

ARTICLE

# Influence of socio-economic profile of neighbourhoods on the selection of home care strategies for older dependants

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## Abstract

Care strategies for older dependants are determined by not only individuals or network characteristics, but also contextual factors. The objective of this study is to determine whether urban contexts (neighbourhoods) are linked to the use of family care (informal), public services or private care at home (formal). We applied logistic regression analysis to data from the Survey of People in a Situation of Dependence 2018. The sample was composed of 530 older people (55 years old and over) living in two types of socio-economic groups of neighbourhoods in Barcelona, Spain. The type of neighbourhood is relevant in explaining the home care that older dependants receive. In neighbourhoods with a high socio-economic level, dependants are more likely to use private services and less likely to use informal care services and public services, even after controlling for household income, degree of dependency, sex, age and the number of people in the household. Understanding the factors that determine the use of public care services, private care services or family care-giving is important due to the increment in the number of older people in the population. Our results suggest that differences in urban socio-economic contexts determine some inequalities in the use of services even after controlling for socio-economic individual differences. The characteristics of neighbourhoods should be considered to adjust care policies for older dependants.

**Keywords:** older dependants; urban inequalities; formal care; informal care

## Introduction

The needs of older dependants vary according to the degree and type of dependency, which may result in highly disparate care-giving decisions. We define older dependants as older people who need assistance or care. According to the Council of Europe (1996: 1), ‘dependence’ is defined as a ‘state in which persons, by reason of lack or loss of physical, psychological or intellectual autonomy, require significant assistance or help in carrying out their usual day-to-day activities’. It is

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important to distinguish 'dependence' from 'disability' (Fine and Glendinning, 2005). Although disability is an inseparable attribute of dependency, there may exist different degrees of disability without dependency (Querejeta, 2004).

The choice of care option in adult age is a complex and dynamic social phenomenon that is influenced by very diverse factors (Hillcoat-Nalletamby, 2019). Dependent persons can be cared for by family members within the home setting, by paid staff (who may be formally or informally contracted), by public service staff (according to the policies and public services in each area), or by non-family members such as friends or neighbours (Barker, 2002). Choosing one option or another, or perhaps a combination of options, can be influenced by a number of factors. In addition to the type of dependency and characteristics of the dependent person, the literature highlights other relevant variables including age, sex (Kramer and Kipnis, 1995; Adams *et al.*, 2002), ethnicity (Adams *et al.*, 2002), the resources at their disposal (Becker, 1993; Saraceno, 2010) or the number of people with whom they live (Freedman, 1996; Rogero García, 2009).

The care options on which the decision is based may be constrained by the alternatives offered by the public or private formal care system, by the access families have to these services and by personal preferences, which are largely defined culturally by socialisation processes. Therefore, central elements in a person's environment may shape individual decisions and the choice of a care-giving alternative does not solely depend on the characteristics of the individual (Forman, 2014). Some studies have shown a relationship between the features of a geographical or territorial area and the choice of care strategy, with a focus on the comparison between urban and rural locations (Lawton, 1982; Mack *et al.*, 1997; Glasgow, 2000; Bédard *et al.*, 2004; Ehrlich *et al.*, 2015). In recent years, a number of studies have been published on how the characteristics of the local neighbourhood or home settings in the same urban environment are associated with health (Mohnen *et al.*, 2010; Cramm and Nieboer, 2012; Kim *et al.*, 2019), wellbeing and quality of life (Nieboer and Cramm, 2017; Lane *et al.*, 2019; Zhang *et al.*, 2019), behaviour and social deviation (Won *et al.*, 2016; Choi and Matz-Costa, 2017). The aim of this research was to identify and analyse differences in the type of care chosen by dependent people and their families in Barcelona, Spain. We examined the relevance of individual and context characteristics in such decisions. In the next section, we review the literature on the importance of considering the context as a factor that influences care-giving strategies, in addition to other more traditional factors such as the characteristics of the dependent, their home and their relatives. To carry out the study, we used data from the 2018 Survey of People in a Situation of Dependence in Barcelona. The results are discussed within the framework of published research.

### The importance of the context in care-giving decisions

Much of the research published on factors behind care-giving decisions has focused on the characteristics of dependants, their homes, the preferences and availability of their relatives, and what financial and human resources the dependants have at their disposal (Sergeant and Ekerdt, 2008; Fernández-Carro, 2016). Some studies have shown that the household's socio-economic level affects the probability of

dependants being cared for by someone other than a family member, but the evidence is sometimes inconclusive (Floridi *et al.*, 2021). Some researchers report that dependants living in lower-income households receive less care from their relatives, friends or neighbours (Jang and Kawachi, 2019). Other studies find that those with lower income are more likely to receive formal care (Rodríguez, 2014) or informal care (Vlachantoni *et al.*, 2015). Similarly, Sarasa and Billingsley (2008) and Groenou *et al.* (2006) indicated that the lower the socio-economic status of older people in a situation of dependency, the greater the probability of their children (largely daughters) devoting time to care for them. Other studies showed that the family network of a dependent person may determine to a large extent whether that person will be cared for by relatives or people close to them (such as a neighbour or friends) (Matt and Dean, 1993; Barker, 2002). According to Herlitz (1997), people who live alone are usually more likely to receive formal home help exclusively. In brief, the presence or absence of support networks influences the choice of one care strategy or another.

The choice of care strategy may also depend on the level of public services and public policies in the setting, that is, the extent to which dependants' needs are covered by public authorities. Indeed, several studies have shown that the behaviour of older people who need care and that of their family carers may depend on the public services they are offered. According to Le Bihan and Martin (2012) and Le Bihan *et al.* (2019), policy measures introduced in the last decades in different European countries give more flexibility to family carers in the organisation of care arrangements. Da Roit (2010) compared elder-care policies in Milan and Amsterdam and concluded that societies with a welfare provision that is more firmly based on individual rights tend to empower older people and offer more care options than societies with a system based on family solidarity and informal care. As Eichler and Pfau-Effinger (2009) stated, older people and their relatives may not take advantage of public care policies and services because they might favour traditional forms of care based on family support. According to the authors, the main reason for this is that the behaviour of older people and their families is more in line with traditional care values, in which priority is given to mutual support between spouses and their descendants. The second reason is that there are certain differences between the type of care a public service can provide and that a family can offer, which makes the option of family care more attractive for older people and their families.

Although public care policies provided in a city are targeted at all the dependent inhabitants who could benefit from them, not everyone uses them in the same way. Districts, neighbourhoods or small communities in the same city may have significant differences between them that are not revealed in an aggregate city analysis. Physical characteristics, urban design and communications (e.g. public transport) and the profile of inhabitants (Sassen, 2010; Cassiers and Kesteloot, 2012) make a big city look like a landscape mosaic. Some researchers see these territorial differences resulting from income inequalities, which explain differences in the behaviour and health outcomes of the inhabitants (Tolsma *et al.*, 2009). According to Demaerschalk *et al.* (2013), in Belgian municipalities with higher average income, older people tend to use informal care more often than in lower-income municipalities.

The profiles of residents in neighbourhoods can determine their support networks and their behaviour regarding the use of social services (Cramm *et al.*,

2013). Studies show that variations in the use of social services can be explained by the profile of users. Some researchers have indicated that the use of certain public services may be stigmatised, which may lead to people in need not asking for help and assistance. These are what are known as 'non-take-ups' (Currie, 2004; Baumberg, 2016).

Some research that highlights variations in levels of take-up in different areas could be explained by the characteristics of the inhabitants. That is, in addition to the quantity and quality of available public services, the choice of care strategies for old dependants is influenced by the area's geography and the cultural, ethnic and socio-economic characteristics of the population (Burton, 1996; Lum *et al.*, 2016; Miao *et al.*, 2018). However, as mentioned, most of these studies compare rural and urban environments. The use of formal home care (provided by public services or paid professionals) is more common among older people in urban areas than among those who live in rural areas (Herlitz, 1997). The reasons for the greater use of formal care in urban settings may be geographical. A more dispersed population or a shortage of staff or services, together with other factors, may make the provision of care in rural areas much more complex (Schlenker *et al.*, 2002; Bédard *et al.*, 2004; Forbes and Janzen, 2004). Another explanation of differences between rural and urban areas is the distance among family members. According to previous research, older people who live in urban areas are less likely to move elsewhere than people living in rural areas, which may reflect different opportunity structures for adjusted care facilities (Van der Pers *et al.*, 2015; Jacobs *et al.*, 2018). However, other studies point in the opposite direction. According to a study by McAuley *et al.* (2004), older people living in rural areas are more likely to receive formal care than those living in urban areas.

This disparity in the literature may reflect the characteristics of each area, country or state in which public and private services are deployed. However, the common thread in these studies is that there are significant differences in care strategies depending on where a person lives.

Some studies show that the likelihood of a person using social services is determined by the degree to which those services are used overall in their neighbourhood, rather than their individual characteristics (Gustafsson *et al.*, 2012). In an assessment carried out on a cash benefit for families living in poverty with under-16s in their charge in Barcelona (*Fons d'infància 0-16*), Blasco and Todeschini (2017) found that the higher the average income in the neighbourhoods, the lower the cover for vulnerable minors. These studies support the hypothesis that there are external factors that determine an individual's decision-making, behaviour and strategies in relation to public support services.

Our objective was to contribute to knowledge of how geographical, social and economic contexts shape care options and strategies in the same urban environment. Do care strategies for older people vary between neighbourhoods with different socio-demographic and economic characteristics, after controlling for the characteristics of the dependent person and their home? We expect to confirm our hypothesis that areas with higher income levels make a greater use of formal home care services compared to areas with low socio-economic profiles that are more likely to use public services and informal care.

## Methodology

To carry out this research, we used the database of the 2018 Survey of People in a Situation of Dependency in Barcelona. This is a survey of people with dependency who use the municipal Home Care Service (*Servei d'Atenció Domiciliària-SAD*) or people who receive cash benefits rather than the service (recognised under Act 39/2006). Dependants living in Barcelona city have the right to choose either SAD or the benefits, and in a few cases they can choose both. In other words, all the people in the database are dependent people who claim some kind of service or public provision. There is no distinction between the cash benefit or the SAD based on economic circumstances. That means the dependants' financial situation does not determine the amount of service time received or the co-payment for this service. However, service access and coverage are determined by the degree of dependency. Using a dependence assessment scale, a group of accredited professionals classify older dependants into three categories: moderate dependence (degree I), severe dependence (degree II) and great dependence (degree III). In degree I the dependent persons need help, at least once a day, to perform various basic activities in their daily living. They may also need intermittent support to be completely autonomous. In degree II, dependants need help with various basic activities in their daily living at least two or three times a day, but they do not require the permanent presence of a care-giver nor require extensive help to preserve autonomy. Finally, a person is considered to be highly dependent, that is, in degree III, when he or she needs the indispensable and continuous presence of another person, or needs extensive help to be autonomous. That assistance is essential to perform basic activities of daily living due to his or her total loss of mental or physical autonomy. In brief, the greater the degree of dependency, the greater the need of care.

The survey sample was comprised of 613 subjects who are representative of low-income neighbourhoods (four neighbourhoods with annual median equivalised income levels below €18,000) and high-income neighbourhoods (five neighbourhoods with an annual median equivalised income above €31,000). The information was registered using a CAPI (Computer-Assisted Personal Interviewer) data collection method. Dependent people were asked to respond to the survey. In some cases, particularly people with higher degrees of dependency, respondents need support from their care-givers (largely family members) to complete the questionnaire: 68 per cent of dependants were able to respond themselves, while the remaining 32 per cent required some support or asked their care-giver to respond on their behalf.

The sample group of older people (55 and over) represented 88.6 per cent of the initial sample ( $N = 543$ ; 74.6% women and 25.4% men). The selection of variables used in the models lowered the sample to 530 individuals aged 55 and over. That sample was comprised of 36.8 per cent SAD users in the low-income neighbourhoods (compared to 19.2% in the high-income neighbourhoods) and 28.9 per cent who receive a cash benefit in the low-income neighbourhoods (compared to 15.1% in the high-income neighbourhoods). Of the individuals in the sample, 42.2 per cent had a degree I dependency, 33.1 per cent degree II, 12 per cent degree III and 12.7 per cent had not been assigned a degree of dependency and were waiting to be assessed by public authorities, but were nonetheless already entitled to SAD or a cash benefit.

In an analysis of care strategies, it is paramount to define the types of care available to dependent persons. In this study, we define informal care as care provided by family members (including partners, sons and daughters) without accounting for the care provided by neighbours or friends (the latter was less frequent in our sample, at under 10%). We define formal care as professional care provided by public services (SAD) and private organisations (directly paid care). The type of care that the dependant receives is captured by asking them ‘who helps you during the week or sporadically to carry out your daily activities?’ Respondents may choose among (multiple answers are accepted): (a) a family member; (b) public social services; (c) public health service; (d) a third person hired paid with the economic benefits from the Dependency Assistance (formal contract); (e) a third person hired paid with other resources different from the Dependency Assistance (formal contract); (f) a care-giver under an informal agreement (no contract); (g) a care-giver provided by private social or health service companies; (h) volunteers from social entities; (i) neighbours (unpaid); and (j) others (open answer).

As stated, the aim of the study was to analyse whether the type of socio-economic characteristics of the neighbourhood (low-income *versus* high-income) is associated with the probability of choosing a care-giving option (care provided by the SAD, by a relative or by paid staff). Using three logistic regression models, we compared the effect of the type of neighbourhood (low-income neighbourhood was taken as the reference category) on each type of care service: family care, use of SAD and use of private care staff. Multinomial regression models were not used, since the three care types are not mutually exclusive. According to Logan and Spitze (1994), formal care replaces family care in some cases but in other situations informal care may be the link with public or formal services, especially among people who have a higher level of dependency. Co-existence of the forms of care occurred in 53.3 per cent of the sample cases. Accordingly, each regression model included the other two types of care (dichotomous variable), as well as the one used as the dependent variable.

*Type of neighbourhood* according to its socio-economic level is one of the independent variables introduced into the three models together with other socio-demographic and control variables. The neighbourhood socio-economic level was characterised as high-income or low-income (reference category). Significant socio-economic differences exist between neighbourhoods in Barcelona (Sarasa *et al.*, 2012). If we consider the income data provided by the Spanish Ministry of Economy and Finance relating to Barcelona’s population, the five neighbourhoods in the best socio-economic situation have on average 2.5 times higher median equivalised income (household income/units of consumption) than the five neighbourhoods with the lowest median equivalised income in the city. The differentiation of neighbourhoods according to the level of households’ income is highly correlated to other context variables, including material deprivation, the percentage of immigration population in the community, occupation, level of education, the density of population and life expectancy. Indeed, for those low-income neighbourhoods in which material deprivation is higher, we find a higher percentage of immigration, unemployment, density of population, lower levels of education and 1.3 years differences in life expectancy (Department of Statistics of Barcelona City Council, 2019).

Behaviour model theory states that factors influencing care strategies may be grouped as predictor characteristics (such as sex, gender or ethnicity), enabler characteristics (such as income, mobility or living with relatives) and need characteristics (such as level or type of dependency) (Mitchell and Krout, 1998). On this basis, the variables added to the model were sex, age, number of people living in the household, degree of dependency and household income. Women were taken as the reference category in the model. According to some studies, women are less likely to receive informal care (Katz *et al.*, 2000; Rogero García, 2009). The age variable included three categories: young-old (55–74) as the reference category, middle old (75–84) and very old (85+). Models were created using age as a continuous variable and the results remained the same. The number of people in the household was introduced as a variable category (lives alone, household of two members and household of three or more members). According to Rogero García (2009), people who live alone are less likely to obtain informal care. The interviewee's degree of dependency was included in the models characterised as degree I (the lowest category, and taken here as a reference), degree II, degree III and no information on the degree. This last category can include cases in which dependants obtain SAD or the cash benefit even though their level of dependency has not been recognised by the municipal social services, which means it could take several months to obtain the official assessment. The level of household income was introduced into the model by sample income quartiles (with the first quartile as the reference category). Some studies carried out in the United States of America have shown that when income level goes up, the use of formal care services increases and the use of informal care is reduced (Kemper, 1992). According to the Barcelona Survey of People in a Situation of Dependency database, neighbourhoods with high socio-economic levels are more likely to have dependants with higher income levels. The sample distribution according to the type of neighbourhood and income level quartiles is the following: in low-income neighbourhoods 24.9 per cent of the sample is in the first quartile (lowest) of household income (Q1), 28.7 per cent in Q2, 26.6 per cent in Q3 and 19.8 per cent in Q4 (highest); by contrast, in high-income neighbourhoods the distribution is that Q4 carries a greater weight (22.1% = Q1; Q2 = 21.5%; Q3 = 23.8%; Q4 = 32.6%).

## Results

Table 1 shows the descriptive characteristics of the sample. The mean age of the respondents was 83.6 years (standard deviation = 9.7 years). The most frequently used care-giving strategy was family care (67.7% of the sample). Some 44.3 per cent of respondents used just one care-giving strategy, 45.7 per cent used two strategies (a combination of municipal services and family support was the most prevalent), 7.4 per cent of respondents used all three strategies and the remaining 2.6 per cent did not receive any of these three types of care (they mainly received non-kin care).

The type of care used differed significantly according to age, household size, degree of dependency and type of neighbourhood. Older people, 75 and over, were more likely to opt for the municipal care services (chi-square  $p < 0.05$ ) and paid care ( $p < 0.01$ ) as strategies (see Table 1). The number of household members



**Table 1.** Characteristics of dependent people (55 years and over) and the association with type of care

	Total		Family care		Municipal care services		Paid care	
	%	N	%	N	%	N	%	N
<b>Sex:</b>								
Woman	74.2	393	63.4	249	51.7	203	41.5	163
Man	25.8	137	80.3	110	42.3	58	38.7	53
<b>Age:</b>								
55–74	18.9	100	70.0	70	39.0	39	30.0	30
75–84	25.7	136	70.6	96	53.7	73	36.0	49
85+	55.5	294	65.6	193	50.7	149	46.6	137
<b>Household size:</b>								
1	27.7	147	17.0	25	76.9	113	30.6	45
2	46.6	247	83.0	205	45.3	112	44.5	110
3	14.9	79	92.4	73	29.1	23	55.7	44
4	7.5	40	97.5	39	27.5	11	27.5	11
5	3.2	17	100	17	11.8	2	35.3	6
<b>Degree of dependency:</b>								
I	42.5	225	63.6	143	54.2	122	36.4	82
II	33.0	175	81.1	142	37.1	65	44.0	77
III	11.7	62	79.0	49	21.0	13	69.4	43
Pending grade	12.8	68	36.8	25	89.7	61	20.6	14

(Continued)



**Table 1.** (Continued.)

	Total		Family care		Municipal care services		Paid care	
	%	N	%	N	%	N	%	N
Household income quartiles:								
1	24.0	127	59.1	75	60.6	77	33.1	42
2	26.2	139	59.7	83	57.6	80	28.8	40
3	25.7	25.7	70.6	96	49.3	67	39.7	54
4	24.2	24.2	82.0	105	28.9	37	62.5	80
Neighbourhood socio-economic status:								
Low	65.8	349	70.5	246	52.7	184	32.4	113
High	34.2	181	62.4	113	42.5	77	56.9	103
Type of care:								
Family	67.7	359	–	–	39.6	142	39.6	142
Municipal services	49.2	261	54.4	142	–	–	28.7	75
Paid	40.8	216	65.7	142	34.7	75	–	–

Note: N = 530.

also influenced the care services used (all  $p < 0.001$ ). There was a positive correlation between the number of individuals in a household and family care-giving. The higher the number of individuals in the household, the more frequent was the family care-giving strategy and the lower the use of municipal care services. Respondents with a higher degree of dependency were more likely to opt for out-of-pocket paid care and less municipal or other types of public services (all  $p < 0.001$ ). At the same time, richer households were more likely to have family care and out-of-pocket paid care and were less likely to receive public care services (all  $p < 0.001$ ). There was a strong correlation between the socio-economic status of the neighbourhood, the use of municipal care services (chi-square  $p < 0.05$ ) and out-of-pocket paid care ( $p < 0.001$ ), and family care-giving ( $p < 0.05$ ).

Table 2 presents the results of the logistic regressions for the three types of care. After controlling for income, household size, degree of dependency and other socio-demographic variables, dependants in a high socio-economic neighbourhood were less likely to be cared for by a member of their own family (odds ratio (OR) = 0.52;  $p < 0.05$ ), less likely to receive municipal care services (OR = 0.52;  $p < 0.01$ ) and much more likely to pay for care services (OR = 2.71;  $p < 0.001$ ) than dependants in low socio-economic neighbourhoods. These results were consistent when we controlled for different types of care-giving strategies.

Older dependants living with other people (most of them family members) were more likely to receive family care (living with someone else, OR = 23.73;  $p < 0.001$ ; living with two or more, OR = 101.89;  $p < 0.001$ ) than when living alone. Conversely, living with someone else resulted in a lower likelihood of receiving help from municipal care services (living with another person, OR = 0.45;  $p < 0.01$ ; living with two or more people, OR = 0.19;  $p < 0.001$ ). These results show that family care may be a substitute for public care. The OR values for household size in Model 3 were not statistically significant. Older respondents were more likely to receive municipal care services (85+, OR = 1.91;  $p < 0.05$ ) and particularly out-of-pocket paid care (85+, OR = 2.41;  $p < 0.01$ ). Similar to what Katz *et al.* (2000) reported, men were more likely to receive family care services than women, although we found no significant differences for the other two models of formal care. Older dependants with third-degree dependency were less likely than first-degree dependants to receive municipal care support (OR = 0.36;  $p < 0.01$ ) and were more likely to receive out-of-pocket paid care (OR = 2.99;  $p < 0.001$ ). Furthermore, respondents with a higher income (fourth quartile) were less likely to receive municipal care support (OR = 0.49;  $p < 0.05$ ) and were more likely to receive out-of-pocket paid care (OR = 2.78;  $p < 0.001$ ) than lower-income respondents (quartile 1 as a reference category).

In Table 3, we have added to each model the two other types of care-giving strategies as independent variables. When we adjusted for these other care-giving modalities, the effect of neighbourhood socio-economic characteristics decreased but was still statistically significant (only family care-giving fell to  $p < 0.1$ ).

## Discussion

Our study shows the importance of considering the type of neighbourhood and its characteristics to explain care strategies for older people. This approach goes

**Table 2.** Logistic regressions predicting prevalence of the type of care for dependent people (55 years and over)

	Model 1: Family		Model 2: Municipal services		Model 3: Paid	
	OR	95% CI	OR	95% CI	OR	95% CI
Sex (Ref. Woman)						
Man	1.92*	1.02–3.60	0.82	0.52–1.30	0.79	0.50–1.25
Age (Ref. <74)						
75–84	1.24	0.56–2.77	1.85*	1.01–3.40	1.43	0.78–2.62
85+	0.88	0.43–1.81	1.91*	1.10–3.33	2.41**	1.39–4.18
Household size (Ref. 1)						
2	23.73***	12.81–43.97	0.45**	0.27–0.75	1.01	0.61–1.68
3+	101.89***	39.49–262.91	0.19***	0.10–0.34	0.92	0.52–1.64
Degree of dependency (Ref. I):						
II	1.92*	1.01–3.63	0.62*	0.40–0.96	1.27	0.81–1.98
III	0.73	0.32–1.63	0.36**	0.18–0.72	2.99***	1.54–5.83
Pending grade	0.88	0.39–1.99	6.99***	2.89–16.94	0.37**	0.18–0.77
Household income quartiles (Ref. 1):						
2	1.37	0.66–2.83	0.84	0.47–1.49	0.64	0.36–1.14
3	1.47	0.71–3.02	0.62†	0.36–1.09	1.16	0.67–1.99
4	1.25	0.58–2.67	0.49*	0.27–0.89	2.78***	1.57–4.94

Neighbourhood socio-economic status (Ref. Low):						
High	0.52*	0.29–0.91	0.52**	0.33–0.81	2.71***	1.78–4.12
Constant	0.16***		2.59**		0.22***	
Pseudo- $R^2$	0.56		0.33		0.24	
Log likelihood	392.17		586.05		614.14	

Notes: N = 530. OR: odds ratio. CI: coefficient interval. Ref.: reference category.

Significance levels: † $p < 0.1$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Table 3.** Logistic regressions predicting prevalence of the type of care for dependent people (55 years and over) controlling by other types of care

	Model 1: Family		Model 2: Municipal services		Model 3: Paid	
	OR	95% CI	OR	95% CI	OR	95% CI
Sex (Ref. Woman):						
Man	1.82†	0.96–3.46	0.81	0.50–1.29	0.81	0.50–1.29
Age (Ref. <74):						
75–84	1.50	0.65–3.45	2.06*	1.10–3.83	1.65	0.89–3.70
85+	1.16	0.55–2.45	2.26**	1.27–4.03	2.75***	1.56–4.85
Household size (Ref. 1):						
2	25.78***	13.46–49.37	0.60	0.32–1.12	1.88†	0.95–3.70
3+	105.14***	38.96–283.74	0.26***	0.12–0.54	1.71	0.79–3.74
Degree of dependency (Ref. I):						
II	2.06*	1.06–4.01	0.67†	0.43–1.05	1.30	0.82–2.06
III	0.81	0.35–1.86	0.41*	0.20–0.85	2.68**	1.35–5.32
Pending grade	0.85	0.37–1.97	6.32***	2.59–15.41	0.46*	0.22–0.96
Household income quartiles (Ref. 1):						
2	1.26	0.61–2.62	0.80	0.44–1.43	0.64	0.35–1.14
3	1.47	0.70–3.05	0.66	0.37–1.17	1.14	0.65–2.00
4	1.48	0.67–3.28	0.59†	0.32–1.08	2.76***	1.53–4.98
Neighbourhood socio-economic status (Ref. Low):						
High	0.60†	0.34–1.08	0.58*	0.36–0.92	2.35***	1.53–3.63

Type of care:						
Family			0.59†	0.33–1.07	0.31***	0.17–0.58
Municipal services	0.58†	0.32–1.06			0.47***	0.30–0.73
Paid	0.30***	0.16–0.57	0.46***	0.29–0.72		
Constant	0.26**		3.28***		0.41*	
Pseudo- $R^2$	0.59		0.35		0.28	
Log likelihood	376.65		577.02		590.22	

Notes: N = 530. OR: odds ratio. CI: coefficient interval. Ref.: reference category.  
 Significance levels: † $p < 0.1$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

beyond individual aspects *per se*, such as income, number of people in the household, age, gender or degree of dependency. Our research also shows that territorial and socio-economic inequalities in the same city reproduce inequalities in the type of care used. The findings suggest that older people in a situation of dependency in high-income neighbourhoods are more likely to receive formal paid care at home and less likely to receive care from relatives or public home care services (SAD). These differences indicate that dependants in high-income neighbourhoods find a wider range of care strategies available which allows for greater flexibility in the organisation of care in accordance to their needs, and less of a burden on their family, relatives and friends as care-givers. Public home care services do not seem to be enough to meet older dependants' needs (the dedication mean is approximately 1.2 hours per day), especially for higher degrees of dependency that require assistance during most of the day and, frequently, overnight. Thus, dependants being able to choose among a wider array of care options (including paid care) increases flexibility in the decision regarding which care strategies best meet their needs.

The explanatory factors behind this relationship are not clear. One possible explanation might be based on the fact that, depending on the neighbourhood profile, social patterns and habits vary regardless of individual characteristics, especially in less-diverse neighbourhoods. This would be consistent with the Weberian concept of life chances (Dahrendorf, 1979; Rytina, 2017) according to which the neighbourhood characteristics, particularly their socio-economic status, would form part of the shared structural elements that define the opportunities each individual has to improve his or her quality of life. These opportunities take the form of options among which individuals finally make their choices.

Another explanation might be the perception of certain barriers to accessing public care services in better-off neighbourhoods. These barriers could be due to stigmatisation associated with using municipal social services (Baumberg, 2016) and the perception of quality ('good care') in these services (Eichler and Pfau-Effinger, 2009), which would encourage the use of other forms of care.

The results are in line with previous research that shows the importance of taking household income into account to understand the type of care older people receive (Saraceno, 2010). A higher income enables people to broaden the range of strategies to choose from, including the option of paying for formal professional care (Becker, 1993). The results show that when the type of neighbourhood is considered, a household's socio-economic profile loses some of its explanatory power, except in higher-income households that continue to show they are less likely to use public services and more likely to turn to the market. In line with previous studies, ours shows there is a very high probability of older people who live alone not getting any help from their family (Roger García, 2009), and the more people that live in a household, the lower the likelihood of them using public care services. Likewise, the more dependent older people there are, the greater the probability of using formal services (both public and private).

The research focused on care for older people living in their own homes, without considering those who live in care homes or visit day centres. The adoption of these other care strategies can also vary depending on the neighbourhood and socio-economic profile of individuals. Some studies have shown that older people who have no partner and a low socio-economic level are those who usually make greater



use of care homes (Finlayson, 2002; Dizi, 2008), although for older dependent people with low incomes living in contexts with a greater prevalence of state-maintained or private homes that is rather more difficult (Mullan *et al.*, 2009).

This study has certain limitations that should be noted. One limitation is the size of the sample of neighbourhoods. In future studies it would be useful to expand the sample to cover more neighbourhood profiles that are representative of the city of Barcelona. Another interesting aspect that would improve our analysis would be to account for the time dedicated to each type of care.

Notwithstanding these limitations, our findings contribute to an aspect that has been little-studied to date. The study is part of extensive literature which highlights the importance of analysing local contexts in a disaggregated manner (Völker *et al.*, 2007; Mohnen *et al.*, 2010), but incorporates care strategies as the main outcome of interest. It shows that local contexts are important to understand people's decisions about using social care services, as well as informal and paid care, beyond the personal and socio-economic characteristics of the household. Given equal household economic conditions (*i.e.* income level), dependent older people who live in high-income neighbourhoods are less drawn to using municipal social services than people with the same socio-economic and co-habitation profiles living in low-income neighbourhoods.

This study looked at the importance of neighbourhood environment in the care strategies of older adults. It offers new insights into tackling elder-care and offers new knowledge for improving elder-care public policies. Elder-care public services should not only focus on individual characteristics but should pay more attention to the characteristics of communities and neighbourhoods to improve the effectiveness of public services.

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