ailing spouse is a time consuming and daily activity which may impede a person's inclination to volunteer. Choi et al (2007) found that for females, those involved in caring for a spouse were significantly less likely to volunteer than non-carers. This may suggest that, particularly for women, full-time caregiving impedes volunteering. This could lead to a hypothesis that widowed retirees may be more likely to volunteer as there will be no spousal caregiving.

To date there has been little work exploring the effect of retirement on volunteering in a UK context beyond reporting on proportions which does not control for other variables and potential interactions (e.g. Community Life Survey – Gov, 2022: see 3.2.7), with work based predominantly on American and other European data. Work is also mostly cross sectional or uses few waves of longitudinal surveys. This analysis will fill this gap by using 9 waves of the English Longitudinal Study of Ageing. Based on both existing evidence and the activity substitution perspective, the following hypotheses are posited:

Table 6-1: Chapter 6.1 hypotheses

Hypotheses		Model
6.1	Those who are retired will be more likely to volunteer than those who are non-retired.	Model 6.1
6.2	Amongst the retired, volunteering will increase with time in retirement.	Model 6.2
6.3	The relationship between volunteering and retirement will differ by gender, with women more likely to volunteer overall in retirement, while males may volunteer at a higher intensity.	Model 6.3

6.4	Retirees who are involved in caring activities will be less likely to volunteer.	Model 6.1
6.5	Retired widows will be more likely to volunteer.	Model 6.1

6.1.2 Methods

6.1.2.1 Sample

This analysis will use waves 1-9 of the English Longitudinal Study of Ageing. Only those who participated in at least two waves were included in the sample. Only those with complete information on the variables of interest (see below) were included. This resulted in 54,606 from 11,027. For detailed description of measures and variables see methods (4.3).

6.1.2.2 Variables of interest

Outcome variable:

The volunteering variable utilised for models 6.1 and 6.2 concerns the frequency of volunteering. Participants are asked "how often if at all do you do any volunteer work" with the answers being twice a month, about once a month, every few months, about once or twice a year, less than once a year and never. Those volunteering "once or twice a year" or more are classed as volunteers, and those who volunteered "less than once a year" or "never" are classed as non-volunteers (as used by Nazroo & Matthews, 2012). The other volunteering question in the survey regarded whether participants volunteered in the month prior to the interview. As stated in chapter 5, some participants reported they volunteered in the last year, though they had not volunteered in the last month (see 5.2.2). Thus, the former measure was chosen as it captures a wider range of volunteers, not only those who had volunteered in the previous month. Models including relevant explanatory variables were also run with both options as outcomes (see appendix 6-1). The results suggest that similar social patterns are revealed by either outcome measure, as such the dichotomised version of the yearly measure will be used.

The main outcome variable for model 6.3 is the frequency of volunteering. This is a categorical variable on a scale from 1 to 4 (never, infrequent, frequent, and very

frequent), Those who reported never volunteering were excluded as this analysis aimed to explore intensity of volunteering of those who reported participating.

Explanatory variable:

To fulfil the aim of understanding the factors that explain volunteering participation in older age and answering the first research questions: what life events are associated with volunteering? Two variables will be used to operationalise retirement. First, a binary variable which captures whether participants are retired or not.

Second, a continuous variable which captures the number of waves a participant is retired in. This variable is derived from the retirement and wave variables in the data set and shows the number of waves a participant has been retired for. This is only available for those who had retired in the observation window. This was also limited to those who had appeared in consecutive waves. For those who were retired for all waves in which they appear, the number of waves was defined as the number of years retired divided by two (as waves are collected every two years). This gave a minimum of .5 (1 year retired) waves to 22 waves, with a mean of 5.1 waves retired (this equated to around 10 years).

While a variable with the age participants retired is available, it was highly correlated with age (r=.71, p<.001). Analysis comparing the effect of waves in retirement to a model where the variable was constrained to equal age showed no significant difference, indicating that there is no significant effect over and above the effect of age in the model. For the waves retired variable there was still a correlation with age (r=.63, p<.05). As a robustness check, a version of the model was run constraining the effect of waves retired, and waves retired-squared to be equal to age and age-squared, and comparison with the unconstrained model revealed significant differences. A likelihood ratio test as well as comparison of fit statistics (log-likelihood and BIC) also indicated the unconstrained model is a better fit to the data than the constrained model (see appendix 6-2). This arguably shows waves in retirement has an association with volunteering net of the effect of age.

Other explanatory variables:

In this analysis, the same explanatory variables as described in chapter 5 (5.2.2 "Other explanatory variables") are used. The functional forms and their relation to the

resource perspective will be outlined again here, though a fuller explanation of their use and the supporting literature see section 5.2.2.

Age is included in a quadratic functional form. Gender (male/female) which has been found to have an association with volunteering will be included (Zaninotto et al, 2013; Wemlinger & Berlan, 2016; Helms & McKenzie, 2014).

For social capital variables, marital status (single, married/civil partnership, divorced/separated, widowed) and involvement in caring activity (yes/no) is used.

For human capital variables, whether or not participant has a degree is used alongside wealth (in quintiles) which accounts for all non-pension wealth within a household including wealth from businesses, property, and investments. Self-rated health status (poor, fair/good, excellent) and CASP-19 score will be used in the analysis, as other studies have consistently found both these measures of health and wellbeing have significant associations with volunteering (Hansen et al, 2018, McMunn et al, 2009; Tabassum et al, 2016).

Finally for cultural capital, membership of a religious organisation was included as a proxy measure of religiosity.

6.1.2.3 Data analysis

Exploratory analysis was conducted, along with cross-tabulations. Three models will be run to test the hypotheses outlined above. Mixed effects logistic regression models with random effects are used. The random effect accounts for residual heterogeneity between individuals across the waves, taking the hierarchical structure of the data into account (see methods for a more detailed account).

For the first model (model 6.1), volunteer participation was the outcome, and the binary retirement variable was the main explanatory variable. This will allow examination of the relationship between being retired versus non-retired on volunteering. Interaction effects between gender and retirement, caring and retirement, and widowhood and retirement were also included to examine hypotheses 4 and 5. Explanatory variables were added in systematically and the full model with all variables is presented below. There was no change in significance as variables were added, and the model with all variables was deemed the best fit to the data (appendix 6-3).

The model will be run again (model 6.2) with the continuous number of waves in retirement variable as the main explanatory variable of interest. There is also a squared version of this variable which will allow for a quadratic relationship, with the expectation likelihood will increase at first before cooling off later in retirement. This will give insight into how being at various stages in retirement is associated with volunteering. As above, variables were added systematically, and the full model with all explanatory variables was chosen as the best fitting model (appendix 6-4)

To explore whether there is an interaction between gender and retirement on frequency of volunteering a mixed effect ordered logistic regression model with random effects was run (model 6.3). The main variable of interest here is the interaction between gender and retirement as it is hypothesised that males who volunteer will do so at higher rates in retirement, meaning females will be less likely to be further along the ordered scale. As above variables were added systematically, and the full model with all explanatory variables was chosen as the best fitting model (appendix 6-5).

6.1.3 Results

The mean age of the sample was 65. The majority of the sample were female (51.3%). Most participants were married or in a civil partnership (66.6%). 15.8% of participants in the sample were educated to degree level and were in the highest wealth quintile (22.9%). 51.4% of the sample were retired. The majority of the sample self-reported that they were in "excellent" health (42.4%). Participants had a mean Casp19 score of 63.5, indicating moderately high wellbeing. Of those in the sample, 19.5% were members of religious organisations. 13.8% of the sample reported being involved in caring activities in the month prior to interview.

For the main outcome variable, 29.1% of individuals reported being involved in volunteering.

Table 6-2: Descriptive statistics for all variables in analysis (chapter 6.1)

Variable		Obs	%	% volunteers
Gender	Male	26,584	48.7%	27.8%
	Female	28,022	51.3%	30.3%
Marital Status	Single	3,450	6.3%	27.4%

	Married	36,378	66.6%	30.9%
	Separated	8,095	14.8%	24.0%
	Widowed	6,683	12.2%	26.1%
Degree	Has a degree	8,629	15.8%	25.4%
	No degree	45,977	84.2%	48.6%
Job status	Retired	28,084	51.4%	31.4%
	Employed	20,025	36.7%	27.4%
	Other	6,496	11.9%	24.1%
Wealth	1	8,604	15.8%	17.8%
	2	10,231	18.7%	19.4%
	3	11,198	20.5%	26.9%
	4	12,071	22.1%	33.2%
	5	12,502	22.9%	42.8%
Self-rated Health	Poor	3,471	6.4%	13%
	Fair/good	27,977	51.2%	26.5%
	Excellent	23,158	42.4%	32.6%
Member of religious organisation	No	43,968	80.5%	22.3%
	Yes	10,638	19.5%	57.1%
Provided care in the last month	No	47,086	86.2%	27.6%
	Yes	7,520	13.8%	38.3%
Involved in volunteering	No	38,723	70.9%	
	Yes	15,883	29.1%	

	Obs	Mean	mean if volunteers
Age	54,606	65	65
Waves retired	29,118	3.6	3.8
Casp 19 score	54,606	63.5	65.8

Note: 54,606 observations from 11,027 respondents' waves 1-9 ELSA

Based on persons-years: those who were interviewed at 2+ waves throughout waves 1-9 of ELSA.

Cross sectional weights applied

A significant association between volunteering and retirement was found (p<.001), albeit a small association (V=.06). Those who were retired volunteered at higher rates than those who were non-retired. Examination of confidence intervals shows that the groups differ significantly in their participation (see Figure 6-1), suggesting that retirement is a time where people may be more likely to volunteer. Whether this is significant when controlling for other relevant variables will be explored in model 6.1.

Figure 6-1: Proportion of volunteers amongst retired and non-retired older adults
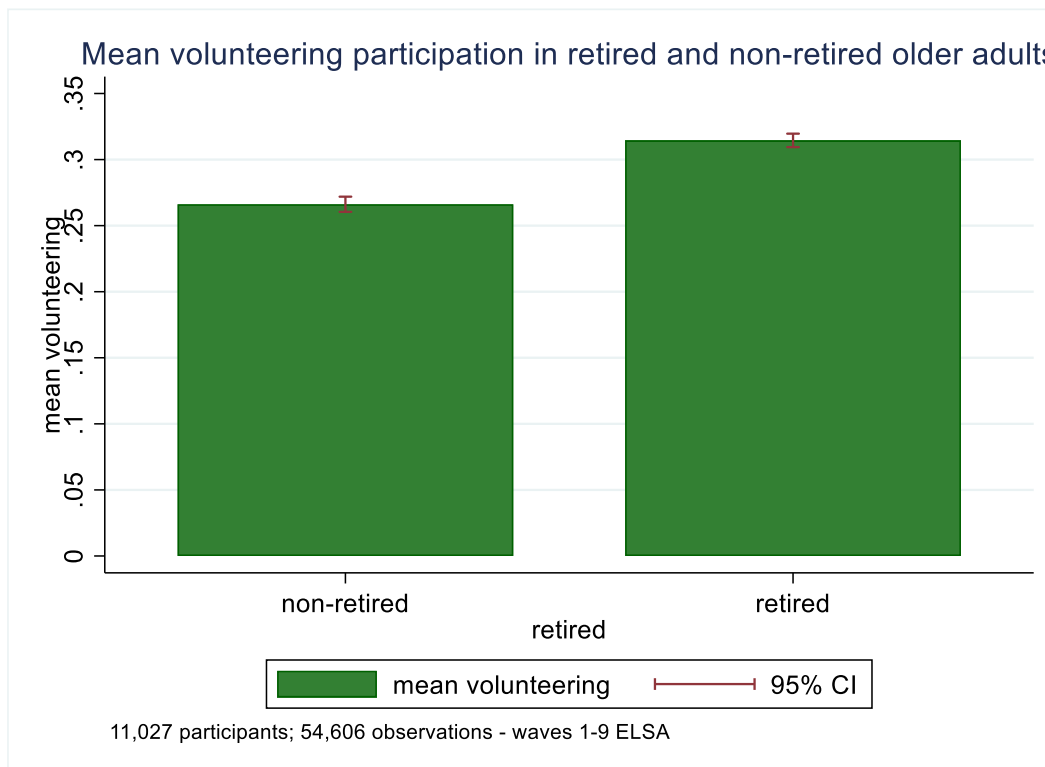
This pattern remained when split by gender, with retirees again reporting volunteering in significantly higher proportions, though the pattern appears to be stronger for females (see Figure 6-2). However, females (both retired and non-retired) reported volunteering in significantly higher rates than their male counterparts (see Figure 6-2). This is in line with prior work that suggests that females are more likely than males to volunteer, and that those who are retired are more likely that the non-retired to volunteer. Whether these patterns hold once other explanatory variables are adjusted for in the regression models will be discussed below.

Figure 6-2: Proportion of volunteers amongst retired and non-retired older adults, by gender
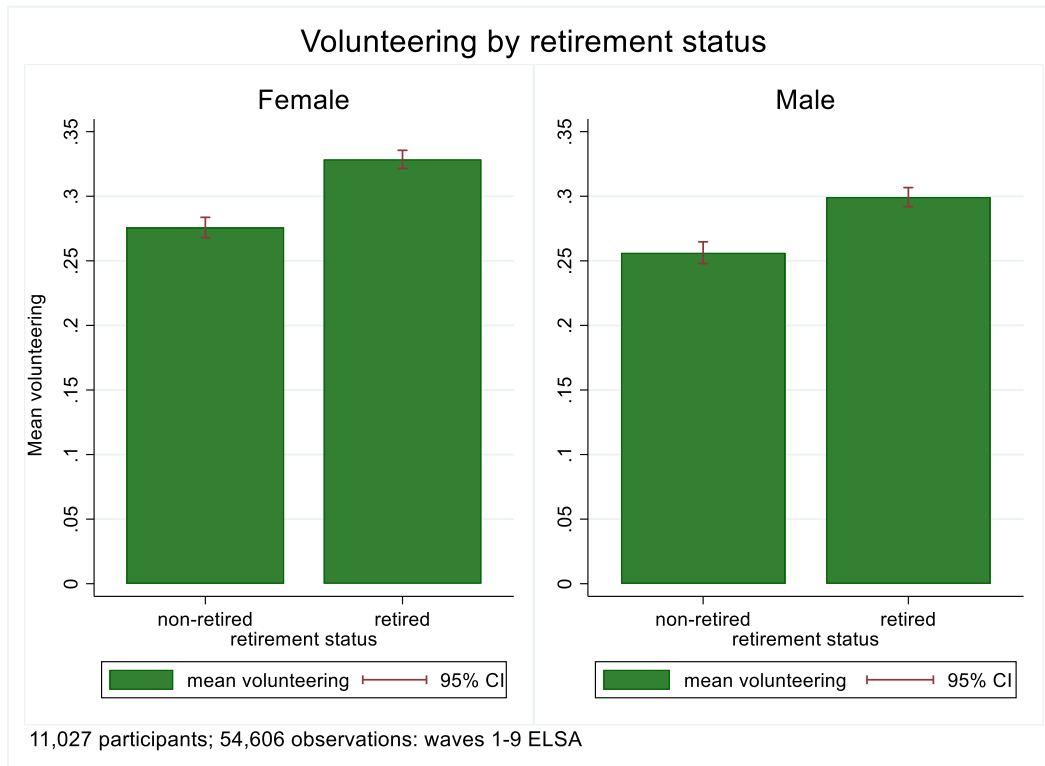
Moving on to the multivariate analysis, the first model presented is a multilevel logistic regression with random effects (see Table 6-3). Variables were systematically added in to improve the model fit, and the final fully adjusted model is presented in Table 6-3 below (see appendix 6-3 for nested model results). Analysis was weighted using cross sectional weights for each of the 9 waves.

Model 6.1 was significant (p<.001) with an icc statistic of .64. This suggest that 64% of the residual variation in volunteering is explained by person-to-person variation.

Table 6-3: Model 6.1 exploring the association between retirement and volunteering.

Model 6.1	
Volunteering	Coefficient
Age	0.276***
age-squared	-0.002***
Female	0.220**
Widow	-0.106
Degree	1.344***

Wealth		0.289***
Retired		0.536***
Health	fair/good	0.655***
	Excellent	0.745***
casp19		0.035***
member religious org		1.912***
Carer		0.706***
female x retired		-0.034
retired x caring		-0.378***
widow x retired		0.273
Random intercept: id		6.036***
N		54606
Ll		-22200.00
BIC		44654.71

Data from waves 1-9 ELSA; cross-sectional weights applied

sig: * (<.05) **(<.01) ***(<.001)

Regarding retirement, those who were retired were significantly more likely to volunteer than those who were non-retired. This result implies a relationship between volunteering and retirement, with retirement a time of increased volunteering, in line with activity substitution theory. To explore the hypothesis that the effect of retirement on volunteering will differ by gender, an interaction effect between gender and retirement was created. This was not found to be significant, suggesting that net of the overall effect of gender and retirement on their own, and other controls, there is no significant difference between females and males in how retirement is associated with volunteer participation.

Further, a significant interaction between retirement and caring was found, with retirees who are also carers significantly less likely to volunteer. This may suggest that the time gained during retirement is being used for caring as opposed to 'free time' which could be used to volunteer. Caring is also a time consuming and often demanding task which may mean individuals are less likely to volunteer in the down time they do have (Arpino & Bordone, 2017; Bulanda & Jendrek, 2016; Choi et al, 2007). Results support the hypothesis that those who are both retired and widowed

will be more likely to volunteer. While the main effect of widowhood is insignificant and negative, the interaction between widowhood and retirement suggests a significant, positive, relationship. This is in line with what was hypothesised based on work by Choi et al (2007).

Adjusting for relevant factors, age has a significant, inverted 'U' shaped association with volunteering, with participation likely to increase with age until 62.7 years old before decreasing. As discussed in the previous chapter, given the age range in the sample, this finding would suggest that for most participants there is a negative association between age and volunteering. As previously found, females are significantly more likely to volunteer than their male counterparts (see 5.1.3 for discussion). Those who have a degree are significantly more likely to volunteer, and as you move up wealth quintiles participants were more likely to volunteer. In combination, this illustrates the resource perspective which underpins the analysis in this thesis, in that access to financial resources, higher skill sets, and potential network opportunities which arise from accumulating human capital means those who are more highly educated and who are wealthier may be more likely to volunteer (Cheng et al, 2021). Those in fair/good or excellent health were significantly more likely to volunteer compared to those in poor health, suggesting that health is a factor in participation and in line with the supporting literature (Dury et al, 2015; Hansen et al, 2018; Haski-Leventhal, 2009; McNamara & Gonzalez, 2011; Morrow-Howell, 2010). There was also a significant positive association between casp19 score and volunteering, which is consistent with other studies (Griep et al, 2017; Hansen et al, 2018; Haski-Leventhal, 2009; McMunn et al, 2009; Tabassum et al, 2016). Taken together, the positive association between these measures of human capital and volunteering suggest that increased human capital resources may be associated with a person's likelihood of volunteering.

The argument that having access to networks is a key factor in volunteering has also been applied to explain the association with religiosity. In line with prior work and a cultural capital lens (Wilson & Musick, 1997), those who participate in religious organisations were more likely to volunteer. Per Wilson and Musick (1997), this could be due to the moral and benevolent attitudes cultivated within religious organisations, with a push towards helping those within the organisation/community.

To further examine the evidenced relationship between retirement and volunteering, the next model (Model 6.2), specified on retirees, explores how the number of waves in retirement is associated with participation in volunteering. Overall, model 6.2 was significant (p<.001) with an icc statistic of .62, indicating that 62% of the residual variation in volunteering participation is explained by person-person variation. Again, an inverted U-shaped relationship between age and volunteering was found, with likelihood of volunteering increasing with age to a point (72.3 years) before decreasing. All other patterns remain the same.

Table 6-4: Model 6.2 - Relationship between time in retirement and volunteering participation

Model 6.2		
Volunteering		Coefficient
Age		0.434***
age-squared		-0.003***
Female		0.242***
Widow		0.162
Degree		1.542***
Wealth		0.296***
waves retired		0.202***
waves retired-squared		-0.015***
Health	fair/good	0.688***
	excellent	0.821***
casp19		0.044***
member religious org		0.360***
Carer		2.129***
Random intercept: id		5.395***
N		29118
Ll		-11400.00
BIC		22997.52
Data from waves 1-9 ELSA; cross-sectional weights applied		
sig: * (<.05) **(<.01) ***(<.001)		

A quadratic effect for number of waves retired suggests an inverted U-shaped relationship. Likelihood of volunteering increases until 6.7 waves retired before having a negative relationship. This suggests that while the time a person is retired can increase their likelihood of participating in volunteering to a point, though the association is not linear.

For model 6.3 (see table 6-5), the overall model was significant. Variables mostly follow the same patterns described in model 6.1, however, in this model there is no significant effect of health, the interaction between widowhood and retirement, or the interaction between caring and retirement. It could be that while these variables have an association with being a volunteer overall, they do not influence the intensity of the activity. In this model, wealth had a negative association with being further along the ordered scale (volunteering at a higher rate) suggesting that while wealth may positively affect entering volunteering, the wealthy do not volunteer at higher rates.

The relationship between gender and volunteering remained the same as model 6.1 with females volunteering at higher rates than males, however in this model the interaction between gender and retirement was significant and negative. This suggests that female retirees volunteer at a lesser intensity than males – which corroborates findings by Eibich et al (2020) which suggested male retirees volunteer at higher intensity.

Table 6-5: Model 6.3 exploring a gender and retirement interaction on volunteer frequency

Model 6.3		
Volunteering		Coefficient
Age		0.422***
age-squared		-0.003***
Female		0.449***
Widow		-0.069
Degree		0.257**
Wealth		-0.079**
Retired		0.905***
Health	fair/good	-0.091

excellent	-0.093
casp19	0.010**
member religious org	0.892***
Carer	0.188*
female x retired	-0.283**
retired x caring	-0.057
widow x retired	0.175
Random intercept: id	4.775***
N	17720
Ll	-17400.00
BIC	35051.78

Data from waves 1-9 ELSA; cross-sectional weights applied

sig: * (<.05) **(<.01) ***(<.001)

6.1.4 Conclusion

This chapter aimed to take a longitudinal approach to explore the life events which predict changes in volunteering participation in older age. In particular, the relationship between retirement and participation decisions was explored. Using 9 waves of ELSA, this chapter examined the association between retirement overall and volunteering, as well as how this association can vary over time, filling a gap in the existing literature.

Overall, it was found that retirees were significantly more likely to volunteer than non-retirees, adjusting for relevant factors, which was in line with existing national surveys (Brodie et al, 2009; Community Life Survey – Gov, 2022; Low et al, 2007; McGarvey et al, 2019). There was an inverted U-shaped pattern of time since retirement upon volunteering, with likelihood of participation increasing up until a certain point before decreasing. These findings add to the body of evidence concerning the relationship between retirement and volunteering, adding a UK context which is underrepresented in the literature. It also adds to the literature by taking a longitudinal approach with analysis spanning 9 waves (18 years) and allowing for the relationship to vary over time.

Regarding the five main hypotheses, the hypothesis that those who are retired will volunteer significantly more than those who are non-retired was substantiated. This is in line with several other studies who have found a significant, positive association between retirement and volunteering participation (Caro & Bass, 1997; Cho et al, 2018; Dosman et al, 2006; Eibich et al, 2022; Gov, 2022; Low et al, 2007; McGarvey et al, 2019; Mike et al, 2014; Mutchler et al, 2003; Tang, 2016; Van Ingen & Wilson, 2017). It is also in line with activity substitution theory which suggests when older adults retire, volunteering provides a substitutive role for the role lost. The second hypothesis that amongst the retired, volunteering will increase with time in retirement was also substantiated to a certain degree. In line with activity substitution theory, as waves in retirement increased so did the likelihood of volunteering, suggesting that as a people transition into retirement, they are likely to substitute the role of paid work with volunteering (e.g., Eibich et al, 2022). However, the squared effect of waves retired was negative, indicating that volunteering increases to a certain time period within retirement before decreasing.

The hypothesis that the relationship between volunteering and retirement will differ by gender, with women more likely to volunteer in retirement, was not supported here. Above the overall effect of gender and retirement on volunteering, there was no significant interaction effect. Past work that has found an interaction between the two tends to focus on both overall participation, and frequency of participation, which is where the differences tend to be found (Dosman, 2006; Eibich et al, 2022). Results exploring the association with frequency of retirement found that female retirees are less likely to volunteer at higher rates, in line with prior work.

The hypothesis that retirees who are involved in caring activities will be less likely to volunteer was substantiated, with a significant interaction between the two variables. The overall relationship between volunteering and caring may be a positive one as caring activity can provide networks which present opportunities for volunteering. On the other hand, caring can be a time consuming and energy consuming activity, particularly if it is full-time, which would suggest caring may impede rather than complement volunteer work (Choi et al, 2007).

Further to this, it was hypothesised that widowed retirees would be more likely to volunteer as they would not have to take on a spousal caregiving role. The overall

association of widowhood and volunteering was not significant, however the interaction between widowhood and retirement on volunteer was significant, with retired widows significantly more likely to volunteer. Non-retired widows may be less likely to volunteer as they are still in the workforce, adding further evidence to activity substitution theory.

Overall, the findings are mostly consistent with other work and theory in the area and therefore add to the growing evidence base about predictors of volunteering, and also how the association between retirement and volunteering can vary over time, and within specific populations. They also suggest inequalities in the profile of volunteers, with some subpopulations being generally underrepresented in the volunteering population.

6.2 Widowhood

6.2.1 Introduction

This chapter will explore the association between widowhood and volunteering participation amongst older adults. As in previous chapters, "volunteering" in this analysis will follow the definition set out by ELSA, as it is this definition which defines the dependent variable used. They define volunteering as any kind of unpaid work, whether formal or informal. It has been suggested that volunteering may compensate for age-related role losses such as retirement, death of a spouse or reduced family roles (Tang, 2016), meaning widowhood may have an impact on volunteering. Widowhood is a time of adjustment for older adults, having to adapt to life without their spouse (Nesbit, 2013). This process can lead to changes in a person's behaviour, especially in terms of social patterns and volunteering. The death of a spouse takes away the psychological benefits of being married. In response, widows and widowers should not only volunteer more hours but identify more strongly with the volunteer role (Van Ingen & Wilson, 2017). As discussed in the literature review, role theory drives much of the research related to life-course transitions on volunteering, with the idea that the loss of the role will result in a loss of resources which will need to be substituted. Volunteer work is considered a substitute for several roles, including widowhood, with the argument that it is a productive activity that increases self-esteem, well-being and provides for the social and emotional needs that older adults have (Lancee & Radl, 2014).

This study will explore widowhood as a transition and will assess evidence for both negative and positive associations between volunteering and widowhood at different times in line with studies which took a longitudinal approach (Bolano & Arpino, 2020; Li, 2007; Utz et al, 2002), utilising 9 waves of data (spanning 2002-18).

Analysis will also allow for any effect to be gendered, as women and men do not experience widowhood in the same way. Discussion from the literature review suggests that widowhood is a gendered experience, with women more likely to find new activities to be involved in whereas men tend to experience more difficulties than women when confronting widowhood in older adulthood (Jaumot-Pascual et al, 2016; Lee et al, 2001; Umberson et al, 1992). Bolano and Arpino (2020) substantiated these gender differences with their study exploring pathways of

volunteering before and after transition to widowhood. They found females' odds of volunteering two years after the event being, on average, higher than the three years before widowhood, whereas the opposite was true for males suggesting the hypothesised U-shape relationship with time may be different for men and women.

To date there has been little work exploring the relationship between widowhood and volunteering in a UK context, with all works mentioned above focussing on the American population, with the exception of Dury et al (2015) whose study was based in Belgium. Work to date mainly uses a binary indicator as part of a larger study, with few studies exploring its association with volunteering participation over time (Cf. Bolano & Arpino, 2020; Li, 2007; Utz et al 2002). This is an advantage of this analysis as longitudinal data is imperative to understand the processual nature of life events - which are not one-off events, but rather dynamic processes which can affect behaviour in different ways at different times (Tang, 2016; Utz et al, 2002).

Hypotheses:

Based on both existing evidence and the activity substitution perspective, the following hypotheses are posited:

Table 6-6: Chapter 6.2 hypotheses

Hypotheses		Models
6.6	Those who are widowed will be more likely to volunteer than those who are non-widowed.	Model 6.4
6.7	Female widows will be more likely to volunteer than male widows.	Models 6.5; Model 6.6.
6.8	The relationship between volunteering and widowhood will differ over time, whereby volunteering decreases over time until widowhood, before increasing thereafter.	Model 6.7

6.2.2 Methods

6.2.2.1 Sample

This analysis will use waves 1-9 of the English Longitudinal Study of Ageing (2002-2018). Only those who participated in at least two waves were included in the

sample. Only those with complete information on the variables of interest (see below) were included. This resulted in 54,615 observations from 11,028 individuals. For detailed description of measures and variables see section 6.2.3. For descriptive statistics see table 6-7[1].

To explore widowhood as a transition and allow for exploration of how volunteering changes before and after the event, several variables are created. First, taking the wave of the event as time 0, time is centred around the widowhood. As such, only those who experience the transition into widowhood within the sample are included. This results in 5,616 observations from 908 individuals, comprising those who have at least one wave immediately prior to widowhood.

Those without a wave prior to the first observation as a widow are also excluded, as a gap in their record would mean considerable uncertainty over when the widowhood event took place. It is noted that some sample members were married then re-entered the sample some waves later as widows, however as it cannot be reasonably predicted when they became a widow they are cut from the sample. This is a similar approach to Li (2007) who removed those who were married before they went missing from the data as their marital status could not be predicted in the missing waves. This approach leaves 3,995 observations from 626 individuals. Of these individuals 79 became remarried following widowhood – they were still included as the time following widowhood can still be measured. A dummy variable for becoming remarried was tried out in model 6.7 but was found to be non-significant and was excluded from the final model as it is not a variable of interest in this analysis. While the sample size has drastically reduced, it is necessary to specify the models outlined. Heckman selection models were tried to account for sample selection around widowhood and to limit the bias introduced in limiting the sample. Comparing these models with the main models specified revealed no difference, as such, the analysis proceeds with the models outlined in the data analysis section.

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[1] Descriptive statistics presented as person-years observations and not individuals due to the panel nature of the data.

6.2.2.2 Variables of interest

Outcome variable:

The volunteering variable utilised concerns the frequency of volunteering. Participants are asked "how often if at all do you do any volunteer work" with the answers being twice a month, about once a month, every few months, about once or twice a year, less than once a year and never. Those volunteering "once or twice a year" or more are classed as volunteers, and those who volunteered "less than once a year" or "never" are classed as non-volunteers (as used by Nazroo & Matthews, 2012).

Another question in the survey regarded whether or not participants volunteered in the month prior to the interview. As in table 5-1 from chapter 5.2, some participants who had volunteered in the last year were coded as non-volunteers in the variable about volunteering in the last month. Models including relevant explanatory variables were also run with both the monthly and yearly measure as outcomes (see appendix 6-6). The results suggest that similar social patterns are revealed by either outcome measure. Thus, the former measure was chosen as it captures a wider range of volunteers, not only those who had volunteered in the previous month.

Main explanatory variables:

Two variables will be used to operationalise widowhood. First, a binary variable which captures whether participants are widowed or not. This is derived from the marital status variable in the data set giving the value of 1 for widowed and 0 otherwise (married/civil partnership, divorced/separated, single).

To facilitate some models, another two variables were used which differentiate time pre- and post-widowhood. In this measure, one variable records time before the event (the number of waves leading up to the event then 0 otherwise), and another records time after the event (number of waves after the event then 0 otherwise). These measures prove to be a convenient way of exploring whether different time trends in volunteering propensity operate before and after widowhood. A squared measure of time after event was created to be used in the fixed part of the model as the descriptive pattern indicates the proportion of volunteers increased after widowhood before declining again (see Table 6-7).

Other explanatory variables:

In this analysis, the same explanatory variables as described in chapter 5 (5.2.2 "Other explanatory variables") are used. The functional forms and their relation to the resource perspective will be outlined again here, though a fuller explanation of their use and the supporting literature see section 5.2.2.

Age is included in a quadratic functional form. Gender (male/female) which has been found to have an association with volunteering will be included (Zaninotto et al, 2013; Wemlinger & Berlan, 2016; Helms & McKenzie, 2014).

For social capital variables, marital status (single, married/civil partnership, divorced/separated, widowed) and involvement in caring activity (yes/no) is used.

For human capital variables, whether or not participant has a degree is used alongside wealth (in quintiles) which accounts for all non-pension wealth within a household including wealth from businesses, property, and investments. Self-rated health status (poor, fair/good, excellent) and CASP-19 score will be used in the analysis, as other studies have consistently found both these measures of health and wellbeing have been found to be associated with volunteering (Hansen et al, 2018, McMunn et al, 2009; Tabassum et al, 2016).

Finally for cultural capital, membership of a religious organisation was included as a proxy measure of religiosity.

6.2.2.3 Data analysis

Exploratory analysis was conducted, along with cross-tabulations. Four models will be run to test the hypotheses outlined above. Mixed effects logistic regression models with random effects are used. The random effect accounts for residual heterogeneity between individuals across the waves, taking the hierarchical structure of the data into account.

For the first model 6.4 (see Table 6-8), volunteer participation was the outcome, and the binary widowhood variable was the main explanatory variable. This will allow examination of whether being widowed versus non-widowed is associated with volunteering participation. Interaction effects between widowhood and caring, wellbeing and retirement will also be added. Caring is thought to increase likelihood

of volunteering due to networks so it could be if widowed older adults are involved (e.g., for grandchildren) this will have an added influence over and above the main effects. As retired widowed will have lost both the roles of the employee and the spouse, this role lose could lead to a higher likelihood of volunteering. It is also thought as wellbeing has a positive association with volunteering, an increase in wellbeing may have a stronger association with volunteering for widows. Variables were added systematically, and the most fully specified model (with all explanatory variables) was deemed the most appropriate and well fitting (appendix 6-7).

The model was run again (model 6.5 and 6.6; see Table 6-8), split by gender to explore whether the relationship between widowhood and volunteering varies by gender. This will allow for exploration of the second hypothesis that female widows will be more likely to volunteer.

Finally, model 6.7 is estimated to examine how the relationship between widowhood and volunteering changes over the time leading up to, and after widowhood. Model 6.7 will be a mixed effects logistic regression model with a random intercept to account for the clustering of responses within individuals and random slopes for time pre- and post-widowhood. Here the main explanatory variables are the two linear time variables for before and after event described under "main outcome variables."

6.2.3 Results

The mean age of the sample was 65 (see Table 6-7). Just over half of the sample were female (51.3%). Most participants were married or in a civil partnership (66.6%). 15.8% of participants in the sample were educated to degree level and were in the highest wealth quintile (22.9%). 51.4% of the sample were retired. The majority of the sample self-reported that they were in "excellent" health (42.4%). Participants had a mean Casp19 score of 63.7, indicating moderately high wellbeing. Of those in the sample, 19.5% were members of religious organisations. 13.8% of the sample reported being involved in caring activities in the month prior to interview.

29.1% of individuals reported being involved in volunteering. Most categories of variables were around the mean proportion of volunteering overall though there were some demographics where participation was higher. For example, 48.6% of those with a degree were involved in volunteering in the last year. For those in the highest wealth quintile 42.8% were volunteering compared to only 17.8% in the lowest

quintile. There are also higher than average levels of participation amongst carers (38.3%) and those who are members of religious organisations (57.1%). This is in line with the previous literature cited above (see variable outline in section 6.3.2.2).

Regarding the main outcome variables, 12.2% of observations were recorded as being widowed. Throughout the observation period 626 individuals became widowed. For these individuals, the average time leading up to widowhood was 3 waves, and the mean time spent in widowhood was 2.7 waves.

Table 6-7: Descriptive statistics for all variables included in the models (chapter 6.2)

Variable		Obs	Percentage	% volunteers
Gender	Male	26,590	48.7%	27.8%
	Female	28,025	51.3%	30.2%
Marital Status	Single	3,450	6.3%	27.4%
	Married	36,387	66.6%	30.9%
	Separated	8,095	14.8%	24.0%
	Widowed	6,683	12.2%	26.1%
Degree	No Degree	45,986	84.2%	25.4%
	Has a degree	8,629	15.8%	48.6%
Job status	Retired	28,093	51.4%	31.4%
	Employed	20,025	36.7%	27.4%
	Other	6,496	11.9%	24.1%
Wealth quintile (low to high)	1	8,606	15.8%	17.8%
	2	10,231	18.7%	19.4%
	3	11,201	20.5%	26.9%
	4	12,073	22.1%	33.2%
	5	12,504	22.9%	42.8%
Self-rated Health	Poor	3,473	6.4%	13.0%
	Fair/good	27,978	51.2%	26.5%
	Excellent	23,164	42.4%	34.6%

Member of religious organisation	No	43,976	80.5%	22.3%
	Yes	10,639	19.5%	57.1%
Provided care in the last month	No	47,094	86.2%	27.6%
	Yes	7,521	13.8%	38.3%
Involved in volunteering	No	38,728	70.9%	
	Yes	15,887	29.1%	
Transition to widowhood	New widow	626	1.2%	27.9%
Time widowed	6-8 waves prior	284	7.1%	34.6%
	3-5 waves prior	882	22.1%	32.8%
	1-2 waves prior	1107	27.7%	29.4%
	Widowed	631	15.8%	25.7%
	1-2 waves after	652	16.3%	31.6%
	3-5 waves after	378	9.5%	30.3%
	6-7 waves after	57	1.4%	27.9%
		(Obs)	**(Mean)**	**(Mean if volunteers)**
Age		54,615	65.02	64.9
Waves widowed	Waves post-widowhood	1,847	2.71	2.64
	Waves leading up to widowhood	2,145	-3	-3.15
Casp 19 score		54,615	63.7	65.8

Note: 54,615 observations from 11,028 respondents' waves 1-9 ELSA

Based on persons-years: participants who were interviewed at 2+ waves throughout waves 1-9 of ELSA.

Cross sectional weights applied

A significant association between volunteering and widowhood was found (p<.001), albeit a small association (V=-.02). Those who were not widowed volunteered at higher rates than those who were (31.3% v 27.5%). To examine whether there may be an interaction between widowhood and gender on volunteering participation, this was rerun split by gender. The pattern remained the same as for the whole

population when split by gender, however females (regardless of widowhood status) were significantly more likely to volunteer than males (see Figure 6-3).

As some participants were 'never widowed' more analysis was run to see if those who were 'never widowed' differed from those who were not widowed in some waves but widowed in others (e.g., non-widowed in wave 2 but became widowed in wave 5), and those who were widowed. Inspection of confidence intervals revealed no significant difference between the never widowed and those non-widowed for some of their observation, however both groups volunteer significantly more than the widowed participants (see appendix 6-8).

Figure 6-3: Graph showing proportion of volunteers by widowhood status.
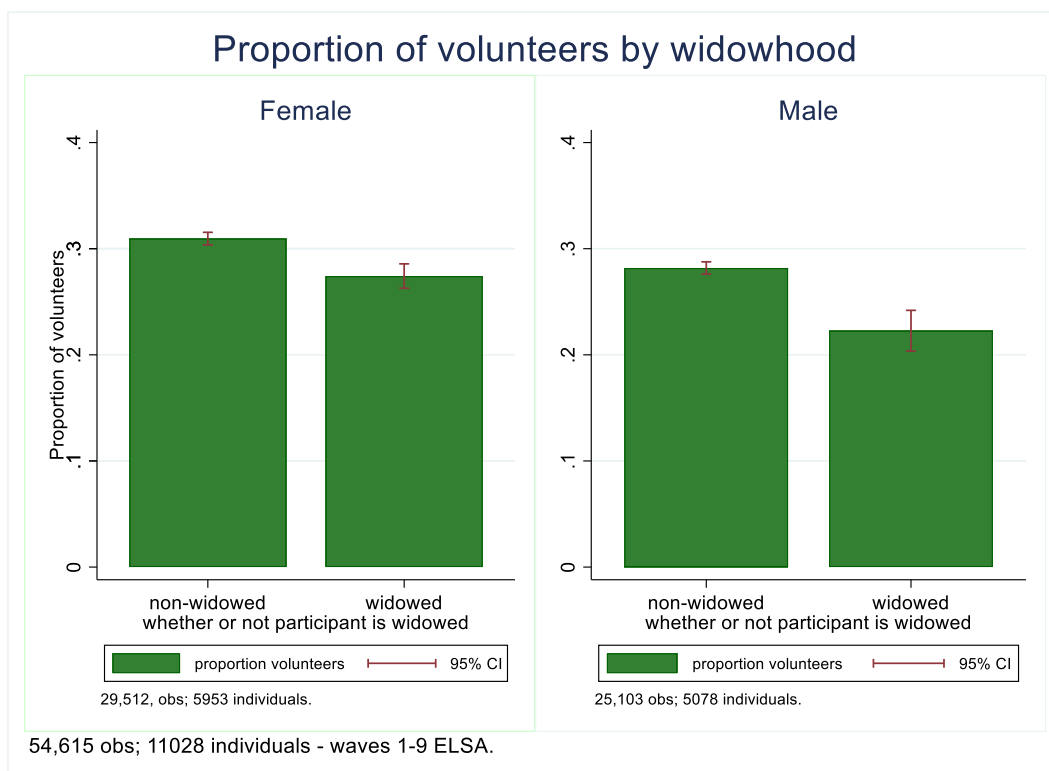
Chi-square tests revealed no significant association between the time widowed and volunteering (p=.08). The general pattern suggests that volunteering decreases until the event (36% to 30.5% pre) before increasing after (27.9% at event to 33.5%). This variable will still be used in the analysis as it may have a significant association once we control for other factors.

Turning to the modelling results, model 6.4, a multilevel logistic regression with random effects was run (see Table 6-8). Variables were systematically added in to

improve the model fit (see appendix 6-7). The overall model was significant (p<.001) with an icc statistic of .65. This suggest that 65% of the residual variation in volunteering is explained by person-to-person variation.

Table 6-8: Models 6.4-6.6 – association between widowhood and volunteering (full sample, males only, and females only)

Volunteering		Full (6.4)	Male (6.5)	Female (6.6)
		Coefficient	Coefficient	Coefficient
Age		0.251***	0.184***	0.314***
age-squared		-0.002***	-0.002***	-0.003***
Female		0.182**		
Widowed		-1.930***	-1.196	-2.094***
Degree		1.358***	1.386***	1.358***
Wealth		0.291***	0.272***	0.305***
Job status				
ref retired	employed	-0.572***	-0.650***	-0.498***
	Other	-0.214**	-0.331*	-0.153
Health				
ref poor	fair/good	0.689***	0.795***	0.592***
	excellent	0.782***	0.826***	0.743***
casp19		0.033***	0.031***	0.034***
member religious org		1.908***	1.866***	1.933***
Care		0.449***	0.441***	0.456***
caring x widow		0.482**	0.831	0.376*
retired x widow		0.371*	0.288	0.428**
casp19 x widow		0.027***	0.014	0.030***
Random intercept: id		6.037***	6.607***	5.563***
N		54615	25103	29512
ll		-22200.00	-10500.00	-11700.00
BIC		44651.6	21112.24	23664.68

In the fully adjusted model, there was a significant negative association between widowhood and volunteering participation (p<.001). Figure 6-5 shows the average predicted probability of volunteering by widowhood status, illustrating that widows have a lower probability of volunteering than non-widows per model 6.4 results. Thus, the first hypothesis that widows will be more likely to volunteer overall was not supported. Though this is in line with some previous studies which also found a negative association with widowhood on volunteering (Butricia et al, 2009; Dury et al, 2015; Nesbit, 2013; Okun & Michel, 2006). As discussed in the literature review, findings on the effect of widowhood on volunteering have been mixed, with some also finding no significant effect of widowhood on volunteering (Donnelly & Hinterlong, 2009), where others have found positive effects (Dury et al, 2015; Li, 2007; Utz et al, 2002).

Figure 6-4: Average predicted probability of volunteering by widowhood status
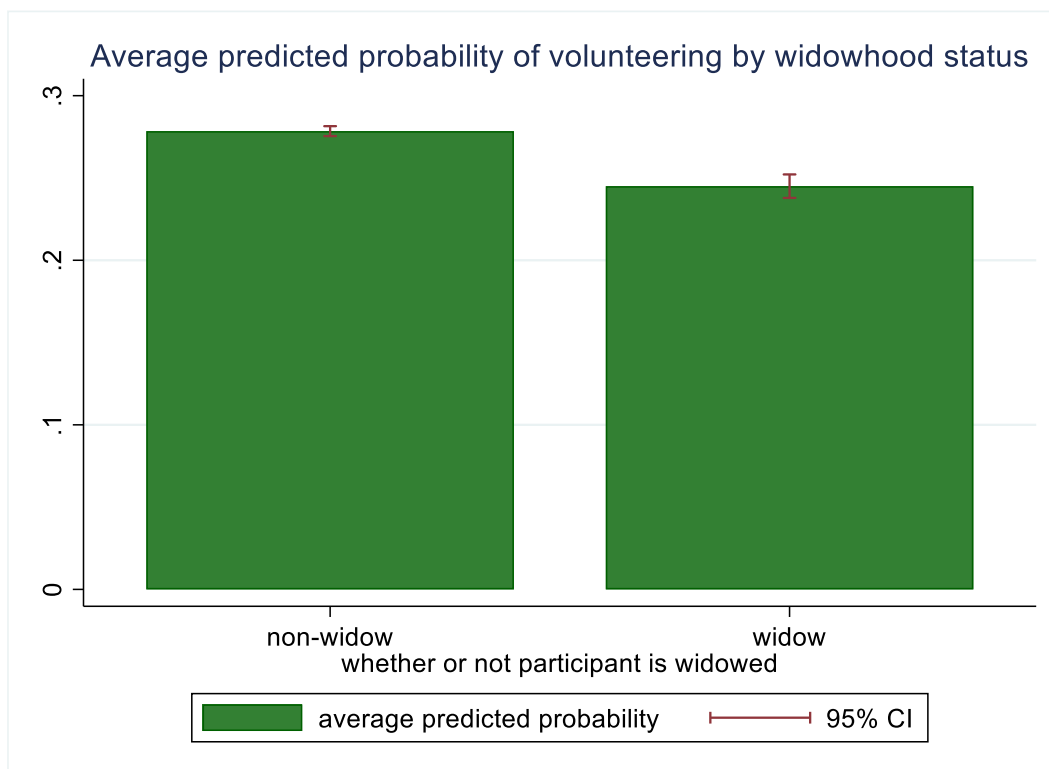
In model 6.4 widowhood was treated as a binary variable, similar to those studies which found a negative effect of widowhood on volunteering. Thus, it could be argued this functional form is the reason these results align with those finding a

negative effect, with the overall effect of being a widow versus not having a negative impact on likelihood of volunteering net of other effects. However, it is expected that due to the processual nature of the life event, the effect may vary over time. This will be further discussed below when discussing findings from model 6.7 which explores widowhoods effect over time.

Interaction effects were also added to model 6.4. A significant, positive interaction between retirement and widowhood on volunteering was found, suggesting that the negative effect of being widowed on likelihood of volunteering is less for those who are retired. This could be due to the extra time, and the combined loss of roles of being an employee and a spouse. There was also a significant interaction between caring and widowhood. This implies the negative effect of widowhood on volunteering is weaker for those involved in caring. It could be that following the death of a spouse widows increase caring activity of grandchildren or for others in their social circle which opens up the opportunity to volunteer. Further, there was a significant, positive interaction between wellbeing score and widowhood on volunteering. The positive effect of wellbeing on likelihood of volunteering is therefore stronger for those who are widowed, with a one unit increase in casp-19 score leading to a larger likelihood of volunteering for the widowed than the non-widowed.

The interaction effect of the caring and widowhood on volunteering participation is particularly interesting. As can be seen in Figure 6-5 findings indicated that for those who were not involved in caring activity, non-widows volunteered at significantly higher rates. Whereas for those who were involved in caring, it was widows who volunteered more. This illustrates the finding from model 6.4 that for those who are carers, the negative effect of being a widow on the likelihood of volunteering is lessened and is in fact reversed[2].

This could potentially be explained by who is being cared for. For example, someone who is non-widowed could be caring for a spouse, whereas a someone who is widowed ad involved in caring activity could be caring for a friend, a neighbour, or even a grandchild. Informal helping of this nature is linked to increased volunteering.

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[2] Figures are based on mean predicted probability of volunteering from model 6.4.

Figure 6-5: Average predicted probability of volunteering amongst widows and non-widows, split by caring status.

Average predicted probability of volunteering amongst widows and non-widows
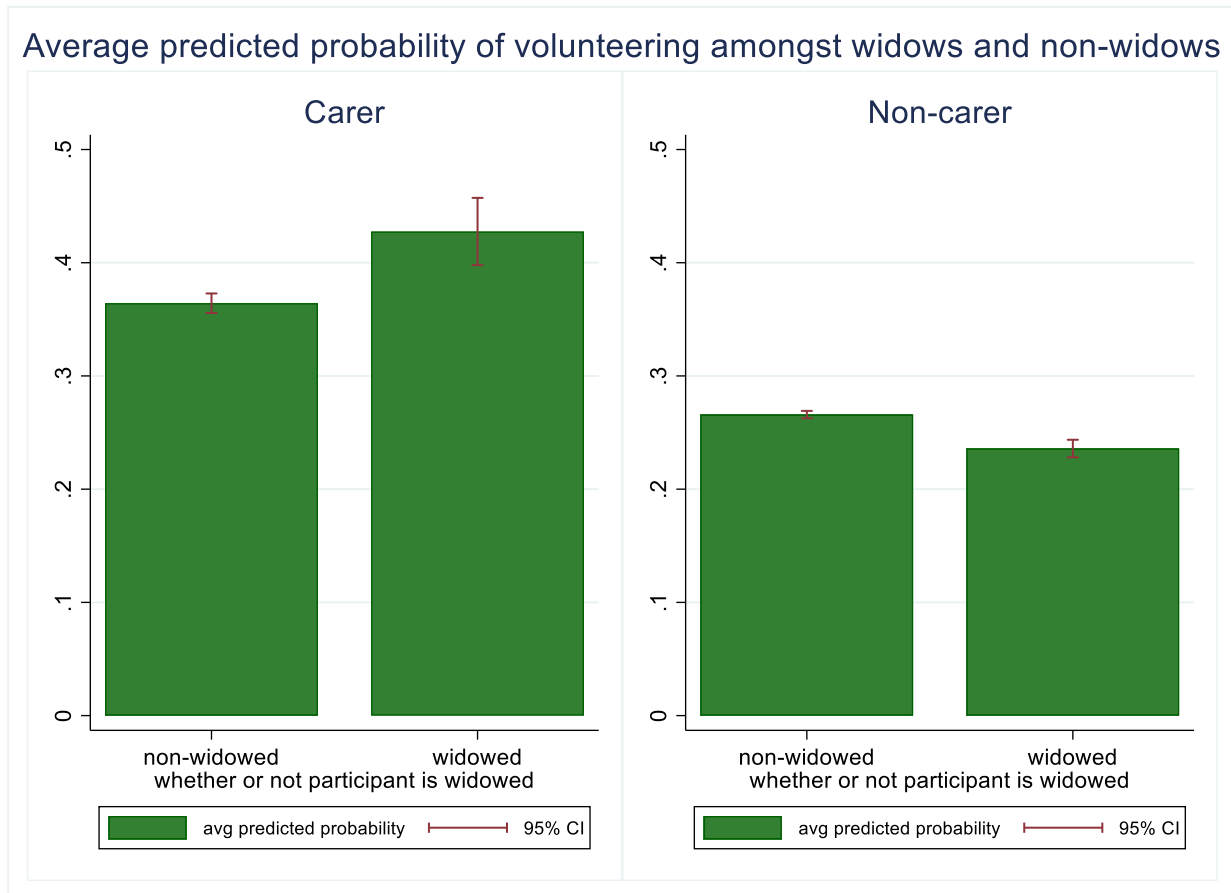
Echoing results of previous chapters, model 6.4 reveals that age has an inverted 'U' shaped relationship to volunteering with participation likely to increase with age until 62.1 years old before decreasing. As discussed in previous chapters, for the sample in this thesis this would suggest a mainly negative association between age and volunteering, with those above 62 becoming less likely to volunteer as age increases. It also corroborates findings from earlier chapters that females, those who were retired, those who have a degree and who were wealthier, members of religious organisations, those involve in caregiving, those in better health and those with higher wellbeing were more likely to volunteer. For an in-depth discussion about these variables see section 5.3.

To explore the hypothesis that there will be a gendered effect of widowhood on volunteering this model was run again split by gender (models 6.5 and 6.6; see Table 6-8). Most results remained the same, however there were a few differences. In the male model there was no significant effect of widowhood on volunteering. This

finding supports the second hypothesis that there are differences in the effect of widowhood on volunteering between the genders. This is in line with findings from widowhood literature which suggests differences in the effect of widowhood on volunteering between males and females (Bolano & Arpino, 2020; Jaumot-Pascual et al, 2016). This finding suggests that for females, despite being more likely to volunteer overall, widowhood is significantly more likely to have a negative impact on their volunteer participation, an impact not found here for males. This could suggest that female widows are driving the overall negative effect of widowhood on volunteering found in model 6.4. There was no significant effect of the interaction terms in model 6.5. This could be due to the fact that there is no significant effect of being widowed on volunteering for males.

Model 6.7 (see Table 6-9) is designed to test the hypothesis that the effect of widowhood on volunteering will vary over time. Most results are unchanged. However, there was no significant, overall effect of widowhood on volunteering participation in model 6.7. There was also no significant effect of being retired, or caring, on likelihood of volunteering. The interactions between caring and widowhood, and casp19 and widowhood are not significant in this model. The retirement x widowhood interaction was significant; however, the main effect of retirement and widowhood were both non-significant. Of the main variables of note, the indicator for transitioning into widowhood from non-widowhood was significant, suggesting they were significantly less likely to volunteer than those who did not transition (remained non-widowed or remained widowed).

Table 6-9: Mixed effects logistic regression model with random slopes for time to and from widowhood

	Model 6.7
Volunteering	Coefficient
Time to widowhood	-0.01
Widowhood transition	-0.385
Time after widowhood	0.092
time after widowhood-squared	-0.035
Age	0.812***

Age-squared		-0.006***
Female		0.731*
Widow		-0.298
Retired		0.281
Member of a religious organisation		1.819***
Caring		0.387*
Health		
ref poor)	fair/good	0.871*
	excellent	1.030*
Casp19		0.040***
Wealth		0.324***
Degree		1.081**
retired x widowhood		0.748*
random intercept: ID		6.984***
random slope: before widowhood		0.292***
random slope: after widowhood		0.338**
N		3992
Ll		-1690.1
Bic		3554.3

Waves 1-9 ELSA - unweighted coefficients

There was also no significant effect of the time before widowhood, time after widowhood, or time after widowhood-squared variable. Though the pattern suggests the likelihood of volunteering reduces in the time leading up to, and including widowhood then time has an inverted-U shaped relationship with volunteering at first increasing post-retirement before decreasing again. The turning point suggests the increase is only one wave post-retirement before the decrease starts, with the size of the coefficient suggesting it will be relatively flat. The random slopes for time however were significant, which suggests that while there is no significant average effect of widowhood and time to and from widowed, the effect of waves widowed on volunteering does significantly vary within individuals over time (see Figure 6-7). Figure 6-7 shows empirical bayes (EB) residuals for the random slopes before and after widowhood. They show variation across individuals in the effect of time on

volunteering. EB residuals represent how individuals deviate from the population averages in the fixed part of the model, showing how the association between time and volunteering is different over time for individuals (Liu et al, 2021). It can be seen that volunteering in the time leading up to widowhood is relatively flat, which remains into widowhood before a slight decline in the likelihood of participation. Correlation between the random slopes and the random intercept suggest a "fanning in" relationship in the time leading up to widowhood and a "fanning out" relationship post-widowhood, which can be seen in Figure 6-6. This suggests that prior to widowhood, there is more variance between individuals on volunteering at the earlier on than at later time points. Meaning, individuals who start with a higher likelihood of volunteering tend to experience greater declines in likelihood over time than individuals who start with a lower probability. Whereas the variability between individuals increases as the time since widowhood increases, shown in the "fanning out" pattern, suggesting that those with higher probability initially will be more likely to have higher probability of volunteering over time, whereas those with lower probability will continue to decline. The results here suggest that the relationship between time and volunteering across the period before and after experiencing widowhood varies substantially between individuals. This individual variability over time could explain mixed results in prior work, with some suggesting both negative (Butricia et al, 2009; Dury et al, 2015; Okun & Michel, 2006) and those who used a more dynamic approach finding positive relationships between widowhood and volunteering post-widowhood (e.g., Arpino & Bordone, 2017). Work that has found a U-shaped relationship between widowhood and volunteering to date has been in a US or Belgian context which may explain why no significant association was found here in an English context, though the general pattern was similar. Also, prior studies did not include random slopes, which could also explain the difference in findings; these models might suggest that if an analysis controls more fully for the variance within individuals, the population average effect of time is no longer significant.

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Figure 6-6: Random slopes model showing individual variation in the association between widowhood and volunteering over time

Volunteering over time leading to and from widowhood clustered within individuals

3,992 observations, 626 individuals: waves 1-9 ELSA
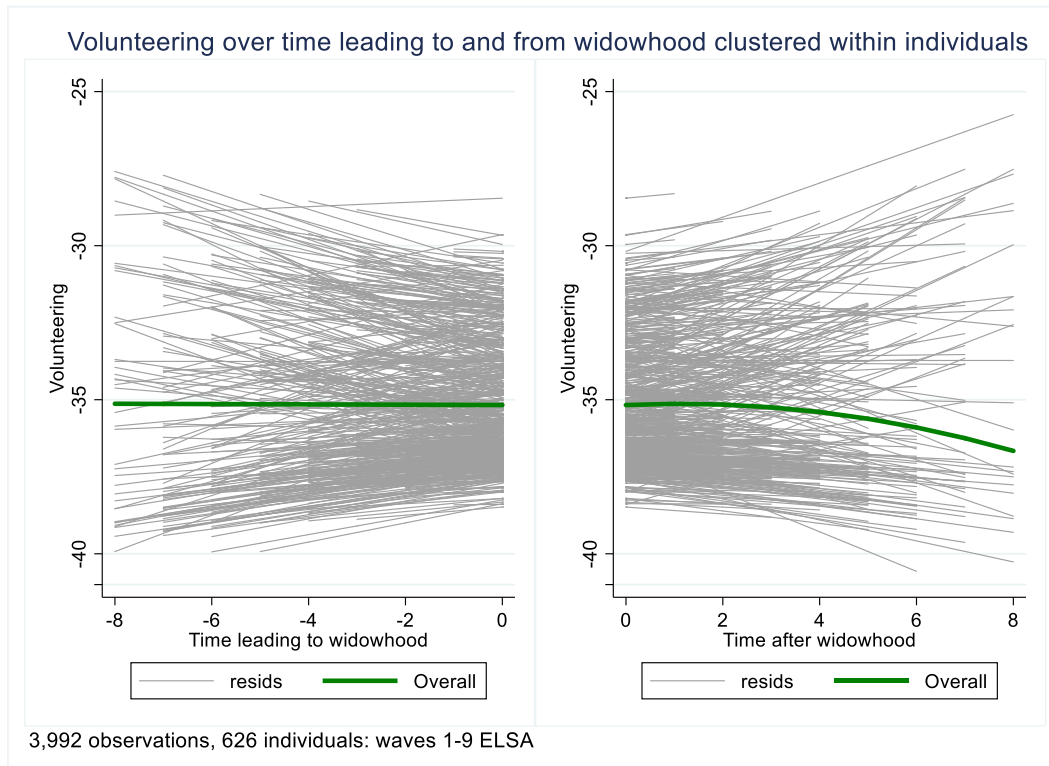
This may also be explained by how model 6.7 was identified. The models contain a dummy for widowhood, time to and from widowhood, random slopes for these time effects, and are also only on a sample who became widowed at one point in the observed period.

6.2.4 Conclusion

To conclude, much of the findings here echo that of previous chapters: those who are older, female, more highly educated, retired, and those who are healthier, wealthier, carers and religious are also more likely to be volunteers. These findings add further credence the resource perspective underlying this thesis, which suggests human, social, and cultural capital are associated with increased volunteer participation (Cheng et al, 2018). As discussed previously, any potential demographic factors which can influence volunteering should be considered when creating recruitment policies. Understanding who is, or who is not, participating will allow for further research into why, which could allow volunteer involving organisations and policy makers to tackle potential inequalities in volunteerism. With a highlight on improving diversity of volunteers in the "Vision for Volunteering" set out

by the NCVO, and Public Health England's goal to remove barriers to participation, this should be of note to policy makers and volunteer involving organisations.

Analysis of the full sample indicated a significant, negative effect of widowhood on volunteering – this negative effect is lessened for widows who are carers, widows who are retired, and widows with higher wellbeing. This would suggest evidence for a resource perspective, where the loss of the role of the spouse could reduce the resources (e.g. monetary, health, wellbeing) required for volunteering (Butricia et al, 2009; Dury et al, 2019). However, no U-shaped effect of time was found in this analysis. This could be due to the method of analysis used, as the random slopes model allowed for both within individual change over time as well as between individual change. As the random slopes for time were significant it is suggested that there is significant within person variation over time in regard to the association between widowhood and volunteering. This could suggest that a one size fits all approach may not work for widows, and volunteer involving organisations and policy makers should seek to understand factors which may make widows more or less likely to volunteer at different times across the transition.

Overall, findings also indicate that widowhood is a time of reduced volunteering. It could be argued these findings are in line with a resource perspective since widowhood can generate emotional and financial distress. Dury et al (2015) argue that experience of resource restrictions affects individual resources, social opportunity structures, and motivational factors, which may all hamper volunteering. There is a reduction in this negative impact of widowhood on volunteering when widows are retired, involved in caring, or have higher well-being suggesting there are some mitigating factors. Promoting opportunities for contact and social activity could have a positive impact on older adults' adjustment to widowhood and provide enhanced opportunities for active ageing (Isherwood et al, 2012). Given that studies have found participation in social activities during widowhood has been associated with lower levels of loneliness (Pinquart, 2003), guilt and sadness (Sharp & Mannell, 1996), enhanced morale and reduced stress (Patterson & Carpenter, 1994), and better physical and mental health (Janke et al, 2008), promotion of volunteering at this time is important from a healthy ageing perspective, where the wellbeing of older adults is a key factor in the idea of "ageing well". Further implications will be discussed in Chapter 9.

7 Association between working beyond SPA and volunteering participation.

7.1 Introduction

With the growing demographic of older adults, Governments are now forced to reconsider the sustainability of the existing arrangements for age-related entitlements such as pensions and narrow focus of policies on remedies for age-related losses (Zaidi et al, 2017). For example, in the UK the SPA has steadily rose, with further increases set for the future (Di Gessa & Grundy, 2017; Ginn, 2013; Hammond et al, 2016). With these policy changes coming into play, and with older adults being encouraged to work beyond state pension age, there is a growing need to explore the potential impact this could have on older adults volunteering participation.

Given that retirement is a time of increased participation in volunteering, it is possible that this increase in retirement age will lead to less volunteering participation amongst older adults. From this it has been argued that work is a 'barrier' to volunteering, due to its time-consuming nature. This is substantiated by existing literature on the relationship between retirement and volunteering (Caro & Bass, 1997; Cho et al, 2018; Dosman et al, 2006; Eibich et al, 2022; Mike et al, 2014; Mutchler et al, 2003; Tang, 2016; Van Ingen & Wilson, 2017). With much of the work finding evidence to support a 'substitution hypothesis' that volunteering is a substitute for paid work (Carr & Kail, 2012; Chambre, 1984; Dosman et al, 2006; Eibich et al, 2022; Mergenthaler et al, 2019; Mike et al, 2014; Tang, 2016). It could be argued then, that increasing the state pensions age will reduce the time older adults spend volunteering post-retirement, reducing the window of opportunity.

Previous literature has been mixed, with some finding a positive relationship, some a negative relationship, and some no significant relationship at all between working beyond SPA and mental wellbeing (Baxter et al, 2021; Maimaris et al,2010). As there has been a documented link between volunteering and mental wellbeing (Hansen et al, 2018, McMunn et al, 2009; Tabassum et al, 2016), it could be argued that this positive association with wellbeing could lead to increased likelihood of volunteering. However, it should be noted that there is no causal evidence of the direction of the

relationship between wellbeing and volunteering. It has suggested that some of the variation in findings could be due to the reasons for working beyond SPA (DiGessa et al, 2018). Findings suggest that those who were in paid work beyond SPA due to financial reasons had significantly lower quality of life that those who had retired at SPA and that those who worked beyond SPA because they enjoyed their job had significantly better quality of life compared to those who had retired at SPA. This suggests that the reason for working beyond SPA could have an indirect association with volunteering participation through its association with wellbeing, not necessarily being negative for some.

Studies have also found that some of the demographic factors which have been found to be predictors of volunteering are also related to working beyond SPA. Those who work beyond SPA have been found to be healthier, wealthier, and more educated (Lux & Sherger, 2015), variables which have typically been found to be associated with higher levels of volunteering (Van Den Bogaard et al, 2014; Dury et al, 2015; Hank & Erlinghagen, 2009; Hansen et al, 2018; McMunn et al, 2009; Okun et al, 2014; Tabassum et al, 2016; Tang et al, 2010). This suggests that there may not be a negative impact on participation, due to similarities. However, once controlling for these factors in a model-based approach, the underlying association between working beyond SPA and volunteering may be negative. This will be explored below in model 7.1.

To date, no study could be found which directly tackles the potential impact of extending working lives on volunteering in the UK. The chapter therefore aims to examine how working beyond the SPA is associated with different patterns of volunteering participation amongst English older adults, to explore how propensity for work in older age is associated with participation. It will use 9 waves of data from the English Longitudinal Study of Ageing. This survey provides a representative sample of UK adults aged 50 plus, over an 18-year period. This has the benefit of covering both the time before and after changes to the SPA allowing for examination of the time spent volunteering post-retirement before and after the change (model 7.3). Mixed effects logistic regression will be used to explore the association between working beyond SPA and volunteering, and reasons for working beyond SPA. A cox-proportional hazards model will examine time to ending volunteering

post-retirement for those who experienced a change in SPA compared with those who did not.

Based on the above, the following hypotheses will be explored:

Table 7-1: Chapter 7 hypotheses

Hypotheses		Models
7.1	When controlling for demographic factors which may influence selection into working beyond SPA, there is a negative relationship between working beyond SPA on volunteering compared to retirees.	Model 7.1
7.2	Those who work beyond SPA due to their poor financial situation will be less likely to volunteer than those who work beyond SPA because they enjoy their job/working generally.	Model 7.2
7.3	There will be a negative association between having experienced a change in SPA and the time spent volunteering in retirement for older adults – with less time spent volunteering post-retirement for those who retired post-change.	Model 7.3

7.2 Method

7.2.1 Sample

This analysis will use waves 1-9 of the English Longitudinal Study of Ageing (2002-2018). Only those with complete information on the variables of interest (see 7. 2.2) were included. This results in 59,113 observations from 14,873 participants.

For hypothesis 2 analysis, the reason for working beyond SPA variable was only available from wave 4 onwards. Also, only those who were working beyond SPA were examined. This gave a sample of 3,338 observations from 1,644 participants.

For hypothesis 3 analysis, only those who were observed to transition into retirement and who participated in volunteering at least once following retirement (including the

wave they retired) were included. This was set up as survival time data and resulted in a sample of 2,176 observations from 809 participants.

Cross-sectional weights for each respondent, at each wave they appeared, were applied to both the descriptive statistics and model analysis to bring the sample in line with the population and to account for non-response[3].

7.2.2 Variables of interest

Outcome variable

Two measures of volunteering are available at all waves (see 4.3.1 for detailed description) – how often (if at all) participants engaged in volunteering, and whether the participant volunteered in the last month prior to interview. For frequency of volunteering, participants are asked "how often if at all do you do any volunteer work" with the answers being twice a month, about once a month, every few months, about once or twice a year, less than once a year and never. Those volunteering "once or twice a year" or more are classed as volunteers, and those who volunteered "less than once a year" or "never" are classed as non-volunteers (as used by Nazroo & Matthews, 2012; Rouxel et al, 2015). Another question in the survey regarded whether participants volunteered in the month prior to the interview. There were 7,954 observations where individuals reported they volunteered in the last year though they had not volunteered in the last month.

Previous chapters have explored both options and results suggested that similar social patterns are revealed by either outcome measure (see chapter 2; chapter 3). However, here some slight differences were found (see appendix 7.1). Running models with both options revealed that when using the monthly variable, widowhood was also non-significant, and the state pension age change indicator was found to be significant - this was not the case for the frequency-based indicator. In this instance, the monthly indicator was chosen as for those who reached SPA and/or retired in the year they were interviewed, the monthly indicator may more accurately capture their volunteering in retirement compared to yearly (where they may not have been retired). Further, this measure has been used previously on ELSA data to

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[3] See section 4.2.1 (Methods – English Longitudinal Study of Ageing – Weighting in ELSA) for description of how weights are calculated.

explore volunteering (DiGessa & Grundy, 2016; Williams et al, 2020; Zaninotto et al, 2013).

Main explanatory variables:

State pension age:

An indicator generated by the Institute of Fiscal Studies was available in the data and was used to determine which participants were below SPA or at/above it.

Working beyond SPA

A categorical variable with 6 categories was created to explore the relationship between job status and state pension age. These categories were based on the state pension age variable and the job status variable (working, retired, other) and were:

1) Above SPA still working.

2) Above SPA retired.

3) Above SPA other.

4) Below SPA still working.

5) Below SPA retired.

6) Below SPA other.

Several configurations of this variable were tried where 'other' was merged with 'retired' for those above SPA (since those out of work would presumably be retired once they reach SPA), with 'other' merged with retired for everyone, and with those classed as 'other' excluded from the analysis. Except for some changes when 'other' was excluded[4], patterns remained the same both for demographics and for the general pattern of the combined work status and SPA variable. It was therefore decided to keep the variable as a 6-category measure. Operationalising the variable in this way will allow for comparison of each state to the 'Above SPA still working category.' Comparisons between this category and those above SPA and retired and

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[4] This is likely due to the change in gender balance – goes from 52% female to 48% female when the 'other' category is excluded.

below SPA retired/working are of particular interest here, thus this operationalisation will aid answering the research question.

Some respondents who stated they were retired nevertheless report full-time or part-time work hours. The work hours variable is a follow-up to a different working variable which has the categories employed, self-employed, or not in employment. This variable does not capture the difference between retired and not employed for other reasons thus the original job status variable was used with the amendment that those who report work hours (self-employed or employed) are categorised as working. This measure is what the participant 'best describes' their situation, implying they could describe themselves as retired from their main occupation but still be putting hours in at another job.

Reason for working beyond SPA.

To explore whether there is a difference between volunteering participation amongst those who work beyond SPA based on their reason a 3-category variable is created. This is based on the question "what are reasons for working after state pension age?" which was originally a 7-category variable[5]. The categories are:

1) Financial reasons

2) Enjoyment

3) Other

Post-retirement volunteering

To examine whether the window of volunteering post-retirement changed, several variables were created and will be discussed below.

For comparing those who experienced a change in SPA versus those who did not, a binary indicator was created called 'spachange.' Those who experienced a change in their SPA were given the value of '1' and those who did not '0'. For males, all those born in or after December 1953 would experience a change in pension age. For

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[5] Original categories with new category in brackets: Could not afford to retire earlier (1); Didn't know what to do after stopping work (3); Enjoyed job/working (2); To improve pension/financial position (1); To keep fit and active (3); To retire at the same time as husband/wife/partner (3); Persuaded by employer to stay on (3).

women, all those born in or after May 1951 would experience a change in pension age. Since there is no birth month information, the indicator created will not perfectly capture those who experienced change. Those males who were born in 1953, were interviewed in December in more than one wave, and who had reached their birthday (age=interview year-birthyear) in some waves and not others were given the value '1' as it is assumed they were born in December 1953. Females born in 1951 who can be assumed to have reached their birthday by April (interviewed in or before April and for whom age=interview year-birthyear) were given the value '0'. While crude, given the information available in the data set, this measure will allow for exploration of the relationship between changing the SPA and volunteering.

To deal with the issue of censoring, as it cannot be ascertained what volunteer status will be at wave 10, the data was set-up as survival data. To this end, several variables were created. A variable indicating the wave in which an individual retired was created and from this a binary variable for having retired pre- or post-change was made (based on the 'spachange' variable described above). To explore volunteering, only those who were volunteering in the wave they first reported being retired were included.

For the purposes of setting up the data as survival data, 'failure' was considered stopping volunteering. The 'time' variable was the wave in which a participant stopped volunteering post-retirement minus the first wave in which they retired, which gives the number of waves post-retirement before volunteering ceased or censoring occurred. From the 809 subjects there were 412 failures, with a mean time at risk of 2.7 waves – see table 7-3 for descriptive statistics regarding this sample.

Other explanatory variables

In this analysis, the same explanatory variables as described in chapter 5 (5.2.2 "Other explanatory variables") are used. The functional forms and their relation to the resource perspective will be outlined again here, though a fuller explanation of their use and the supporting literature is given in 5.2.2.

Age is included in a quadratic functional form. Gender (male/female) which has been found to have an association with volunteering will be included (Zaninotto et al, 2013; Wemlinger & Berlan, 2016; Helms & McKenzie, 2014).

For social capital variables, marital status (single, married/civil partnership, divorced/separated, widowed) and involvement in caring activity (yes/no) is used.

For human capital variables, whether or not participant has a degree is used alongside wealth (in quintiles) which accounts for all non-pension wealth within a household including wealth from businesses, property, and investments. Self-rated health status (poor, fair/good, excellent) and CASP-19 score will be used in the analysis, as other studies have consistently found both these measures of health and wellbeing have significant associations with volunteering (Hansen et al, 2018, McMunn et al, 2009; Tabassum et al, 2016).

Finally for cultural capital, membership of a religious organisation was included as a proxy measure of religiosity.

7.2.3 Data analysis

Exploratory analysis was conducted (see table 7-2), along with cross-tabulations. Two models will be run to test the hypotheses outlined above. Mixed effects logistic regression models with random effects are used. The random effect accounts for residual heterogeneity between individuals across the waves, taking the hierarchical structure of the data into account. This will also allow for exploration of the association between working beyond SPA on volunteering, controlling for the demographic factors which may influence selecting into work beyond SPA.

For the first model (7.1), volunteer participation was the outcome, and the six-category variable exploring work patterns above and below SPA will be the explanatory variable. This will allow examination of the relationship between working beyond SPA and volunteering. Variables were systematically added, and the fully adjusted model was chosen as the best fit to the data (see appendix 7-2).

The second model (7.2) will be another mixed effect logistic regression with random effects to account for clustering of responses within individuals. This will have the same outcome variable however the main explanatory variable here will be reasons for working beyond SPA. This is run on a subsample of 3,338 participants. This sample is smaller due to the main variable of interest only being collected from wave 4 onwards. It will also only be run on those who are working beyond SPA. This will allow for exploration of the second hypothesis that those who are working beyond

SPA due to financial restraint will be less likely to volunteer than those who work beyond SPA because they enjoy their job/working. Variables were systematically added, and the fully adjusted model was chosen as the best fit to the data (see appendix 7-3).

Survival analysis exploring the survival rates of volunteering post-retirement before and after SPA changes will be used to examine whether there is a shortening at the end of the 'volunteering window'. A cox-proportional hazard model with be run to explore the association between experiencing changes in SPA or not and continuing volunteering into retirement whilst adjusting for relative factors. Variables were systematically added, and the fully adjusted model was chosen as the best fit to the data (see appendix 7-4). Standard errors are adjusted for clustering of responses within individuals.

7.3 Results

Descriptive statistics

For the panel dataset, the mean age of the responses was 64.9 (see Table 7.2). Most of the responses were from female (51.7%). Most responses were from participants who were married or in a civil partnership (66%).14.9% of responses were from those educated to degree level and were in the highest wealth quintile (22.3%). 48.3% of the responses were retired. Most self-reported that they were in "excellent" health (42.1%). Across the responses there was a mean Casp19 score of 63.4, indicating moderately high wellbeing.

Of the responses, 19.3% were members of religious organisations. 13.5% of the responses were from those who reported being involved in caring activities in the month prior to interview. 15% of responses were involved in volunteering.

Regarding the main outcome variables, 53.8% of responses were observed to be above SPA across the sample. Regarding job status by SPA, 6.9% of responses were above SPA and working, while 33.5% were below SPA and working. 5.7% were retired and below SPA with 42.7% being retired and above SPA. Regarding reasons for working beyond SPA, the majority cited enjoyment of working/their job (51.5%), with 32.7% doing so due to financial constraints.

For the survival data set, the mean age of the responses was 67.8 (see Table 7.3). Most of the responses were from female (57.9%). Most responses were from participants who were married or in a civil partnership (73.6%). 30.7% of responses were from those educated to degree level and were in the highest wealth quintile (37.1%). Most self-reported that they were in "excellent" health (39.9%). Across the responses there was a mean Casp19 score of 65.9, indicating moderately high wellbeing.

Of the responses, 42.8% were members of religious organisations. 19.5% of the responses were from those who reported being involved in caring activities in the month prior to interview.

Table 7-2: Panel data descriptive statistics for all variables in analysis (person-years)

Variable		obs	%	% volunteers
Gender	Male	28,539	48.3%	13.9%
	Female	30,574	51.7%	15.9%
Marital Status	Single	3,859	6.5%	14.7%
	Married	39,032	66.0%	15.9%
	Separated	8,738	14.8%	11.5%
	Widowed	7,484	12.7%	14.1%
Degree	No Degree	50,279	85.1%	12.7%
	Has a degree	8,834	14.9%	27.7%
Job status	Retired	28,582	48.3%	18.6%
	Employed	23,822	40.3%	10.5%
	Other	6,709	11.4%	13.3%
Hours	Non-working	35,375	59.9%	17.1%
	Part-time	7,627	12.9%	16.1%
	Full-time	16,043	27.2%	9.6%
Wealth	1	9,731	16.5%	8.7%
	2	11,315	19.1%	8.8%
	3	12,070	20.4%	13.8%
	4	12,836	21.7%	17.4%

	5	13,161	22.3%	23.6%
Self-rated Health	Poor	3,933	6.7%	5.9%
	Fair/good	30,286	51.2%	13.3%
	Excellent	24,894	42.1%	18.4%
Member of religious organisation	No	47,736	80.7%	10.7%
	Yes	11,376	19.3%	32.7%
Provided care in the last month	No	51,147	86.5%	13.6%
	Yes	7,965	13.5%	23.9%
Involved in volunteering	No	50,268	85.1%	
	Yes	8,844	14.9%	
State pension age	Below SPA	27,304	46.2%	11.8%
	Above SPA	31,809	53.8%	17.7%
Job status by SPA	Above SPA working	4,050	6.9%	17.5%
	Above SPA retired	25,228	42.7%	18.0%
	Above SPA other	2,530	4.3%	14.6%
	Below SPA working	19,771	33.5%	10.5%
	Below SPA retired	3,354	5.7%	19.7%
	Below SPA other	4,179	7.1%	11.4%
Reasons for working beyond SPA	Financial reasons	1108	32.7%	11.7%
	Enjoyment	1745	51.5%	22.4%
	Others	538	15.9%	13.7%

	obs	mean	mean if volunteers
Age	59,113	64.9	65.9
Casp 19 score	59,113	63.4	66.1

Note: 59,113 observations from 14,873 respondents' waves 1-9 ELSA

Based on persons-years

Cross sectional weights applied

Table 7-3: Survival time data descriptive statistics for all variables in analysis.[6]

Variable		Obs	%
Gender	Male	972	44.7%
	Female	1204	55.4%
Marital Status	Single	84	3.9%
	Married	1650	75.8%
	Separated	235	10.8%
	Widowed	206	9.5%
Degree	No Degree	1,463	67.2%
	Has a degree	713	32.8%
Wealth	1	157	7.2%
	2	249	11.5%
	3	383	17.6%
	4	550	25.3%
	5	837	38.5%
Self-rated Health	Poor	51	2.4%
	Fair/good	1006	46.2%
	Excellent	1119	51.4%
Member of religious organisation	No	1,278	58.7%
	Yes	898	41.3%
Provided care in the last month	No	1,755	80.6%
	Yes	421	19.4%
State pension age	Below SPA	443	20.4%
	Above SPA	1,733	79.6%
		(Obs)	(Mean)
Age		2,176	67.2
Casp 19 score		2,176	66.2

Waves 1-9 English Longitudinal Study of Ageing

Weighted using cross-sectional weights at each wave.

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[6] Based on persons-years: those who were interviewed at waves1-9 of ELSA.

A significant association between volunteering and being above or below SPA was found (p<.001), albeit a small association (V=-.08). Those who were above SPA volunteered at higher rates than those who were not (19% v 12.5%).

Chi-square tests revealed a small (V=.10), significant (p<.001) association between job status above and below SPA and volunteering. Those below SPA and retired volunteer at the highest rates (21%). Interestingly, examination of confidence intervals reveals that for those below SPA retirees volunteer at significantly higher rates than workers whereas for those above SPA there is no significant difference between retirees and workers (see Figure 7.1). This may suggest a positive association between working beyond SPA on volunteering as the proportion of volunteers similar between the retired and working (19.4%% v 18.4%). Whether this finding holds when controlling for other factors will be determined in model 7.1 (see below).

Figure 7-1: Proportion of volunteers over job status by SPA categories[7]

Proportion of volunteers by work status above and below SPA

59,113 observations: waves 1-9 ELSA
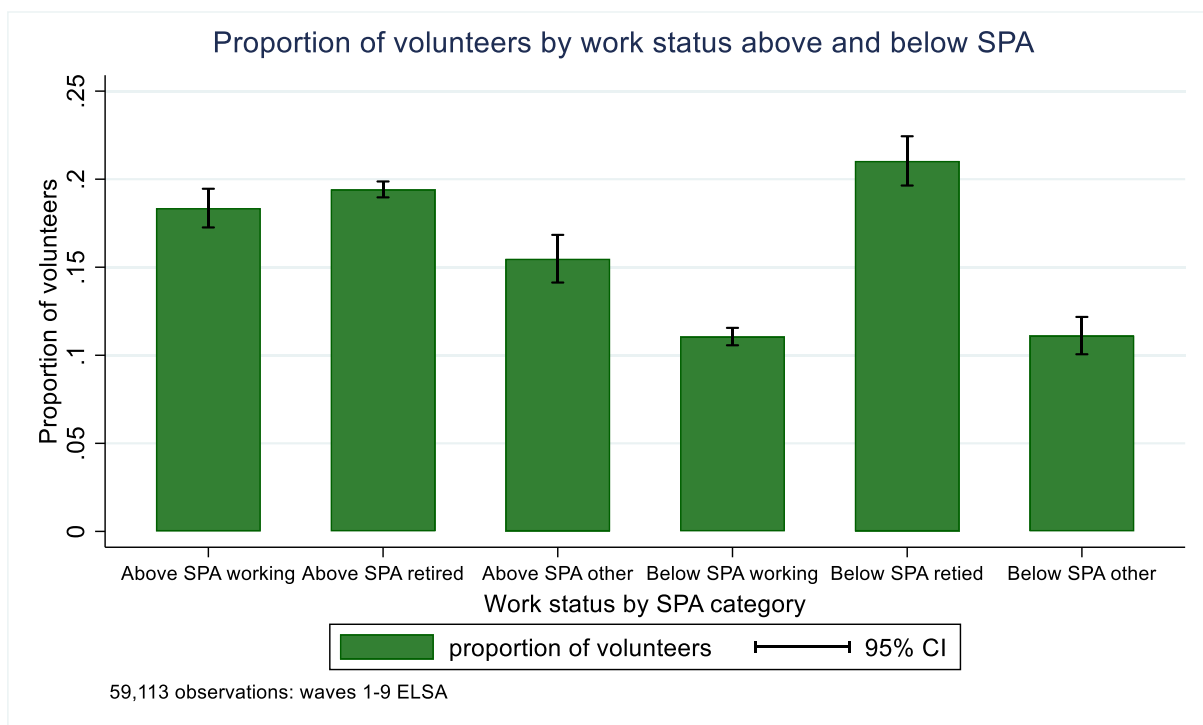
There was also a significant association between volunteering and reasons for working beyond SPA (V=.13, p<.001). Those who worked beyond SPA due to enjoyment volunteered at significantly higher rates that those who worked beyond

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[7] Binomial confidence intervals displayed in all graphs.

SPA (see Figure 7.2) due to financial constraints (23.7% vs 12.4%). They also volunteered at significantly higher rates that those who worked beyond SPA for 'other' reasons (23.7% vs 15%). There was no significant difference between those who worked beyond SPA for other reasons and those who did so due to financial reasons. This is in line with what was expected from the literature review.

Figure 7-2: Proportion of volunteers by reason for working beyond SPA.

Proportion of volunteers by reason for working beyond SPA

3,391 observations: waves 4-9 ELSA
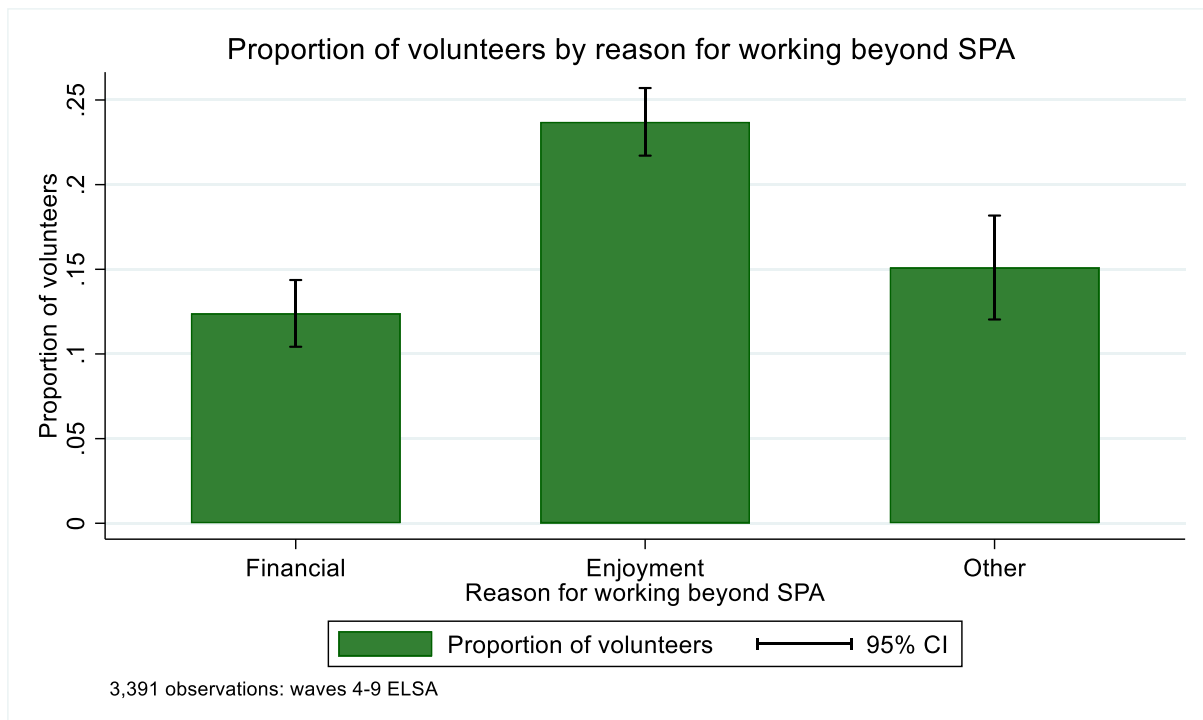
Model 7.1 (see Table 7.3) is a mixed effects logistic regression model with random effects. The random effect is for the individual to account for clustering of responses within individuals. The main variable of interest in this model captured job status above and below state pension age to explore whether working above SPA had a negative association with volunteering participation. The overall model was significant (p<.001) with an icc statistic of .59. This suggest that 59% of the residual variation in volunteering is explained by person-to-person variation.

The first hypothesis that those who were working beyond SPA would be significantly less likely to volunteer that those who retired was substantiated. Retirees both above and below state pension age were significantly more likely to volunteer than above SPA workers (see Figure 7-3). Those in the 'other' category for both above and below SPA were also more likely to volunteer compared to above SPA workers. There was no significant difference in the likelihood of volunteering between workers

of both SPA categories. This is in line with findings which suggest paid work is a barrier to volunteer participation (Caro & Bass, 1997; Cho et al, 2018; Dosman et al, 2006; Eibich et al, 2022; Mike et al, 2014; Mutchler et al, 2003; Tang, 2016; Van Ingen & Wilson, 2017). The role theory concept of 'role substitution' could also be used to explain this finding. This concept suggests as older adults transition out of the labour market, they will seek to substitute this role for another (Eibich et al, 2022).

Table 7-4: Model 7.1 Mixed effect logistic regression with random effect for individual – working beyond SPA and volunteering.

Model 7.1		
Volunteering		**Coefficient**
Age		0.327***
Age-squared		-0.003***
Fem		-0.01
Job status by SPA		
ref Above SPA still working	Above SPA retired	1.182***
	Above SPA other	0.897***
	Below SPA working	-0.175
	Below SPA retired	0.908***
	Below SPA other	0.953***
Part-time		.566***
Change in SPA indicator		0.058
Marital Status		
ref Married/Civil Partnership	Single	0.424***
	Divorced/Separated	0.001
	Widowed	0.101
Degree		1.038***
Wealth		.280***
Health		
ref poor	fair/good	.748***
	Excellent	.957***

casp19	.035***
member religious organisation	1.657***
Involved in caring	.841***
Female*degree	.294*
Random intercept: id	4.908***
N	59113
Ll	-18100
BIC	36397

Data from waves 1-9 ELSA

sig: * (<.05) **(<.01) ***(<.001)

Analysis is weighted to account for non-response bias and to make sample representative of English adults aged 50+

Figure 7-3: Marginal effect of job status by SPA on volunteering participation
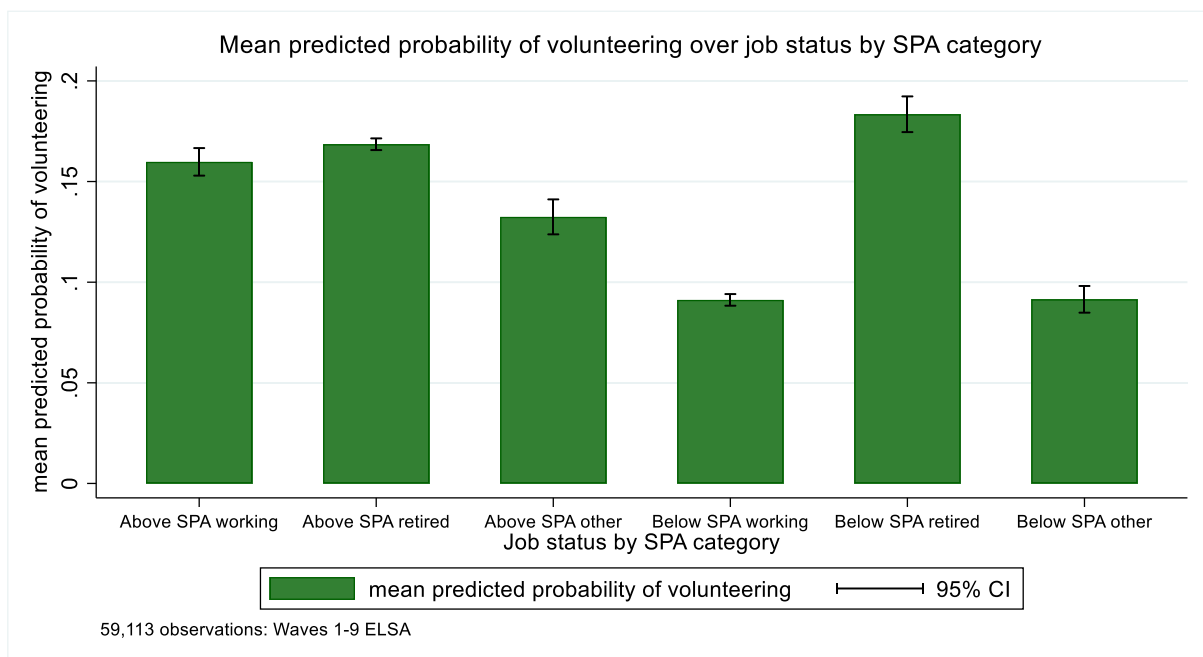
Figure 7-4 shows the mean predicted probability of volunteering over age for those who were working and retired before and after SPA. Linear fit as opposed to raw line graph was used for ease of interpretation as it is the overall trend, and trend around SPA that is of interest rather than specific ages. This illustrates that volunteering 'jumps' around state pension age, though more starkly for those who are working. This is in line with work that suggests retirement is a time of increased volunteering,

and potentially around SPA, winding down of activity could lead to an increase in volunteering. The graph also shows the nature of this relationship differs across age, with those above SPA and working eventually overtaking the retired in the predicted probability of volunteering from around age 75. This was alluded to earlier in graph 7.1 with no significant difference in volunteering between those who were working and those who were retired above SPA. This suggests a dynamic relationship between work and volunteering in the oldest old which further research could disentangle.

Figure 7-4: Predicted probability of volunteering by work status above and below SPA[8]
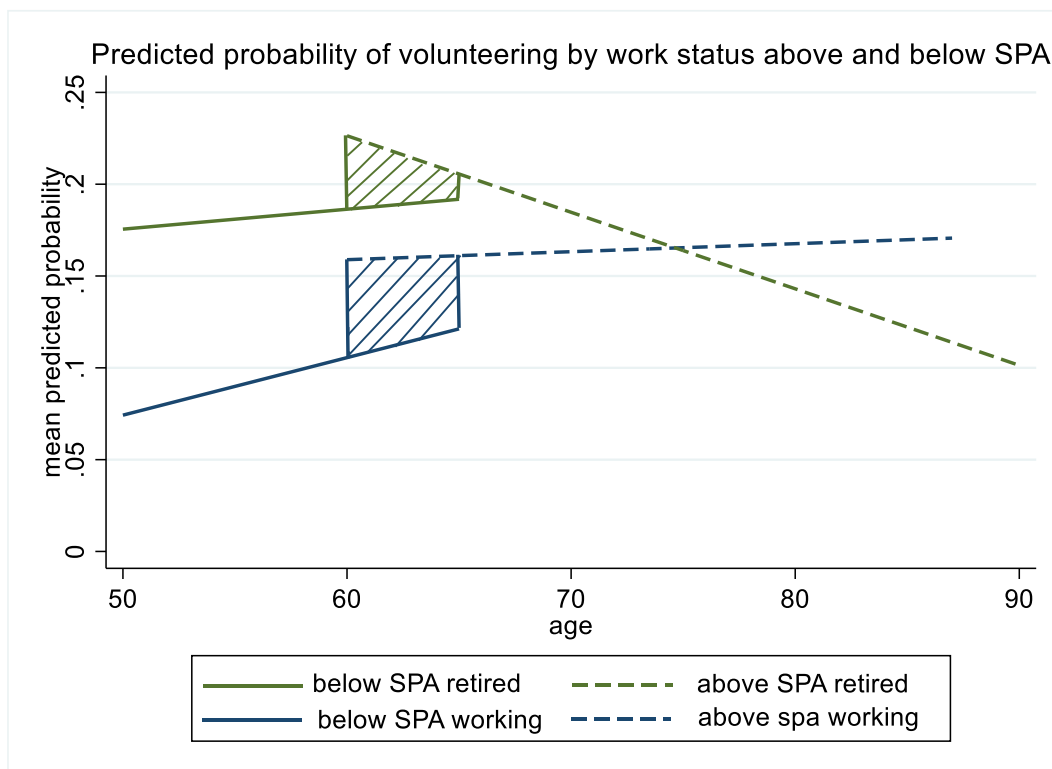
It was also found that, controlling for other variables in the model, being a part-time worker has a positive association with likelihood of volunteering. This is in line with the literature that suggest part-time working is conducive to volunteering as it provides access to networks which facilitate volunteering while not taking up as much time as full-time work (Choi, 2003; Johnson et al, 2017; McNamara &

[8] Hatched areas indicate where participants may move from below to above SPA – this is 60 for some women and 65 for men, with those who experienced change falling within these lines. 4 observations were removed as outliers (mean predicted probability >.3). Linear fit of the mean predicted probability is used for ease of interpretation.

Gonzalez, 2011; Mutchler et al, 2003). There was no significant association between having experienced an increase in SPA and volunteering.

Adjusting for other relevant explanatory variables, findings remain the same as previous chapters, finding an inverted 'U' shaped relationship to volunteering, though at an earlier age of 55 years old before decreasing. As discussed previously, this would suggest a negative association for the majority of the sample. Those who were single rather than married, who have a degree, and who were wealthier were more likely to volunteer in line with other findings (Dury et al, 2015; Hansen et al, 2018; Haski-Leventhal, 2009; Morrow-Howell, 2010; Tang et al, 2010). An interaction effect between gender and degree status was also found to be significant and to have a positive association with likelihood of volunteering. This suggests the positive association between high levels of education and volunteering is stronger for females than for males. Consistent with findings from other chapters, and prior research, those in better health (Dury et al, 2015; Hansen et al, 2018; Haski-Leventhal, 2009; McNamara & Gonzalez, 2011; Morrow-Howell, 2010)., with higher well-being score (Griep et al, 2017; Hansen et al, 2018; Haski-Leventhal, 2009; McMunn et al, 2009; Tabassum et al, 2016), members of religious organisations (Bulanda & Jendrek, 2016; Cheng et al, 2021; Wilson & Musick, 1997), and those who took part in caring activities (Dury et al, 2015; Van Groenou & Van Tilburg, 2012) were more likely to volunteer. As discussed previously (see 5.3 for in depth discussion of each variable), these findings suggest that human, social, and cultural capital are associated with volunteering, with the resources they provide increasing the likelihood of volunteering in some populations. The consequences of this are discussed further in the conclusion section.

To explore the second hypothesis that the reason for working beyond SPA will influence the likelihood of volunteering, with those who are working beyond SPA for financial reasons being less likely to volunteer, model 7.2 (see table 7.4) uses a mixed effect logistic regression model with random effects for individuals to assess the reason for working beyond SPA. The overall model was significant (p<.001) with an icc statistic of .43. This suggest that 43% of the residual variation in volunteering is explained by person-to-person variation.

Table 7-5: Model 7.2 Mixed effect logistic regression with random effect for individual - reasons for working beyond SPA and volunteering.

Model 7.2		
Volunteering		Coefficient
Age		0.596
Age-squared		-0.004
Fem		.429*
Reason for working beyond SPA		
ref financial constraint	Enjoyment	.489**
	Other	-0.018
Part-time		.629**
Change in SPA indicator		0.201
Marital Status		
ref Married/Civil Partnership	Single	.910*
	Divorced/Separated	-0.187
	Widowed	-0.109
Degree		.991***
Wealth		.242**
Health		
ref poor	fair/good	-0.36
	Excellent	0.025
casp19		.046***
member religious organisation		1.579***
Involved in caring		1.156***
Random intercept: id		2.473***
N		3338
Ll		-993.32
BIC		2140.8

Data from waves 4-9 ELSA

Regarding the reason for working beyond SPA and how it may influence volunteering, the second hypothesis that those who worked beyond SPA due to financial reason would be less likely to volunteer was supported. Those who worked beyond SPA due to enjoyment of working/their job were significantly more likely to volunteer compared to those who worked beyond SPA due to financial constraints (see Figure 7-5).

Figure 7-5: Marginal effect of reason for working beyond SPA on volunteering participation (sum-sample of those working beyond SPA waves 4-9).

Mean predicted probability of volunteering by reason for working beyond SPA

3,338 observations: waves 4-9 ELSA
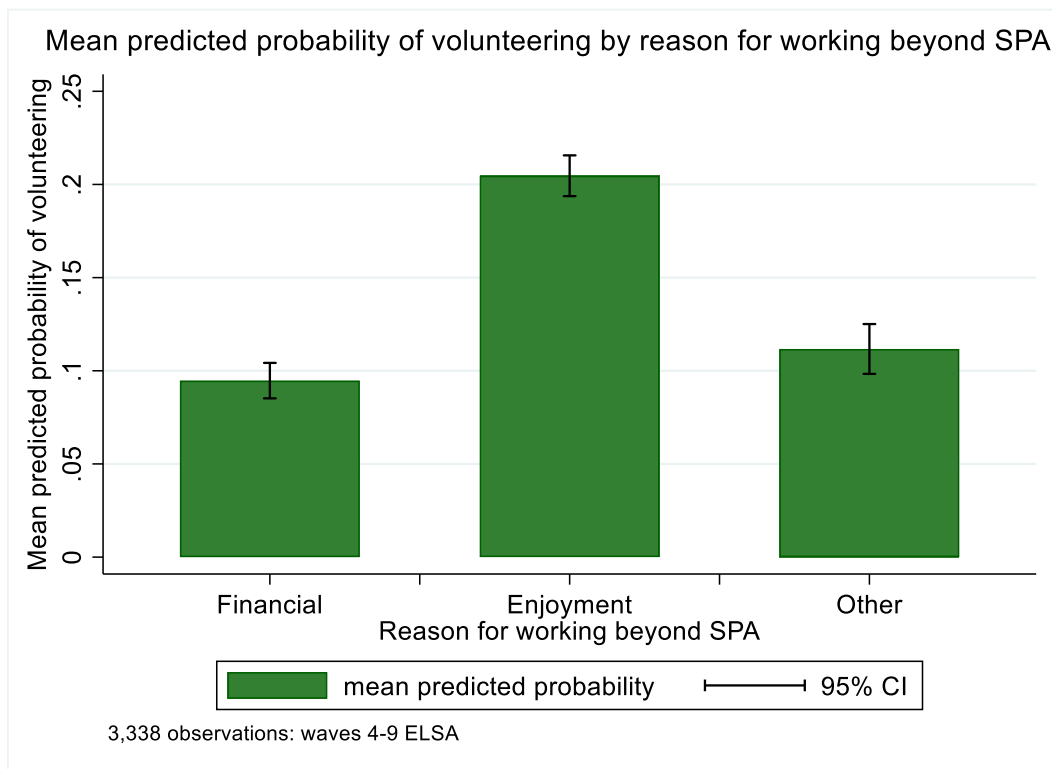
It was hypothesised that the reason for working beyond SPA would be significant through its association with wellbeing, however the finding remains even when controlling for wellbeing, and other relevant factors for selecting into work beyond SPA (wealth, health, and education). It was also thought that this could be due to nature of the occupation, with those who work for enjoyment doing so part-time whereas those who work for financial reasons may be more likely to work full-time. However, these findings stood while controlling for part-time working. In line with prior findings, it was found that part-time work increased the likelihood of

volunteering compared with full-time workers (Choi, 2003; Johnson et al, 2017; McNamara & Gonzalez, 2011; Mutchler et al, 2003). This could be that working beyond SPA for financial reasons puts strain on an individual, meaning they may not pick up other roles if they already feel burdened by their current ones.

Unlike model 7.1 there was no significant association between age, gender, or health on volunteering. This may be due to the reduced sample as only those who were above state pension age were included in this analysis, also less than 2% of the reduced sample described their health as "poor" which could explain why there was no significant association between health and volunteering. The positive association between being single (versus married/civil partnership), a member of a religious organisation, involved in caring in the last month, having a higher casp19 score, being in a higher wealth quintile, and having a degree on the likelihood of volunteering remained.

To explore hypothesis 3 that there will be a difference between those who retired after experience an increase in SPA and those who did not on volunteering participation, the data was set-up as survival data. The Kaplan-meier graph below (see Figure 7-6) indicates slight differences between those who experienced SPA increase and those who did not in the time spent volunteering following retirement. Figure 7-6 shows that, at first, those who retired without experiencing change have a lower survival rate, though from 3 waves till 5 waves into retirement, those who experienced a rise in SPA stopped volunteering at similar rates.

However, cox regression-based test for equality of survival curves was non-significant (p=.69), suggesting no significant difference between the survival rates of the two groups. This would suggest that the end of the 'volunteering window' may not be moving. To examine this further, a cox-proportional hazards model was run with standard errors adjusted for clustering within individuals[9]. The model controls for several demographic factors with the main variable of interest being whether participants experienced a change in SPA or not. Whether participants retired above/at SPA or below was also included.

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[9] Proportional hazards assumption was upheld.

Figure 7-6: Proportion continuing volunteering post-retirement by whether experience change to SPA or not.

Survival rates of volunteering post-retirement

2,176 obs from 809 respondents: waves 1-9 ELSA
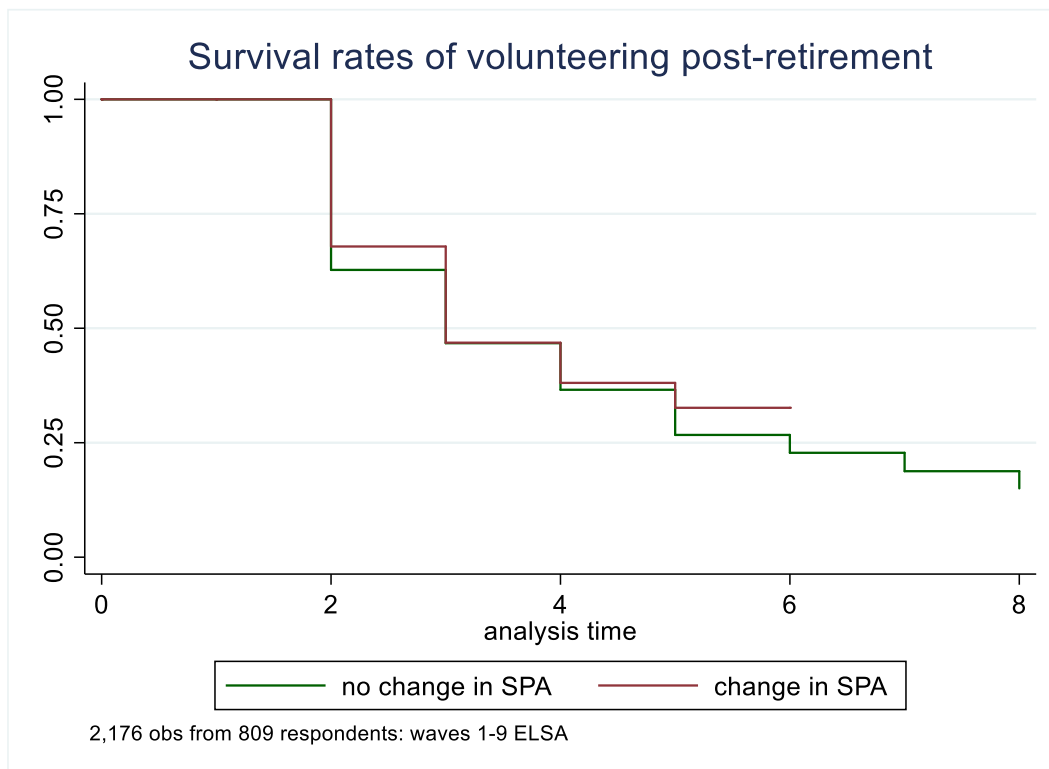
Model 7.3 found that when controlling for other factors, there was no significant difference between those who experienced a change in SPA and those who did not of continuation of volunteering into retirement. A significant U-shaped relationship with age was found, with the hazard being lower until around 67.4 before then increasing, indicating that survival time gets shorter as participants get older, in line with the models above. For those with a degree, who were in excellent health (in comparison to poor), who were members of a religious organisation and who were involved in caring the hazard was significantly lower, suggesting a longer survival time. This is in line with the models above (7.1 & 7.2) and prior research which suggest these factors are indicative of volunteering. This further shows that as well as being more likely to volunteer, they may also be more likely to stay a volunteer. Conclusions from this analysis are limited in reference to this as the sample is limited, however future research could examine time to cease volunteering amongst different populations to ascertain whether the more likely to volunteer are more likely to stay as volunteers for longer.

Table 7-6: Model 7.3 - Cox-proportional hazard model exploring differences in length of time volunteering post-retirement for those who experienced a change in SPA versus those who did not.

Model 7.3		
Volunteering		Coefficient
Age		-0.233*
Age-squared		0.002*
Fem		0.036
Whether above or below SPA when retired		-0.041
Change in SPA indicator		-0.000
Marital Status		
ref Married/Civil Partnership	Single	-0.033
	Divorced/Separated	0.069
	Widowed	-0.168
Degree		-0.240**
Wealth		-0.027
Health		
ref poor	fair/good	-0.228
	Excellent	-0.541**
casp19		-0.006
member religious organisation		-0.260**
Involved in caring		-0.375**
N		2,176
LI		-2470
BIC		5055

Data from waves 1-9 ELSA

sig: * (<.05) **(<.01) ***(<.001)

These findings do not support the third hypothesis that the window of volunteering is shortening with SPA increases, instead suggesting it may just be moving further along with no significant difference between retirees who experienced changes to their SPA and those who did not. It should be noted however, that the sample

characteristics should be taken into consideration with this conclusion. The only participants in this sample who experienced a change in SPA were women aged 60-62. One potential reason could be the sample used here, of those above SPA, only 4% experienced a change in SPA. Of these participants, 88% changed from 60 to either 61 or 62. While a limitation of this analysis, it is unavoidable due to the timing of when the SPA changes came in. This is discussed further below.

7.4   Conclusion

Findings from this analysis support hypothesis 7.1 that, when controlling for demographic factors which may influence selection into working beyond SPA, there is a negative impact of working beyond SPA on volunteering compared to retirees. As discussed previously, this can be explained from both a resource and role theory perspective. As found in other studies (Caro & Bass, 1997; Cho et al, 2018; Dosman et al, 2006; Eibich et al, 2022; Mike et al, 2014; Mutchler et al, 2003; Tang, 2016; Van Ingen & Wilson, 2017), findings here suggest that net of other factors, paid work is a barrier to volunteer participation. From a resource perspective, participants may not have the time to engage in productive behaviours out with the workplace, meaning that they are less likely to engage in volunteer work. From a role theory perspective, the concept of 'role substitution' would suggest that as older adults transition out of the labour market, they will seek to substitute this role for another, therefore they may not volunteering during work due to potential role strain which can lead to a negative association (Cho et al, 2018; Eibich et al, 2022; Lancee & Radl, 2014; McBride et al, 2007; Tang, 2006).

The second hypothesis that those who work beyond SPA due to their poor financial situation will be less likely to volunteer than those who work beyond SPA because they enjoy their job/working generally, was also substantiated. This finding also held while controlling for wellbeing and also part-time work, which was considered a potential explanation for the differing relationships between reasons for working beyond SPA on volunteering. As above, a role theory perspective could aid in interpretation of these findings. As discussed in chapter 2.3, as individuals accumulate multiple roles, they could be at risk for experiencing 'role strain'. If a particular role becomes a burden, it may be dropped, or potentially not picked up if the roles an individual occupies. If an individual has to work beyond SPA due to

financial reasons, the burden this may place could limit a person's ability to engage with volunteering. This aspect of role theory has previously been applied in this area, with a view that paid work and volunteering are generally substitutive rather than complementary. However, those working beyond SPA for enjoyment of work, may be more likely to volunteer as they are not burdened in their current role.

The final hypothesis that there will be a negative association between experiencing a change in SPA and the time spent volunteering in retirement – with less time spent volunteering post-retirement for those who retired post-change, was not substantiated. Instead, there was no significant difference between retirees who experienced changes to their SPA and those who did not, which could suggest the window of volunteering is simply moving along, rather than narrowing as hypothesised. The change in SPA coming to the younger old may have more of an impact, though until they reach SPA, and can be observed as being retired over several years, this cannot be estimated with existing data.

This research area is currently underdeveloped in the UK and with the recent jump in retirement age for women, and with the impending further rise in the state pension age in the coming decade, it is time to build empirical evidence on its potential impact on volunteering. Given the findings in this analysis that working beyond SPA hinders volunteering, and that working generally can be a barrier, research into the potential impact of higher SPA on volunteering is needed. Given that volunteerism has benefits to both those who participate, and to wider society, the potential for raising the SPA to reduce the number of older adults volunteering should be of interest to volunteer organisations and policy makers, particularly with the scaling back of government resources. As discussed briefly above, the analysis regarding the impact of changing the SPA on volunteering in retirement was limited by the sample. While a limitation, it is unavoidable as the analysis is limited by the data that is collected, and the population who experience a SPA change and who we can observe over time is limited at the time of writing. This leads into the next analysis chapter, in which a microsimulation approach is used to explore different SPA policy scenarios and forecast their impact on volunteer participation (chapter 8).

8 Forecasting the potential impact of raising the State Pension Age on volunteering.

8.1 Introduction

In response to the issue raised in the previous chapter, that full analysis into the effect of raising the SPA cannot be done with data collected to date, this chapter will build and estimate, an initial dynamic microsimulation model (MSM). MSM is used to explore how changing the state pension age (SPA) would impact retirement decisions, and in turn how this could impact upon volunteering participation amongst older adults. A dynamic MSM is chosen as dynamic models include time explicitly, allowing researchers to model processes which drive change over time, in order to make predictions about future behaviour (Spielauer, 2001). See methods section on MSM for a more in-depth discussion on the method and its use in this thesis.

By simulating raising SPA the number of volunteers under different scenarios can be forecasted, exploring the potential impact of a raise in SPA of volunteering provision. Adding this component to the analysis will add to the unique contribution to the literature of this thesis as so far, no example of using MSM to predict future volunteering in UK adults could be found.

8.2 Method

In the construction of a microsimulation model, firstly a target population is selected. A representative sample of this population then forms the base population for the model (Payne, 2019). Survey data is often used as a base within MSMs (Payne, 2019) and while the most appropriate data type to use as a base for MSM is debated, longitudinal data is expected to form a realistic base for specifying transitions (Li & O'Donoghue, 2012). Thus, in this analysis, this will be older adults from the English Longitudinal Survey of Ageing (ELSA, 2022).

This data will also be used in the construction of the 'parameter modules' described below which produce the predicted values of the key variables in the simulations. The base population will then be run forward through several modules, following trajectories or transition probabilities. At each simulated time period, this gives a hypothetical population, based on the assumptions utilised within the model (Payne,

2019). In this instance, after 9 runs, the results will be assessed, yielding a possible projection of the target population (Gilbert & Troitzsch, 2005). Issues arise within this modular approach with the order in which the modules are applied – consideration of how the order may impact the simulation should be taken. In this case, a theoretical approach based on existing volunteering literature will be employed. Further explanation of how the data is used, and how the module is constructed is described below (see 8.2.3).

8.2.1 Data

The main data used, both in the construction of the model and as the base population for the simulation, is from the English Longitudinal Study of Ageing (see Methods 4.2 for full description), a multidisciplinary study that contains detailed information on the health, economic and social circumstances of a representative sample in England ages 50 and over (Nazroo & Matthews, 2012).

In the construction of the parameter modules, data from all waves (1-9) will be used[10]. This will allow for tracking changes over time in specific variables including marital status and health, and to predict states of wellbeing, caring activity, work status, and volunteering participation. Life tables from the Office of National Statistics (ONS, 2021) will be used to obtain death probabilities by age and sex.

As a base population, the most recent wave of the survey (wave 9) will be used. This includes adults aged 50-90. The age will be capped at 90 in the simulation as that is the oldest age in the base sample in which probabilities are based on. This sample is expanded 4 times to increase the sample size, and finally expanded by the 'weight'[11] variable to further increase the sample and to bring it in line with the true population. This gives a base sample of 211,936 individuals aged 50-90.

8.2.2 Parameter module construction

There are several parameter modules the population will run through in a given simulation (see Table 8-1). These parameter modules are used to update individual

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[10] Analysis is weighted to account for non-response bias and to make sample representative of English adults aged 50+.
[11] See 4.2.1 Weighting in ELSA for in depth explanation.

characteristics based on transition probabilities from the underlying ELSA data, and model predicted states.

Table 8-1: parameter module construction

	Parameter module	Derived	Covariates
1	Mortality	ONS life tables	Age, sex
2	Marital Status	Transition probability tables, ELSA data waves 1-9	Marital status in previous wave
3	Health	Transition probability tables, ELSA data waves 1-9	Age, health in previous wave
4	Wellbeing	Predicted probabilities from mixed effects linear regression model	Age, age-squared, sex, marital status, health status, work status, and wealth
5	Caring	Predicted probabilities from mixed effects logistic regression models – one for starting and one for stopping based on caring and previous waves	Age, age-squared, sex, and marital status
6	Employment	Predicted probabilities from multinomial logistic regression models – one for each work status based on work status at previous wave	Age, age-squared, sex, marital status, health status, wealth, and degree status
7	Volunteering	Predicted probabilities from mixed effects logistic regression models – one for each lagged state of volunteering	Age, age-squared, sex, marital status, health status, wealth, degree status, caring, wellbeing, religious organisation membership

The procedure for assigning states will be the same for each module. Stata's random number generation command[12] is used to assign a value between 0 and 1 for each individual. Then participants will be assigned to a given category based on whether this random number is smaller or equal to the probability of being in a given state. Values for the probabilities will be stored in external look-up tables, the process of their creation is described below.

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[12] The Stata command 'set seed' was set for reproducibility – this command ensures the same results are returned when random number generation is utilised.

First, the mortality module. A data set containing the probability of death for age by sex combinations, retrieved from the Office of National Statistics (ONS, 2021), was created, and was joined to the base data set, giving each individual a probability of 'dying'. If categorised based on these probabilities as having died, the individual is removed from the data set.

To construct the marital status module, the full 9 wave ELSA data set was used. First, a lagged variable was created to examine marital status in the previous wave. Marital status is measured as unmarried (1), married (2), and widowed (3). Those who were unmarried will either stay as unmarried or move to the 'married' category. Those who are married can become 'unmarried' or 'widowed', and those who are 'widowed', or become assigned 'widowed', will stay in this state until the end of the simulation. A table was then created in excel containing the proportion of those who moved from one category to another between waves. This was then imported to Stata, to be joined to the base data set, with individuals being assigned to a category based on probability tables. This predicted marital status variable will then be used at the next stage of the simulation.

To construct the health status module, the full 9 wave ELSA data set was used. First, a lagged variable was created to examine health status in the previous wave. Health status is measured as poor (1), good/fair (2), and excellent (3). A table was then created in excel containing the proportion of those who moved from one category to another between waves, by age group (50-59, 60-69, 70-79 and 80+). This was then imported to Stata, to be joined to the base data set. The process of applying a random number, and assigning a category based on this, is the same as the process described above. This predicted health status variable will then be used at the next stage of the simulation.

For wellbeing, CASP-19 score will be used - CASP-19 has been found to consistently have significant effects on volunteering (Hansen et al, 2018, McMunn et al, 2009; Tabassum et al, 2016: see methods 4.3.3 for further description). Using the 9-wave ELSA data, a mixed effects linear regression will be used to predict casp-19 score based on covariates and controlling for the effect of responses being clustered within individuals. The covariates are age, age-squared, sex, marital status, health status, work status, and wealth. All had a significant relationship with casp-19 score

(p<.05). Predicted probabilities are calculated for each permutation of the covariates described above. These are stored in a separate data set as a look-up table. As the data is going to be simulated through time, there may be permutations of demographic variables which are not in the original data set, having all possible permutations saved in the look-up tables will allow for this. This predicted CASP-19 score will then replace the original variable in the next stage of the simulation.

For the caring module, model-based prediction is used. Using the 9-wave ELSA data set, a lagged variable is created for caring activity at the previous wave. Based on this, two variables were created: one for stopping caring (1 if stopped caring, 0 if not), and one for starting caring (1 if started caring, 0 if not). Two mixed effects logistic regressions with random effects on the individual level were run with each outcome (starting caring or stopping caring) and the covariates age, age-squared, sex, and marital status. Based on probabilities stored, individuals will be assigned a caring state. This updated caring variable will be used in the next stage of the simulation.

To estimate employment state, several models will be used. Before predicting the models, first a lagged variable for work status at the previous wave will be created. Then for each lagged status (retired (1), employed (2) and other (3)), a multinomial logistic regression with standard errors clustered on the individual will be used. Covariates are age, age-squared, sex, marital status, health status, wealth, and degree status. For each lagged state, three variables predicting the likelihood of being in each of the categories are created. Predicted work status will be based on stored probabilities, and this predicted work status variable will then replace the original in next stage of the simulation.

The final module that the simulated individuals will run through is the volunteering module, this is used to predict volunteering. As above, separate models were created for those who had volunteered at the last wave and those who had not. There were logistic regression models with standard errors clustered on the individual. Covariates were age, age-squared, sex, marital status, health status, wellbeing score, work status, wealth, whether or not they are educated to degree level, caring activity, and whether or not they are a member of a religious organisation. The process of storing and assigning a category is as described above,

with the predicted volunteering variable will then be used to examine volunteering participation in the simulated data set.

Some variables used in the model will be held constant or are not predicted by a model. The SPA will be set at the start of the model and will remain the same through each run. For the baseline scenario simulation, which is projecting the sample forward through the current policy, SPA will remain as it was at the time of data collection in 2018/2019. The SPA is highly individual, being specific to an individual's birth date. As ELSA is collected every 2 years, and specific birth date information is not available, all SPA changes and ages of eligibility are set to the nearest birth year, with the exception of the SPA of 64 for women (see table 8-2). While this may introduce error compared to the true population, it will allow for the comparison of alternative SPA scenarios, which is the aim of this analysis (as done by Payne, 2019).

Table 8-2: Construction of baseline SPA for microsimulation

	birth years	
spa	Female	Male
60	<=1950	n/a
61	1951	n/a
62	1952	n/a
63	1953	n/a
64	1953 if below SPA at 63	n/a
65	1954	<1953
66	1955-1960	1954-1960
67	1961+	1961+

Age will be included and is updated at each crank of the model (+1), since mortality rate is based on one-year increments. Sex (male, female) will remain constant as no one in the sample is observed to move between genders in the data. Religious membership will also be kept constant – leaving an organisation does not necessarily mean an individual is no longer religious and varying this would add complexity beyond what is needed for this analysis. It has also been decided that wealth will be kept constant. Exploration in the 9-wave data set revealed less than 2

percent either moved up or down 2-4 quintiles, with most of the change being up or down 1 quintile. Exploring the percentage who volunteer amongst those who stayed the same versus moved up or down, there is not much difference (down 30.3, same 31.6, up 30.9). Allowing wealth to vary would therefore introduce an additional layer of complexity to the model which can impact the efficiency. As the aim is to produce a simple, yet functioning model, which can assess a variety of SPA policies, and given that wealth is not a main outcome of interest in the model, it was decided that it would remain constant (Payne, 2019).

8.2.3 Model justification and outline

Before outlining the MSM created in this chapter, below is a brief summary of the terminology that will be used from here to describe the running of the model (Table 8-3).

Table 8-3: Terminology used to describe the running of the simulation.

Term	Meaning
Base data	The wave 9 ELSA expanded data set
Baseline scenario	Keeping the pension age as is (2018/2019)
Crank	A cycle through the parameter modules
Run	End of the 2-crank cycle
Simulation	Full 9 runs of the 2-crank cycle

As discussed above, the order of the module is important to the outcome. In this case, the mortality module will run first. Mortality rates are estimated based on age in one-year increments and sex, which in this analysis is held constant, thus it is decided the mortality will be estimated each crank of the simulation before the demographic module updates every second crank, since age and sex can be estimated yearly. As marital status can predict all other demographic modules (Gaymu et al, 2008; Lawrence et al, 2019; Robards et al, 2012), it is decided that should be second. Again, as health can predict the rest of the demographic modules it will be third. Wellbeing will be the fourth module, as caring is not considered as a covariate in the model predicting wellbeing it was decided it would run after as the fifth module. As all previous modules have an effect on work status, work status is

the second last module to be run. Then, given the interest of volunteering participation through retirement, volunteering is the final module.

To examine the effect of changing the state pension age, 7 separate simulations will be run with a baseline scenario being the state pension age at the time the data was collected (2018/2019), then state pensions ages of 65, 67, 69, 71, 73 and 75. At each SPA the sample will run through the modules outlined above 9 times (see figure 8-1) and a final simulated sample will be retrieved. This will allow for the examination of retirement decisions at different state pension ages, and the effect on volunteering participation.

For each simulation (Baseline, SPA=65, SPA=67, SPA=69, SPA=71, SPA=73, SPA=75), the state pension age will be set. Based on this, an indicator of being above (1) or below (0) state pension age is created (age>=spa = 1; age<spa = 0). As there are participants in the base data who will have already reached SPA, only those who are still below will have the simulated pension age applied to them, those who were above in the base sample will remain as such since being about SPA is a significant predictor of both retirement (Eibich et al, 2022) and volunteering (see chapter 7 results). Participants are then aged 1 year, run through the mortality module ('crank 1'), and then aged a further year. Here the SPA indicator is updated, then the sample is run through the mortality module, the marital status module, health status module, wellbeing module, caring module, employment state module, and finally the volunteering module ('crank 2'). At the end of this 2-crank cycle the data will be saved, and the simulation will then repeat 9 times to give a total of 9 runs (18 years). As there is a stochastic element to the predictions given the random number procedure, this process was repeated 100 times to give a range of possible samples. Stata's 'simulate' command is used to repeat each simulation 100 times, with descriptive statistics for the variables of interest posted at the end. The mean and standard deviation were explored to ensure any variation in the simulated variables is non-consequential. For all scenarios, the standard deviation was less than 1 on the different variable suggesting all repetitions produced comparable results, therefore variation between versions is considered to be non-consequential.

The final iteration will be the output data which can be compared across simulations to explore the effect of changing SPA on volunteering though retirement decisions.

Figure 8-1: Microsimulation model set-up – source: authors own work
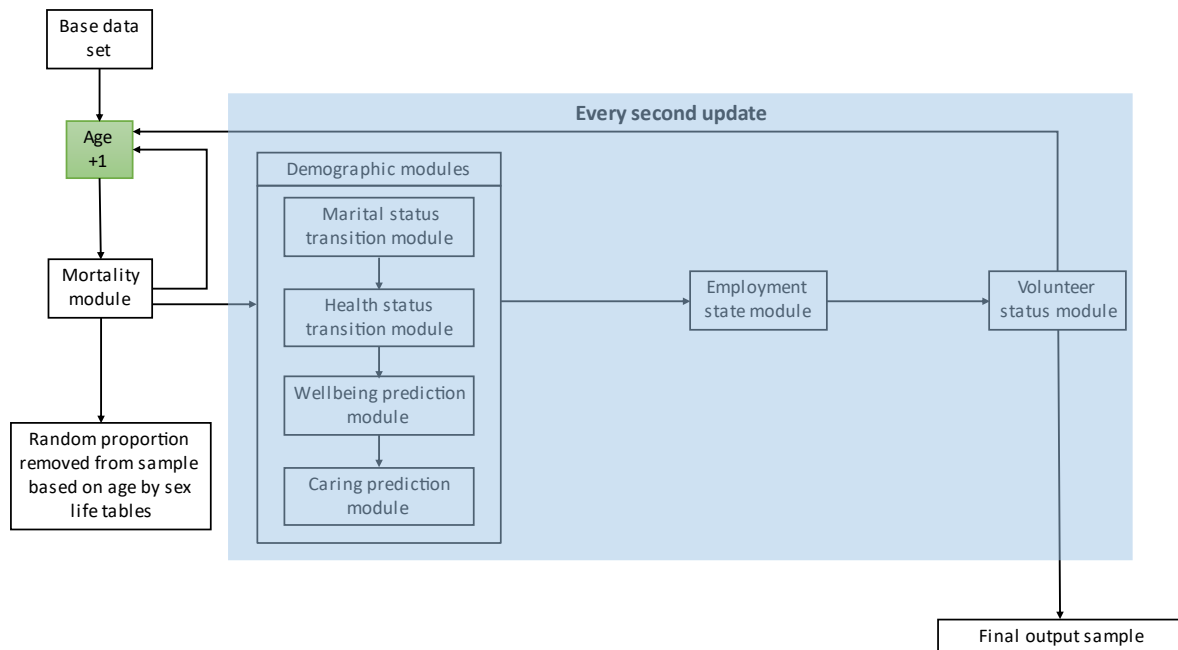
8.3 Results

8.3.1 Descriptive statistics: base simulation data set

For description of the key variables used in the construction of this model from waves 1-9 ELSA data, see section 7.2.2. For descriptive statistics for this sample, see section 7.1.3 of the previous chapter.

Table 8-4 below provides descriptive statistics for the base microsimulation sample.

The majority of the base sample are female (51.3%) with a mean age of 64.99. Most of the base sample are married (65.66%) and retired (46.93%). The vast majority indicated they were in good/fair or excellent health (93.33%), and the mean casp-19 score for the sample was 63.79 indicating moderately high wellbeing. Around 17.1% were members of a religious organisation, and around 15% had been involved in caring activity in the previous month. 28.51% were involved in volunteering activity. Selected groups were associated with notably higher levels of volunteering (e.g., those who are degree educated; in the wealthiest quintile; members of religious organisations; and those providing care). This has also been found in previous chapters (see chapter 5 results; chapter 6 results; chapter 7 results), as well as in the literature (see literature review chapter 3).

Table 8-4: Descriptive statistics for base microsimulation sample

Variable		%	Obs	% Volunteering	Obs volunteering
All			**211,936**	**28.51**	**60,428**
Sex			**211,936**		
	Male	48.71	103,240	27.40	28,284
	Female	51.29	108,696	29.57	32,144
Marital Status			**211,936**		
	Unmarried	24.86	52,688	22.31	11,756
	Married	65.66	139,152	30.94	43,056
	Widowed	9.48	20,096	27.95	5616
Degree			**211,936**		
	No Degree	86.94	184,248	25.04	46,132
	Has a degree	13.06	27,688	51.63	14,296
Job status			**211,936**		
	Retired	46.93	99,468	32.38	32,212
	Employed	44.48	94,268	26.19	24,692
	Other	8.59	18,200	19.36	3,524
Wealth			**211,936**		
	1	16.87	35,764	16.89	6,040
	2	18.82	39,876	18.49	7,372
	3	20.59	43,640	27.13	11,840
	4	21.87	46,344	31.54	14,616
	5	21.85	46,312	44.39	20,560

		(Mean)	(Obs)	(Mean)	(Obs)
Self-rated Health			211,936		
	Poor	6.66	14,124	9.52	1,344
	Fair/good	48.74	103,296	25.90	26,756
	Excellent	44.6	94,516	34.20	32,328
Member of religious organisation			211,936		
	No	82.9	175,692	22.68	39,852
	Yes	17.1	36,244	56.77	20,576
Provided care in the last month			211,936		
	No	85.1	87,920	26.79	48,812
	Yes	14.9	15,436	39.08	11,616
Involved in volunteering			211,936		
	No	85.98	182,212		
	Yes	14.02	29,724		
		(Mean)	(Obs)	(Mean)	
Age		64.99	**211,936**	65.90	
Casp 19 score		63.79	**211,936**	66.51	

Waves 9 English Longitudinal Study of Ageing

Expanded by 4 and then by weight to be in line with target population

After running through each of the scenarios, we have 7 cohort data sets, with individuals nested within 9 runs. These data sets can now be used to explore the effect of increasing the SPA on volunteering participation of older adults.

As a robustness check, the wave 1 ELSA sample was run through the baseline simulation scenario, the idea being they should be generally in line with the combined wave 1-9 data ELSA set. Only those who answered in wave 1 were included in the summary statistics to replicate a singular cohort being progressed

through time. Some differences are to be expected as the ELSA wave 1 cohort have wave specific weights applied which brings them in line with the population at that time and accounts for sample attrition (see 4.2.1 for more information on weighting in ELSA), though it is still expected they should be similar. Figure 8-2 suggests a similar pattern, in volunteering overall, although the model slightly underestimates the number of volunteers.

Figure 8-2: Comparison of volunteering over and 18-year period in ELSA and in the simulation
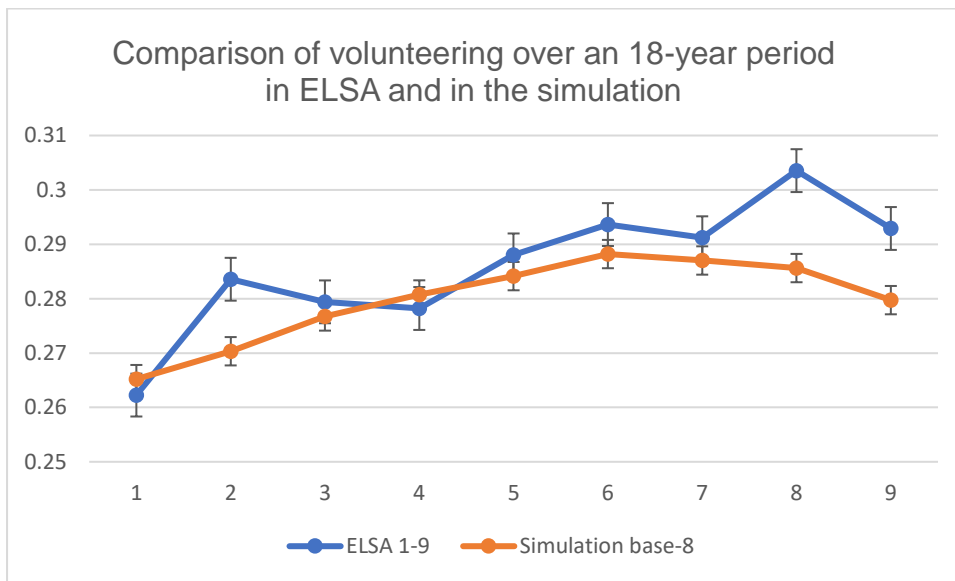
8.3.2 Changing SPA policy and volunteering rates

Exploring the proportion of volunteers above and below SPA reveals some significant differences across policy scenarios. For all SPA scenarios, those above SPA are volunteering in significantly higher proportions than those below SPA (see Figure 8-3). This is in line with what would be expected, given that SPA and retirement are closely related, with it being used as an instrument for retirement in instrumental variable approaches (Eibich et al, 2022; Lafererre, 2016; Zhu, 2021), and with previous findings that retirement is a time of increased volunteering (Caro & Bass, 1997; Cho et al, 2018; Dosman et al, 2006; Eibich et al, 2022; Mike et al, 2014; Mutchler et al, 2003; Tang, 2016; Van Ingen & Wilson, 2017). It can be seen visually that the gap between those above and below SPA narrows as SPA increases, suggesting there may be a negative impact of raising the SPA on volunteering (Figure 8-3).

Figure 8-3: Proportion of volunteers above and below SPA, over simulation
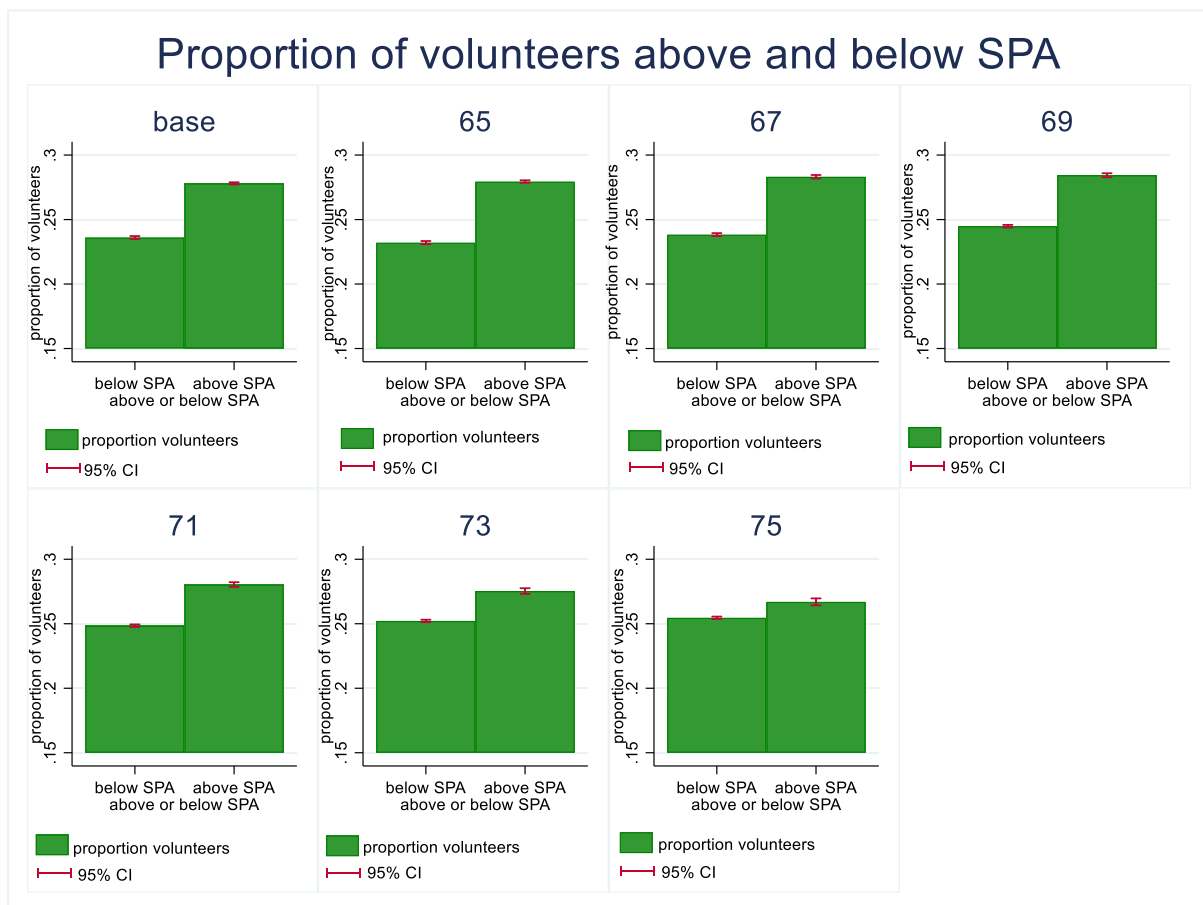
To explore whether there are variations in volunteering over age between the scenarios, an animated graph (Figure 8-4[13]) was produced. This shows the mean trajectory of the sample as they move through the 9 runs, allowing for comparison across the different scenarios. Looking further into the effect of age over time, while there are some dips at certain ages due to variation in the base sample (see appendix 8-1), volunteering generally increases till around the mid-70s before decreasing. This 'peak' seems to move with the SPA, with volunteering participation peaking around suspected retirement ages (Eibich et al, 2022: SPA an instrument of retirement).

Generally, post-SPA in each scenario the baseline scenario begins to overtake the policy simulation, suggesting that increasing the SPA could be reducing the number of older-adult volunteers post-SPA.

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[13] Note that moving graph is only available in word format, still images available in appendix 8-2 for PDF and paper copies.

Figure 8-4: Proportion of volunteers over age: simulated sample

This relationship is further shown in Figure 8-5 below, which illustrates the difference between volunteering in each scenario and the baseline scenario. Each line shows the simulation-based estimates that would be applicable if the SPA age were fixed at the relevant age as indicated by the colour Where the line falls below 0 this indicates lower levels as compared with baseline, and those above have higher participation than the baseline. Scenarios 65 and 67 have higher levels of participation as by the end of the simulation there will be people in the baseline scenario with the SPA of 68. Those in the 69 and above scenarios show lower levels of participation over time as compared to the baseline scenario. This further shows the impact on volunteering participation in older ages if the SPA is to further increase, which should be pertinent to policy makers who are proponents of healthy ageing, and to organisations who increasingly rely on volunteers.

Figure 8-5: Change in volunteering between baseline and scenarios over simulation time

Difference between baseline and other scenarios at each run time
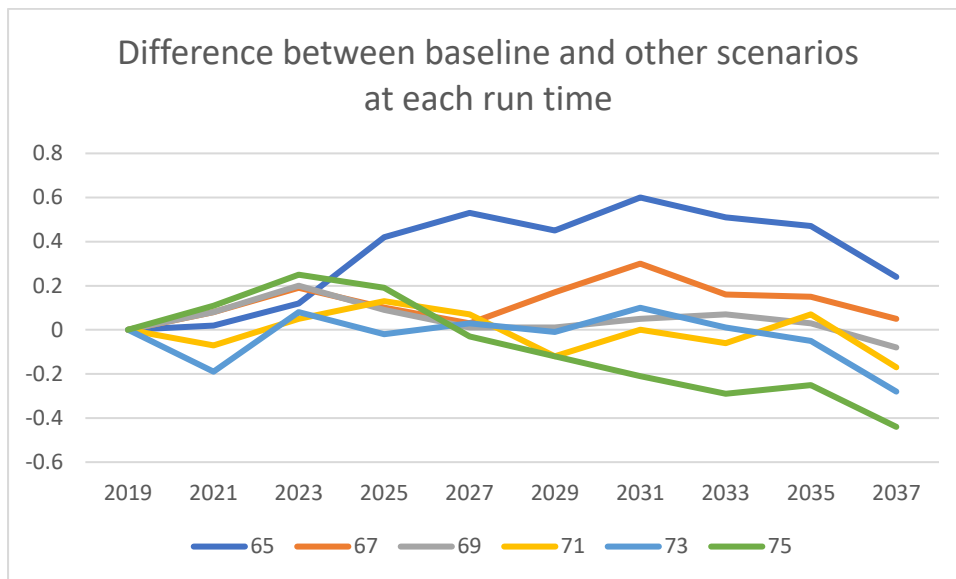
Exploring these raw numbers for only those above SPA reveals a similar pattern, with both number of volunteers and proportion of volunteers decreasing from the SPA=69 scenario. Raw numbers were used here for illustration, from the right-hand side of the axis it can be seen that these all fall within 1 percent of each other, suggesting that proportionally, there is not much of a decrease in volunteering. However, as the left-hand axis shows, there is a reduction in 42,058 volunteers from the baseline scenario to the SPA=69. This jumps to almost 100,000 for the most severe SPA scenario (SPA=75). This further shows the potential negative impact of raising the SPA on the volunteer population. To contextualise, there are roughly 1.6 million person-observations in each simulated scenario, for ease of interpretation these are being counted as individuals as they are volunteers within separate "years". In the true population there are around 22.2 million older adults aged 50-90+ in England, meaning this sample is around 7% of the true population size. Numbers in figure 8-6 and below are scaled up, and for the SPA=69 scenario, the 42,058 reduction in volunteers would be around 81,171 volunteers in the true population. While small in comparison to the estimated 16 million (total population 16+) people who volunteer in England (NCVO, 2022), any reduction in volunteer participation, specifically reduction in response to a policy change, should be of importance, particularly to volunteer involving organisations, charities, and communities. The hypothesised reduction here would mean less volunteers to provide help to people in

need, to help in the running of local charities, and to help in improving communities. For the individuals, it would mean losing the documented health and wellbeing benefits of volunteering. Therefore, despite this number being contextually "small", there is still an important impact to consider on the opportunities for older adults, and the benefits their volunteering could provide to society.

Figure 8-5: Scaled-up number and proportion of volunteers across SPA scenarios.
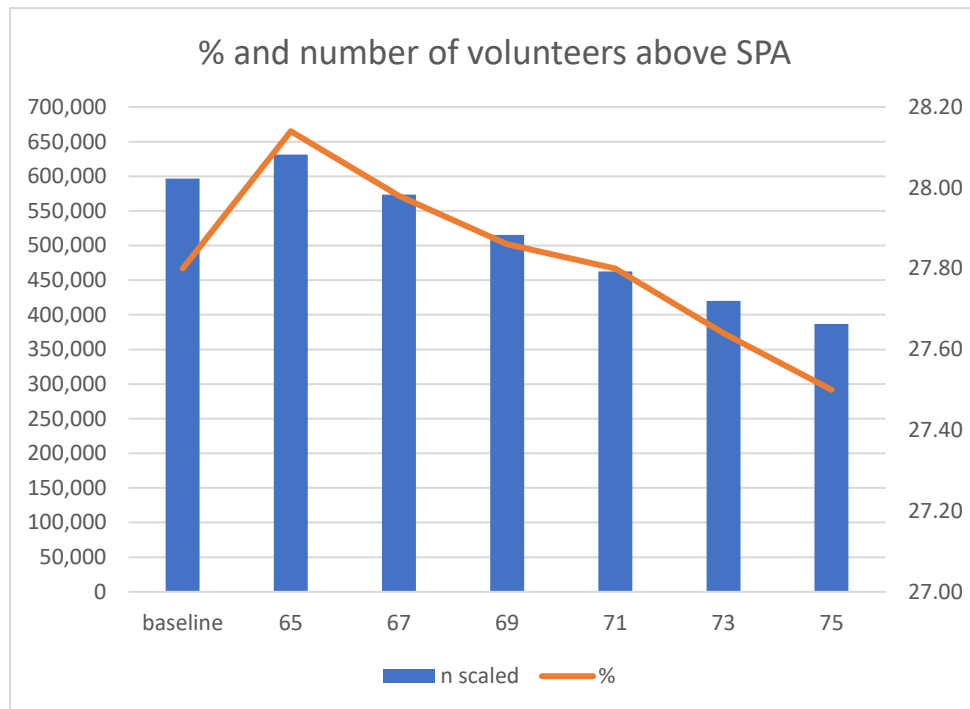
8.4 Conclusion

To summarise, this chapter focussed on the building of a simple, yet functioning, microsimulation model. While there is room to improve and to grow in complexity, the model allowed a cohort of English older adults to be simulated through time to explore the impact of different SPA scenarios on number of volunteers.

Overall, these findings suggest that volunteering participation would decline with increasing state pension ages, with the number of older adults above SPA volunteering predicted to fall to varying degrees depending on the severity of the increase. This could have the potential impact of narrowing the "window of volunteerism" in older retirees, between leaving the workforce and then being no longer able to continue volunteering whether due to health issues or other age-related reasons. As discussed above, even a small decrease in the number of older

adults volunteering post-SPA should be of importance. Given the importance of volunteering to society, and the health and wellbeing benefits the volunteer receives, volunteering is actively encouraged by policy makers such as PHE, and organisations such as the NCVO in England. As part of their initiatives to increase access to volunteering, and to increase the number of volunteers, the impact of the raising SPA and potential negative effects on volunteering should be taken into consideration. For example, as discussed in other areas in this thesis, encouraging more work-place based volunteering pre-retirement, so that there is still support for that age group to volunteer even though they may be remaining in the workforce longer. This will be discussed further in the conclusion chapter.

This analysis was the first that could be found that used a microsimulation approach to exploring volunteering participation as it relates to retirement decisions. Given the findings here, it would be suggested that more use of this method to explore behavioural decisions in relation to rising SPA. As discussed previously, with the recency of the changes to SPA, analysis of existing data will not be useful in exploring longitudinal trajectories. Taking a MSM meant overcoming this limitation, allowing for analysis which explores the effect of increasing the SPA on volunteering participation. Implications for policy and organisations, limitations, and future avenues of research regarding this analysis will be discussed in chapter 9.

9 Conclusion

This thesis has explored the volunteering participation of older adults and how it might be affected by life-events such as occupation, retirement, and widowhood. It has also shown how volunteering behaviour can change around state pension ages and the potential effect of raising the SPA on volunteering participation.

This thesis was structured around two key research aims. First, to understand factors that are associated with volunteering participation in old age particularly in relation to transitional life events such as widowhood and retirement, and from a lifecourse perspective, how past occupation can affect participation. Second, to understand how propensity for work may change around state pension age and its relationship volunteering participation, and the potential impact that changing SPA policy may have on this. This conclusion chapter will first discuss the key findings from the analysis chapters and how they answered the research questions posed, in relation to the thesis aims above. The unique contribution of this thesis to the wider field is discussed, before a consideration of the impact that these findings could have on policy makes and volunteer organisations. Limitations of the analysis presented in this thesis is then discussed. Finally, ways in which this thesis could be taken forward will be outlined, and any further gaps or avenues for future research on the topics raised are discussed.

9.1 Summary of key findings

Chapter 5 provided analysis on pre-retirement occupations and their relationship with volunteering participation. It was found that likelihood of volunteering varies by both skill level of occupation, and physicality, as well as the association between skill level and volunteering only being significant in regard to manual occupations.

Chapter 6.1 found that those who are retired are more likely than the non-retired to volunteer, with likelihood of volunteering increasing from the point of retirement before dropping again. Involvement in caring activity amongst retirees can impede volunteering, whereas widowed retirees are more likely to volunteer. While there was no significant interaction between gender and retirement on volunteering overall, female retirees who volunteer were less likely to do so at higher rates.

In chapter 6.2, analysis of the full sample indicated a significant, negative association between widowhood and volunteering – this negative association is weaker for widows who are carers, widows who are retired, and widows with higher wellbeing. However, no U-shaped relationship with time was found in this analysis. Random slopes analysis suggested that the association between widowhood and the likelihood of volunteering varies within individuals over time, showing that it is a dynamic process.

The key findings from chapter 7 were, when controlling for other factors including wellbeing and part-time work, working beyond state pension age has a negative association with volunteering. Amongst those who do find themselves in employment after they reached SPA, if they were working for financial reasons, they were significantly less likely to volunteer than those working because they enjoyed their job/working generally. Another key finding from chapter 7 was that the 'window' of volunteering post-retirement, which could hypothetically decrease with changes to policy, was not significantly different for those who experienced a change in SPA versus those who did not, although this could be due to the sample used in the analysis (see 7.4 for discussion).

A microsimulation approach was adopted in chapter 8, finding that increases in the SPA could potentially decrease the number of people partaking in volunteering. These findings are of particular note with the further increases in the state pension age set to come into action in the coming decade.

Another key finding threaded throughout the analysis chapters of this thesis, is that several demographic and economic variables were significantly associated with the likelihood of volunteering, and with intensity of volunteering. As set out in the theoretical framework, there were several aspects of human, social, and cultural capital expected to be associated with an increased likelihood of volunteering (Cheng et al, 2021). Particularly of note was the findings related to health, wealth, and education, which suggest those who are healthier, wealthier, and more educated are more likely to volunteer, suggesting that not having access to that level of resource could be a barrier to volunteering (Caro & Bass, 1995; McBride, 2007; Tang et al, 2007; Cao et al 2021). This potential barrier could lead to inequality in who is able to volunteer. This is of importance as a diverse volunteer population, and

reducing barriers which hinder volunteering, has been highlighted in both Public Health England's "Consensus on healthy ageing", and the NCVO's "Vision for Volunteering". The findings here further underline the need for flexibility, increased access (e.g., through providing transport), and more promotion of new, more accessible, roles to reach all in society (Cao et al 2021).

9.2   Summary of unique contribution

The findings in this thesis add a unique contribution of knowledge to the field of volunteering. The findings that past occupation has an impact on volunteering participation post-retirement, and that these findings present an issue of inequality of resources required for volunteering are particularly prominent as most work to date focusses on present occupation, neglecting a life-course perspective (Marshall & Tanaguchi, 2011; Wilensky, 1961; Wilson & Musick, 1997). Prior work regarding pre-retirement occupation also focusses mainly on Germany (Lengfeld & Ordermann, 2016) and the US (Marshall & Tanaguchi, 2011; Webb & Abzug, 2008; Wilson & Musick, 1997), with the findings from this thesis adding a UK context from a sample of English older adults.

Findings surrounding retirement from Chapter 6.1 also bring an English context in a literature dominate by American and other (non-UK) European data. Work is also mostly cross sectional or uses few waves of longitudinal surveys for cross-country comparison Choi, 2003; Eibich et al, 2020; Hank & Erlinghagen, 2009; Principi et al, 2012; Van Ingen & Wilson, 2017). The findings here allow the relationship between retirement and volunteering to be different over time on volunteering, and suggest retirement is a time of increased volunteering in older adults. This finding bolsters the role theory argument that suggests volunteering has a role enhancing effect that can be more pronounced in older adults, increasing their perceived power and status, and improving wellbeing as they experience age related losses such as the "employee" role in retirement (Cho et al, 2018). It has been suggested in the literature that volunteering increases in intensity as it becomes a substitute for the role of the "employee" (Tang, 2016). This was also corroborated by this thesis' findings in that, for males, volunteer intensity increased with retirement, though this was not found for women as per prior work (Eibich et al, 2020).

Chapter 6.2 analysis on widowhood also contribute uniquely to the knowledge base, with little work to date exploring the relationship between widowhood and volunteering in an English context, particularly how this evolves over time. There are also few studies which have taken a longitudinal approach to examining the association between widowhood and volunteering (Utz et al, 2002). This is an advantage of this analysis as longitudinal data is imperative to understand the processual nature of life events - which are not one-off events, but rather dynamic processes which can affect behaviour in different ways at different times (Tang, 2016; Utz et al, 2002). The findings of chapter 6.2 illustrate this, with the random slopes analysis indicating the relationship between widowhood and volunteering varied over time. As with retirement, these results are in line with the theoretical underpinning of the thesis, in this instance role theory. It was hypothesised that, from a role enhancement perspective, we take on roles that enhance our sense of self-esteem and status particularly around times of transition where we may experience role loss (like widowhood) and therefore volunteering may be higher amongst widows than non-widows (Cho et al, 2018). While this was not found in the global association between widowhood and volunteering, when accounting for time, there is an initial increase in volunteering around the event which partially supports the theory.

The findings in chapter 7 are the first that could be found to date, that directly explore the relationship between working beyond state pension age and volunteering in England. With the state pension age steadily rising, it is time to build empirical evidence on its potential impact on volunteering participation, as retirement (a time for increased activity) could be pushed back. The findings from this analysis build on existing work that shows work and volunteering have a substitutive, rather than complementary, relationship potentially due to the time, energy and burden the "employee" role has, meaning workers will be less likely to volunteer (Carr & Kail, 2012; Chambre, 1984; Dosman et al, 2006; Eibich et al, 2022; Mergenthaler et al, 2019; Mike et al, 2014; Tang, 2016). To date, this work focusses on workers generally, and is not specific to those who are working beyond SPA. The findings from this thesis will therefore add to an up-and-coming area of research that explores the influence of increasing the SPA on productive activities older adults partake in outside of work. This could be of interest to volunteer organisations and

volunteer policy makes, as further raising the SPA could restrict the time that older adults are willing to volunteer, meaning a potentially smaller volunteer force. The implications of this are discussed further below.

While there has been previous work using microsimulation to explore the potential impacts of raising the SPA, it has focussed more on economic and health outcomes rather than any behavioural outcomes. No use of microsimulation modelling to explore volunteering participation has been found at the time of writing this thesis. This is important as currently, there is not available data to explore the impact raising the SPA will have on volunteering. With future increases coming in to play, the potential negative effect found in this thesis suggests that policy makers and volunteer involving organisations should be prepared to try and mitigate a reduction in the volunteer force. The findings in this thesis that there are implications on the volunteer population with different SPA scenarios is therefore unique. The implication of this, and the other findings outlined above, will be discussed in section 9.4 below.

9.3   Limitations of study

As is the case with most longitudinal studies, ELSA is subject to sample attrition. Analysis by Steptoe et al (2013) found that those who dropped out were more likely have less favourable financial and health circumstances. This could potentially bias the finding that those who were healthier and wealthier are more likely to volunteer. Though this finding is in line with other studies, and with other studies who used ELSA data. There was also item missing data, particularly with the wellbeing score, CASP-19, and membership of religious organisations. Due to this being in the self-complete part of the questionnaire, many did not answer these questions (c. 19%). The implications of this missing data, how it was accounted for in the analysis contained in this thesis, and how it impacts the interpretation of results is discussed in section 4.3.1. Despite this limitation, the findings here are in line with other studies in the volunteer literature, and the measures taken to account for the missing data mean that valid conclusions can still be drawn.

This analysis was also limited in how it deals with volunteering. ELSA is not a survey created to explore volunteering, and as such the variables are limited, particularly ones that can be found in all available waves. Analysis was limited to two measures,

neither of which show what kinds of volunteering is taking place e.g., sports volunteering or mentoring. Also, the measure used in this analysis is based on broad categories of frequency rather more detailed measures such as hours spent volunteering, which is found in other studies (Carr et al, 2008; Carr & Kail, 2012; Cho et al, 2018). Measures could also potentially be biased by self-reporting. Further, it is unclear that participants are aware that it is both formal and informal volunteering that is measured – while there is a clear definition of what ELSA mean by volunteering in the questionnaire documentation (User guides | ELSA (elsa-project.ac.uk)), whether this is communicated to all participants or only those who ask for clarification, is unclear. Further to this, as discussed in section 1.2.1.1, what it means to volunteer can be subjective and is highly complex, having different meanings to different people. This could mean there may be some under reporting, or over reporting, depending on the participants own conception of what activities constitute volunteering. This also means that we cannot distinguish motivation, place, or paradigm regarding the volunteering which could have given a deeper exploration of volunteering amongst older adults. However, the variables used here allowed for analysis of overall levels of participation, levels which remained around a third of the population in line with other national surveys (e.g. Time Well Spent; Civil Society Almanac; Community Life Survey: see section 3.1).

Another issue, as discussed in 4.2.3, is that we cannot disentangle formal and informal volunteering or the type/motivation behind the volunteering with the variables chosen in the analysis. Dean (2022) gives a critical discussion of the sidelining of informal volunteering within volunteering research, arguing in line with Einolf et al (2016: cited in Dean, 2022) that it is one of the most common types of helping behaviour, but scarcely studied. Dean (2022) states that while informal volunteering is done more frequently than formal volunteering, it is often sidelined in research, giving the example of the Helping Out (Low et al, 2007) study which did not count it as part of volunteering, despite being a comprehensive and in-depth study of volunteering in England. This is arguable an important issue due to informal volunteers being more likely to be disadvantaged, in comparison to formal volunteering which is more linked to the advantaged (Dean, 2022), meaning there could be potentially different profiles of 'volunteers' depending on the type. This links more deeply to the discussion in section 1.2.1.1 about what is meant by

'volunteering' and brings up arguments about what "counts". However, some argue that the differentiation between formal and informal is not necessarily cut and dry, particularly when it comes to self-reporting of activity. In this instance, we are not able to distinguish what survey participants are considering as volunteering, and whether they perceive their activities as formal or informal, instead providing an exploration of overall volunteering. This approach, while not without limitations, allowed for exploration of the research questions in this thesis, and findings based on this measurement of volunteering were generally in line with existing research.

There are also some limitations surrounding the use of time in the analysis. Accurate SPA could not be derived due to the nature of the data, as the public access data does not include that level of detail on individuals. This is also similar for the retirement and widowhood time relationships. Knowing more detailed information on when exactly the event took place could have allowed for more granular analysis as opposed to within the last 2-years, or longer if a participant had skipped one or more waves.

For chapter 7 analysis, there was also a data availability limitation. At the time of analysing whether experiencing a change in SPA was associated with a shorter time spent volunteering in retirement, there was a limited sample who had experienced change and retired. This was limited to women and only those whose SPA was changed to 61 or 62 from 60. This is unavoidable given the data available, and it is this limitation in the existing data that led to the use of microsimulation in chapter 8.

A final limitation relates to causality. While strong associations, rooted in theory were found in the analyses, causality cannot be claimed. Whilst the research questions would ideally lead to the assessment of causal relationships, in practice the majority of the analysis presented in this thesis focusses on empirical associations. Though findings in some areas (6.1) are in line with other research which used causal approaches, and the analysis being rooted in an established theoretical foundation with corroborating evidence can make a reasonable case for potential causality regarding the findings. The opportunity for the use of causal methods in one of the areas researched in this thesis (retirement) is discussed further below the in the 'Future research', despite their use in this study being deemed inappropriate (see "Note on causality" section 4.5).

9.4 Implications for policy and practice

These findings have implications for both policy and practice, adding to a growing evidence base of predictors of volunteering. Throughout this analysis it was clear that there are inequalities in opportunities for volunteering, with increased resources increasing the likelihood of volunteering. McBride (2007) found that volunteering can be inaccessible to older adults who need to earn income, who provide caregiving, and who have certain disabilities – all circumstances that are more common among older adults of lower socioeconomic status. Therefore, it might be argued that policy makers and organisations should aim to address these inequalities and aim to make volunteering accessible to all. This came up as a central theme for the NCVO 'vision for volunteering' (NCVO, 2022), with a push towards more diversity and inclusion within volunteering opportunities. Having a diverse group of volunteers' benefits organisations, bringing new perspectives, and opening up the benefits of volunteering to a wider range of people (NCVO, 2021). This is also in line with other policies in the devolved Nations of the UK, with the Northern Irish, Welsh, and Scottish governments all having accessibility of volunteering as an aim of their policies (see 1.2.1.2 for discussion).

Organisations could reach out to those under-represented populations and work to enable their participation, whether through wider advertisement for those potentially excluded due to limited networks, or creating flexible volunteer roles for those who may have limiting health issues or caring responsibilities. The NCVO also suggests collecting data and information to understand who volunteers for organisations and why, to seek out any barriers that may exist that are specific to their organisation so they could take action to remove them (NCVO, 2021).

Regarding the health and wellbeing benefits of volunteering, Tang et al (2007) argue that systematic exclusion of subgroups of the population represents a structural disadvantage which could lead to increased health and well-being gaps. Therefore, it is important to facilitate engagement in volunteering for disadvantaged subpopulations who have generally been underrepresented in the volunteering population (Tang et al, 2007). They could tailor recruitment to increase the number of volunteers in under-represented demographics, or potentially offer incentive such as reimbursement for travel which may reduce the indirect burdens the volunteer role

can take on. In their work exploring "Pathways through participation", Brodie et al (2011) note that transportation and money are two of what they consider as important conditions for volunteering. They note that this type of "in-kind" support can be linked to willingness to volunteer, which should be of interest to those seeking to increase volunteering rates, and to retain existing volunteers (ibid).

The Chapter 5 finding that occupation prior to retirement has a significant relationship with post-retirement volunteering indicates that it is an area to be explored by policy makers and organisations. Arguable then, policy makers and organisations should seek to produce further research into the sectors and occupation types that are underrepresented in the volunteer population, with a view to finding underlying reasons. If the same view is taken as this thesis, it could relate back to inequalities in resources which are associated with volunteering. Findings from Chapter 7 that paid work can be considered a barrier to volunteering, and that working beyond state pension age has a negative association with volunteering could be of note to policy makers and organisations. With the push towards a 'big society' approach in England, where volunteers are filling the gap that public spending used to fill, potential impacts on these volunteers arguably should be considered when making changes to age related entitlement. While these results are based on a sample of English older adults, given changes to SPA are UK wide, the implications may also be of importance to the other nations of the UK. This research area is currently underdeveloped in the UK as a whole, and with the recent jump in retirement age for women, and with the set increase in SPA, which is upcoming, it is time to build empirical evidence on its potential impact on the volunteer population.

Chapter 6.1 findings indicate that retirement is a time for increased volunteering, this is of particular relevance with both the pushing of healthy ageing initiatives which seek to keep older adults active, and government policies which seek to keep them working longer. From this, it is argued that policy makers and organisations should seek to encourage those leaving the job market to volunteer, particularly if they are coming from less wealthy or educated background, to combat inequality in participation. As discussed above, this could potentially occur even before retirement, with organisations potentially partnering with businesses to promote volunteering and to give access to a volunteering opportunity individuals might not otherwise come across. This notion of bringing volunteering into the workforce is

already established in some organisations including investment banks such as Morgan Stanley and in civil service roles in the Scottish Government, though it is generally optional. A push for workplaces to include volunteering opportunities, and to advertise these, particularly close to retirement, could engage more individuals in volunteering who might otherwise not have known or accessed the opportunities. Findings from the Time Well Spent survey (McGarvey et al, 2019) indicated that many who volunteer want to use their existing skills to give back when volunteering. Matching those in need of volunteers with workplaces that could provide volunteers with sought after skills (e.g. tutoring or bookkeeping) could be one way of increasing access to volunteering pre-retirement. As above, with health policies promoting healthy and active ageing initiatives, promoting opportunities for contact and social activity could have a positive impact on older adults' adjustment to times of transition, including retirement and widowhood and provide enhanced opportunities for active ageing (Isherwood et al, 2012).

For the final microsimulation chapter, there is an implication that increasing the SPA could impact negatively on the number of people volunteering. Volunteering is an important part of society; it is beneficial both to the individual and to the wider community. The Office of National Statistics reported in 2017 that 1.9 billion hours were volunteered in 2015 with an estimated value of £22.6 billion (ONS, 2019). Volunteers are vital to organisations and often charities, as well as being key contributors to community development (Dawson et al, 2019). It could then be beneficial for policy makers and volunteer organisations to promote volunteering in line with the rising SPA, particularly amongst the underrepresented groups discussed throughout this thesis, and create strategies to mitigate any impact of extended working lives on volunteer provision. As discussed above, allowing more flexibility in the types of roles to adapt to different age-work relationships, and promotion of volunteering opportunities within workplaces could be an avenue to explore.

In 2020, then Prime Minister Boris Johnson commissioned proposals to sustain the "monumental" community response to COVID-19 and to set out how civil society can contribute to their "levelling up" agenda to improve communities. One of these proposals was to increase accessibility. Their response indicates support for volunteerism, believing it to be "critical to a vibrant and resilient civil society" as it

provides opportunities for civic participation, fosters a sense of belonging and builds pride in place (Gov, 2022). The government is targeting barriers to volunteering through the Volunteering Futures Fund, which launched in November 2021 (ibid). The £7m fund will pilot creative solutions to remove barriers to volunteering and improve accessibility in arts, culture, sports, civil society, youth, and heritage sectors. However, this will focus heavily on young people, particularly around skill building for the out of work.

While not directly related to older adults, this does show the Government recognises the importance of volunteering to communities and individuals and are willing to provide funding for the promotion of volunteering and a widening of the volunteer force. From this thesis, there are several key areas where promotion and funding could fit with the governments 'levelling up' agenda with an older population. First, promotion of volunteering within workplaces, particularly close to retirement. Offering incentives to private businesses or providing opportunities within the public sector for staff to volunteer could help increase volunteering provision, provide services to individuals and communities, and offer the opportunity to volunteer to those who may not otherwise access it. Secondly, reducing barriers to volunteering. For example, this could be through targeted promotion to populations who may be less likely to volunteer due to lack of networks or providing a "volunteer bus pass" for access to public transport to partake, or funds to volunteer involving organisations which could be used for travel stipend. Further, promotion of other ways of volunteering, such as online volunteers and phone "buddy" type activities could provide a more accessible way for volunteering which may not be known in the wider population. This type of volunteering has become more popular since the pandemic, with 31% of those who volunteered at least once in a year did at least some of their volunteering online according to the 2023 Time Well Spent survey (Kanemura et al, 2023). It was also found in the Time Well Spent survey that volunteer satisfaction was similar amongst those who did their volunteering only by phone or online and those who did their volunteering offline (both 92% satisfied) (ibid). This type of "micro volunteering" has been lauded as having potential to better incorporate those with limited time and mobility into volunteering participation (Heley et al, 2022), which could increase accessibility.

9.5 Future research

Identification of differences in pre-retirement occupations and volunteering in later life could be a potential avenue for future research. While this analysis focussed on individuals, sector-based analysis could be of use, to provide a more micro level analysis of occupational categories as opposed to higher level occupational classes. Understanding with occupations are volunteer over, or under, the average could provide insight into sectors where promotion could be of more use for those volunteering less, and potential case studies for those who are volunteering at higher rates. A larger data set such as the labour force survey, or a longer running survey such as the British Household Panel survey could be used to follow individuals over a longer period of time – something that was out with the scope of this research.

Chapter 6.1 provided evidence that retirement is a time of increased volunteering for older adults. Though the findings in this case are not causal, recent work has used and instrumental variable approach to derive causality. To date, only Eibich et al (2022) could be found which used this approach on the ELSA, though this was limited to waves 5-8 to allow for cross-country comparisons with other surveys. A future avenue would be to apply this method to the full 9 waves of ELSA, to further validate the findings here in a causal manner. While the approach was considered, it was deemed too restricting in the conclusions that could be drawn due to one of the key limitations of the methodology: in the IV approach is that it does not provide an estimate of the average treatment effect, but rather an estimate of the local average treatment effect (LATE) which refers to the treatment effect for the complier population (Eibich et al, 2022). For a potential analysis in this thesis, which would mean individuals who do not retire when they are below the age threshold for state pension eligibility, but who do retire once they reach the threshold. This would exclude early and late retirees, which considering this thesis is interested in the association between retirement and volunteering more generally, would restrict the sample unnecessarily. Another issue pointed out by Eibich et al (2022) is that for wealthier individuals, the majority of their old-age income will come from occupational and private pensions therefore, eligibility thresholds for the state pension will be less relevant making them more likely to be underrepresented in the complier population. Due to this, the approach in this thesis was deemed more appropriate for purposes of conducting subject-specific analysis which can answer

questions about the wider underlying population, something that a mixed effects model can do, where IV has strict assumptions about the population and who the results can be generalised to (Rabe-Hesketh & Skrondal, 2008).

Another important avenue for furthering the findings of this thesis would be to further build upon the initial microsimulation model created here. While the aim of this research was to create a simple, yet functioning model that could explore potential policy implication, with more time and training in relevant software, the model could increase in complexity – particularly with regards to potential feedback between different modules. The computer power needed for these simulations, and the time (c. 16 hours each), meant that upping the complexity was beyond the scope of this current study, though accessing specialist software could improve this with time and training. A larger data set such as census data could also improve the robustness of the model, and use of alignment techniques could bring findings in line with known trends. The findings from this study could provide a helpful starting point in the creation of a robust dynamic simulation model that could be used for volunteering, and other potential social participation outcomes on older adults – potentially as a postdoctoral research project.

9.6   Final remarks

To summarise, this thesis found that having more resources, and coming from a highly skilled, non-manual occupation increases the likelihood of being involved in volunteering. This is in line with what is expected from prior work from a European and American context, with the suggestion that those in more highly skilled and non-manual jobs are more likely to volunteer (Van Den Bogaard et al, 2014; Choi, 2003; Webb & Abzug, 2008; Wilson and Musick, 1997). It is thought that, as working and volunteering are two interdependent roles, while work could pose demand and limitations that negatively affect volunteering, it can also provide resources that enhance volunteering (Lup & Booth, 2019). From a resource perspective, more highly skilled and less manual occupations provide skills and knowledge that make them more qualified for volunteer work and make them appealing to organisations who are seeking volunteers (Forbes & Zampelli, 2014).

Life-course events of widowhood and retirement are significantly associated with volunteering participation of older adults, with the relationship being different at

different times. In line with a life-course perspective, which suggests these events are not just 'one-offs' but can have lasting and even preceding influences (Gray et al, 2012; Li, 2007; Tang, 2016; Utz et al, 2002). It also found that propensity for work in older age has an impact on volunteering, with those choosing to work beyond state pension age being less likely to volunteer. Results here are in line with other studies in the area which found a negative association between work and volunteering (Caro & Bass, 1997; Cho et al, 2018; Dosman et al, 2006; Eibich et al, 2022; Mike et al, 2014; Mutchler et al, 2003; Tang, 2016; Van Ingen & Wilson, 2017). This can be explained from a role theory perspective, particularly through the "role strain" component which would suggest taking on too many roles can have a negative impact on an individual's wellbeing. This has been previously used to explain the negative association between paid work and volunteering (Mutchler et al, 2003), with many studies finding evidence of a substitutive, rather than complementary, relationship between the two activities (Carr & Kail, 2012; Chambre, 1984; Dosman et al, 2006; Eibich et al, 2022; Mergenthaler et al, 2019; Mike et al, 2014; Tang, 2016). This is particularly the case with those who are working beyond state pension age for financial reasons, further reflecting the inequality in who it is volunteering. This finding further illustrates the "role strain" aspect of role theory, with the argument being that as a role becomes a burden, it may be dropped, or potentially limit other roles an individual may occupy. If an individual has to work beyond SPA due to financial reasons, the burden this may place could limit a person's ability to engage with volunteering, compared with someone who is working for enjoyment who may be less strained in taking on a new role, or continuing volunteering (Cho et al, 2018; McBride et al, 2009). Finally, policy around raising the SPA could potentially have a negative impact on numbers of older adults volunteering, which Governments and policy makers should potentially keep in mind given the importance of volunteers in society, filling in gaps where public spending is missing.

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Appendices

Appendix 1-1: GUEP ethical approval for thesis research

RE: Ethics submission Stacey McNicol

General University Ethics Panel (GUEP) <guep@stir.ac.uk>
Wed 25/09/2019 12:22

To: Stacey McNicol <stacey.mcnicol@stir.ac.uk>; General University Ethics Panel (GUEP) <guep@stir.ac.uk>
Cc: Ethics <ethics@stir.ac.uk>; Alasdair Rutherford <alasdair.rutherford@stir.ac.uk>

Dear Stacey,

As you research project is a desk based study I am happy to approve this project on behalf of the University.

Good luck with your research, Rachel

Rachel Beaton
Research Integrity and Governance Manager
Tel : 01786 466196
Email : rachel.beaton@stir.ac.uk
Twitter : @stir_research

Research & Innovation Services
University of Stirling
stir.ac.uk/research

Please note I do not work Friday afternoon

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Appendix 5-1: model building for model 5.1

Variable	mod1	mod2	mod3	mod4	mod5	mod6	mod7	mod8	full
Manual									
Standing	-0.520***	-0.392**	-0.391**	-0.440**	-0.442**	-0.408**	-0.392**	-0.283*	-0.201
Manual	-1.460***	-1.108***	-1.139***	-1.035***	-1.021***	-0.943***	-0.799***	-0.589***	-0.463**
Skill									
2		0.602*	0.623**	0.570*	0.589*	0.525*	0.447	0.422	0.342
3		1.183***	1.235***	1.368***	1.375***	1.279***	1.090***	0.830***	0.661**
4		1.969***	2.047***	2.192***	2.192***	2.015***	1.713***	1.049***	0.812**
Age			0.680***	0.684***	0.680***	0.640***	0.660***	0.637***	0.656***
age2			-0.005***	-0.005***	-0.005***	-0.004***	-0.005***	-0.004***	-0.005***
Fem				0.587***	0.599***	0.575***	0.365**	0.369**	0.360**
Marstat									
married/civil partnership					0.358	0.269	0.127	0.196	0.066
separated/divorced					-0.02	-0.027	-0.025	0.048	0.074
widowed					0.344	0.29	0.055	0.163	0.102
health									
fair/good						0.803***	0.693**	0.694**	0.665**
Excellent						0.946***	0.844***	0.840***	0.785**
casp19						0.031***	0.030***	0.029***	0.024***
Caring							0.330**	0.324**	0.341**
Memrelorg							2.237***	2.184***	2.171***
Degree									1.320***
wealth									0.266***
Random intercept: ID	7.898***	7.594***	7.678***	7.584***	7.537***	7.297***	5.697***	5.448***	5.266***
N	10127	10127	10127	10127	10127	10127	10127	10127	10127
bic	8705.601	8639.375	8621.991	8614.389	8635.341	8615.968	8355.409	8279.714	8255.497
Ll	-4334.36	-4287.41	-4269.49	-4261.08	-4257.72	-4234.2	-4094.7	-4052.24	-4035.52

Appendix 6-1: model comparison of outcomes

Variable	Yearly	Monthly
age	0.321***	0.404***
age2	-0.003***	-0.003***
sex	0.208***	0.222***
widow	0.127	0.048
degree	1.371***	1.154***
wealth	0.271***	0.233***
retired	0.479***	0.803***
health		
fair/good	0.629***	0.647***
excellent	0.723***	0.837***
casp19	0.038***	0.034***
caring	0.456***	0.811***
memrelorg	1.835***	1.578***
Random intercept: id	6.020***	4.928***
N	54606	54606
ll	-23600.00	-18400.00
bic	47286.25	36986.92

Appendix 6-2: analysis comparing constrained and unconstrained coefficients (model 6.2).

	constrained	unconstrained
age	0.093***	0.486***
age2	-0.001***	-0.004***
fem	0.240**	0.264***
widow	0.133	0.183*
degree	1.674***	1.702***
wealth	0.281***	0.290***
nwaveret	0.093***	0.203***
nwaveret2	-0.001***	-0.015***
health	0.680***	0.690***
fair/good	0.795***	0.800***
excellent		
casp19	0.051***	0.049***
caring	0.324***	0.334***
memrelorg	2.090***	2.111***
Random intercept: ID	6.988***	7.033***
N	29118	29118
ll	-13200.00	-13100.00
bic	26451.1	26327.74
Likelihood-ratio test	LR chi2(2)= 143.92	
(Assumption: modcon nested in uncon)	Prob > chi2=0.000	

Appendix 6-3: model building for model 6.1

Variable	mods1	mods2	mods3	mods4	mods5	mods6	full
retired	0.437***	0.562***	0.564***	0.514***	0.479***	0.474***	0.536***
age		0.389***	0.388***	0.318***	0.269***	0.271***	0.276***
age2		-0.003***	-0.003***	-0.003***	-0.002***	-0.002***	-0.002***
fem			0.317***	0.468***	0.445***	0.205***	0.220**
widow			-0.031	0.13	0.113	0.114	-0.106
degree				1.549***	1.516***	1.341***	1.344***
wealth				0.382***	0.315***	0.288***	0.289***
health							
fair/good					0.675***	0.654***	0.655***
excellent					0.758***	0.742***	0.745***
casp19					0.037***	0.035***	0.035***
caring						0.507***	
memrelorg						1.910***	1.912***
does care							0.706***
femret							-0.034
retcar							-0.378***
widret							0.273
Random intercept: id	9.743***	10.050***	10.012***	8.138***	7.950***	6.019***	6.036***
N	54606	54606	54606	54606	54606	54606	54606
ll	-23600.00	-23400.00	-23400.00	-23000.00	-22800.00	-22200.00	-22200.00
bic	47191.23	46871.36	46874.52	46026.98	45730.9	44644.21	44654.71

Appendix 6-4: model building for model 6.2

Variable	mods1	mods2	mods3	mods4	mods5	mods6	mods7
nwaveret	0.182***	0.262***	0.264***	0.264***	0.193***	0.191***	0.202***
nwaveret2	-0.022***	-0.017***	-0.017***	-0.017***	-0.014***	-0.014***	-0.015***
age		0.462***	0.465***	0.466***	0.511***	0.445***	0.434***
age2		-0.004***	-0.004***	-0.004***	-0.004***	-0.003***	-0.003***
fem			0.304***	0.301***	0.515***	0.496***	0.242***
widow				0.017	0.231*	0.200*	0.162
degree					1.844***	1.797***	1.542***
wealth					0.429***	0.341***	0.296***
health							
fair/good						0.741***	0.688***
excellent						0.857***	0.821***
casp19						0.049***	0.044***
caring							0.360***
memrelorg							2.129***
Random intercept: id	9.005***	9.254***	9.211***	9.215***	7.460***	7.256***	5.395***
N	29118	29118	29118	29118	29118	29118	29118
ll	-12400.00	-12300.00	-12300.00	-12300.00	-12000.00	-11800.00	-11400.00
bic	24937.06	24719.95	24717.86	24728.11	24033.68	23791.49	22997.52

Appendix 6-5: model building for model 6.3

Variable	mods1	mods2	mods3	mods4	mods5	mods6	full
retired	0.748***	0.750***	0.749***	0.750***	0.742***	0.743***	0.905***
age	0.415***	0.412***	0.416***	0.417***	0.407***	0.417***	0.422***
age2	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
fem		0.414***	0.406***	0.431***	0.426***	0.304***	0.449***
widow			0.07	0.06	0.06	0.05	-0.07
degree				0.279***	0.279***	0.256**	0.257**
wealth				-0.055*	-0.068**	-0.077**	-0.079**
health							
fair/good					-0.08	-0.09	-0.09
excellent					-0.10	-0.09	-0.09
casp19					0.011**	0.010**	0.010**
caring						0.168**	0.188*
memrelorg						0.891***	0.892***
femret							-0.283**
retcar							-0.057
widret							0.175
cut1	10.902***	11.038***	11.132***	11.057***	11.326***	11.688***	11.880***
cut2	12.551***	12.687***	12.781***	12.705***	12.974***	13.333***	13.526***
cut3	13.563***	13.699***	13.793***	13.717***	13.987***	14.343***	14.537***
cut4	14.703***	14.838***	14.932***	14.857***	15.126***	15.480***	15.674***
Random intercept: id	4.775***	4.730***	4.733***	4.709***	4.702***	4.383***	4.775***
N	17720	17720	17720	17720	17720	17720	17720
ll	-17500.00	-17500.00	-17500.00	-17500.00	-17500.00	-17400.00	-17400.00
bic	35167.07	35146.05	35155.39	35161.09	35182	35030.1	35051.78

Appendix 6-6: model comparison of outcomes (chap 6.2)

variable	yearly	Monthly
age	0.251***	0.329***
age2	-0.002***	-0.003***
fem	0.182**	0.157*
widowed	-1.930***	-1.547**
jobstat		
employed	-0.572***	-1.126***
other	-0.214**	-0.154*
memrelorg	1.908***	1.619***
does care	0.449***	0.784***
health		
fair/good	0.689***	0.753***
excellent	0.782***	0.960***
casp19	0.033***	0.031***
wealth	0.291***	0.253***
degree	1.358***	1.156***
cwid	0.482**	0.153
rwid	0.371*	0.267
cawid	0.027***	0.022**
Random intercept: ID	6.037***	4.814***
Statistics		
N	54615	54615
ll	-22200	-16900
bic	44652	33920

Appendix 6-7: model building for model 6.4

Variable	mod1	mod2	mod3	mod4	mod5	mod6	mod7	full
widow	-0.249***	0.038	-0.008	-0.027	0.137	0.124	0.121	-1.930***
age		0.492***	0.491***	0.380***	0.305***	0.245***	0.253***	0.251***
age2		-0.004***	-0.004***	-0.003***	-0.002***	-0.002***	-0.002***	-0.002***
fem			0.308***	0.302***	0.445***	0.407***	0.176**	0.182**
jobstat								
employed				-0.627***	-0.615***	-0.638***	-0.598***	-0.572***
other				-0.455***	-0.343***	-0.201**	-0.254***	-0.214**
wealth					0.385***	0.317***	0.289***	0.291***
degree					1.562***	1.534***	1.356***	1.358***
health								
fair/good						0.710***	0.683***	0.689***
excellent						0.799***	0.777***	0.782***
casp19						0.039***	0.036***	0.033***
memrelorg							0.493***	0.449***
does care							1.904***	1.908***
cwid								0.482**
rwid								0.371*
cawid								0.027***
intercept	-2.079***	9.990***	9.952***	10.043***	8.151***	7.937***	6.027***	6.037***
Random intercept: ID	9.710***	10.142***	10.099***	10.194***	8.249***	8.032***	6.078***	6.089***
Statistics								
N	54615	54615	54615	54615	54615	54615	54615	54615
ll	-23600	-23500	-23500	-23400	-23000	-22800	-22200	-22200
BIC	47317	47020	47013	46897	46040	45723	44650	44652

Appendix 6-8: comparison between the never widowed, sometimes widowed, and always widowed in the sample

Proportion of volunteers among the never widowed, those who became widowed, and the always widowed

54,615 obs, 11,028 participants: waves 1-9 ELSA
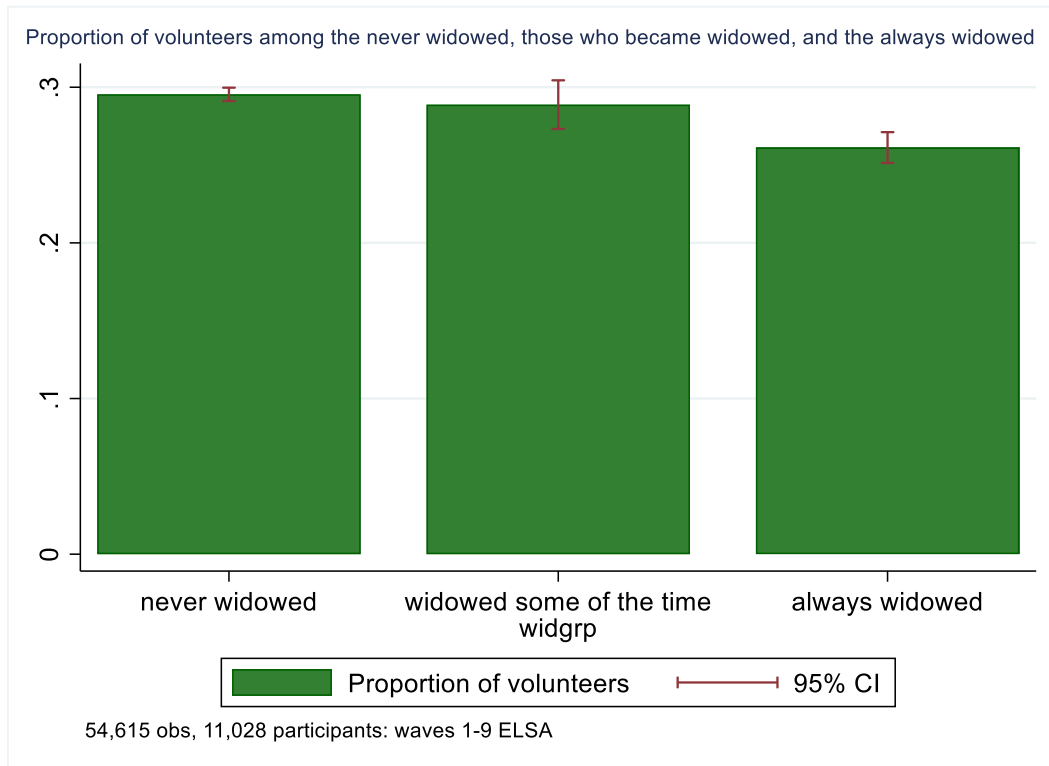
Appendix 7-1: model comparison of potential outcomes

Variables		volunteers	vols
age		.239***	.326***
age2		-.002***	-.002***
fem		0.076	-0.01
marstat			
ref married	single	.217*	.424***
	separated	-0.034	0.001
	widowed	.159*	0.101
spachange		-0.018	0.058
memrelorg		1.930***	1.657***
parttime		.396***	.566***
caring		.520***	.841***
health			
ref poor	fair/good	.697***	.748***
	excellent	.791***	.957***
casp19		.038***	.035***
wealth		.305***	.280***
degree		1.381***	1.038***
femdeg		0.138	.294*
waspa			
ref above SPA working	above SPA retired	.771***	1.182***
	above SPA other	.524***	.897***
	below SPA working	-0.035	-0.175
	below SPA retired	.507***	.908***
	below SPA other	.342*	.953***
_cons		-14.017***	-18.890***
var(_cons[idauniq])		6.309***	4.908***
Statistics			
N		59113	59113
ll		-24197	-18072
bic		48647	36398

Appendix 7-2: model building for model 7.1

variable	mod1	mod2	mod3	mod4	mod5	mod6	mod7	mod8	mod9	full
Job status by SPA										
(ref above SPA working)										
Above SPA retired	0.460***	0.974***	1.177***	1.155***	1.143***	1.152***	1.194***	1.236***	1.179***	1.182***
Above SPA other	0.224*	0.743***	0.871***	0.827***	0.803***	0.832***	0.905***	1.023***	0.890***	0.897***
Below SPA working	-0.694***	-0.417***	-0.240*	-0.220*	-0.222*	-0.199*	-0.194	-0.16	-0.181	-0.175
Below SPA retired	0.466***	0.976***	1.011***	1.019***	1.007***	0.922***	0.936***	0.984***	0.903***	0.908***
Below SPA other	-0.129	0.395**	0.548***	0.550***	0.547***	0.703***	0.764***	1.082***	0.947***	0.953***
Change in SPA indicator	0.045	0.046	-0.013	-0.057	-0.071	-0.004	-0.035	-0.024	0.069	0.058
Part-time		0.708***	0.683***	0.659***	0.653***	0.601***	0.621***	0.622***	0.563***	0.566***
Age			0.441***	0.447***	0.442***	0.394***	0.367***	0.325***	0.327***	0.327***
Age-squared			-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***
Fem				0.179**	0.218***	0.228***	0.342***	0.298***	0.049	-0.01
Marital Status (ref Single)										
Married/civil partnership					-0.176	-0.461***	-0.367**	-0.402**	-0.436***	-0.424***
Separated/divorced					-0.551***	-0.592***	-0.530***	-0.493***	-0.431**	-0.422**
Widowed					-0.350*	-0.428**	-0.322*	-0.362**	-0.337*	-0.322*
Wealth						0.456***	0.379***	0.307***	0.279***	0.280***
Degree							1.367***	1.337***	1.171***	1.038***
Health (ref Poor)										
Fair/good								0.813***	0.746***	0.748***
Excellent								1.018***	0.955***	0.957***
Casp19								0.035***	0.035***	0.035***
Caring									0.840***	0.841***
Member of religious organisation									1.655***	1.657***
Female*Degree										0.294*
Random intercept: ID	7.587***	7.588***	7.722***	7.715***	7.647***	6.708***	6.320***	6.150***	4.910***	4.908***
N	59113	59113	59113	59113	59113	59113	59113	59113	59113	59113
ll	-19400	-19400	-19200	-19200	-19200	-18900	-18800	-18600	-18100.	-18100
bic	38890	38813	38550	38554	38553	38061	37750	37452	36391	36397

sig: * (<.05) **(<.01) ***(<.001)

Analysis is weighted to account for non-response bias and to make sample representative of English adults aged 50+

Appendix 7-3: model building for model 7.2

Variable	mod1	mod2	mod3	mod4	mod5	mod6	mod7	mod8
Reason for working beyond SPA								
(ref Financial reasons)								
Enjoyment	0.950***	0.907***	0.900***	0.867***	0.864***	0.880***	0.681***	0.489**
Other	0.195	0.147	0.176	0.149	0.15	0.165	0.036	-0.018
Age		0.42	0.655	0.666	0.688*	0.693*	0.599	0.596
Age squared		-0.003	-0.004	-0.004	-0.005	-0.005	-0.004	-0.004
Fem			0.558**	0.617**	0.582**	0.403*	0.37	0.429*
Marital status								
(ref Married/Civil Partnership)								
Single				0.623	0.619	0.805*	0.958*	0.910*
Separated/Divorced				-0.651**	-0.647**	-0.43	-0.372	-0.188
Widowed				-0.124	-0.117	-0.201	-0.151	-0.109
Change in SPA indicator					0.185	0.25	0.217	0.202
Member of a religious organisation						1.763***	1.759***	1.579***
Carer						1.174***	1.181***	1.156***
Health (ref Poor)								
Fair/good							-0.273	-0.36
Excellent							0.182	0.025
Casp19							0.051***	0.046***
Wealth								0.242***
Degree								0.991***
Part time								0.629***
Random intercept: ID	3.758***	3.905***	3.834***	3.793***	3.772***	2.932***	2.716***	2.473***
N	3338.00	3338.00	3338.00	3338.00	3338.00	3338.00	3338.00	3338.00
ll	-1124	-1120	-1116	-1110	-1110	-1045	-1026	-993
bic	2280.	2289	2289	2302	2310	2196	2181	2140

Data from waves 4-9 ELSA

sig: * (<.05) **(<.01) ***(<.001)

Analysis is weighted to account for non-response bias and to make sample representative of English adults aged 50+

Appendix 7-4: model building for model 7.3

Variable	mod1	mod2	mod3	mod4	mod5	mod6	mod7	mod8
Change in SPA indicator	-0.089	-0.09	-0.074	-0.058	-0.072	-0.04	0.024	0.000
Retired after SPA change		-0.003	-0.036	-0.009	-0.026	-0.044	-0.049	-0.041
Age			-0.196	-0.205	-0.22	-0.226*	-0.216	-0.233*
Age squared			0.001	0.002*	0.002*	0.002*	0.002*	0.002*
Fem				-0.044	-0.026	-0.048	-0.036	0.036
Marital Status (ref married)								
Single					0.056	0.004	0.004	-0.033
Separated/divorced					0.187	0.122	0.101	0.069
Widowed					-0.129	-0.192	-0.156	-0.168
Wealth						-0.062	-0.024	-0.027
Degree						-0.255**	-0.226*	-0.240**
Health (ref Poor)								
Fair/good							-0.298	-0.228
Excellent							-0.625**	-0.541**
Casp19							-0.005	-0.006
Member of a religious organisation								-0.260**
Caring								-0.375**

Data from waves 1-9 ELSA - standard errors clustered on individual to account for nested responses
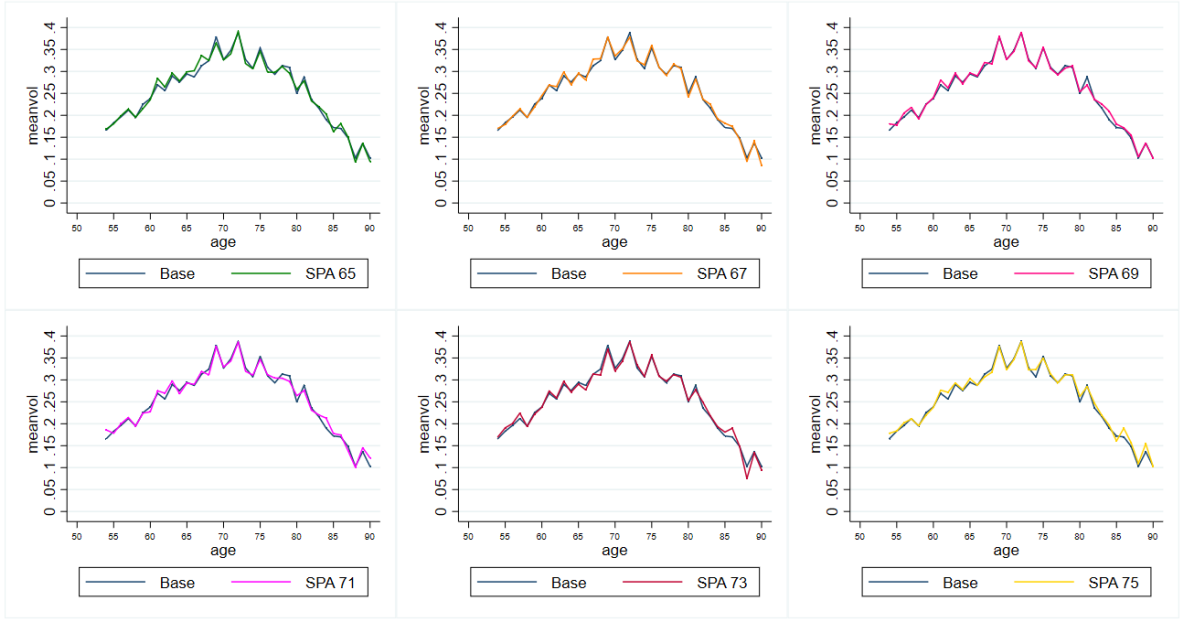
sig: * (<.05) **(<.01) ***(<.001)

Appendix 8-1: proportion of volunteering by age of ELSA wave 9 sample members

Proportion of volunteering by age of ELSA wave 9 sample members
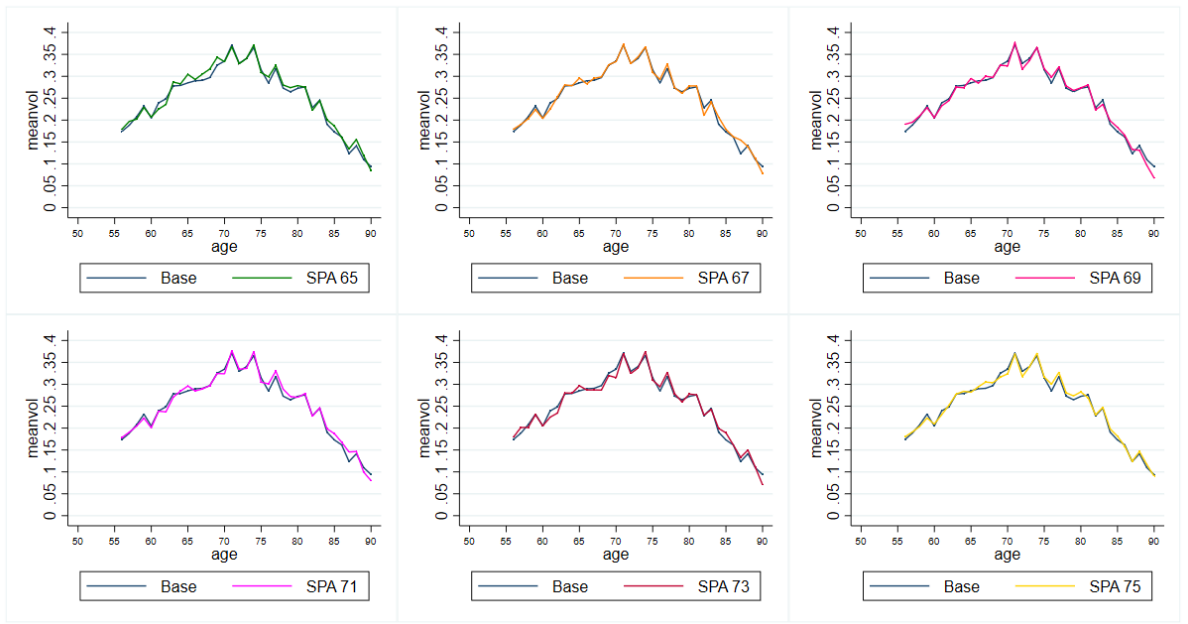
5,431 sample members: wave 9 ELSA
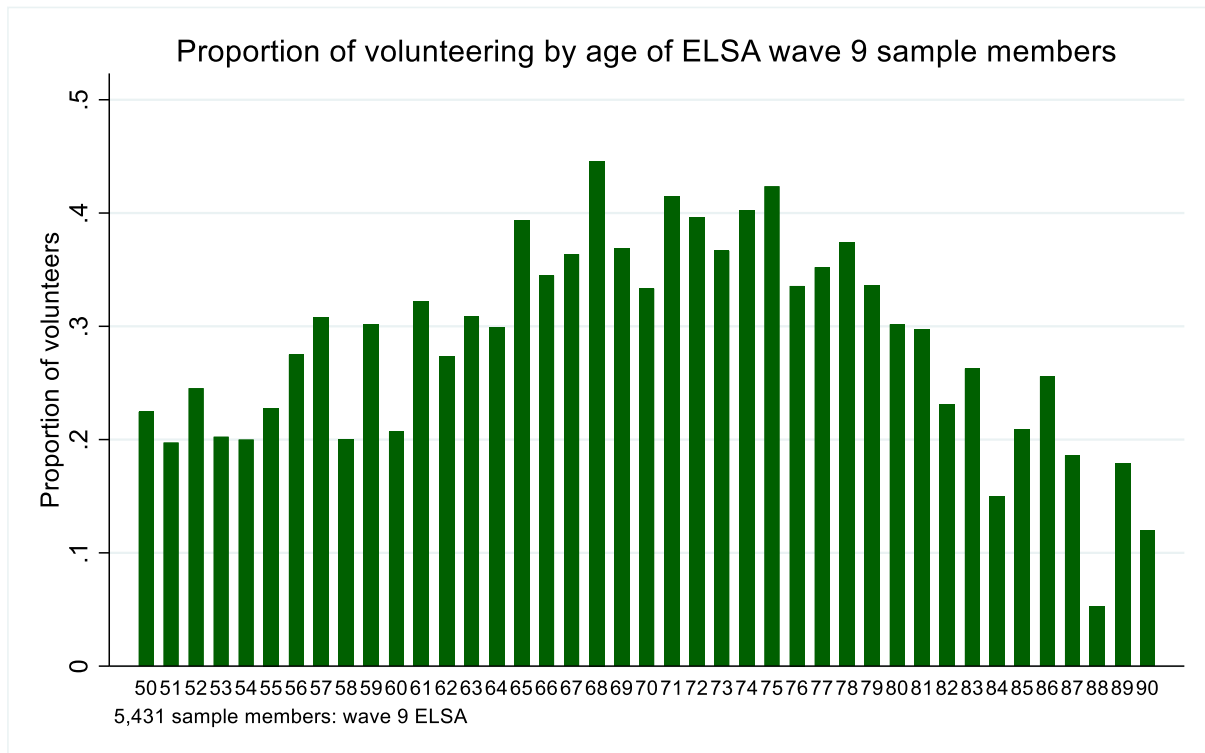
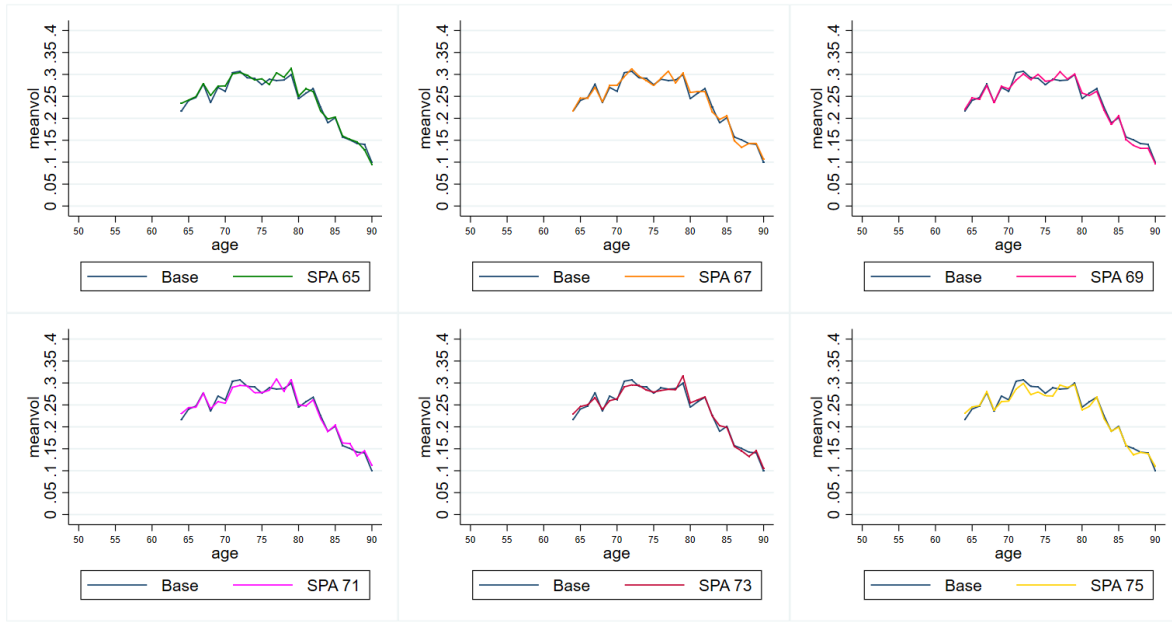# Appendix 8-2: stills of moving Figure 8-4

2022

2024

2026

2028

2030

2032

2034

2036