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Household composition and the dynamics of community-based social care in England

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Abstract

Little is known about the dynamic relationship between the different funding sources of community-based social care in England. Using Waves 2–6 (2004–2013) of the English Longitudinal Study of Ageing survey, I estimated dynamic multi-level cross-classified mixed-effects logistic regression models to investigate whether receiving services by one source is more or less likely if an older person was already receiving services funded by the same source or another in the previous period. Four hypotheses between formal privately and publicly funded help and informal help are tested: substitution, complementarity, compensation and task-specificity. I also report evidence that older people on low incomes residing in local authorities that reduce social care spending are especially affected.

Introduction

In the financial year 2014/15, around 400,000 people aged 65 or over received community-based social care services in England with an estimated value of £3 billion (LaingBuisson, 2016). Non-residential adult social care services comprise home care, day services, direct payments, equipment and adaptations, and meals. Due to changes in the information systems and returns used to collect data on adult social care in England, since 2015/16 expenditure and activity cannot be broken down by these types of services. Non-residential care services for people aged 65 or over represented about 32 per cent of the annualised value of care services, of which just over 65 per cent was publicly funded. Moreover, domiciliary-based services represented about 40 per cent of all public and private expenditure in adult care services for people aged 65 or over (LaingBuisson, 2015). In addition to these formal care services, around 6.5 million people provide unpaid care in the United Kingdom whose services are estimated to be worth £132 billion a year (Carers UK, 2017).

Of all community-based social care services, local authorities paid 59 per cent – either directly, through direct payments or by commissioning the services to

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private providers; households paid about 35 per cent privately; and the National Health Service (NHS) commissioned the remaining 6 per cent (LaingBuisson, 2015).

Despite the size of this market, little is known about the interplay between the dynamics of formal and informal care services and the structure of households. A vast literature has considered whether formal and informal care services are complementary goods or act as substitutes of each other. There is also a smaller literature whose focus is on the dynamics between care-giving and labour market decisions (*e.g.* Nguyen and Connelly, 2017), and another strand that looks into the transitions in and out of dependence and between domiciliary and institutional settings (*e.g.* Garber and MaCurdy, 1990; Börsch-Supan *et al.*, 1991).

However, the question of whether the probability of receiving services from one source (*e.g.* local authority-funded services) is related to the receipt of services from the same or any other source (*e.g.* unpaid services) in a previous period has not been investigated thoroughly – that is, whether there is dynamic complementarity or substitution between different community-based adult social care services (Goeree Sovinsky and Stern, 2016).

Care arrangement dependence has been reported for the United States of America (USA) by Dostie and Léger (2005) and Heidemann *et al.* (2018), using two different data-sets. Mentzakis *et al.* (2009) found strong inertia effects in informal care, but focusing on the carers' decision to provide the services rather than the older recipients of those services.

Considering the changes in family structure, the restructuring of and reductions in publicly funded social care, and the increasing pressure on social care services stemming from current projected demographic trends, a better knowledge of the dynamics in the provision of and demand for different sources of care services is of crucial importance.

The focus of this paper is to look into the dynamics of the interplay between formal (local authority and privately funded) and informal community-based care-giving services to older people in England, and, within the informal provision of care, the relationship between spousal and filial care. I investigate two related research questions: (a) that receiving formal care services significantly influences the probability of receiving informal care services in the future; and (b) that these effects vary within the informal care-giving context by source (*i.e.* spouse, sons and daughters).

The following section presents a literature review, which is followed by a description of the data and statistical methods. The next section describes the results and is followed by the conclusions.

Literature review

Goeree Sovinsky and Stern (2016) reviewed the literature on dynamic modelling of long-term care decisions. They reported strong inertia or state dependence by source, as well as duration dependence, *i.e.* that transition rates between sources are affected by the length of time receiving care from each source.

Within households, the literature investigated both theoretically and empirically whether opportunity costs, burnout or other factors would affect the decision by

adult children to provide informal care to an older relative in need. However, a large part of this literature considered the provision of care by only one child, irrespective or independent of the presence of siblings and their respective care-giving decisions. Despite shedding light on some aspects of the intra-household or, more likely, intra-family decision, this independence assumption obviously fails to account for the richness of dynamic relationships, strategic or otherwise, within the younger generations.

Some papers consider alternative care arrangements, whilst others include living arrangements as well: the expected roles of children co-residing with their older parents are different from those expected from adult children living independently.

Depending on the wider context of welfare and health services, the public provision of health and care-giving services and the degree of integration between health care and social care have also been factored in as potentially relevant explanatory variables.

The literature proposes five alternative models regarding the relationship between formal and informal care services: the substitution model, the compensatory model, the complementary model, the task-specific model (Jiménez-Martín and Villaplana-Prieto, 2012) and the convoy of care model (Kemp *et al.*, 2013).

The substitution model postulates that formal and informal care compete with each another, so that a reduction in funding or an increase in costs of formal care would increase the provision of informal unpaid care services.

The compensatory model purports that there is substitution between formal and informal care, but observing a hierarchy or order of preference: informal care, especially by a member of the household, is preferable, and formal care is used as a last resort.

The complementary model combines the substitution and compensatory models: formal and informal care services are substitutes but when an informal carer needs respite or feels overwhelmed and exceeded by the nature or level of care demanded, formal care services would step in.

The task-specific model proposes that formal and informal care are complements, each attending different care needs.

The convoy of care model proposes the existence of a collection of formal and informal care providers whose composition changes over time according to factors operating at the societal, community, care industry and care-setting levels, as well as in the networks of formal and informal carers, the satisfaction with services, the level of burden, *etc.*

Within the realm of informal care services, the substitution model, for example, proposes that sons and daughters would act as substitutes. A parallel literature, not pursued in this paper, has identified different factors predisposing daughters (affection) and sons (filial obligation, inheritance, frequency of contact) to provide care to their elderly parents (Silverstein *et al.*, 1995). These separate drivers may translate into either complementary or substitutive behaviour. Certain care activities that demand intimacy may be more frequently performed by a partner and those that require physical strength, for example, by one son. This would give support for a task-specific explanation for a specialisation of activities between partners, sons and daughters. There is room for compensatory and complementary mechanisms within informal sources of help, in the sense that partners are preferred to, say,

daughters and daughters to sons, *etc*., or that daughters engage in caring when the help provided by the spouse of the parent in need is not sufficient (Stoller and Earl, 1983). Therefore, the theoretical approaches are agnostic regarding the dynamic relationships between the different sources of informal care, which leaves the determination of their nature an empirical matter to which this paper contributes.

Using data from the USA for 1982 and 1984, Checkovich and Stern (2002) found that care-giving decisions of adult children of their elderly parents are dependent across time and family members. In particular, the authors identified two sets of variables as significant factors, one corresponding to the adult child's characteristics and the other to the parent's. Among the child's characteristics, the authors listed their sex (daughters were more likely to provide care than sons), distance of residence from parent, work status and number of siblings. Among the parent's variables, significant factors included sex, age, marital status and level of functional disability.

Mentzakis *et al.* (2009) looked into British data for the period 1991–2004. Their model treats formal care as an exogenous variable (using contemporaneous formal care values, rather than lagged values) to the informal care-giving decision. The rationale is that formal care eligibility is carried out irrespective of and independently from the availability and provision of informal care services (*i.e.* 'carer blind'). The authors used a two-part modelling strategy by which the decision by adult children to provide informal care is determined first and the level of care is decided afterwards, conditional on having decided to give care. These authors' results suggest that the decisions by sons and daughters are influenced by comparable factors, with age and household size exerting a positive effect. In turn, there are differences by gender regarding the level of hours of care-giving: *e.g.* higher levels of income and wealth reduce the probability that adult sons provide care to their parents, but increase the probability that adult daughters do so. One important finding is that there would be complementarity between sons and daughters for less-demanding tasks, but substitution for more skilled and technical tasks.

Methods

Data

The statistical analysis uses data from Waves 2–6 (fieldwork between June 2004–July 2005 and May 2012–June 2013, respectively) of the English Longitudinal Study of Ageing (ELSA) survey. ELSA is an ongoing longitudinal survey, representative of people aged 50 and over living in private households in England (Marmot *et al.*, 2015). I base the analysis on respondents aged 65 or over as this age group represents around 64 per cent of all clients receiving community-based services provided or commissioned by local authorities in England (Health and Social Care Information Centre (HSCIC), 2014: table P1a).

Social care encompasses 'services to help with personal care and practical tasks to adults who need it due to physical disabilities, learning disabilities, physical or mental ill-health, or old age' (National Audit Office, 2014: 55). An objective measure of such need is to have difficulty with performing activities of daily living (ADLs), instrumental activities of daily living (IADLs) or mobility tasks.

ADL is a classification of routine, everyday self-care activities (Katz *et al.*, 1963) including: having a bath or a shower, dressing or undressing, getting in and out of bed, using the toilet, and eating, including cutting up food.

IADLs are activities that require higher mental and physical capacity and functioning compared to ADLs (Lawton and Brody, 1969), and include: using a map to get around in a strange place, preparing a hot meal, shopping for groceries, making telephone calls, taking medication, doing work around the house or garden, and managing money.

Mobility tasks include walking 100 yards, sitting for about two hours, getting up from a chair after sitting for long periods, *etc*. I use all the ADLs but I excluded paying bills, using a telephone or a map from the IADL list so that I only considered the activities more likely to trigger formal or unpaid social care use (Whalley, 2012; Jones, 2016).

The ELSA survey included questions about difficulty with performing each of the ADLs and IADLs (*e.g.* 'ADL: difficulty dressing, including putting on shoes and socks'), dichotomised into 0 = not mentioned and 1 = mentioned (apart from the categories 'refusal, don't know and not applicable').

The variables of interest are related to the three different funding sources of adult social care services: formal social care services funded by local authorities (LA-funded), formal social care services privately funded (private), and informal or unpaid social care (unpaid). For respondents who declare to have difficulty with one or more ADLs or IADLs, ELSA includes questions about who helps with these activities, from which I constructed the variables for the three sources. I classified as informal source help from unpaid volunteers and from relatives (husband, wife or partner; mother or father; son; daughter; *etc.*). The category 'privately paid employee' was used to define private help, except for Wave 6 for which, due to changes in the questionnaire, I resorted to the 'other formal help' category. Finally, help from social or health service workers became the LA-funded help variable.

The models included the following individual-level independent variables:

(1) Household income: benefit-unit (BU) equivalised income (according to the Organisation for Economic Co-operation and Development equivalisation scale; Hagenaars *et al.*, 1994). A BU is either a single person or a couple regardless of whether they keep their finances separate or together (Oldfield, 2015*a*). Income is the sum of income from employment, self-employment, state benefit, state pension, private pension, assets and other sources (Oldfield 2015*b*).

(2) Non-housing wealth: net total non-housing wealth, equivalised by BU. Net total non-housing wealth is the sum of savings, investments and physical wealth after financial debt is subtracted (ELSA, 2015*b*).

Other individual-level covariates include the number of ADLs with difficulty (from 1 to 6), the number of IADLs with difficulty (from 1 to 4), chronological age (in years, truncated at 90), gender, and household size (with categories one and two or more, as only 7 per cent of respondents in the sample lived in households with three or more people including themselves).

Four local authority-level variables were used:

(1) Public expenditure: I used the Net Current Expenditure on community-based social care services for clients aged 65 or over (sources: HSCIC, 2014 and earlier) inflated to 2015/16 prices using the Gross Domestic Product deflator divided by the resident population aged 65 or over (source: Office for National Statistics, 2016). I included the following services: home care, day care/day services, fairer charging – community services, direct payments, equipment and adaptations, meals, and other services to older people. I omitted spending on assessments and referrals to focus on spending on activities closely related to the actual provision of services. To coincide with the fieldwork dates of ELSA Waves 2–6, I used biennial data covering the financial years 2004/5 to 2012/13.

(2) Income poverty: a higher concentration of older people on low incomes may be associated with access to and the density and quality of care services available to residents (Phillipson *et al.*, 2002; Hancock *et al.*, 2003). The Income Deprivation Affecting Older People Index is one of the supplementary indices of the English Index of Deprivation (Department for Communities and Local Government, 2015). However, it is only available for 2004 (relating to 2001), 2007 (relating to 2005), 2010 (relating to 2008) and 2015 (relating to 2012/13). Therefore, I used the percentage of beneficiaries of pension credit in receipt of the guarantee-credit element only as the data are available for the whole period under study – this element of the pension credit benefit is a top-up amount for people on low incomes (Age UK, 2016). I estimated the average percentages for the four quarters in each year.

(3) Rurality: social care services in rural areas are affected by sparcity (Asthana *et al.*, 2003) and higher costs (Hindle *et al.*, 2009) compared to more urban locations. Therefore, I controlled for the degree of rurality of the local authority as this may influence the relative prevalence of the sources of care services. I used the percentage of residents in mainly and largely rural areas and rural-related hub towns based on the rural–urban classification (Bibby and Brindley, 2016). Urban areas include major and lesser conurbations, cities and towns. Rural areas include smaller towns, villages, and hamlets and isolated dwellings.

(4) Type of local authority: local authorities in England are classified into county councils, district councils, unitary authorities, metropolitan districts and London boroughs (apart from the City of London Corporation and the Council of the Isles of Scilly, which we excluded from the sample). Of 353 local authorities, responsibility for the provision of adult social care services falls on 152 upper-tier authorities, which excludes the 201 district councils. I included this variable because the type of upper-tier local authority an individual resides in is significantly associated with changes in net expenditure on adult social care (Fernández *et al.*, 2013).

Table 1 provides the summary statistics by wave.

Table 1. Summary statistics

	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
	Mean values (standard deviations)				
Unmet needs	0.53 (0.50)	0.63 (0.48)	0.57 (0.50)	0.57 (0.49)	0.57 (0.50)
Funding sources:					
Local authority-funded	0.07 (0.26)	0.06 (0.24)	0.08 (0.27)	0.06 (0.23)	0.08 (0.28)
Informal	0.65 (0.48)	0.54 (0.50)	0.58 (0.49)	0.57 (0.49)	0.59 (0.49)
Privately funded	0.16 (0.36)	0.10 (0.31)	0.12 (0.33)	0.11 (0.31)	0.11 (0.31)
Individual-level variables:					
Household income	218.21 (200.13)	223.52 (134.45)	263.80 (187.85)	273.22 (164.64)	305.75 (257.25)
Non-housing wealth	44,732 (172,780.20)	50,187 (148,370.20)	64,636 (199,789.80)	63,404 (154,310.90)	71,264 (185,172.30)
Age	76.74 (7.09)	77.36 (7.37)	76.76 (7.30)	76.04 (6.71)	77.01 (7.68)
ADLs	1.49 (1.40)	1.62 (1.50)	1.54 (1.47)	1.50 (1.47)	1.62 (1.59)
IADLs	1.27 (1.11)	1.38 (1.20)	1.32 (1.18)	1.31 (1.16)	1.42 (1.23)
Gender	1.39 (0.49)	1.38 (0.49)	1.40 (0.49)	1.40 (0.49)	1.60 (0.49)
Household size	1.65 (0.69)	1.63 (0.75)	1.65 (0.71)	1.67 (0.71)	1.66 (0.72)
Local-authority level variables:					
Adult social care net current expenditure per person	328.77 (118.24)	360.45 (142.04)	383.66 (131.16)	339.89 (120.46)	314.84 (124.54)
Guarantee-only pension credit (%)	0.08 (0.04)	0.08 (0.05)	0.09 (0.05)	0.09 (0.05)	0.09 (0.05)
Rurality (% of residents)	19.81 (19.93)	19.39 (19.36)	19.75 (19.17)	20.35 (19.58)	20.17 (19.73)
Sample size	1,695	1,530	1,762	1,624	1,737

Notes: ADLs: activities of daily living. IADLs: instrumental activities of daily living.

Statistical methods

As mentioned, the goal of the paper is to investigate whether receiving help from one source makes it more or less likely to receive help from that source or any of the other sources conditioned on local authority of residence, public spending on social care and the other covariates.

As observations in one period or wave are linked to those in some other period, I fitted dynamic regression models (Box-Steffensmeier *et al.*, 2014: chap. 3) to the data. Given that the individual respondents were nested into their respective local authority of residence, the models needed to count for this multi-level structure. In particular, because I identified that some individuals moved local authority of residence in around 0.89 per cent of all valid individual-wave records, I tested whether a multi-level cross-classification (Rasbash and Goldstein, 1994) model fitted the data better than a purely hierarchical specification using the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). I found that cross-classified models did not significantly improve the fit and therefore we opted for a simpler nested specification. I did not impose any restrictions to the coefficients for each local authority – that is, I allowed them to vary both in slope and intercept – so we used a mixed-effects specification.

Dynamic linear models suffer from the 'initial condition problem' (Heckman, 1981*a*): they would render biased and inconsistent estimators if the initial conditions were not handled properly. Following Heckman (1981*b*) and Woolridge (2005), I included the initial conditions of each variable of interest (*e.g.* whether the individual received care from the particular source under investigation in the first wave they have entered the survey) to solve such a problem.

Finally, as each variable of interest in the equations above are binary (*e.g.* whether the individual received LA-funded social care in period t or not), I applied logistic regression models.

Consequently, I fitted the following dynamic multi-level mixed-effects logistic regression models:

$$
\begin{aligned}
\text{LA} - \text{funded}_{t,i} = {} & \alpha + \beta_1 \text{LA} - \text{funded}_{t-1,i} + \beta_2 \text{Private}_{t-1,i} + \beta_3 \text{Unpaid}_{t-1,i} \\
& + \beta_4 \text{LA} - \text{funded}_{0,i} + \beta_5 \text{Private}_{0,i} + \beta_6 \text{Unpaid}_{0,i} \\
& + \beta_7 \text{Spending}_{t,i} + \text{B.OC}_{t,i} + \varepsilon_{t,i}
\end{aligned}
$$

$$
\begin{aligned}
\text{Private}_{t,i} = {} & \alpha + \beta_1 \text{LA} - \text{funded}_{t-1,i} + \beta_2 \text{Private}_{t-1,i} + \beta_3 \text{Unpaid}_{t-1,i} \\
& + \beta_4 \text{LA} - \text{funded}_{0,i} + \beta_5 \text{Private}_{0,i} + \beta_6 \text{Unpaid}_{0,i} \\
& + \beta_7 \text{Spending}_{t,i} + \text{B.OC}_{t,i} + \varepsilon_{t,i}
\end{aligned}
$$

$$
\begin{aligned}
\text{Unpaid}_{t,i} = {} & \alpha + \beta_1 \text{LA} - \text{funded}_{t-1,i} + \beta_2 \text{Private}_{t-1,i} + \beta_3 \text{Unpaid}_{t-1,i} \\
& + \beta_4 \text{LA} - \text{funded}_{0,i} + \beta_5 \text{Private}_{0,i} + \beta_6 \text{Unpaid}_{0,i} \\
& + \beta_7 \text{Spending}_{t,i} + \text{B.OC}_{t,i} + \varepsilon_{t,i}
\end{aligned}
$$

where t is the time period or wave and $t − 1$ refers to the previous period to t; 0 corresponds to the initial conditions; i is the local authority; OC stands for other covariates (with B as the respective vector of regression coefficients) including the number of ADLs and IADLs with difficulty, age, gender and household size; and ε is the stochastic error.

The sample consists of people aged 65 or over who have at least one son, one daughter and a spouse. Let us consider the probability of receiving help from a son in a given period. The model investigates whether it depends on having received help from a partner or a son in the previous period, or from formal sources, as well as on the other covariates. Crucially, it also considers whether having received help from a daughter in the previous period is significant. It would not have been correct simply to have included a binary variable for help from a daughter in the previous period, as the older recipient of services may not have any daughters. Not receiving help from a living daughter is not the same as not receiving help from a daughter because the older person in need does not have any daughters in the first place. Therefore, the model to test for the probability of receiving help from a son in period t was run on the sub-sample of older people who had difficulty with ADLs and IADLs, and who had a son and at least one daughter in $t − 1$; similarly for spousal care. This means that the models belong to the family of models with multiple children (Checkovich and Stern, 2002; Byrne *et al.*, 2009).

Results

Table 2 presents the regression results on each variable of interest.

The sources of social care older people receive are subject to temporal inertia, confirming previous results reported in the literature. Receiving LA-funded services in one year is a strong predictor of the probability of receiving LA-funded services two years later, and the same applies to the other sources of formal and informal help.

I also find a complex dynamics within sources of informal care, and between these and formal care. Starting with informal care, help from sons and daughters appear to be substitutes: it is less likely for an elderly parent to receive help from an adult son if an adult daughter was already providing help, and *vice versa*. However, the interplay between help from an offspring and partners is less clear cut: receiving help from a daughter reduces the probability of obtaining help from a partner in the future, but the converse is not true: having received help from a partner two years earlier is not associated with the probability of receiving help from a daughter. Furthermore, there is no dynamic relationship between help from adult sons and help from partners.

Focusing on formal care, I find that LA- and privately funded care services are complementary to each other. Regarding the relationship between formal and informal care, receiving formal help is not associated with the probability of receiving informal help in the future, which suggests that the substitution hypothesis between formal and informal services would not be validated. However, the more detailed analysis reveals that receiving help from a partner reduces the probability of receiving formal help (and in the case of help from a daughter, it reduces

Table 2. Regression results

	Informal help from partner			Informal help from son			Informal help from daughter			Formal local authority-funded help			Privately funded formal help		
	Coef.	z	P > |z|	Coef.	z	P > |z|	Coef.	z	P > |z|	Coef.	z	P > |z|	Coef.	z	P > |z|
Help from partner in $(t-1)$	0.986	6.060	0.000	0.130	0.470	0.641	0.152	0.460	0.643	−0.559	−2.650	0.008	−0.481	−3.390	0.001
Help from son in $(t-1)$	−0.406	−1.390	0.164	1.797	7.310	0.000	−0.804	−2.890	0.004	0.063	0.310	0.756	−0.082	−0.520	0.601
Help from daughter in $(t-1)$	−0.982	−3.910	0.000	−0.775	−3.460	0.001	2.622	8.400	0.000	−0.506	−2.670	0.008	−0.181	−1.320	0.188
LA-funded help in $(t-1)$	−0.243	−0.480	0.633	0.296	0.800	0.424	−0.341	−0.880	0.378	1.916	10.190	0.000	0.618	3.420	0.001
Privately funded help in $(t-1)$	−0.218	−0.840	0.402	0.175	0.670	0.506	0.104	0.320	0.748	0.430	2.560	0.011	1.332	10.510	0.000
Age	−0.026	−2.010	0.045	0.002	0.130	0.898	−0.012	−0.620	0.537	0.049	4.260	0.000	0.042	5.120	0.000
Gender (1 = male)	−0.055	−0.350	0.725	−0.171	−0.820	0.410	−0.543	−2.260	0.024	−0.109	−0.730	0.464	−0.026	−0.250	0.804
Household size	0.179	1.010	0.314	0.203	1.820	0.068	0.127	0.850	0.393	−0.433	−3.270	0.001	−0.422	−4.410	0.000
ADLs (baseline = 1):															
2	0.487	2.430	0.015	0.427	1.660	0.097	0.195	0.650	0.515	0.397	2.000	0.045	−0.085	−0.640	0.525
3	0.580	2.340	0.019	0.117	0.390	0.697	−0.413	−1.170	0.242	0.582	2.520	0.012	0.062	0.380	0.702
4	0.381	1.530	0.127	0.068	0.220	0.826	−0.060	−0.160	0.871	0.995	4.790	0.000	0.149	0.960	0.336
IADLs (baseline = 1):															
2	0.617	3.160	0.002	0.092	0.360	0.721	0.282	0.960	0.337	0.167	0.850	0.395	−0.073	−0.560	0.573
3	0.505	2.000	0.045	0.157	0.540	0.588	0.572	1.640	0.101	0.789	3.790	0.000	0.226	1.460	0.145
4	0.878	2.730	0.006	0.122	0.330	0.743	1.015	2.280	0.023	0.900	3.540	0.000	0.618	3.180	0.001
Household income	0.234	2.200	0.028	0.068	0.550	0.580	0.156	0.950	0.340	0.051	0.430	0.668	0.194	2.030	0.042
Non-housing wealth	−0.018	−0.640	0.522	0.014	0.520	0.601	0.007	0.230	0.819	−0.010	−0.500	0.618	0.043	2.540	0.011
Pension credit	−2.045	−0.820	0.415	3.638	1.370	0.172	−3.171	−1.020	0.309	−0.621	−0.280	0.780	1.484	0.940	0.347

	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|
Adult social care spending per capita	0.152	0.440	0.662	−0.581	−1.370	0.171	−0.189	−0.390	0.693	0.685	2.180	0.029	−0.202	−0.900	0.369
Rurality	−0.004	−1.020	0.307	0.005	0.950	0.344	−0.008	−1.370	0.172	0.004	1.110	0.268	0.000	−0.050	0.963
Type of local authority:															
Metropolitan borough	−0.101	−0.280	0.781	−0.137	−0.320	0.748	−1.387	−2.370	0.018	0.534	1.530	0.127	−0.221	−0.930	0.354
Non-metropolitan council	0.390	0.840	0.402	−0.422	−0.750	0.456	−0.724	−0.990	0.323	0.423	0.980	0.329	0.151	0.510	0.613
Unitary authority	0.322	0.800	0.423	−0.050	−0.110	0.916	−1.269	−1.990	0.047	0.442	1.180	0.237	−0.067	−0.260	0.791
Intercept	−0.070	−0.030	0.978	1.020	0.350	0.729	1.797	0.520	0.603	−10.857	−4.730	0.000	−4.341	−2.640	0.008

Notes: (t – 1) refers to the period previous to t. ADLs: activities of daily living. IADLs: instrumental activities of daily living. Coef.: coefficient. P > |z|: probability value.

LA-funded help), whereas informal help from sons does not affect the chances of receiving formal help. This would indicate that daughters and partners would substitute formal help, but not sons. More generally, this result points to the need to refine the theoretical models with the addition of a gender dimension.

Increasing age reduces help from partners and increases dependence on formal help, but age is not associated with informal help from adult children.

The gender of the older person with care needs is only associated with receiving help from a daughter: daughter–father provision is less likely than any other offspring–parent combination. This would bring additional evidence to explanations of gendered care-giving based on mediating cultural norms, although not on same-sex care as I failed to find that the son–mother dyad is less likely than the son–father relationship.

Compared to those living alone, older people who live with others are less likely to receive LA- and privately funded help. I ran, following Mentzakis *et al.* (2009), models for each of the three informal care sources in which the two formal sources (LA- and privately funded services) did not enter as lagged covariates, but as contemporaneous to the dependent variables. As these authors, I failed to find significant differences in any of the regression coefficients.[1] However, I prefer to present the results from the specifications with the lagged variables because the statistically significant result about the probability of receiving formal services and living alone or not shows that, despite the assessment and eligibility processes for the provision of formal care by local authorities being, in principle (though not according to the legislation, regulation and guidance; *see* Schwehr, 2014) 'carer blind', the actual packages of care and support plans are not.

In addition, household size is not associated with getting informal help except from a son, in which case it is more likely. I surmise that this may reflect that older people who reside with other people in their homes are more likely to delay seeking help from their local authorities or from private providers until the severity or number of activities they have difficulty with increases, which would provide some empirical evidence in favour of the complementary model.

Having difficulty with two or more ADLs is associated with receiving LA-funded help (and to some extent with informal help from a partner), whereas having problems with IADLs is mostly associated with receiving informal help from a partner, except when performance of three or more IADLs is compromised when LA- and privately funded help is also more likely. This would suggest a degree of specialisation in the type of need that each source of help is aimed at, indicative of task specificity: having difficulty with ADLs and with a high number of IADLs seem to trigger LA-funded help. In contrast, informal help from partners is more likely when older people have difficulty with IADLs and with a relatively low number of ADLs. Neither informal help from sons and daughters nor privately funded formal help seem to be associated with the type or degree of care needs.

Informal help from a partner is more likely in households on higher incomes, and so is privately funded formal help. Regarding non-housing wealth stock, it is not associated with a higher probability of receiving any type of help except that privately funded formal help provision becomes more likely the higher the non-housing wealth of the household.

Local authority spending per capita on social care is positively associated with the probability of receiving LA-funded services; it does not directly affect the provision of help from any of the other sources. I mentioned above that receiving help from a spouse or a daughter diminishes the probability of getting publicly funded help in the future. Now it can be seen that the reverse is not true: in particular, a reduction in publicly funded care does not increase the probability of obtaining informal help. This is important because it would indicate that a contraction in adult social care budgets would manifest in higher unmet care needs among the older population (Iparraguirre, 2017).

Finally, whether an older person in need of community-based care lives in a more rural or urban locality is not associated with the probability of receiving help –either formal or informal. However, I did find that it is less likely that daughters provide informal help to their parents if they live in metropolitan boroughs and unitary authorities.

Conclusion

This paper has examined the dynamic relationships between community-based social care services for older people in England between 2004 and 2013 from different sources: formal help, including LA-funded and privately funded services, and informal unpaid services by partners, sons and daughters.

I noticed a rich tapestry of dynamic interactions between formal and informal sources of help, as well as within households regarding the provision of informal, unpaid care services. I found that help from sons and daughters acts as substitute services. This result points to a division of roles, perhaps led by proximity of residence (which could not be tested due to data limitations). Neither the type nor the intensity of need seem to indicate whether it is the son or the daughter who would first provide the care. I did find, however, that in case that a father needs care services, it is more likely that a son steps in, which confirms previous results in the literature indicative of mediating cultural norms in the provision of informal care within families.

In addition to filial care, privately funded formal care is not associated with either the intensity or the type of need; however, both care from a partner and LA-funded care are. In particular, demand for the latter increases as older people have difficulty with a higher number of ADLs.

I found that informal help from daughters partially substitutes formal help, which does not apply to care-giving services from sons. Therefore, the division of tasks by gender within households has an impact on the demand for formal care services. I failed to find that this division is related to the types of task or the intensity of services, so I suggest that wider cultural norms would be in place – a surmise that is further based on the finding that father–son and mother–daughter dyads are more likely than father–daughter or mother–son configurations. Consequently, I envisage that employment policies that aim to maintain women in paid employment for longer, thus extending their working lives, will increase the financial and operational pressure that publicly funded community-based social care services are under.

In relation to public funding of social care services, and considering the results from Table 2 about household income, wealth and public spending, I arrive at an additional, worrying conclusion regarding older people on lower incomes and with a relatively lower stock of non-housing wealth. Their relative lower financial status makes it less likely for them to rely on privately funded help. If, in addition, they reside in local authorities that spend less per person or which cut public spending on community-based social care services, they are faced with the additional problem of being less likely to receive LA-funded care services. In other words, a contraction in public expenditure by their local authority reduces the probability that they may receive publicly funded services, and their lower income makes it less likely for them to purchase services privately. This doubly adverse effect is compounded by the fact that household income levels are inversely related to the number of ADLs and IADLs older adults have difficulty with: the lower the income, the higher the need for care services.

The negative impact of the reductions in public spending on the probability that an older person in need may have their needs fully met and the partial substitution of formal home care services by daughters in times of increases in pensionable age calls into question the trend towards increasing marketisation of the home care and community-based social care sector in England – a model that, according to LaingBuisson (2016: 1), has 'political support from the main parties (in contrast with politically controversial outsourcing of NHS clinical services)' which makes it 'now effectively impossible to roll back the "privatisation" of social care'.

The paper is subject to three principal limitations. The ELSA survey is carried out every two years, a period too long to test the presence of compensatory decisions or adaptive behaviour following transitions such as the onset or aggravation of disability as well as intra-household changes. Second, the data do not include any information about the daughters or sons providing care, so I could not control for their chronological age, marital or employment status (which is a strong determinant of opportunity costs), proximity of residence to their parents, *etc*. Finally, as it is usually the case with household-based surveys, there is an assumption of intra-household equality that was not testable with the data. Neither could I check for inter vivos financial transfers to fund, partially or in full, privately provided care services.

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NOTE

1 Results available from the author.

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