



Discretion and Obligation Across Volunteering and Caring: Shining Light on Non-Voluntary Carers in the Retiring Encore Segment

John Rodwell¹ · Dianne Johnson² · Lara Thynne¹

Accepted: 8 July 2024
© The Author(s) 2024

Abstract

This paper seeks to understand pathways into volunteering in the encore life stage and contribute to policy interventions. There is a need for more clarity regarding the delineation of formal volunteering from informal volunteering and from adult kin-caring. A sample of 4,464 respondents from the Household, Income and Labour Dynamics in Australia survey was analysed using a set of logistic regressions, to explore three frames of volunteering—substitution (of former work time), complementary focus (gradual adjustment to less paid work or other change in personal circumstance), and obligation (compulsion to provide care or unpaid labour). Results indicate that formal volunteering was largely discretionary and a result of substitution, that informal volunteering, particularly caring for children, was complementary and partly obligatory, and the area of greatest potential policy intervention, adult kin caring was found to be largely obligatory.

Keywords Volunteering · Caring · Obligations · Discretion · Encore · Age · Career · Retirement · Disability · Gender

1 Introduction

Many countries with aging populations have an increasing focus on maximising production, including through managing an aging workforce (Clark & Ghent, 2010), as well as volunteering, to meet the challenge of maintaining productive capacity and social cohesion (Davies et al., 2024). In addition, these countries have a pressing social problem of providing adequate quality care for older citizens, children, the ill and those living with disability (Dukhovnov et al., 2022; Duffy et al., 2013; Di & Rosenbaum, 1994), including

✉ John Rodwell
jrodwell@swin.edu.au

¹ Swinburne University of Technology, John St, Hawthorn, VIC 3122, Australia

² Griffith University, Nathan, Australia

by encouraging diverse savings strategies for retirement incomes and extending paid careers (Fernandez, 2013).

Volunteering generates substantial social and economic value to participating individuals and organizations (Mutchler et al., 2003; Sellon, 2014; Withall et al., 2018), with greater numbers of older adults expected to be seeking meaningful civic engagement through volunteering (Morrow-Howell, 2010; Seaman, 2012; Lou, 2022) to the point that the very concept of retirement has changed from a period of relaxation and pleasure to increasingly being one of productive activity (Chambré & Netting, 2018; Cho et al., 2018). A sizable subset of the population is having bonus years of healthy life expectancy often characterised as a third age (Laslett, 1987), fourth age (Laslett, 1994), or encore period (Moen & Flood, 2013) where older individuals can have ongoing participation in meaningful activities such as volunteering, in addition to extended paid working life.

Age appears to be a key determinant of participation in volunteering (Moen & Flood, 2013). Yet, this encore period or segment is not necessarily defined by age alone but could also be characterized by employed activities, retirement status and health (Komp et al., 2012; Papa et al., 2019; Abbas et al., 2021). The impact of these characteristics on forms of volunteering and unpaid labour is unclear. Reducing paid work may free up time, but may disconnect the individual from employment-based social relations or income, and may be due to health limitations (Mutchler et al., 2003; Papa et al., 2019; Tang, 2016; d'Errico et al., 2022). Further, the relationships between the characteristics of the individual and volunteering may vary by the form of volunteering being examined (Fekete et al., 2019). Similarly, along with greater longevity, the last few decades have seen vastly changing work patterns, including more variety in transition pathways to retirement (Beehr & Bennett, 2015; Mazumdar et al., 2021), which may impact the types of volunteering undertaken in retirement (Grünwald et al., 2021; Kim, 2020). With a focus on increasing volunteering, the extant literature insufficiently explores the considerations that enable volunteering, particularly for those who would prefer to extend their paid working life, suggesting that not all volunteering may be discretionary (van Solinge et al., 2021; Moen et al., 2011; Sánchez-García et al., 2022). Therefore, this paper investigates the relationships between the individual's characteristics, whether they are bridging to retirement and their volunteering or caring choices, to inform our understanding of the transitions between paid work and forms of volunteering or helping, to inform policy interventions for those who may prefer to extend their paid working life.

2 Literature Review

2.1 Sociodemographic Characteristics of Volunteers

Volunteering is affected by the capital or resources that individuals have available, including human, social and cultural resources (Wilson & Musick, 1997). Aligning with this 'integrated theory of volunteering', a range of sociodemographic characteristics have been found to be positively associated with volunteering including being married, socioeconomic status, educational attainment, previous volunteer experience, church attendance, social network size (Wilson & Musick, 1997; Niebuur et al., 2018), as well as age, functional

limitations such as through illness or disability, and transitions into parenthood were found to be inversely associated to volunteering (Niebuur et al., 2018).

2.2 Delineating Forms of Volunteering, Unpaid Caring, and Helping

Contributions through volunteering, unpaid caring and helping have been conceptualised in various forms, particularly whether as formal or informal volunteering, as well as whether unpaid work, unpaid care-giving, or unpaid helping through to productive or leisure volunteering (Adams et al., 2011; Di Gessa & Grundy, 2017). These contributions can be made through organisations, community groups or via family and social ties, with debates about the differences between these forms of unpaid assistance (Serrat et al., 2020; Teasdale & Silver, 2009).

The distinguishing characteristics of formal volunteering tend to emphasise that formal volunteering is the individual's contribution of unpaid time and services through organisations or established entities to benefit distant collective others (Lee & Brudney, 2012; Wilson & Musick, 1997). Informal volunteering is also unpaid, but usually not provided through an organisation and the services are generally provided to non-household individuals but may often include kin (Choi et al., 2007; Hank & Stuck, 2008; Wilson & Musick, 1997).

The boundaries between informal volunteering and informal caring are less clear. Informal volunteering has some typical characteristics similar to informal caring in that they are both unpaid and not provided through an organisation. Informal caring generally includes care provided to those in the same household as the provider and/or others outside of the household (Pettigrew et al., 2019). Examples of informal caring may include caring for grandchildren, children (including adult children with disability or other support needs), extended family/kin, and non-family members.

Even when there are care facilities provided outside of the home, individuals still care for kin outside of the physical household. In the context of an aging population in Western, developed countries where there is now a wide array of respite, hospice and elder care facilities, this trend suggests a move from an emphasis on household status to kinship obligations (Eagar et al., 2020; Lu et al., 2021).

Another key form of informal unpaid caring is adult kin caring, especially spousal caring. Most spousal caregivers feel that they do their caregiving responsibilities because of affection and obligation, in contrast to less obligatory (i.e., more discretionary) forms of caregiving (Choi et al., 2007; Fekete et al., 2019), such as occasional babysitting. That is, some informal caring may be perceived as being more obligatory as distinct from more discretionary volunteering (Morrow-Howell, 2010; Lor-Serrano & Esteban-Salvador, 2021). The distinction between voluntary and obligatory caring is an important area that requires further research. For example, if there is no availability of safe, appropriate housing for adult relatives with a disability or a spouse with dementia, a parent, grandparent or spouse may undertake a lifetime of unpaid care-giving due to perceived obligation, as distinct from a voluntary choice (Flennert et al., 2019; Spijker & Schneider, 2021). Care theorists contend that both paid and unpaid care are not widely rewarded by society, often due to cultural associations of nurturance work with women whose nurturing labour has been systemically undervalued (Edgell & Tranby, 2010; Duffy et al., 2013; Hansen et al., 2018). Unpaid caring for adult kin may have some overlaps with informal volunteering in terms of the services

provided, but more explicitly emphasises kinship obligations. In contrast, informal volunteering in this study will focus on the relatively discretionary choice of caring for young who may or may not be a relative, as distinct from more obligatory adult kin caring.

Overall, there is a lack of clarity regarding the delineation of formal volunteering from informal volunteering and from adult kin-caring. Investigating the similarities and differences among the predictors of caring for kin by those people entering the encore stage of their life, relative to formal and informal volunteering may help delineate those forms of volunteering and helping. In turn, a better understanding of the characteristics that distinguish these forms of social service provision can inform better support for volunteers and carers, as well as shine a light on underfunded care needs in communities. Consequently, this study seeks to investigate the key characteristics of encore individuals, such as age, retirement status and health, along with resource capability, for each of formal volunteering, informal volunteering, and adult kin caring. The theoretical lenses of Activity/Time Substitution Theory and Complementary Theory appear to be central in explaining why certain drivers may determine the type of volunteering; however, Care Theory also explains drivers for adult kin caring.

3 Theoretical Frameworks

3.1 Activity/Time Substitution Theory, Complementary Theory and Care Theory

Individuals ceasing paid meaningful work may have increased opportunity to fill their time with activities such as formal volunteering. When individuals reduce their time in paid work either through a gradual transition to retirement or complete cessation of paid work, they are likely to experience a considerable increase in free time (Mutchler et al., 2003), leading to an impetus to substitute at least some of their former working time with other activities, often referred to as Activity Substitution Theory (Carr et al., 2018; He & McHenry, 2016; Rabaté & Rochut, 2020).

Activity substitution theory proposes that volunteering would substitute for paid work activities such that volunteering is more likely as older individuals cease work (Chambre, 1984). That is, there would be an expected positive association between retirement and volunteer work (Mutchler et al., 2003). The utility of activity substitution theory is less clear for kin caring, although there is some support in that women doing caregiving worked fewer hours (Pavalko & Artis, 1997). Similarly, employed individuals are less likely than the non-employed to help primary kin, such as adult children and parents (Gallagher, 1994), although the context has changed substantially since those studies.

Substitution theory may be more relevant to fully retired individuals, whereas for partly retired individuals, complementary theory may be more relevant as an alternative theory which proposes that working and volunteering are complementary, where there would be a negative association between retiring and volunteering (Mutchler et al., 2003). Complementary theory has similarities with approaches emphasising how the encore group may see some of the informal caring activities undertaken by partly retired or fully retired people as an extension of their role, which suggests that multiple activities performed in parallel may complement each other, thus leading to an overall greater productive engagement, or role extension (Choi et al., 2007; Mutchler et al., 2003).

However, the explanations offered by activity substitution theories still need to be investigated across a variety of likely volunteering and caring forms for the current encore segment, with some research showing the substitution effect has been found for both partly retired and completely retired people for whether they participated in formal volunteering, but not for informal volunteering, when analysing data from the late 1980s (Mutchler et al., 2003; Pavlova & Silbereisen, 2012). Yet, perhaps because of the cultural changes reflected in the third age or encore segment that started emerging since the late 1980s, studies on more recent samples have found that substitution with formal volunteering occurred for the partly retired, but not for the completely retired (Tang, 2016).

Care Theory is conceptualised by a number of scholars as relational in nature, often directed to dependent populations, and undervalued in both paid and unpaid arenas due to the traditionally feminised nature of caring roles (Duffy et al., 2013), with scholars having shown that paid jobs requiring nurturant skills suffer a wage penalty (England et al., 2002). Efforts to increase the visibility of unpaid care work has substantial tradition in feminist studies and development economics (Sen & Fitoussi, 2010; Waring & Steinem, 1988; Beneria, 1999). Paid and unpaid care work are both substitutes for one another as well as potential complementary activities (Duffy et al., 2013; Lockstone-Binney et al., 2021). Understanding the complementary relationships between paid work and caring roles helps inform complementary policy interventions to enhance paid work and unpaid care work (such as paid and unpaid parental leave, paid or unpaid elder care leave). The inconsistent relationships between the time demands of paid work and informal volunteering, particularly when informal volunteering includes kin caring, may reflect the obligatory nature of some activities in informal volunteering (Wilson & Musick, 1997), or may reflect the impact of other factors on people who are completely retired such as poor health or disability, which act as barriers to volunteering even if time is available (Cho et al., 2018). Furthermore, the changes associated with the third age or encore segment include higher rates of partly retiring, and the remaining who completely retire may be more likely to do so due to poor health, possibly suggesting those with a high propensity to volunteer self-select into part-time work (Lancee & Radl, 2014; Moen & Flood, 2013). To assist with investigating the drivers of the various forms of volunteering and kin caring among the encore segment, various constraining factors, and opportunity indicators are considered.

3.2 Constraints and Realised Opportunities

Activity substitution and complementary theories may suggest why retirees have the potential for volunteering or helping, but that potential may not be realised due to the individual's situation in terms of constraints, lack of capability and/or opportunity. Conversely, the individual may have the potential to continue in paid work, but have opportunity constraints due to kin caring obligations. In short, the potential links between part-retirement, complete retirement, volunteering and caring may vary for older adults depending on their socioeconomic situation and other circumstances (Cho et al., 2018). For example, the finding that partly retired individuals were more likely to volunteer (substituting for their released time), may also be because the partly retired still maintain social connections at work that more readily link them to volunteering (Tang, 2016).

The impact of retirement on forms of volunteering is therefore, strongly linked to context for individuals. The need for more critical analysis of context in the research conversa-

tion on non-profit and volunteer contributions has grown in the context of rapid globalisation in the 1990s through to more recent geopolitical unrest, recognising the resurgence of social movements refocusing attention on broader class and social conflicts in non-profit and volunteer research (Coule et al., 2022). Some of the life course inequality indicators that enable or constrain public engagement for older people are education, age, gender, and health (Moen & Flood, 2013; Mesch et al., 2022; Erlinghagen & Hank, 2006), as well as related wealth and income effects (Niebuur et al., 2022; Atalay & Barrett, 2022). Helping is strongly affected by enabling factors such as age and health, where good health is a resource and bad health is a constraint (Rabaté & Rochut, 2020; Wilson & Musick, 1997). Similarly, the effects of age may reflect age-graded institutionalized guidelines, such as pension eligibility ages, that open or close opportunities as adults move through the encore years (Moen & Flood, 2013).

Other key drivers beyond age include sex, social capital and human capital. Rates of formal volunteering, informal volunteering, and helping are strongly predicted by gender, reflecting deeply-embedded sex-role enculturation for nurturing and caring for others, or by human capital and social capital constraints or opportunities (Schieman & Glavin, 2008; Wilson & Musick, 1997; Martin & Lynch, 2009). Determining the impact of social capital and human capital is more complicated with forms of retirement such as part retirement intrinsically containing elements of human capital (education, where more educated people are more likely to keep some part-time work) and social capital (work-related social connections) that may not be able to be truly separated from the effects of part-retirement. Consequently, the following section will first review the impacts of retirement, the impacts of prototypical forms of social capital (marital status) and human capital (education and health) to separate these elements from the effects of retirement.

When individuals withdraw from the workplace, they will have disconnected from employment-oriented social ties, potentially making volunteering less likely (Tang, 2016). Retiring from work and the associated shrinking social networks may reduce the number of requests they receive to volunteer and thereby reduce the likelihood of volunteering, despite the enhanced capacity for volunteering due to increased time availability (Mutchler et al., 2003). Yet the impact of retirement on volunteering, in terms of social capital, could vary by the form of retirement as well as form of volunteering. Unlike those who have completely retired, partly retired individuals can maintain their employment-related social networks, where they may also be more likely to hear of volunteering opportunities and then be more likely to volunteer (Tang, 2016). However, the relationship between the forms of retirement and informal caring for kin may be less apparent because caring for kin places substantial demands on available resources (Cho et al., 2018), including substantial time commitments and strain (Choi et al., 2007).

A prototypical form of social capital relevant to the encore segment is their marital status, social connections and support. Married individuals are more likely to participate in formal and informal volunteering activities than those who are not married, possibly because of more extensive social networks or their spouse's activities (Mutchler et al., 2003). Informal caring for kin may be a function of social capital (Choi et al., 2007) and may be more likely for married people. Social capital as represented by partnership status may also have an effect because spouses' voluntary engagement has been shown to be closely interrelated (Eismann et al., 2019; Rotolo & Wilson, 2006). On the other hand, substitution approaches suggest an increase in volunteering following widowhood, divorce or separation as volun-

teering can be one way to cover social needs (Pavlova & Silbereisen, 2012; No et al., 2021). Making the potential relationships even more complicated is the possibility that social capital may not discriminate between volunteering and caregiving, with caregivers tending to have links to broader networks, including charitable organisations that provide opportunities for voluntary activities (Hank & Stuck, 2008).

The next key set of resources that represent constraints on, or opportunities for, volunteering are to do with human capital. Having enough human capital may give individuals the ability to harmonize their work with family activities, thereby enabling the possibility of volunteering and conversely of continuing in paid work (Cho et al., 2018).

During the encore years, health is a key contingency impacting volunteering (Moen & Flood, 2013). For example, the health of the potential volunteer may reflect the capacity of the individual to volunteer or the ability to seize an opportunity for volunteering (Choi et al., 2007). Similarly, health may be associated with the form of retirement where the completely retired may have worse health than the partly retired (Zhan et al., 2009).

In contrast to poor health being a constraint, education may be the driver of cumulative advantage over an individual's life that allows them to participate in volunteering in their encore years (Moen & Flood, 2013), particularly as they are then more likely to have the resources and skills needed for certain types of volunteer work (Choi et al., 2007). The relationships between human capital, such as education, and the different forms of volunteering and caring are complex. Education has been found to predict formal volunteering, but not informal volunteering (Wilson & Musick, 1997). When informal caring includes caring for kin who are not co-located, education and health do predict informal volunteering (Choi et al., 2007). However, in the context of potential retirees, education may also have associations with the forms of retirement pursued. University-educated adults are less likely to completely retire (Moen & Flood, 2013).

Research investigating the differences between partly retired and fully retired individuals and association with volunteering, has often focussed on formal volunteering (Lancee & Radl, 2014; Wilson, 2000). This paper will be examining the relationships between partly retiring and fully retiring, as well as a variety of constraining issues such as age, sex, marital status, health and education, in terms of how they differentiate between formal volunteering, informal volunteering in the form of relatively discretionary child caring, and less discretionary adult kin caring.

3.3 Current Study

Definitions of volunteering may start with a focus on helping behaviors but differ in terms of whether that help is offered of their own free will, on behalf of an organization or not, or whether small scale or larger scale involving ongoing effort (Davies et al., 2024). To improve on previous research there is a need to examine part-retirement specifically, instead of a focus on complete retirement (when considering retirement status) or combining part-retirement and complete retirement together.

Having delineated forms of volunteering, unpaid caring and helping, into formal volunteering, informal volunteering, and adult kin caring, this study seeks to understand pathways into these different forms of volunteering and caring in the encore life stage. In particular, this study hypothesizes that due to the distinct nature of formal volunteering, informal vol-

unteering, and adult kin caring, that patterns of variables could predict participation in these different forms.

Three possible volunteering theory frames—substitution (of former work time), complementary focus (gradual adjustment to less paid work or other change in personal circumstance), and obligation (compulsion to provide care or unpaid labour)—will be considered in the analyses of the key characteristics of encore individuals engaging in the different forms of volunteering and caring. The characteristics being investigated are age, sex, retirement status, marital status, education, general health, along with resource capability, for each of formal volunteering, informal volunteering, and adult kin caring. Further, this study seeks to contribute to better-targeted policy interventions to either increase engagement in truly discretionary volunteering—both formal and informal—to highlight more obligatory forms of volunteering for priority policy intervention.

4 Method

4.1 Sample

This study's data source was the Household, Income and Labour Dynamics in Australia (HILDA) Survey, a large-scale, representative household survey in Australia. HILDA collects information on demographics, education, labour market dynamics and health status (Wooden & Watson, 2007). The sample for this study included respondents from 2015 (the most recent available wave at the time of these analyses that included detailed retirement status questions, that was not impacted by recession or the COVID-19 pandemic). We applied an initial age range of 54 to 79 years, which is similar to the typical age range of studies of older individuals' volunteering (Komp et al., 2012). This study includes an investigation of activity theory where activities such as work may be replaced by volunteering or kin caring. Consequently, 56 cases indicating that they had never been in paid work were excluded from the sample, in a similar manner to Tang (2016). The starting sample for the study was 4,464 respondents.

4.2 Measures

4.2.1 Age

The respondent was asked to indicate their 'Age last birthday at the 30th June 2015'.

4.2.2 Sex

The respondents were asked their sex, with responses coded 1 male, 2 female.

4.2.3 Retirement Status

The survey had a module asking about retirement and plans for retirement from paid employment. A question asked: Do you consider yourself to be completely retired from the paid workforce, partly retired or not retired at all? The answers were: Completely retired,

Partly retired, Not retired at all and Not relevant – have never been in paid work. Due to the sample selection process above, where Not relevant – have never been in paid work had been excluded from the initial sample, the respondents were coded as to whether they were Completely retired (1), Partly retired (2), or Not retired at all (3).

4.2.4 Marital Status

Respondents were asked: ‘Looking at [the options below], which of these best describes your current marital status? And by “married” we mean in a registered marriage.’ The options were: 1 Married (in a registered marriage), 2 Separated, but not divorced, 3 Divorced, 4 Widowed, 5 Never married but living with someone in a relationship, and 6 Never married and not living with someone in a relationship. The responses for 6 were combined into 5 (into Never Married/Single), leaving five categories.

4.2.5 Education - Highest Level of Education Achieved

To classify the highest level of education achieved, respondents’ answers across two questions were coded. The first question asked: what was the highest year of school you completed/are currently attending? The second question allowed multiple responses and asked: since leaving school what qualifications have you completed? The respondent was explicitly asked to ‘not include hobby or recreation courses.’ Across the responses the highest level of education was coded and then grouped such that: Year 12 of school or less, or Certificate 3 or 4 (representing a maximum of ‘Year 12 or similar’ = 0), Advanced Diploma or Diploma (1), Bachelor’s degree or Graduate Diploma (2), Postgraduate degree - being a Masters or doctorate (3).

4.2.6 General Health

The respondents’ general health was measured by their responses to the question: In general, would you say your health is: with response options of Excellent, Very good, Good, Fair, and Poor.

4.2.7 Forms of Volunteering

The measures of the three forms of volunteering were obtained by asking: [H]ow much time would you spend on each of the following activities in a typical week? Those participants indicating that they had spent zero time doing volunteer work were classed as Not Volunteering, and those indicating any time volunteering were classed as performing that form of Volunteering. The responses to ‘Volunteer or charity work (for example, canteen work at the local school, unpaid work for a community club or organisation)’ were the basis of the Formal Volunteering variable. The responses to ‘Looking after other people’s children (aged under 12 years) on a regular, unpaid basis’ were the basis of Informal Volunteering–Children. The responses to ‘Caring for a disabled spouse or disabled adult relative, or caring for elderly parents or parents-in-law’ were the basis for Adult Kin Caring.

5 Results

Logistic regression analyses were performed on the forms of volunteering with sex, marital status, education, age and retirement status as predictors. The analysis was performed using SPSS 26. The analyses were conducted per the general process of Tabachnick et al. (2007), while applying the best practice techniques from Osborne (2015).

The 69 cases with missing values on the predictors were found to be missing completely at random (MCAR) using Little's MCAR test ($p = .232$). The descriptive statistics for the categorical variables of the remaining cases included in at least one of the regressions ($n = 4,464$) are detailed in Table 1 and the continuous variable of age had a mean of 64.51 with a standard deviation of 7.012.

For the Formal Volunteering analysis there were no cases that were inappropriately influential or had inappropriate leverage, using checks such as those based on studentized residuals, leverage scores, DFBetas or Cook's Influence scores. For the Informal Volunteering-Children analysis there were 14 cases that appeared to have inappropriate levels of leverage and were excluded from the analyses. For the Adult Kin Caring analysis there were 38 cases that appeared to have inappropriate levels of leverage and were excluded from the analyses. The final samples used in each of the analyses were for Formal Volunteering ($n = 4,356$), for Informal Volunteering-Children ($n = 4,303$), and for Adult Kin Caring ($n = 4,267$).

Per best practice in trying to reduce unnecessary multi-collinearity for later higher-order derived variables, the continuous predictor, age, was transformed into z-scores for each of the analyses respectively. The odds ratio for age as a z-score is the change in odds for a one standard deviation increase in age, after controlling for the other variables examined (Osborne, 2015). The potential presence of curvilinearity for age was tested using Box-Tidwell transforms following the best practice logistic regression processes of Osborne (2015) for each of the regressions respectively. The checks suggested that an age-squared

Table 1 Descriptive statistics for the respondents in the regressions ($n = 4,464$)

Categorical Variables	Count (Percentage)
Male	2,115 (47.4%)
Female	2,349 (52.6%)
Completely retired	2,357 (52.8%)
Partly retired	426 (9.5%)
Not retired at all	1,681 (37.7%)
Education - LTE Year 12 & Cert 3/4	2,872 (64.3%)
-Diploma/Advanced Diploma	507 (11.4%)
-Bachelor's degree	840 (18.8%)
-Postgraduate degree (Masters or Doctorate)	245 (5.5%)
Marital status - Married	2,850 (63.8%)
-Separated	174 (3.9%)
-Divorced	717 (16.1%)
-Widowed	397 (8.9%)
-Never Married	326 (7.3%)
General Health - Excellent	255 (5.7%)
-Very good	1,282 (28.7%)
-Good	1,775 (39.8%)
-Fair	917 (20.5%)
-Poor	235 (5.3%)

variable (based on the z-standardised age variable) should be included in both the Formal Volunteering and Informal Volunteering–Children analyses. There was no indication of curvilinearity for age in the Adult Kin Caring analysis.

The logistic regression on Formal Volunteering was a statistically significant improvement over a constant-only model with ($\chi^2(16)=245.272, p<.001$), indicating that the predictors, as a set, reliably distinguished between those who had done Formal Volunteering from those who had not. The summary indices for this regression were: Somers' D of monotone association=0.299, Concordance Index C=0.650, Goodman and Kruskal's Gamma=0.301, and the pseudo R-squared indices for Cox and Snell=0.055 and Nagelkerke=0.080.

The logistic regression on Informal Volunteering–Children was a statistically significant improvement over a constant-only model with ($\chi^2(16)=215.018, p<.001$), indicating that the predictors, as a set, reliably distinguished between those who had done Formal Volunteering from those who had not. The summary indices for this regression were: Somers' D of monotone association=0.342, Concordance Index C=0.671, Goodman and Kruskal's Gamma=0.344, and the pseudo R-squared indices for Cox and Snell=0.049 and Nagelkerke=0.082.

The logistic regression on Adult Kin Caring was a statistically significant improvement over a constant-only model with ($\chi^2(16)=102.565, p<.001$), indicating that the predictors, as a set, reliably distinguished between those who had done Formal Volunteering from those who had not. The summary indices for this regression were: Somers' D of monotone association=0.249, Concordance Index C=0.625, Goodman and Kruskal's Gamma=0.252, and the pseudo R-squared indices for Cox and Snell=0.024 and Nagelkerke=0.042.

The logit parameter estimates, their Standard Errors, Odds Ratios and the 95% confidence limits of the odds ratios are in Table 2. The variables in the logistic regression on to Formal Volunteering that were significant in Table 2 were health, education, marital status, sex, age, age-squared and retirement status. In particular, having excellent, very good or good health were significant predictors of Formal Volunteering, relative to having poor health. All of the levels of education higher than Year 12 or similar, were more likely to do formal volunteering. Married, separated and widowed were more likely than those who had never married to formally volunteer. Females were more likely to formally volunteer and those individuals who had partly retired were more likely than the non-retired to formally volunteer.

The regression on to Informal Volunteering–Children had significant effects for marital status, retirement status, sex, and age-squared. For the marital status variable all of the present categories were more likely than those who had never married to informally volunteer. The completely retired were more likely than the not retired to informally volunteer for child caring, while females were more likely than males to do informal child care volunteering. The relationship between age and informal child care volunteering is shown in Fig. 1.

The regression on to Adult Kin Caring had significant effects for marital status, sex, age, and education. Divorced and widowed respondents were less likely than those who had never married to do Adult Kin Caring. Females were more likely than males to do Adult Kin Caring. More likely to do Adult Kin Caring were those with a diploma or advanced diploma and a non-significant effect for those with a postgraduate education, relative to those with the lowest category of education. The main effect of age was such that older individuals were less likely to provide Adult Kin Caring.

Table 2 Odds ratios of variables for the logistic regressions on formal volunteering, Informal Volunteering-Children and Adult Kin Caring

Variables	Formal Volunteering			Informal Volunteering-Children			Adult Kin Caring		
	B(SE B)	Odds Ratio	95% CI	B(SE B)	Odds Ratio	95% CI	B(SE B)	Odds Ratio	95% CI
Age (Z)	0.252 (0.051)	1.286***	1.164-1.420	0.004 (0.060)	1.004	0.892-1.130	-0.291 (0.059)	0.748***	0.666-0.839
Age (Z) - Squared	-0.079 (0.038)	0.924*	0.858-0.996	-0.347 (0.050)	0.707***	0.641-0.779	--	--	--
Sex Male [Ref: Female]	-0.246 (0.074)	0.782***	0.677-0.904	-0.649 (0.089)	0.523***	0.439-0.622	-0.514 (0.091)	0.598***	0.500-0.715
Retirement Status [Ref: Not Retired at all]	0.157 (0.103)	1.169	0.955-1.432	0.235 (0.117)	1.265***	1.006-1.589	0.070 (0.120)	1.072	0.848-1.356
-Completely Retired									
-Partly Retired	0.313 (0.131)	1.368*	1.058-1.769	0.232 (0.156)	1.261	0.930-1.712	0.150 (0.160)	1.161	0.848-1.590
Education [Ref: LTE Yr12 & Cert3/4]	0.419 (0.112)	1.521***	1.221-1.894	0.075 (0.135)	1.078	0.827-1.403	0.292 (0.134)	1.340*	1.030-1.742
-Diploma/Advanced Diploma									
-Baccalaureate degree & Graduate Diploma	0.734 (0.090)	2.084***	1.747-2.487	0.076 (0.111)	1.078	0.868-1.341	0.092 (0.115)	1.096	0.875-1.373
-Postgraduate degree - Masters, Doctorate	0.954 (0.146)	2.597***	1.952-3.457	0.160 (0.188)	1.174	0.811-1.698	0.330 (0.190)	1.391†	0.959-2.019
Marital Status = Married; [Ref=Never Married]	0.564 (0.159)	1.757***	1.285-2.402	1.636 (0.280)	5.132***	2.965-8.884	-0.045 (0.162)	0.956	0.696-1.313
-Separated	0.490 (0.240)	1.633*	1.021-2.611	0.828 (0.389)	2.289*	1.069-4.902	-0.258 (0.282)	0.772	0.444-1.342
-Divorced	0.146 (0.182)	1.157	0.810-1.654	1.102 (0.298)	3.009***	1.679-5.393	-0.531 (0.195)	0.588**	0.401-0.862
-Widowed	0.778 (0.193)	2.178***	1.492-3.178	1.365 (0.312)	3.915***	2.126-7.212	-0.615 (0.243)	0.540*	0.335-0.871
General Health [Ref= Poor] - Excellent	0.963 (0.233)	2.618***	1.659-4.132	-0.303 (0.282)	0.738	0.425-1.282	-0.134 (0.290)	0.874	0.495-1.544
-Very Good	0.745 (0.198)	2.107***	1.429-3.106	0.248 (0.206)	1.281	0.855-1.920	0.065 (0.228)	1.067	0.682-1.668
-Good	0.630 (0.194)	1.878***	1.283-2.748	0.078 (0.202)	1.081	0.728-1.605	0.036 (0.223)	1.037	0.670-1.604
-Fair	0.388 (0.038)	1.473†	0.990-2.193	-0.014 (0.212)	0.986	0.650-1.495	0.206 (0.230)	1.229	0.783-1.929
Intercept (B)	-2.337 (0.261)			-2.713 (0.353)			-1.579 (0.283)		

Note: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Reference categories were set to 0. All of the constants were significant at $p < .001$. Age-squared was not suggested by the Box-Tidwell process and was not used in the Adult Kin Caring logistic regression

The quadratic effects of age in the Formal Volunteering and Informal Volunteering–Children regressions are presented in Fig. 1. For the regression on to Formal Volunteering both the age and age-squared variables were significant and when combined their overall effect is of the first half of an inverted-U that plateaus at the higher ages. For the regression on to Informal Volunteering–Children the main effect of age is not significant and the age-squared variable is significant, leading the curvilinear effect to dominate the overall age effect in the form of an inverted-U.

6 Discussion

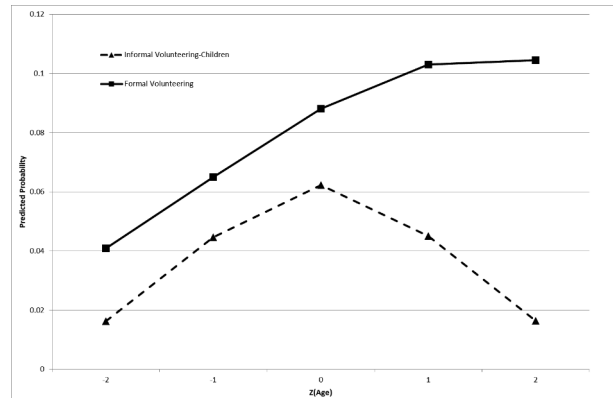
Of the three forms of volunteering or helping, formal volunteering had the most variables that distinguished it from not volunteering or helping. Having good to excellent health, more than a high school education, being married, separated or widowed, female, partly retired and older indicated a higher likelihood of formal volunteering. Informal Volunteering–Children was characterised by people having ever been married, even if later divorced, separated or widowed, completely retired and female, with an inverted-U shaped relationship with age. In contrast, those doing adult kin caring were distinguished from those not doing any form of volunteering or helping investigated here by being never married, female, having a non-baccalaureate diploma, and being younger.

The inverted-U result could be explained by a more granular analysis of the impact of age on volunteering choices and capacity. A number of variables have been found to be inversely associated with volunteering including age, social isolation, functional limitations such as through illness or disability, and transitions into parenthood (Niebuur et al., 2018; Musick & Wilson, 2003; Morrow-Howell et al., 2003). In addition, a range of psycho-social variables such as a psychological sense of community and wellbeing have been found to have a key role in older volunteerism and promoting psychological well-being (Greenfield & Marks, 2004; Mellor et al., 2009). Events such as the arrival of grandchildren could also influence the direction of the relationship between age and volunteering, with different ages likely to be distinguished in terms of different caring opportunities, including for younger and older grandchildren or other kin (Omoto et al., 2000). Volunteering and caring activity could also be related to generativity, the “concern in establishing and guiding the next generation” (Erikson, 1963, p. 267), which may fluctuate across different ages.

The variables representing constraints and opportunities as indicators of life course inequality for older people—education, age, gender, and health—were found to specifically enable or constrain civic engagement (Moen & Flood, 2013). In particular, age and sex distinguished all three forms of volunteering and helping from those not doing volunteering. The effects of age may reflect age-based systems that open opportunities as adults move through the encore years (Moen & Flood, 2013). The pervasiveness of the gender effect appears to reflect deeply-embedded sex-role enculturation for females to do the nurturing and caring for others (Wilson & Musick, 1997). However, for the remaining significant variables there were variations by the form of volunteering or caring.

A specific form of social capital investigated here is marital status and its consequent social connections and support. Married individuals were more likely to participate in formal and informal volunteering activities, supporting (Mutchler et al., 2003), possibly because of more extensive social networks or their spouse’s activities. The results above

Fig. 1 The quadratic effects of age in the formal volunteering and informal volunteering–children regressions



support the substitution approaches to social capital for informal volunteering specifically and thereby clarifying (Pavlova & Silbereisen, 2012), where an increase in informal volunteering, following widowhood, divorce or separation can be one way to meet social needs. Yet social capital appears to not be a clear driver of adult kin caring, in contrast to the implications of Choi et al. (2007).

The enabling factor of health, where good health is a resource and bad health is a constraint (Rabaté & Rochut, 2020; Wilson & Musick, 1997), only impacted formal volunteering. During the encore years, health is a key contingency impacting volunteering (Moen & Flood, 2013). For example, the health of the potential volunteer may reflect the capacity of the individual to volunteer or the ability to seize an opportunity for volunteering (Choi et al., 2007). Education was found to enable participation in formal volunteering, reflecting a form of human capital embodying a cumulative advantage over an individual's life in their encore years (per Moen & Flood, 2013). The results above support the ongoing presence of the pattern of findings that education predicts formal volunteering, but not informal volunteering (Wilson & Musick, 1997).

6.1 Implications for Retirement and Workforce Planning

The pattern of these specific results can be seen to have implications for forms of retirement and their associations with forms of volunteering and caring. Some form of retirement distinguished the formal (partly retired) and informal (completely retired) forms of volunteering. Being either partially or completely retired was not associated with adult kin caring. The impacts of these forms of retirement remained after accounting for the effects of age and specific forms of social and human capital such as marital status, health and education.

The effect of partly retiring was significant for formal volunteering after separating the specific form of social capital associated with marital status. The partially retired individuals have available time and can maintain their employment-related social networks, where they may be more likely to hear of volunteering opportunities and then be more likely to volunteer (per Tang, 2016), particularly in the form of formal volunteering, where this social network effect remained beyond marital status.

Conversely, the variable completely retired may not have been significant for formal volunteering because these analyses had simultaneously accounted for health and education, both of which were significant for formal volunteering. University-educated adults are less

likely to completely retire (Moen & Flood, 2013) and the completely retired have worse health than the partly retired (Zhan et al., 2009). Once both of these effects were statistically removed from the completely retired coding the remaining effect of complete retirement was not significant for formal volunteering. However, this result may be particular to contexts of relatively universal health care such as Australia, which does not require connection to work to maintain health insurance.

The pattern of results across partly retiring and completely retired for formal volunteering enables a separation of the effects of time availability and shrinking work-related social networks. Completely retiring reduces work-related social networks, reducing the number of requests received to volunteer and thereby reduces the likelihood of volunteering, despite the enhanced capacity for volunteering due to increased time availability (Mutchler et al., 2003). Only partly retiring and not completely retiring was significant for formal volunteering. Both have increased time availability, but only part retiring enabled maintaining work-related social networks. That is, when individuals completely retire from the workplace they disconnect from employment-oriented social ties, making formal volunteering less likely (per Tang, 2016), despite increased time availability. A possible explanation for completely retired not being characteristic of formal volunteering, relative to other studies, is that in this study the variable completely retired was effectively 'being completely retired after accounting for education and health effects'.

In contrast, the only form of retirement that characterised informal volunteering with children was being completely retired. The association between completely retiring and informal volunteering with children, along with the importance of having been married at some point, suggests that personal social networks may be a key driver of informal volunteering rather than work-related social networks. Compared to the findings discussed above for the constraining variables and retirement's impact on formal volunteering, the arising pattern suggests that work-related social networks may be key for formal volunteering. In contrast, personal social networks may be more a driver for informal volunteering (children).

6.2 Implications for Theory

Activity substitution theory would usually be seen to be more relevant to explaining volunteering for completely retired individuals, where volunteering would substitute for paid work activities as older individuals cease work (Chambre, 1984). But the changes associated with the encore segment include higher rates of partly retiring and those who completely retire may do so due to poor health, suggesting that those with a high propensity to volunteer self-select into part-time work (Lancee & Radl, 2014; Moen & Flood, 2013). The changing context indicated a need to extend the findings of earlier studies of activity substitution by examining relationships between different types of retirement and key constraints and enablers across forms of volunteering and caring.

Part retirement is distinctive of formal volunteering, while complete retirement was characteristic of informal volunteering (children). Neither being distinctive of adult kin caring appears to swap the substitution and complementary theories around, but suggests also an element of obligatory caring, particularly by women, related to care theory. Substitution with formal volunteering occurred for the partly retired, but not for the completely retired, in a similar manner to Tang (2016). However, that pattern of results is more strongly in line

with complementary theory, where the partial work in retirement and formal volunteering performed in parallel complement each other (Choi et al., 2007; Mutchler et al., 2003). The difference in the pattern of results may be because of the cultural changes impacting the encore segment in the last few decades, and/or may be, in delineating complementary theory more specifically, that complementarity is the driver for part retirees when the parallel activities are formally organised, such as work and formal volunteering. Conversely, substitution theory often used more to explain why the completely retired take up formal volunteering, may be more applicable to informal volunteering, particularly with children. The difference in the pattern of results between what older studies have found and what was found here may be because, for formal volunteering, many of the variables often packaged in with completely retiring, such as poor health, age and education, had been specifically separately accounted for in this study. Alternatively, in delineating substitution theory more specifically, it may be that the completely retired, after excluding impacts of health and age, in particular, substitute discretionary, informal volunteering for their former working hours and/or want to get away from formally organised 'work-like' volunteering. Again, cultural changes toward retirement being for leisure and the rise of 'grey nomads' may be contextual elements that impact where completely retired may be more likely to volunteer for informal, relatively discretionary activities such as caring for children.

There was no association between forms of retirement and adult kin caring, suggesting a link to care theory rather than substitution or complementary theory for this form of helping in the encore life stage. Care theory may also explain the lack of relationship between forms of retirement and informal caring for kin which places substantial demands on available resources (Cho et al., 2018), including substantial time commitments and strain (Choi et al., 2007). In terms of key drivers though, retirement may not have a clear relationship with adult kin caring, possibly reflecting the obligatory nature of some activities in this type of caring (and some informal volunteering) (Wilson & Musick, 1997), which applied irrespective of potential constraints such as health.

With a sizable subset of the population having bonus years of healthy life expectancy often characterised as an encore period (Moen & Flood, 2013), older individuals can have ongoing participation in meaningful activities such as volunteering and caring, as well as continued paid work. The distinguishing characteristics of formal volunteering tend to emphasise unpaid time and services through organisations or established entities to benefit distant collective others (Lee & Brudney, 2012; Wilson & Musick, 1997). In turn, informal volunteering is also unpaid but usually not provided through an organisation and the services are usually provided to non-household individuals but can include kin (Choi et al., 2007; Hank & Stuck, 2008; Wilson & Musick, 1997). But the boundaries between informal volunteering and informal caring are less clear. Informal caring may be more obligatory (Morrow-Howell, 2010), especially adult kin caring such as spousal caring (Choi et al., 2007; Fekete et al., 2019). For example, caring for adult relatives with a disability or illness may lead to a lifetime of unpaid care-giving due to perceived obligation (Flennert et al., 2019; Spijker & Schneider, 2021). Overall, unpaid caring for adult kin may have some overlaps with informal volunteering in terms of the services provided, but be on a spectrum of perceived obligation versus discretion within informal volunteering that starts to blend over into caring.

Propping up these findings were the pervasive gender effects reflecting deeply-embedded sex-role enculturation for women to do the nurturing and caring for others (per Wilson &

Musick, 1997). Further, indicators of life course inequality for older people that represent constraints and opportunities such as education, age and health, where age may reflect a bundled set of age-graded effects (Moen & Flood, 2013) which continued to have an impact.

More broadly, the findings of this study suggest that work-related social networks may be key for formal volunteering. In contrast, personal social networks may be more a driver for informal volunteering (children). In turn, the findings suggest that substitution theory may be more applicable to informal volunteering, particularly with children; whereas, complementary theory may be more applicable for formal volunteering. These implications may be different from some prior studies because of the cultural changes in recent decades regarding the encore segment and/or analytic strategies that specifically accounted for variables often packaged in with completely retiring, such as poor health, age and education. Alternatively, on top of these potential modifiers, the implications of the findings may suggest specific delineations of substitution theories, complementary theories and care theory. For example, in a context with relatively universal health care such as Australia, with little pressure to work at least part time in order to maintain health insurance, those who completely retire may be wanting to get away from formally organised 'work-like' volunteering and instead substitute their former work hours with more discretionary informal volunteering. Similarly, complementary theory may be more applicable for part retirees when the parallel activities are formally organised, such as work and formal volunteering.

Neither substitution or complementary theory, usually more retirement-oriented theories, applied to adult kin caring, potentially because of kin caring's more obligatory nature and the substantial demands such caring entails, reinforcing the link to care theory. A further indicator of the obligation's strength is that those providing adult kin caring did so irrespective of their state of health. The demands of obligations associated with adult kin caring imply that government policies may want to ensure that caregiving responsibilities are adequately recognized and supported, which may also help extend some individual's working life and improve quality of care (per Carr et al., 2018).

Most importantly, the results showed that no matter whether the theory basis was whether from a substitution frame, or complementary frame, it was obligations, rather than choice, that plays a role in the 'informal caring for children', and 'adult kin caring' forms of volunteering. The only common variables across participants in these two forms of volunteering was that they had children, grandchildren or adults who needed caring. This distinction for adult kin caring suggests a gap in choice for those providing such care, pointing to a need for policy and service intervention. Whereas findings related to 'formal volunteering' suggest that work-related social networks may be key and for 'informal volunteering' that does not include caring' personal social networks may be the main drivers.

The commonality of sex, age and marital status indicates that all three forms of social service provision depended on the situation, whether to indicate availability or need. The informal caring for an adult appears to be wholly due to perceived obligations. The informal volunteering for children was reflected by time available and the formal volunteering was a function of whether capability was matched to a need. That is, the key sociodemographic parameters appear to be for a relevant situation to be present and then the forms of social service vary in terms of being discretionary or obligatory, and whether a certain level of capability, especially in terms of health for formal volunteering, is required.

In terms of limitations, further testing was limited by the variables collected in the dataset which leads to a number of areas of possible future research. Along with testing the above

potential modifications to retirement-oriented theories of drivers of volunteering, future research may want to investigate a wider set of drivers such as specifying a variety of indicators of obligation and discretion to see where volunteering, especially various forms of informal volunteering, are located relative to forms of caring. The result is likely to be a more multifaceted spectrum of discretion through to obligation.

The results may also be limited because they were conducted in Australia, a country with a relatively developed, albeit basic, welfare safety net for older Australians and a relatively universal (and quite good) health care system (e.g., per Rodwell, 2022). Countries with either stronger or weaker welfare systems may have different drivers of, and constraints on, volunteering as well as different patterns of relationships when considering formal volunteering with caring activities.

Further, except perhaps for the variables associated with age, the categorical nature of most of the predictors may mean that their relationships with the outcomes are understated and that more finely grained variables used in the future may find stronger relationships. Complicating that possibility though is the presence of non-linear relationships between these variables, which may mean that more continuous variables may often need to be coded to reflect that non-linearity. If some of those non-linear variables are curvilinear such as squared variables (for continuously-scored variables), then they could also be included in regression analyses before possible interaction terms to ensure a more thorough test of any potential interactions (applying Ganzach, 1997 and Cohen et al., 2003, both of which build on Aiken & West, 1991).

This study has contributed toward considering elements of discretion, obligation and formalisation in viewing the variety of forms of formal volunteering, informal volunteering and caring. In particular, cultural changes associated with the encore segment may have changed the applicability of activity substitution and complementary theories of retirement and volunteering, elevating care theory in the adult kin caring narrative. Future research could continue investigating the wide array of avenues through which older people may consider contributing to society, including through paid work, as well as informing policy and organisations to better meet future volunteering and caring needs.

7 Conclusions

Volunteering is often lauded as a highly-valued choice of the benevolent, adventurous and the newly time-rich. The findings above indicate that formal volunteering was largely discretionary and a result of substitution, informal volunteering, particularly caring for children, was complementary and partly obligatory, whereas adult kin caring was found to be largely obligatory. Together, this pattern of nuances in obligation versus discretion and the links to differing theory bases clarifies the delineation of formal volunteering from informal volunteering and from adult kin-caring.

More specifically, this paper has presented evidence that obligatory (non-voluntary) labour, especially adult kin caring and spousal caring could represent a sizable opportunity cost for individuals who may otherwise have preferred to continue in paid work. This form of obligatory volunteering has a pervasive gender effect, suggesting the demands on women associated with adult kin caring need targeted government policies that ensure caregiving

responsibilities are adequately recognized and supported, to reduce non-voluntary labour and extend individuals' paid working life.

Acknowledgements This paper uses unit record data from the HILDA Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either DSS or the Melbourne Institute.

Funding No funding was received by the authors for conducting this study.
Open Access funding enabled and organized by CAUL and its Member Institutions

Data Availability The HILDA data are available via application through the Commonwealth of Australia's Department of Social Services Longitudinal Studies Dataverse (<https://dataverse.ada.edu.au/dataverse/DSSLongitudinalStudies>).

Declarations

Ethical Approval The University of Melbourne ethics approval number for the HILDA Survey Project is 1647030.

Conflict of interests The authors declare no conflict of interest.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Abbas, M., Jabeen, S., Idrees, A., Safdar, M., Safdar, A., Siddiqui, M., Hamid, I., & Sherazi, M. (2021). Health-related quality of life among senior citizens in territory of Islamabad Pakistan-A community based cross-sectional study. *Ageing International*, 1–12.
- Adams, K., Leibbrandt, S., & Moon, H. (2011). A critical review of the literature on social and leisure activity and wellbeing in later life. *ageing and society*, 31(4), 683–712. <https://doi.org/10.1017/S0144686X10001091>.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: testing and interpreting interactions*. Sage.
- Atalay, K., & Barrett, G. (2022). Retirement routes and the well-being of retirees. *Empirical Economics*, 63(5), 2751–2784.
- Beehr, T., & Bennett, M. (2015). Working after retirement: Features of bridge employment and research directions. *Work Aging and Retirement*, 1(1), 112–128.
- Beneria, L. (1999). The enduring debate over unpaid labour. *International Labour Review*, 138(3), 287–310.
- Carr, E., Murray, E., Zaninotto, P., Cadar, D., Head, J., Stansfeld, S., & Stafford, M. (2018). The association between informal caregiving and exit from employment among older workers: prospective findings from the UK household longitudinal study. *The Journals of Gerontology: Series B*, 73(7), 1253–1262.
- Chambre, S. (1984). Is volunteering a substitute for role loss in Old Age? An empirical test of activity theory. *The Gerontologist*, 24(3), 292–298.
- Chambré, S., & Netting, F. (2018). Baby boomers and the long-term transformation of retirement and volunteering: evidence for a policy paradigm shift. *Journal of applied gerontology*, 37(10), 1295–1320.

- Cho, J., Kim, B., Park, S., & Jang, J. (2018). Postretirement work and volunteering by poverty groups informed by Role Theory. *Journal of Gerontological Social Work, 61*(3), 243–260.
- Choi, N., Burr, J., Mutchler, J., & Caro, F. (2007). Formal and informal volunteer activity and spousal caregiving among older adults. *research on aging, 29*(2), 99–124.
- Clark, R. L., & Ghent, L. S. (2010). Strategic HR management with an aging workforce: Using demographic models to determine optimal employment policies. *Population Research and Policy Review, 29*, 65–80.
- Cohen, J., Cohen, P., West, S., & Aiken, L. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. Lawrence Erlbaum Associates Inc.
- Coule, T., Dodge, J., & Eikenberry, A. (2022). Toward a typology of critical nonprofit studies: A literature review. *Nonprofit and Voluntary Sector Quarterly, 51*(3), 478–506.
- Davies, B., Abrams, D., Horsham, Z., & Lalot, F. (2024). The causal relationship between volunteering and social cohesion: A large scale analysis of secondary longitudinal data. *Social Indicators Research, 171*, 809–825. <https://doi.org/10.1007/s11205-023-03268-6>.
- Di, J., & Rosenbaum, E. (1994). Caregiving system in transition: An illustration from Shanghai, China. *Population Research and Policy Review, 13*, 101–112.
- Di Gessa, G., & Grundy, E. (2017). The dynamics of Paid and unpaid activities among people aged 50–69 in Denmark, France, Italy, and England. *Research on Aging, 39*(9), 1013–1038.
- Duffy, M., Albelda, R., & Hammonds, C. (2013). Counting care work: The empirical and policy applications of care theory. *Social Problems, 60*(2), 145–167.
- Dukhovnov, D., Ryan, J. M., & Zaghenni, E. (2022). The impact of demographic change on transfers of care and associated well-being. *Population Research and Policy Review, 41*(6), 2419–2446.
- Eagar, K., Gordon, R., Snoek, M., Loggie, C., Westera, A., Samsa, P., & Kobel, C. (2020). The Australian national aged care classification (ANACC): A new casemix classification for residential aged care. *Medical Journal of Australia, 213*(8), 359–363.
- Edgell, P., & Tranby, E. (2010). Shared visions? Diversity and cultural membership in American life. *Social Problems, 57*(2), 175–204.
- Eismann, M., Henkens, K., & Kalmijn, M. (2019). Origins and mechanisms of social influences in couples: The case of retirement decisions. *European Sociological Review, 35*(6), 790–806.
- England, P., Budig, M., & Folbre, N. (2002). Wages of Virtue: The relative pay of care work. *Social Problems, 49*(4), 455–473.
- Erikson, E. H. (1963). *Childhood and society*. Norton.
- Erlinghagen, M., & Hank, K. (2006). The participation of older europeans in volunteer work. *Ageing & Society, 26*(4), 567–584.
- Errico, A., Ardito, C., Leombruni, R., Ricceri, F., Costa, G., Sacerdote, C., & Odone, A. (2022). Working conditions and health among Italian ageing workers. *Social Indicators Research, 162*(3), 1043–1067. <https://doi.org/10.1007/s11205-021-02862-w>.
- Fekete, M., Szabo, A., Stephens, C., & Alpäss, F. (2019). Older New Zealanders in caregiving roles: Psychological functioning of caregivers of people living with dementia. *Dementia, 18*(5), 1663–1678. <https://doi.org/10.1177/1471301217725897>.
- Fernandez, J. (2013). Broad reciprocity, elderly poverty, and the retiree/nonretiree cleavage in the demand for public retirement income support. *Social Problems, 60*(2), 255–280.
- Flehnert, M., König, H., & Hajek, A. (2019). The Association between voluntary Work and health care use among older adults in Germany. *BMC Health Services Research, 19*, 1–10.
- Gallagher, S. (1994). Doing their share: Comparing patterns of help given by older and younger adults. *Journal of Marriage and the Family, 567–578*.
- Ganzach, Y. (1997). Misleading interaction and curvilinear terms. *Psychological Methods, 2*(3), 235–247.
- Greenfield, E. A., & Marks, N. F. (2004). Formal volunteering as a protective factor for older adults' psychological well-being. *The Journals of Gerontology: Series B Psychological and Social Sciences, 59*(5), 258–264.
- Grünwald, O., Damman, M., & Henkens, K. (2021). The differential impact of retirement on informal caregiving, volunteering, and grandparenting: results of a 3-year panel study. *The Journals of Gerontology: Series B, 76*(3), 607–619.
- Hank, K., & Stuck, S. (2008). Volunteer work, informal help, and care among the 50 in Europe: Further evidence for 'Linked' productive activities at older ages. *Social Science Research, 37*(4), 1280–1291.
- Hansen, T., Aartsen, M., Slagsvold, B., & Deindl, C. (2018). Dynamics of volunteering and life satisfaction in midlife and old age: Findings from 12 European countries. *Social Sciences, 7*(5), 78. <https://doi.org/10.3390/socsci7050078>.
- He, D., & McHenry, P. (2016). Does formal employment reduce informal caregiving? *Health Economics, 25*(7), 829–843.
- Kim, S. (2020). Human, social and cultural predictors of productive activities in later life. *Ageing & Society, 40*(2), 328–347.

- Komp, K., Van Tilburg, T., & Van Groenou, M. (2012). Age, retirement, and health as factors in volunteering in later life. *Nonprofit and Voluntary Sector Quarterly*, 41(2), 280–299.
- Lancee, B., & Radl, J. (2014). Volunteering over the life course. *Social Forces*, 93(2), 833–862.
- Laslett, P. (1987). The emergence of the third age. *Ageing & Society*, 7(2), 133–160.
- Laslett, P. (1994). The third age, the fourth age and the future. *Ageing & Society*, 14(3), 436–447.
- Lee, Y., & Brudney, J. (2012). Participation in formal and informal volunteering: Implications for volunteer Recruitment. *Nonprofit Management and Leadership*, 23(2), 159–180.
- Lockstone-Binney, L., Holmes, K., Meijs, L., Oppenheimer, M., Haski-Leventhal, D., & Taplin, R. (2021). Growing the volunteer Pool: Identifying non-volunteers most likely to Volunteer. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 33(4), 777–794. <https://doi.org/10.1007/s11266-021-00407-w>.
- Lor-Serrano, A., & Esteban-Salvador, L. (2021). An approach to corporate volunteering in Spain. *Social Sciences*, 10(3), 80. <https://doi.org/10.3390/socsci10030080>.
- Lou, V. (2022). Meaningful aging: A relational conceptualization, intervention, and its impacts. *social sciences*, 11(1), 10. <https://doi.org/10.3390/socsci11010010>.
- Lu, P., Xu, C., & Shelley, M. (2021). A state-of-the-art review of the socio-ecological correlates of volunteerism among older adults. *Ageing & Society*, 41(8), 1833–1857.
- Martin, A., & Lynch, M. (2009). Counting things and people: The practices and politics of counting. *Social Problems*, 56(2), 243–266.
- Mazumdar, B., Warren, A., & Brown, T. (2021). Bridge employment: Understanding the expectations and experiences of bridge employees. *Human Resource Management Journal*, 31(2), 575–591.
- Mellor, D., Hayashi, Y., Stokes, M., Firth, L., Lake, L., Staples, M., Chambers, S., & Cummins, R. (2009). Volunteering and its relationship with personal and neighborhood well-being. *Nonprofit and Voluntary Sector Quarterly*, 38(1), 144–159.
- Mesch, D., Osili, U., Dale, E., Ackerman, J., Bergdoll, J., & O'Connor, H. (2022). Charitable giving in married couples: Untangling the effects of education and income on spouses' giving. *Nonprofit and Voluntary Sector Quarterly*, 51(2), 444–458.
- Moen, P., & Flood, S. (2013). Limited engagements? Women's and men's work/volunteer time in the encore life course stage. *Social Problems*, 60(2), 206–233.
- Moen, P., Kelly, E., & Hill, R. (2011). Does enhancing work-time control and flexibility reduce turnover? A naturally occurring experiment. *Social Problems*, 58(1), 69–98.
- Morrow-Howell, N. (2010). Volunteering in later life: Research Frontiers. *The Journals of Gerontology: Series B*, 65(4), 461–469.
- Morrow-Howell, N., Hinterlong, J., Rozario, P. A., & Tang, F. (2003). Effects of volunteering on the well-being of older adults. *The Journals of Gerontology: Series B Psychological and Social Sciences*, 58(3), 137–145.
- Musick, M. A., & Wilson, J. (2003). Volunteering and depression: The role of psychological and social resources in different age groups. *Social Science & Medicine*, 56(2), 259–269. [https://doi.org/10.1016/S0277-9536\(02\)00025-4](https://doi.org/10.1016/S0277-9536(02)00025-4).
- Mutchler, J., Burr, J., & Caro, F. (2003). From paid worker to volunteer: Leaving the paid workforce and volunteering in later life. *Social Forces*, 81(4), 1267–1293.
- Niebuur, J., van Lente, L., Liefbroer, A., Steverink, N., & Smidt, N. (2018). Determinants of participation in voluntary work: A systematic review and meta-analysis of longitudinal cohort studies. *Bmc Public Health*, 18(1), 1213.
- Niebuur, J., Liefbroer, A., Steverink, N., & Smidt, N. (2022). Transitions into and out of voluntary work over the life course: What is the effect of major life events? *Nonprofit and Voluntary Sector Quarterly*, 51(6), 1233–1256.
- No, W., Han, H., & Swindell, D. (2021). The Immediate effects of changes in life circumstances on volunteering decisions in the USA. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 33(4), 795–806. <https://doi.org/10.1007/s11266-021-00380-4>.
- Omoto, A. M., Snyder, M., & Martino, S. C. (2000). Volunteerism and the life course: Investigating age-related agendas for action. *Basic and Applied Social Psychology*, 22, 181–197.
- Osborne, J. (2015). *Best practices in Logistic Regression*. Sage.
- Papa, R., Cutuli, G., Principi, A., & Scherer, S. (2019). Health and volunteering in Europe: A longitudinal study. *Research on Aging*, 41(7), 670–696.
- Pavalko, E., & Artis, J. (1997). Women's caregiving and paid work: Causal relationships in late midlife. *The Journals of Gerontology Series B Psychological Sciences and Social Sciences*, 52(4), 170–179.
- Pavlova, M., & Silbereisen, R. (2012). Participation in voluntary organizations and volunteer work as a compensation for the absence of work or partnership? Evidence from two German samples of younger and older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 67(4), 514–524.

- Pettigrew, S., Jongenelis, M., Jackson, B., & Newton, R. (2019). Charity begins at home': Informal caring barriers to formal volunteering among older people. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 30(5), 921–931. <https://doi.org/10.1007/s11266-018-0017-8>.
- Rabaté, S., & Rochut, J. (2020). Employment and Substitution effects of raising the statutory retirement age in France. *Journal of Pension Economics & Finance*, 19(3), 293–308.
- Rodwell, J. (2022). Health need factors are the key drivers of hospitalization among the elderly living alone. *International Journal of Environmental Research and Public Health*, 19(22), 15315: 1–12.
- Rotolo, T., & Wilson, J. (2006). Substitute or complement? Spousal influence on volunteering. *Journal of Marriage and Family*, 68(2), 305–319.
- Sánchez-García, J., Gil-Lacruz, A., & Gil-Lacruz, M. (2022). The influence of gender Equality on volunteering among European Senior citizens. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 33(4), 820–832.
- Schieman, S., & Glavin, P. (2008). Trouble at the Border? Gender, flexibility at work, and the work-home interface. *Social Problems*, 55(4), 590–611.
- Seaman, P. (2012). Time for my life now: Early Boomer women's Anticipation of volunteering in Retirement. *The Gerontologist*, 52(2), 245–254.
- Sellon, A. (2014). Recruiting and retaining older adults in volunteer Programs: Best practices and next steps. *Ageing International*, 39, 421–437.
- Sen, A., & Fitoussi, J. (2010). *Mismeasuring our lives: Why GDP doesn't add up. The report of the Commission on the Measurement of Economic Performance and Social Progress*. New.
- Serrat, R., Scharf, T., Villar, F., & Gómez, C. (2020). Fifty-five years of Research into Older people's Civic participation: Recent trends, future directions. *The Gerontologist*, 60(1), 38–51.
- Solinge, H., Damman, M., & Hershey, D. (2021). Adaptation or exploration? Understanding older workers' plans for Post-retirement Paid and volunteer Work. *Work Aging and Retirement*, 7(2), 129–142.
- Spijker, J., & Schneider, A. (2021). The myth of Old Age: Addressing the issue of dependency and contribution in Old Age using empirical examples from the United Kingdom. *Sociological Research Online*, 26(2), 343–359.
- Tabachnick, B., Fidell, L., & Ullman, J. (2007). *Using Multivariate statistics* (5th ed.). Pearson.
- Tang, F. (2016). Retirement patterns and their relationship to volunteering. *Nonprofit and Voluntary Sector Quarterly*, 45(5), 910–930.
- Teasdale, B., & Silver, E. (2009). Neighborhoods and Self-Control: Toward an expanded view of socialization. *Social Problems*, 56(1), 205–222.
- Waring, M., & Steinem, G. (1988). *If women counted: A New Feminist Economics*. Harper & Row.
- Wilson, J. (2000). volunteering. *Annual Review of Sociology*, 26(1), 215–240. <https://doi.org/10.1146/annurev.soc.26.1.215>.
- Wilson, J., & Musick, M. (1997). Who cares? Toward an Integrated Theory of volunteer Work. *American Sociological Review*, 694–713.
- Withall, J., Thompson, J., Fox, K., Davis, M., Gray, S., De Koning, J., Lloyd, L., Parkhurst, G., & Stathi, A. (2018). Participant and public involvement in Refining a peer-volunteering active aging intervention: Project ACE (active, connected, engaged). *The Gerontologist*, 58(2), 362–375.
- Wooden, M., & Watson, N. (2007). The HILDA Survey and its contribution to Economic and Social Research (so far). *Economic Record*, 83(261), 208–231.
- Zhan, Y., Wang, M., Liu, S., & Shultz, K. (2009). Bridge employment and retirees' health: A longitudinal investigation. *Journal of Occupational Health Psychology*, 14(4), 374–389.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.