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Overlooked and undervalued

Carmichael, Fiona; Ercolani, Marco

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OVERLOOKED AND UNDERVALUED: THE CARING CONTRIBUTION OF OLDER PEOPLE

Fiona Carmichael: Department of Management, Birmingham Business School, University of Birmingham, Birmingham, UK, and
Marco G. Ercolani: Department of Economics, Birmingham Business School, University of Birmingham, Birmingham, UK

Abstract

Purpose – Older people are often perceived to be a drain on health care resources. This ignores their caring contribution to the health care sector. The purpose of this paper is to address this imbalance and highlight the role of older people as carers.

Design/methodology/approach – The study uses a unique data set supplied by a charity. It covers 1,985 caregivers, their characteristics, type and amount of care provided and the characteristics and needs of those cared-for. Binary and ordered logistic regression is used to examine determinates of the supply of care. Fairlie-Oaxaca-Blinder decompositions are used to disentangle the extent to which differences in the supply of care by age are due to observable endowment effects or coefficient effects. Nationally representative British Household Panel Survey data provide contextualization.

Findings – Older caregivers are more intensive carers, caring for longer hours, providing more co-residential and personal care. They are therefore more likely to be in greater need of assistance. The decompositions show that their more intensive caring contribution is partly explained by the largely exogenous characteristics and needs of the people they care for.

Research limitations/implications – The data are regional and constrained by the supplier's design.

Social implications – Older carers make a significant contribution to health care provision. Their allocation of time to caregiving is not a free choice, it is constrained by the needs of those cared-for.

Originality/value – If the burden of care and caring contribution are measured by hours supplied and provision of intimate personal care, then a case is made that older carers experience the greatest burden and contribute the most to the community.

Keywords Ageing, Healthcare, Carers

Paper type Research paper

Introduction

This paper focusses on the provision of informal care by older carers aged 65 and over. Although the peak age for becoming a carer is 45-65 (Hirst 2002) and the majority of carers are younger than 65, nearly a quarter of all carers are older people aged 65 and over. Older carers are engaged in unpaid informal care of adults, particularly spouses and they also care for their children and grandchildren (Vlachantoni 2010). Nevertheless, while there is considerable discussion in the media about the care needs of older people and the needs of their carers, there is much less discussion of the contribution of older people to the care of others. Relatedly, the needs of older carers are also sometimes overlooked even though they are often dealing with their own health problems (McGary and Arthur 2001; Arber and Ginn 1990). The analysis of this paper addresses this imbalance by contributing to and building on a relatively small but growing body of literature aimed at understanding the caring contribution of older people (Vlachantoni 2010; Buckner and Yeandle 2007; Dahlberg *et al.* 2007; McGarry and Arthur, 2001). To do so it uses a unique regional data set compiled by a charitable organization giving support and advice to carers in the Midlands region of the UK.

The objectives of this analysis are threefold. First, to investigate whether and how the caring contribution of older people differs from that of younger carers. Second to examine the determinants of age based differences in the type and time intensity of caring provision. Third, to explore the degree to which the caring decisions of older people are constrained by the needs of the people they care for. The results indicate that older carers aged 65 and over tend to care for longer hours of care and are more likely to provide personal and co-residential care. These differentials in caring provision do not appear to be explained simply by the lower employment participation rates of older people. Instead, the largely exogenous characteristics and needs of the cared-for are significant determinants. This is in line with Vecchio *et al.* (2009) who find that care condition is an important determinate of the need for

assistance. Overall, this evidence is consistent with decisions around care provision being constrained by the needs of the cared-for, implying a limited role for individual preferences.

The demographic context of the study is population ageing which is projected to lead to extra demands on health and caring services (Hancock *et al*. 2003). Individuals are therefore increasingly likely to be caring for sick, disabled and elderly relatives (Pavalko and Henderson 2006). At the same time, population ageing is putting increasing pressure on pensions. This has created an urgent imperative to extend working lives by measures such as raising the statutory pension age (SPA). As the employment participation of older people increases the time they have available time to provide informal care will be constrained. Instead, pressures to combine care and work are likely to increase (Laczko and Noden 1993). As a result, the number of workers who also provide care is likely to rise above the figure of close to three million estimated by Yeandle *et al.* (2006). The combination of these factors suggests that the demand for informal care is increasing while the time available to supply care is simultaneously being constrained.

The paper begins by briefly outlining the theoretical context. The next section describes the characteristics and the care provision of the carers in the regional sample.   Data from the 1991-2008 waves of the BHPS is used to provide some national context (see also, Hirst 2001). The subsequent analysis uses multivariate techniques, including Fairlie-Oaxaca-Blinder decompositions to explore the relationship between caring provision and older age in more detail.

Theories of care

Theories of care explore the rationale for engagement in unpaid care and provide insights on why older people might be more intensively involved in care provision. One argument is that people provide care because they feel an obligation or duty to do so when a

family member becomes ill (Twigg and Atkin, 1994; Badgett and Folbre, 1999). This sense of responsibility is tied to social norms and may allow little room for manoeuvre. For example, the norm epitomised by the *work ethic* can oblige those not in paid employment, including retired older people, to provide the bulk of informal care. In contrast the rational choice perspective assumes that the decision to undertake care is a rational one reflecting utility maximisation. This approach focusses on the allocation of time to unpaid care and the associated opportunity costs. Empirical research confirms that there are opportunity costs of caring for those in work (Lilly *et al.* 2007) and people in work are less willing to provide time intensive care (Carmichael *et al*. 2010). By implication, older, retired people will have fewer disincentives to undertake care when a need arises.

The critical feminist economics discourse focuses on altruism, reciprocity and norms of responsibility as motivations for care. Folbre (1995:75) defines caring as 'labor undertaken out of affection or a sense of responsibility for other people, with no expectation of immediate pecuniary reward' and suggests altruistic preferences are exogenously given and probably biologically determined. As such, altruistic motives are likely to be shaped more by individual characteristics than stage of life.

The concept of reciprocity for either tangible or emotional services can be linked to systems of gift giving (Folbre, 1995) ideas of intergenerational solidarity (Daatland and Lowenstein, 2005) and orientation to the future (Knobloch, 2012). Reciprocity implies the existence of a prior relationship as well as the creation of debt. In the care of elderly parents by their children the original gift is the parent's care for their children. For older people the idea of reciprocity could incorporate precautionary expectations about their own future care needs.

Once a caring episode begins, decisions around caring are constrained by myriad factors including the changing needs of the cared-for and the type of care required (Baldwin

1985; Arksey *et al.* 2005; Vickerstaff *et al.* 2009). Hassink and Van den Berg (2011) find that time constraints vary with the type of caring activity which in turn reflects the needs of the care recipient. The time given to care also tends to increase as the health of the cared-for deteriorates and the closer they are to death (Dumont *et al*. 2010). The scope to reduce the burden of care in these circumstances depends on the ability to share caring responsibilities or shift care into the paid sector (Knobloch, 2012). Older spousal carers in particular may be reluctant to share their caring responsibilities and may have insufficient resources to pay for private care.

Data and summary statistics

The regional dataset was supplied by a charitable carers' service based in South Warwickshire. The charity offered support to all types of carers including carers of elderly people, carers of adults with physical disabilities or learning disabilities and young carers. The charity has since undertaken some structural changes and currently supports only young carers. Since July 2011, adult services for the whole of Warwickshire have been run by the Guideposts Trust. Access to the charity's records was allowed only after anonymisation by the company who designed the original Access database (Estia-IT). The data were supplied as an MS Excel spread sheet (available on request) and analysed in STATA. The database records information on all 1,985 carers who contacted the organisation between 1998 and 2009. It provides details of their caregiving provision including hours of care supplied, the type of help given (e.g. personal, or physical) and the duration of the caring episode. The database also includes data on the characteristics and needs of the people being cared for. Information of this kind is not generally available in national data sets, particular when the carer and cared-for are not co-resident.

Tables 1-2 summarise the characteristics of the carers in the sample and the type and amount of care they provide. Due to the supporting role provided by the Warwickshire

charity, the characteristics of the carers in the regional database tend to reflect those of the most intensive carers. Table 3 provides some contextual national data on caregiving from 18 (pooled) waves of the BHPS. The BHPS is an annual survey consisting of a nationally representative sample of households. The first wave was conducted in 1991 and the last, the eighteenth, was conducted in 2008. Table 4 summarises the characteristics of the people cared for in the regional sample. Comparable data is not available for all carers in the BHPS.

<Insert Tables 1-3 here>

Just under half of the carers in the regional sample are aged 65 or over (46.5 percent) many of these carers are in their 80s (n= 230) a few are in their 90s (n=28) and one male carer is in his 100s. The skewed age of the sample is in line with McGee (2008) but the mean age of 59 is higher than the mean age of 50 for carers in the BHPS sample where only 21 percent of carers are older than 64. In both the regional sample and the BHPS the majority of carers are women (70 percent and 60 percent respectively) but among older carers the proportion of women is significantly lower (in both the regional sample and the BHPS). Data on employment status are available for 954 carers in the regional sample. Just over 5 percent of older carers in both the regional sample and the BHPS are employed. Among those aged 25-64, 41.12 percent of the regional sample are employed; 39.4 percent of women and 49.3 percent of men. These employment participation rates for mid-life carers are low compared with the BHPS where 63 percent of carers aged 25-64, are employed; 58 percent of women and 71.4 percent of men (comparable figures for non-carers aged 25-64 are 67.9 percent for women and 83.1 for men).

Only 173 carers (8.7 percent) in the regional sample claimed to be in receipt of Carer's Allowance. This is the main state benefit available to carers but the eligibility

conditions are restrictive; carers need to look after someone for at least 35 hours a week, earn less than £100 a week and the person cared for must receive a qualifying disability benefit. 77 carers said they received benefits payable to people with no or low income: 46 received Income Support and 31 received Pension Credits (payable only to those aged 60 or over).There is no data on income. The ethnicity of the regional sample members is predominantly white (92 percent).

The relatively low employment rate of working age carers in the regional sample is not altogether surprising given that many are caring for long hours and some have cared for many years (Table 2). The mean number of years recorded for older carers is 3.30 years it is a year less for mid-life carers but just under 25 percent of the whole sample are recorded as caring for more than 5 years, and 79 had cared for at least 9 years.

Among the 869 carers for whom there is data on hours of care, median weekly hours of care are between 50 and 99 and the modal category is at least 100 hours. These statistics are driven up by the figures for older carers among whom, 92.4 percent care for at least 50 hours a week and 64.4 percent care for at least 100 hours a week. Among the latter group, some will almost certainly be round-the-clock carers effectively caring for 168 hours a week (Vlachantoni, 2010). In comparison, fewer than half of the mid-life carers in the regional sample undertake 100 or more hours a week. These differences between the two age groups are statistically significant. In contrast, the within age group gender differences in hours of care are not significant. Among the carers in the BHPS sample, hours of care are lower: only 15.2 percent of older female carers and 16.8 percent of older male carers provide more than 50 hours of care a week (Table 3). It is interesting to note that among older carers in the BHPS, men provide longer hours of care on average than women. These differences are significant other than for the 50 hour threshold. The reverse effect is observed among mid-life carers; women care for longer hours.

Over half, 54.1 percent, of the regional sample are co-resident with the person they care for (in a joint home or the carer's home): 68.5 percent of older carers and 55.5 percent of mid-life carers. This compares with only 33 percent of carers in the BHPS who are co-residential carers; 47.9 of older carers and 32.7 percent of mid-life carers. Previous research suggests that co-resident carers have more significant caring responsibilities and care for longer hours than other carers (Vickerstaff *et al.* 2009; Heitmueller 2007). This, taken together with the data on hours of caring, suggests that older carers are more likely to be involved in the most intensive, most demanding forms of caring. Interestingly older males in the BHPS sample are more likely to be co-residential carers and this may be part of the reason why they provide longer hours of care. Among older carers, co-residential care is likely to be spousal care and because women live longer than men they are more likely to be involved in other forms of care such as care for grandchildren.

An alternative, more needs-focused measure of the intensity of caring is provided by the type of care given. This will vary according to their ability to conduct core daily activities (Hill *et al.* 2008). In particular, receipt of personal care identifies a care recipient as someone who faces profound limitations on their capacity to perform basic personal care. The provision of personal care is therefore likely to identify someone who faces exacting demands in their caring role. In line with this Scharlach *et al.* (2007) provide evidence of a trade-off between employment and the provision of personal care while Hassink and Van den Berg (2011) suggest that personal care may be the most difficult type of care to fit around other activities such as paid work. In contrast, provision of only practical care suggests a less intensive carer who faces fewer demands on their time and energy.

In the regional sample older carers are significantly more likely to provide personal care than mid-life carers. Women are also more likely to provide personal care than men, but the gender difference is only significant among older carers. Just under 20 percent of the

sample provide only practical care and a similar proportion provide only emotional/'other' care. 17.1 percent of the sample are young carers who provide either excess chores or sibling care.

The regional data set is limited by lack of information on the familial relationship between the carer and the cared-for. The amount of intergenerational elder care provided for parents by their adult children was estimated using an indicator based on the age difference between carers and cared-for. A minimum difference of 17 years combined with an age threshold of 60 for the cared-for was used to provide a lower threshold for the identification of an elderly parent. This measure identifies only 26 percent of the whole sample as intergenerational elder carers. However, nearly half of mid-life carers (46.2 percent) and nearly 11 percent of older carers are intergenerational elder carers by this measure.

<Table 4 about here>

Table 4 reports on the characteristics and needs of 1,294 of the people cared for by the carers in the regional sample. The average age of the cared-for is just under 61 and the gender split is very equal. The very marginal difference between the mean age of the carers in the regional sample and the people they help suggests that spousal care is a large part of the care provided, particularly for older carers where the age gap is negligible. In line with this, 60.37 percent of all older carers are recorded as caring for someone whose care needs are defined simply in terms of being an older person (65 or over) and another 6.00 percent of older carers care for someone classified as an older person with mental health or learning needs. The 45.2 percent of mid-life carers helping someone classified as an older person either with or without mental health or learning needs are more likely to be involved in intergenerational elder care. Compared with older carers, mid-life carers are also more likely to be caring for

an adult under 65 with mental health or learning needs or a disabled child. Just under 20 percent of the whole sample care for someone who receives Attendance Allowance the main state benefit available to people 65 or over who need help to look after themselves and/or to get around because of a long-term health problem or disability or have a terminal illness. This figure rises to 30 percent among older carers. Fewer than five percent of the sample looks after someone who receives Disability Living Allowance the equivalent benefit paid to disabled people under 65 (currently being replaced by the Personal Independence Payment, PIP). Older carers are more likely to be caring for someone who shares a joint home with their carer and this is also consistent with spousal care. Among mid-life carers this is more likely among men. Both findings are in line with evidence from national data which indicates that among carers aged 50 and over, males and older carers, particularly those aged 85 and over, are more likely to be caring for a spouse (Vlachantoni, 2010).

Empirical specification

The determinates of caring provision are explored by specifying the following estimated relationship:

$$C = \beta_0 + \beta_1 AGE{\geq}65 + \beta_2 MALE + \beta_3\, X_1 + \beta_4\, X_2 + \beta_5\, X_3 + \beta_6\, WORKING\ +\ \varepsilon \qquad (1)$$

where C is the measure of the intensity of care provision indicated either by the time involved in care, T, or the provision of personal care, P. AGE$\geq$65 is a dichotomous variable that equals one if the carer is 65 or over (zero otherwise). MALE is a dichotomous variable indicating the gender of the carer. X_1 and X_2 are vectors of covariates reflecting, respectively, the characteristics and needs of the cared-for person and the amount, type and duration of the care given. X_3 is a vector of covariates indicating receipt of three specific state benefits by

either the carer or the cared-for: Carer's Allowance, CA; Attendance Allowance, AA or; Disability Living Allowance, DLA. WORKING is a dichotomous variable indicating whether the carer is employed or not. ε is the error term. In the estimation of personal care provision the vector X_2 includes an appropriately restricted set of covariates. Table 9 provides definitions of all the variables used in the analysis.

The dependent variable indicating the time involved in caregiving (T) is ordered over seven bands of weekly care hours, CAREHOURScat. Ordered logit was therefore considered an appropriate estimating model. Because the ordered probit model imposes the constraint of parallel regressions which is frequently violated (Long and Freese, 2006:200) two alternative specifications were estimated for comparison: (i) multinomial logit (MNL) with CAREHOURScat and; (ii) logit regression using a binary variable marking the 100 hour threshold, CAREHRS$\geq$100 . The indicator of personal care provision (PERSONAL_CARE) is a dichotomous variable and the probability of providing personal care (P) is modelled using the logit estimator. In initial estimations we included most of the available variables reflecting the characteristics and measures in Tables 1, 2 and 4. Subsequently, variables were dropped when they lacked significance in simple regressions, or were strongly correlated with other significant variables and distorted the results.

For each dependent variable, we report four alternative specifications. In addition to AGE$\geq$65 and MALE, Model 1 includes variables reflecting the characteristics and needs of the cared-for and measures of caring provision. Model 2 additionally includes the benefit variables (CA, AA, DLA) and Model 3 includes the indicator of employment status, WORKING. Model 4 adds an independent variable interacting the ages of the carer and the cared-for (Carer&CF$\geq$65). This stepped procedure allows separate consideration of the needs of the cared-for and characteristics other than age which may otherwise be obscured. Obscuration is expected not least because the eligibility conditions for receipt of CA

precisely identify carers caring for at least 35 hours a week while receipt of AA or DLA confirms high dependency on the part of the cared-for. In addition, carers can only claim Carer's Allowance if the cared-for person is in receipt of either an attendance or disability living allowance. The benefit variables are therefore likely to be highly correlated with the intensity of care need as is the age of the person cared-for. In relation to employment status, this is expected to impact on ability to care, but as noted, the relationship is complex because caring responsibilities can also constrain employment participation. This means that caring and employment are likely to be jointly determined. In this case there will be unobserved covariates such as ability that potentially impact on both caring commitment and employment participation. The omission of these covariates in Model 3 would violate the zero conditional mean assumption $(E(\varepsilon|X)=0)$ since changes in such variables would alter both caring provision and employment status and OLS estimates of Model 3 would be inconsistent. For example, if people with higher unobserved ability have a lower propensity for caring $(\beta UnobservedAbility < 0)$ and a higher propensity for employment then $Cov(\varepsilon, WORKING) > 0$ biasing the OLS estimates.

The most common method used to control for this implied endogeneity in the care-employment relationship is to specify an instrument and use 2SLS to generate consistent estimations (Heitmueller 2007,). To address the identification problem, the instrument needs to satisfy two criteria: it needs to be strongly correlated with the measure of the endogenous independent variable and uncorrelated with the error term in the estimated equation. Unfortunately, the regional data does not include a suitable instrument for employment status (e.g. educational attainment). Instead, since instruments for caring provision are available, we tested for endogeneity by estimating the inverse, employment participation equation. To satisfy the first criteria, the instrument is constructed using a subset of those variables that are significant in the estimates of Model 1. Although we cannot observe ε, and therefore cannot

directly test for the second assumption (Wooldridge 2002) the sub-set of variables excludes carer characteristics and includes only those reflecting the characteristics of the cared-for and their care-needs. It is unlikely that these measures are correlated with unobserved determinants such as the carer's unobserved ability. The latter are likely to be determined in the carer's formative years not by the onset or nature of the cared-for person's illness or disability. Although, this distinction will be less clear cut for those who have been caring from a young age. The selection of the instruments was further refined using the Amemiya-Lee-Newey test for validity. The results of the IV estimation procedure (not reported) suggested that endogeneity leads to an underestimation of the strength of the relationship between caring and employment. However, the Wald test of endogeneity was insignificant ($\chi^2 = 1.90$) indicating that there is sufficient information to accept the null of no endogeneity and infer that the reported estimates for Model 3 are unbiased.

Finally we use Fairlie-Blinder-Oaxaca decompositions to decompose the overall differences in caring provision between older and younger carers into explained (endowment) and unexplained (coefficient) effects. Caring provision of care is measured by hours of care supplied and provision of personal care. We use the Fairlie (2006) variant of the standard Blinder-Oaxaca decomposition as this variant accommodates binary dependent variables. However, the method does not accommodate ordered variables and we therefore use the binary dependent variable, CAREHRS$\geq$100, in the decompositions for hours of caring provision instead of the ordered variable, CAREHOURScat. The binary variable PERSONAL_CARE is used in the decompositions for the provision of personal care. We use the Stata oaxaca script (Jann, 2008) with logit which has the advantage that the individual components in the decomposition add up exactly to the overall probabilities. As suggested by Oaxaca and Ransom (1994) we use pooled parameter estimates to provide 'group-neutral' coefficients. The resulting decomposition of the difference between the predicted mean

probabilities of caring for 100 or more hours a week for the older (C^o) and younger (C^y)

carers is:

$$\overline{C}^y - \overline{C}^o = \overline{P}(X_j^y \hat{\beta}^*) - \overline{P}(X_j^o \hat{\beta}^*) + \overline{P}(X_j^y \hat{\beta}^y) - \overline{P}(X_j^y \hat{\beta}^*) + \overline{P}(X_j^o \hat{\beta}^*) - \overline{P}(X_j^o \hat{\beta}^o) \quad (2)$$

Where each $\overline{P}$ is the mean probability and the superscripts o, y and * represent the older

sample, the younger sample and the pooled sample respectively. An equivalent

decomposition is estimated for the probability of providing personal care. In each case,

$\overline{P}(X_j^y \hat{\beta}^*) - \overline{P}(X_j^o \hat{\beta}^*)$ are the explained endowment effects due to differences between the

two groups in the values of the included variables (X_j) including those reflecting the

characteristics and needs of the people cared-for.

$\overline{P}(X_j^y \hat{\beta}^y) - \overline{P}(X_j^y \hat{\beta}^*) + \overline{P}(X_j^o \hat{\beta}^*) - \overline{P}(X_j^o \hat{\beta}^o)$ are the coefficient effects. These can be

interpreted as older carer specific effects which by definition are unexplained.

<Tables 5-6 about here>

Results

Hours of care

Table 5 reports the ordered logit estimates for Models 1-4 in which the dependent variable is

the ordered measure of caring intensity, CAREHOURScat. For ease of interpretation odds

ratios and confidence intervals are reported. Table 6 reports a subset of parameter estimates

for the MNL estimates of Models 1-4 and the alternative logit specification with the dichotomous dependent variable CAREHRS>100.

In Table 6, AGE$\geq$65 is positively significant in Models 1-4 although the level of significance is lower in Model 4 which includes the interaction term, Carer&CF$\geq$65. These results confirm that even after controlling for the gender and employment status of the carer, the characteristics and needs of the cared-for and receipt of care-related benefits, older carers are the most time-intensive carers. The positive significance of Carer&CF$\geq$65 (Model 4) suggests this is particularly true for those older carers who are themselves looking after an older person. This interpretation is also supported by the MNL and alternative logit estimates (Table 6). In the MNL estimates, the odds of caring for 20-34, 35-49, 50-99 or at least 100 hours a week relative to the base category of less than 5 hours, are all higher for older carers. Similarly, AGE$\geq$65 is positively significant in the Model 1-3 logit estimates with the dependent variable CAREHRS$\geq$100. It is not significant in Model 4 but the interaction term, Carer&CF$\geq$65, is highly significant.

The results for Model 1 in Table 6 also show that the nature of the cared-for's health needs are significant. Notably, hours of caring are longer when the cared-for is an older person either with or without mental health or learning needs. While the odds ratios associated with caring for an adult with a physical disability or 'other' needs are also positive they are smaller. The influence of caring for a younger adult with mental health or learning needs is not significantly different from that of caring for a disabled child (the reference category). In Models 2-3, CF_Older_Person_care_needs, the variable capturing the care-needs of an older person retains significance while the other indicators of care need lose significance. However, in Model 4, the inclusion of Carer&CF$\geq$65 unsurprisingly cancels out the influence of CF_Older_Person_care_needs. Nevertheless, these results support the

contention that that older people caring for other older people are the most intensive carers, particularly as the variable proxying intergenerational elder care is consistently insignificant.

In line with previous research, female carers are also more intensive carers (although gender is not significant in Model 3). In contrast, the gender of the cared-for is not a significant determinate of hours of caring. The influence of the living arrangements of the cared-for is consistent with previous research; longer hours of care are provided by co-residential carers. This is particularly true when the cared-for person lives in the carer's home as opposed to sharing a joint home: in the first case the odds of caring for longer hours are up to twice as large.

In all four estimations the provision of personal care is strongly and positively significant: the odds of caring for longer hours are up to 8.53 higher when personal care is provided. The positive significance of providing only emotional care suggests that a considerable amount of a caregiver's time could involve intangible forms of care which, as reported in Thomas *et al.* (2002) can be very challenging.

In Models 2-4, the significant influences of receipt of CA, AA, and DLA are all positive. This coupled with the reduction in the odds ratios and significance of most of the indicators of care need suggests that receipt of these benefits captures greater care need as predicted. In Model 3, the influence of employment status (WORKING) is somewhat surprisingly insignificant, although the significance of the carer's gender and care needs of an older person are reduced. The duration of the caring episode is consistently negatively significant. This may be interpreted as suggesting attrition or possibly a trade-off between time spent caring and the duration of the caring episode. Perhaps, those who manage to supply care over the very long term find ways to reduce or contain the time they are involved in care e.g. by organizing more help.

<Table 7 about here>

Provision of personal care

In Table 7 the dependent variable is the indicator of personal care provision. As discussed, the provision of personal care can be viewed as an alternative, needs-focused measure of the intensity of caregiving. The results indicate that the age and gender of the carer are both important determinants of the provision of personal care: in Models 1-3 the odds of providing personal care are up to 2.3 times higher for older carers. AGE$\geq$65 is insignificant in Model 4 but the influence of Carer&CF$\geq$65 is positive and significant: the odds of providing personal care are 5.04 times higher if both the carer and the cared-for are 65 or over. These are interesting results given that the provision of personal care is also a positive and significant determinant of hours of care (Table 5). There is potentially an additional indirect relationship between carer age and gender and the time devoted to caregiving through the provision of personal care.

Not surprisingly, the needs of the cared for person are a strong determinate of personal care provision and the odds of providing personal care are higher when care needs are related to a physical disability. Most of the measures of care need retain significance in Model 2 which additionally includes the indicators of benefit receipt. These indicators are all positively significant although AA and DLA only weakly so and AA is insignificant in Model 3, as is WORKING. In Model 4, the inclusion of Carer&CF$\geq$65 cancels out the influence of care needs associated with an older person (as in Table 5).The weak significance of the receipt of either AA or DLA is somewhat surprising and contrasts with the consistent significance of most of the variables reflecting the needs of the cared-for person. One interpretation is that the relationship between care need and the provision of personal care is

better captured by direct measures of the cared-for person's health needs than by the broader, benefit indicators.

As in Table 5, living arrangements are an important determinant of caring intensity but only co-residential carers sharing their home with the cared-for person are more likely to provide personal care. One possibility is that care need is the reason why the cared-for person lives in the carer's home. Notably, personal care is less likely to be provided if the cared-for lives in their own home (significant in Model 1 only). Neither the duration of the caring episode nor the proxy for intergenerational elder care are significant in these estimations.

<Table 8 about here>

Fairlie-Blinder-Oaxaca decompositions

Table 8 reports the Fairlie-Blinder-Oaxaca decompositions for the Model 3 logit estimates with the binary dependent variables CAREHRS$\geq$100 and PERSONAL_CARE. The results for CAREHRS$\geq$100 indicate that the overall difference in the proportion of younger and older carers caring for 100 or more hours a week (-0.293) is significant and attributed jointly to explained and unexplained (coefficient) effects. Both effects are significant, although the unexplained effects only weakly so, and the contribution of the explained effect is larger. The figures indicate that 59.42 percent of the difference in the proportion of older and younger carers providing 100 or more hours of care is explained by differences in the mean values of the included variables. Of these, the strongest effects are linked to the characteristics and needs of the people cared-for (details not reported but available on request). The strongest individual explained components contributing to the difference come from the higher incidences of personal care provision and co-residence in a joint home among older carers and the lower employment participation of older carers. The significant individual

coefficient effects contributing to the difference are all due to the variables capturing care needs. For these variables, the coefficients within the older carer sample are all larger. In contrast, all of the difference between older and younger carers in the provision of personal care (-0.134) is attributed to unexplained differences in the coefficients of the included variables. The explained effect reduces the difference but is insignificant. The strongest individual coefficient effects contributing to the difference in the provision of personal care come from the duration of the recorded caring episode and 'other' care needs; the estimated coefficient for both is larger within the older sample. The significance of unexplained effects suggests that personal care and, to a less extent, longer hours of are a particular feature of the care supplied by older people. Since personal care provision and longer hours of care and are likely to indicate a greater need for assistance, these results are in line with those of Vecchio *et al.* (2009) who find that after allowing for the disabling condition of the cared-for, perceived need for care assistance increases with the age of the carer.

<Table 9 about here>

Summary and implications

The research reported here is based on the analysis of a regional data set that that includes information on the characteristics and needs of the cared-for as well as the type of care given. While the data set is relatively small, the availability of data on the characteristics and needs of the cared-for range enabled an exploration of their role in the determination of the amount and type of care supplied by older carers (65 and over).

The results indicate that older carers are among the most intensive carers who care for the longest hours. Older carers are also more likely to be co-resident carers in a joint home with the cared-for and are more likely to be caring for an older person of a similar age to themselves. In line with national data (Vlachantoni, 2010) this suggests that older carers are

most likely to be engaged in spousal care. Secondly, older carers, along with female and co-resident carers are more likely to provide personal care. Because the receipt of personal care identifies a care recipient as someone with profound limitations, the provision of this type of care can be considered as an alternative, needs-focused measure of the intensity of the caring role. The provision of personal care also suggests a high level of intimacy in the caring relationship which can place particular demands upon the carer, as well as the cared-for. Within the regional sample, personal care is most likely to be received by adults with a physical disability and older people. Cared-for people living in the carer's home are also more likely to receive personal care. A positive relationship found between the provision of personal care and hours of caring suggests that these indicators of more intensive caregiving are complementary and possibly jointly determined. This is in line with Vickerstaff *et al*. (2009:27) who find that the provision of intimate personal care and long hours of care are complements. Such information is potentially useful for identifying those carers most in need of support (Hellström and Hallberg 2001).

Thirdly, the Fairlie-Blinder-Oaxaca decompositions indicate that the characteristics and needs of the people cared for and the type of care provided are a large part of the explanation for the longer hours of care provided by older carers. The significance (albeit weak) of the overall unexplained, coefficient effect in the hours of care decomposition additionally implies that among otherwise equal carers those who are at least 65 years old provide longer hours of care. However, the greater incidence of personal care provision among older carers does not appear to be explained by the characteristics of the people cared-for: the overall explained, endowment effect is not significant. Instead, the significance of the overall unexplained, coefficient effects suggests that personal care is a particular feature of caring relationships in which the caregiver is an older person. One explanation is that because older people are more likely to be involved in spousal care, there is a greater

intimacy between the carer and the cared-for and this makes it more natural to provide personal care where it is needed.

Taken together, the results can be interpreted as suggesting that the characteristics and needs of the cared-for have a direct influence on the amount and type of informal care provided and by implication the need for assistance. This would be consistent with the results of Vecchio *et al.* (2009) who find that perceived (unmet) need for support is related to the disabling condition of the cared-for. Since these characteristics are largely exogenously determined and can change after a decision to provide care has been made, the discretion carers have over the time and energy they commit to caregiving is likely to be limited. The associated costs for carers, in part due to constraints on their leisure time and reduced opportunities in employment for some, are often ignored in policy decisions and overall there is a lack of recognition of carers' contribution to the health and wellbeing of others and the difficulties they face. Instead, informal carers tend to be regarded as a free source of labour from the perspective of health and social services. From a policy perspective this could be costly since there is some evidence that higher opportunity costs of caring deter people from taking on these responsibilities (Carmichael *et al.,* 2010). At the same time community health and social care systems rely on family carers providing support for people who need care but want to remain in their homes (Nolan 2001). This has been acknowledged by successive UK governments in a string of policies dating from the milestone Carers (Recognition and Service) Act (1995) and the development of the first National Strategy for Carers (Department of Health, 1999). However, the difficulties faced by carers may not have changed significantly (Challis et al. 2005, Carmichael and Hulme 2008). The current government recognises the contribution of carers to social care (e.g. CFCS, 2011:4, 18) and its stated intention is to 'refresh' the National Carers Strategy and it has produced a plan of action for 2011-15. The minister for Care Services, issued a call for views on this process

(Department of Health 2010) and a response to the views submitted has been published (Carers Policy Team 2010). In the 'refreshment' process there is a focus on 'effective early intervention' and 'personalisation'.   To improve the early identification of carers the Reaching out to Carers Innovation Fund has awarded £1.35m to 79 projects run by voluntary groups who are 'keen to support carers' (Department of Health 2011). At the time of writing, the funding of social care remains under review (CFCS, 2011; HMG, 2012).

   In line with previous research the results of the current analysis suggest that such initiatives need to be directed to support the most intensive carers who are providing long hours of care to people with complex health needs. Many of these carers are quite elderly themselves and some will face competing demands linked to their own health needs. Others will be struggling to balance paid work with their caring responsibilities. However, the generalizability of the results reported here is limited by the relatively small sample size and the cross section nature of the dataset. As is often the case with data not collected specifically for research purposes, data on some relevant variables including familial relationships, were not available. Previous research on caregiving and employment has also highlighted the importance of taking a life course approach which was not possible here (Henz 2004, Young and Grundy 2008). Additionally there are likely to be inaccuracies in the self-reported measurement of time involved in caring (Dumont *et al*. 2010). A further limitation is that the sample is composed of those carers most heavily involved in informal care. To the extent that the results of this research are generalizable, this will only be true in respect of the minority of carers in a similar position. Nevertheless, it is important to examine the needs of carers who fall into this category since it is this group that is in most need of support. In addition, this group contributes the most to community care and a significant membership of this group is older people whose contribution is not always acknowledged.

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Table 1: Characteristics of older caregivers and mid-life caregivers

	Older caregivers: ≥ 65yrs			Mid-life caregivers: 25-64yrs			Whole sample††
	All (i)	Women (ii)	Men (iii)	All (iv)	Women (v)	Men (vi)	All (vii)
Number of observations (% of whole sample)	792 (46.53)	521	271	704 (41.36)	561	143	1985 (100%)
Mean age	76.07***	75.43###	77.30	52.99	52.69##	54.20	59.01
Female (%)	65.78***			79.69			69.97
Employed: self-employed or employee (%)	5.02 ***	4.17	6.5	41.12	39.35	49.32	21.28
In training/education (%)	0	0	0	0.24	0.3	0	16.88
White ethnic (British, Irish, European, other) (%)	91.04	91.36	90.41	90.34	92.16###	83.22	91.74
Asian or Black ethnicity (%)	8.97	8.64	9.59	9.09	7.31###	16.08	7.96
In receipt of Carers Allowance (%)	4.92 ***	5.57	3.69	18.75	18.72	18.89	8.72
Either carer and/or cared-for receives state benefit† (%)	47.98	47.79	48.34	44.46	45.10	41.96	38.64

Notes:

Means and percentages are by column (sub-sample).

***, **. For row characteristic, mean for all older carers (column (i)) significantly different from mean for all midlife carers (column (iv)) at 1% or 5% level

###, ##: Within age group and for row characteristic, mean of female sub-sample significantly different from mean of male sub-sample at 1% or 5% level.

† Either carer receives Carers Allowance (CA), Income Support or Pension Credit and/or cared-for receives Attendance Allowance (AA) or Disability Living Allowance (DLA).

†† 12.10 percent of the sample (n= 206; 98 male, 108 female) are younger caregivers aged ≤ 25. The vast majority are in training or education and provide mainly sibling care and/or are performing household chores.

Table 2: Amount and type of care provided by caregivers' age group and gender

	Older caregivers: ≥ 65yrs			Mid-life caregivers: 25-64yrs			Whole sample
	All (i)	Women (ii)	Men (iii)	All (iv)	Women (v)	Men (vi)	All (vii)
< 20 hours per week (%)	1.04[***]	1.14	0.88	2.69	2.61	3.08	21.29
20 - 49 hours per week (%)	6.57[***]	6.29	7.02	20.16	20.85	16.92	12.66
≥ 20 hours per week (%)	98.96	98.86	99.12	97.31	97.39	96.92	78.71
≥ 50 hours per week (%)	92.39[***]	92.57	92.11	77.15	76.55	80	66.05
≥ 100 hours per week (%)	64.36[***]	65.14	63.16	47.04	48.21	41.54	43.73
Mean years caring	3.30[***]	3.23	3.44	2.33	2.25[##]	2.65	2.77
Co-residential care (%)	68.45[***]	68.75	67.88	55.49	56.41[###]	51.51	54.14
Provides personal care (with or without physical care) (%)	53.45[**]	57.53[##]	46.51	47.42	48.71	41.56	41.70
Provides only practical care (includes drug administration) (%)	22.41	19.64	27.13	24.65	25.50	20.78	19.23
Provides only emotional or 'other' care (%)	19.25[**]	19.18	19.38	24.41	23.50	28.57	18.42
Intergenerational elder care proxy (%)	10.85[***]	11.90	8.67	46.17	42.86[##]	60.42	26.02

Notes:

Means and percentages are by column (sub-sample).

[***], [**]. For row characteristic, mean for all older carers (column (i)) significantly different from mean for all midlife carers (column (iv)) at 1% or 5% level

[###, ##]: Within age group and for row characteristic, mean of female sub-sample significantly different from mean of male sub-sample at 1% or 5% level.

Intergenerational elder care proxy: cared-for is 60 or over and at least 17 years older than carer

Table 3: National data (BHPS 1991-2008): Caregiving by age and gender

	Older caregivers: ≥ 65yrs			Mid-life caregivers:25-64			All carers	All non-carers
	All	Women	Men	All	Women	Men		
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
No of observations	7,730	4,196	3,534	26,200	16,376	9,824	36,692	202,314
Caring participation rate (%) for group	17.56	16.56	18.91	16.53	19.25	13.38	15.35	
Proportion of all carers (%)	21.07	11.44	9.63	71.41	44.63	26.77	100	-
Proportion of all carers ≥ 25 (%)	22.79	12.37	10.42	77.21	48.26	28.95	100	-
Mean age	72.71***	72.33###	73.15	47.12	49.71###	47.44	50.43	44.34
Female (%)	54.28***			62.25			60.22	53.14
Employed (self-employed or employee) (%)	5.40***	4.29###	6.71	63.00	57.96###	71.41	49.54	58.22
Caring < 20 hours per week (%)	67.43***	69.12###	65.42	75.29	73.32###	78.58	74.52	-
Caring 20 - 49 hours per week (%)	9.20	7.94###	10.70	9.41	10.32###	7.89	9.10	-
Caring ≥ 20 hours per week (%)	29.69***	28.01###	31.69	22.82	24.83###	19.47	23.33	-
Caring ≥ 50 hours per week (%)	15.96***	15.26	16.79	10.26	11.11###	8.86	10.94	-
Caring ≥ 100 hours per week (5)	14.30***	13.47##	15.27	8.44	9.18###	7.22	9.21	-
Co-residential carers (%)	47.88***	42.90###	53.79	32.66	30.46###	36.33	36.42	-

Notes:

Means and percentages are for column sub-sample.

***, **. For row characteristic, mean for all older carers (column (i)) significantly different from mean for mid-life carers (column (iv)) at 1% or 5% level

###, ##: Within age group and for row characteristic, mean of female sub-sample significantly different from mean of male sub-sample at 1% or 5% level.

Table 4: Characteristics of cared-for person by caregivers' age group and gender

	Older caregivers ≥ 65yrs			Mid-life caregivers: 25-64yrs			Whole sample
	All (i)	Women (ii)	Men (iii)	All (iv)	Women (v)	Men (vi)	All (vii)
Mean age of cared-for	76.05***	75.81	76.54	57.83	54.96###	70.19	60.97
Male cared-for (%)	55.58***	77.00###	11.83	45.25	51.50###	19.23	50.39
Older person (≥65) with care needs (%)	60.37***	63.41##	54.54	38.12	36.74#	44.12	42.64
Older person (≥65) with mental health or learning needs (%)	5.95	4.48###	8.86	7.10	6.95	7.69	5.74
Adult (<65) with mental health or learning needs (%)	12.66***	13.13	11.76	18.97	20.64	11.76	16.07
Adult (<65) with physical disability care needs (%)	10.83	9.50#	13.37	12.71	10.66###	21.57	13.21
Disabled child (%)	2.57***	3.63##	0.53	16.58	19.8 ###	1.96	15.20
Employed (%)	11.12***	11.26	10.96	22.04	22.14	21.59	18.86
Retired (%)	86.56***	86.35	87.00	53.81	50.78###	67.05	60.47
Adult not working/retired/student (%)	9.80***	9.22	10.96	19.28	18.75	21.59	17.14
Student/pupil (%)	1.14 ***	1.37	0.68	21.40	25.26###	4.55	16.23
Receives Disability Living Allowance, DLA (%)	4.04***	3.26	5.54	6.82	6.60	7.69	4.23
Receives Attendance Allowance, AA (%)	30.05***	30.13	29.89	11.79	12.30	9.79	18.89
Lives in own home (%)	12.83***	13.86	10.88	27.84	28.21	26.26	23.92
Lives in joint home with caregiver (%)	53.12***	51.63#	55.96	19.51	15.38###	37.37	31.81
Lives in caregivers home (%)	15.33***	17.11	11.92	35.99	41.00###	14.14	22.34
Lives in institutionalised accommodation (%)	3.00	2.41	4.19	4.17	4.2	4.04	3.32

Notes:

Means and percentages are by column (sub-sample).

***, **. For row characteristic, mean for all older carers (column (i)) significantly different from mean for all midlife carers (column (iv)) at 1% or 5% level

###, ##,#: Within age group and for row characteristic, mean of female sub-sample significantly different from mean of male sub-sample at 1% , 5% or 10% level.

Table 5: Ordered logit regressions; dependent variable is CAREHOURScat

Independent Variables	Model 1	Model 2	Model 3	Model 4
AGE$\geq$65	3.37***	3.70***	3.71***	2.07*
	(2.03 - 5.59)	(2.22 - 6.17)	(2.11 - 6.53)	(0.95 - 4.51)
Carer&CF$\geq$65				2.66**
				(1.05 - 6.74)
MALE	0.68**	0.71*	0.73	0.73*
	(0.47 - 0.98)	(0.49 - 1.02)	(0.50 - 1.07)	(0.50 - 1.06)
CF_MALE	0.76	0.79	0.84	0.83
	(0.54 - 1.07)	(0.56 - 1.11)	(0.59 - 1.20)	(0.58 - 1.19)
CF_Older_Person_care_needs	4.45***	2.26**	2.12*	1.64
	(2.21 - 9.00)	(1.08 - 4.74)	(0.96 - 4.65)	(0.72 - 3.75)
CF_Older_Person_Mental_Health_ needs	2.24*	1.81	1.69	1.30
	(0.95 - 5.29)	(0.76 - 4.31)	(0.69 - 4.15)	(0.51 - 3.31)
CF_Phys_Disability	2.23**	1.35	1.23	1.29
	(1.20 - 4.16)	(0.71 - 2.57)	(0.63 - 2.40)	(0.66 - 2.52)
CF_Mental_Health_Learning_needs	1.65	1.36	1.14	1.22
	(0.90 - 3.01)	(0.73 - 2.52)	(0.59 - 2.20)	(0.63 - 2.37)
CF_Health_needs _other	2.69**	2.06	1.80	1.89
	(1.11 - 6.50)	(0.84 - 5.08)	(0.69 - 4.67)	(0.73 - 4.90)
CO-RES_JOINT_HOME	2.15***	3.90***	4.68***	4.45***
	(1.33 - 3.50)	(2.31 - 6.58)	(2.70 - 8.12)	(2.56 - 7.73)
CO-RES_CARER'S_HOME	4.92***	7.29***	8.49***	9.03***
	(2.84 - 8.52)	(4.11 - 12.9)	(4.66 - 15.5)	(4.93 - 16.5)
CF_ RES_INSTITUTION	0.48	0.51	0.63	0.63
	(0.18 - 1.28)	(0.20 - 1.32)	(0.23 - 1.71)	(0.23 - 1.71)
CF_OWN_HOME	0.52***	0.93	1.10	1.06
	(0.32 - 0.83)	(0.57 - 1.51)	(0.65 - 1.85)	(0.63 - 1.78)
DURATION	0.79***	0.78***	0.77***	0.76***
	(0.69 - 0.89)	(0.69 - 0.88)	(0.67 - 0.88)	(0.67 - 0.87)
INTERGEN_ELDERCARE	1.12	1.08	1.00	1.27
	(0.61 - 2.06)	(0.58 - 2.01)	(0.52 - 1.94)	(0.63 - 2.55)
PERSONAL_CARE	8.53***	8.02***	7.88***	7.57***
	(5.67 - 12.8)	(5.27 - 12.2)	(5.09 - 12.2)	(4.88 - 11.7)
EMOTIONAL_CARE	2.41***	2.26***	2.07**	2.10**
	(1.38 - 4.21)	(1.28 - 3.99)	(1.12 - 3.84)	(1.13 - 3.90)
PHYSICAL_CARE	1.89	2.47**	2.46**	2.41**
	(0.87 - 4.09)	(1.14 - 5.36)	(1.10 - 5.50)	(1.08 - 5.38)
OTHER_CARE	4.95***	4.77***	5.01***	5.14***
	(2.54 - 9.66)	(2.40 - 9.49)	(2.36 - 10.7)	(2.42 - 10.9)
CA		5.64***	6.98***	6.94***
		(3.39 - 9.40)	(4.04 - 12.1)	(4.00 - 12.0)
AA		6.27***	6.45***	6.39***
		(3.37 - 11.7)	(3.36 - 12.4)	(3.32 - 12.3)
DLA		6.29***	7.09***	8.24***
		(2.73 - 14.5)	(2.92 - 17.2)	(3.34 - 20.4)
WORKING			0.90	0.91
			(0.58 - 1.39)	(0.59 - 1.42)
cut1:Constant	0.039***	0.050***	0.034***	0.033***

	(0.019 - 0.081)	(0.024 - 0.10)	(0.014 - 0.079)	(0.014 - 0.078)
cut2:Constant	0.27***	0.35***	0.35***	0.35***
	(0.15 - 0.47)	(0.20 - 0.63)	(0.19 - 0.64)	(0.19 - 0.64)
cut3: Constant	0.98	1.43	1.50	1.48
	(0.55 - 1.75)	(0.79 - 2.59)	(0.81 - 2.78)	(0.80 - 2.76)
cut4: Constant	1.43	2.19**	2.30***	2.28**
	(0.79 - 2.57)	(1.20 - 4.01)	(1.22 - 4.34)	(1.21 - 4.30)
cut5: Constant	3.26***	5.64***	5.73***	5.70***
	(1.78 - 5.95)	(3.00 - 10.6)	(2.96 - 11.1)	(2.94 - 11.0)
cut6: Constant	17.1***	35.2***	36.5***	36.8***
	(9.16 - 32.0)	(18.1 - 68.5)	(18.2 - 73.2)	(18.3 - 74.1)
Observations	652	652	609	609
Log likelihood	-787.14	-747.98	-685.76	--683.67
Log likelihood ratio χ^2	421.41***	499.72***	476.73***	480.91***
(18, 21, 22)				
Pseudo R^2	0.211	0.250	0.258	0.26

Notes:
Reference categories as detailed in Table 5. 95% Confidence intervals in parentheses.
***, **, *: significantly different from zero at 1%, 5% and 10% levels respectively

Table 6: (i) Multinomial Logit estimations; dependent variable is CAREHOURScat;
(ii) Logit estimations; dependent variable is CAREHRS≥100

(i) Multinomial logit: Parameter estimates for AGE ≥65	Model 1	Model 2	Model 3	Model 4
<5 weekly hours of care = base outcome				
5-9 weekly hours of care	0.002	0.0002	0.0	0.0004
10-19 weekly hours of care	1.27	4.77	7.15	8.70
20-34 weekly hours of care	7.25***	3.22***	6.16***	4.45***
35-49 weekly hours of care	5.72***	2.56***	2.26***	9.06
50-99 weekly hours of care	1.20***	6.03***	1.31***	8.68***
≥ 100 weekly hours of care	1.70***	9.74***	1.24***	3.21***
Observations	652	652	609	609
Log likelihood	-611.113	-575.61	-504.53	-499.25
Log likelihood ratio χ^2 (108, 126,132,138)	773.46***	844.47***	839.19	849.75***
Pseudo R^2	0.388	0.423	0.454	0.460

(ii) Logit: Parameter estimates for AGE≥65 (and Carer&CF≥65, Model 4 only)	Model 1	Model 2	Model 3	Model 4
AGE ≥ 65	2.41***	2.75***	2.03**	0.78
	(1.37 - 4.22)	(1.54 - 4.93)	(1.06 - 3.91)	(0.30 - 2.03)
Carer&CF≥65				4.64***
				(1.51 -14.25)
Observations	652	652	609	609
Log likelihood	-326.39	-304.53	-273.29	-269.60
Log likelihood ratio χ^2 (18, 21, 22, 23)	241.73***	285.46***	289.83***	297.22***
Pseudo R^2	0.270	0.319	0.345	0.3554

Notes

Reported figures are Relative Risk Ratios for the MNL estimate (i) and Odds Ratios for the logit estimates (ii)
Other included variables are as in Table 5. 95% Confidence intervals in parentheses (logit estimations only)
***, **, *: significantly different from zero at 1%, 5% and 10% levels respectively

Table 7: Logit regressions; dependent variable is PERSONAL_CARE

Independent Variables	Model 1	Model 2	Model 3	Model 4
AGE≥65	2.02***	2.16***	2.30***	0.77
	(1.27 - 3.21)	(1.35 - 3.46)	(1.35 - 3.92)	(0.32 - 1.86)
Carer&CF≥65				5.04***
				(1.85 - 13.7)
MALE	0.52***	0.54***	0.57**	0.58**
	(0.34 - 0.78)	(0.36 - 0.82)	(0.37 - 0.89)	(0.37 - 0.90)
CF_MALE	1.06	1.10	1.17	1.17
	(0.73 - 1.52)	(0.76 - 1.59)	(0.79 - 1.74)	(0.78 - 1.73)
CF_Older_Person_care_needs	2.87***	2.25**	2.12*	1.47
	(1.44 - 5.72)	(1.09 - 4.63)	(0.96 - 4.67)	(0.64 - 3.36)
CF_Older_Person_Mental_Health_ needs	2.85**	2.56**	2.40*	1.68
	(1.21 - 6.70)	(1.08 - 6.10)	(0.96 - 6.01)	(0.65 - 4.33)
CF_Phys_Disability	4.85***	4.18***	3.64***	3.98***
	(2.45 - 9.58)	(2.08 - 8.38)	(1.73 - 7.64)	(1.87 - 8.44)
CF_Mental_Health_Learning_needs	0.42***	0.41***	0.39**	0.51*
	(0.22 - 0.79)	(0.22 - 0.79)	(0.19 - 0.80)	(0.25 - 1.05)
CF_Health_needs _other	2.87**	2.57*	2.44	2.57
	(1.02 - 8.04)	(0.90 - 7.29)	(0.80 - 7.45)	(0.83 - 8.01)
CO-RES_JOINT_HOME	0.72	0.89	0.93	0.85
	(0.45 - 1.16)	(0.54 - 1.45)	(0.55 - 1.58)	(0.50 - 1.45)
CO-RES_CARER'S_HOME	4.81***	5.22***	4.35***	4.71***
	(2.84 - 8.15)	(3.05 - 8.93)	(2.43 - 7.78)	(2.62 - 8.45)
CF_ RES_INSTITUTION	1.01	1.09	1.31	1.25
	(0.38 - 2.64)	(0.41 - 2.91)	(0.45 - 3.81)	(0.43 - 3.65)
CF_OWN_HOME	0.54**	0.68	0.64	0.59*
	(0.32 - 0.91)	(0.39 - 1.17)	(0.35 - 1.16)	(0.32 - 1.07)
DURATION	1.05	1.05	0.97	0.97
	(0.92 - 1.19)	(0.92 - 1.19)	(0.83 - 1.13)	(0.83 - 1.14)
INTERGEN_ELDERCARE	1.06	1.07	0.99	1.40
	(0.59 - 1.90)	(0.59 - 1.94)	(0.51 - 1.94)	(0.69 - 2.84)
CA		2.02***	2.28***	2.19***
		(1.27 - 3.22)	(1.39 - 3.73)	(1.33 - 3.60)
AA		1.68*	1.29	1.28
		(1.00 - 2.84)	(0.72 - 2.31)	(0.71 - 2.29)
DLA		1.91*	2.33**	2.69**
		(0.92 - 3.97)	(1.07 - 5.08)	(1.21 - 5.94)
WORKING			1.36	1.39
			(0.85 - 2.17)	(0.87 - 2.23)
Constant	0.24***	0.18***	0.20***	0.19***
	(0.13 - 0.45)	(0.094 - 0.36)	(0.095 - 0.41)	(0.092 - 0.40)
Observations	756	756	662	662
Log likelihood	-441.94	-435.93	-134.01	-378.71
Log likelihood ratio χ^2 (14, 19, 18)	138.83***	150.85***	124.01***	134.62***
Pseudo R^2	0.136	0.148	0.139	0.151

Notes: Reference categories as detailed in Table 5. 95% Confidence intervals in parentheses.
***, **, *: significantly different from zero at 1%, 5% and 10% levels respectively

Table 8: Fairlie-Blinder-Oaxaca decompositions; dependent variables are for Model 3 estimates (excluding AGE≥65) with dependent variables (i) CAREHRS≥100 and (ii) PERSONAL_CARE

	Younger carers	Older carers	Fairlie-Blinder-Oaxaca Decomposition	
			Explained effect:	*Unexplained effect:*
Dependent variable:				
CAREHRS≥100	*Mean:*	*Mean:*		
	0.339	0.632	-0.1741**	-0.1187*
			(-2.95)	(-1.69*)
	-0.293		-0.293***	
Difference:			(-6.93)	
Observations	395	212		
Dependent variable:			*Explained effect:*	*Unexplained effect:*
PERSONAL_CARE	*Mean:*	*Mean:*		
	0.351	0.485	0.01035	-0.1449**
			(0.21)	(-2.38)
	-0.135		-0.135***	
Difference:			(-3.36)	
Observations	422	237		

Notes:

z statistics in parentheses.

***, **, *: significantly different from zero at 1%, 5% and 10% levels respectively.

Table 9: Definitions of variables used in the analysis

Variable	Definition
CAREHOURScat	Ordered variable indicating weekly hours of care provided: less than 5, 5-9, 10-19, 20-34, 35-49, 50-99, $\geq$100 hours a week (=0, 1,2,3,4,5,6).
CAREHRS$\geq$100	Caregiver provides 100 or more hours of care weekly (=0,1)
AGE$\geq$65	Caregiver's age is 65 or over (=0,1)
Carer&CF$\geq$65	Caregiver and cared-for at least 65 years old (=0,1)
MALE	Caregiver is male (=0,1)
CF_MALE	Cared-for is male (=0,1).
CF_Older_Person_care_needs	Cared-for has care needs defined as being an older person (65 and over) no mental health or learning needs (=0,1).
CF_Older_Person_Mental_Health_ needs	Cared-for is an older adult (65 or over) with mental health or learning needs (=0,1).
CF_Mental_Health_Learning_needs	Cared-for is an adult (64 or younger) with mental health or learning needs (=0,1).
CF_Phys_Disability	Cared-for is an adult with a physical disability (=0,1).
CF_Health_needs _other	Cared-for has care needs defined as 'Other'(=0,1).
CF_Disabled_Child	Reference group: Cared-for is a disabled child of the caregiver (=0,1).
CO-RES_JOINT_HOME	Caregiver provides co-residential care in a joint home with cared-for (=0,1).
CO-RES_CARER'S_HOME	Caregiver provides co-residential care in own home (=0,1)
CF_ RES_INSTITUTION	Cared-for lives in institutional or supported accommodation: sheltered or supported accommodation, a residential home, a nursing home, hospital or hospice (=0,1).
CF_OWN_HOME	Cared-for lives in own home (=0,1)
CF_RES_other_non-co-res	Reference category: Cared-for lives in 'other' accommodation non-co-residential with carer
DURATION	Number of years registered as providing care
INTERGEN_ELDERCARE	Caregiver provides care for a person who is 60 or over and at least 17 years older than the caregiver; proxy for elder care. (=0,1)
PERSONAL_CARE	Caregiver provides personal care (=0,1)..
EMOTIONAL_CARE	Caregiver provides only emotional care (=0,1).
PHYSICAL_CARE	Caregiver provides only physical care
OTHER_CARE	Caregiver provides only 'other' care (=0,1).
YOUNG_CARER	Reference category: Caregiver is young carer (chores or sibling care).
PRACT_ CARE	Reference category: Caregiver provides only practical care (include drug administration).
CA	Caregiver receives Carer's Allowance (=0,1)
AA	Cared for receives Attendance Allowance (=0,1).
DLA	Cared for receives Disability Living Allowance (=0,1).
WORKING	Caregiver is in employment (=0,1).