

# PAPELES DE TRABAJO

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Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case<sup>(\*)</sup>

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## Abstract

Taking into account the increasing relevance of long-term care in the policy agenda, the aim of our analysis is to assess whether the introduction of a new Dependency law, as it can be the case of the 2006 Dependency Act in Spain, affects the demand for formal and informal care. Our results using all the waves of the Survey of Health, Aging and Retirement in Europe (SHARE) show that for the overall sample, a higher age would increase the risk of receiving formal care. The same applies for being unemployed, disabled, sick, living in a rural area, have children in the household, activity daily limitations, chronic conditions or depression. Similar arguments are obtained for informal care. Moreover, the dummy variable for the first years after the introduction of the Dependency Act is associated with a lower probability of demanding informal care, and it is associated with formal care only in the full model. But when we consider only individuals with some limitation in the Activities of Daily Living (ADLs) the significance of some variables has changed. In case of the demand for formal care, older age, being permanently sick or disabled and living in a rural area is significantly associated with formal care. With respect to informal care, older ages, being female, any level of education, being widowed and household income are significantly associated with the demand for informal care. With respect to the dummy variable for the years after the implementation of the Dependency Act, it is significant in case of formal care.

*Keywords:* Dependency; Economic crisis; Long-term care; Social services; probit models; Spain.

*JEL codes:* I14, I38, J14.

## Resumen

Teniendo en cuenta la relevancia cada vez mayor del cuidado a largo plazo en la agenda de políticas públicas, el objetivo de nuestro análisis es evaluar si la introducción de una Ley de dependencia, como la Ley de 2006 en España, afecta a la demanda de cuidado formal e informal. Nuestros resultados utilizando todas las oleadas de la Encuesta de salud, envejecimiento y jubilación en Europa (SHARE) muestran a mayor edad aumenta el riesgo de recibir atención formal. Lo mismo sucede con el hecho de estar desempleado, discapacidad, enfermo o vivir en un área rural, tener hijos en el hogar, estar limitado diariamente en sus actividades o estar afectado por condiciones crónicas o depresión. Argumentos similares se obtienen para el cuidado informal. Además, la variable ficticia para los primeros años después de la introducción de la Ley de Dependencia está asociada con una menor probabilidad de requerir atención informal, y está asociada con la atención formal solo en el modelo completo. Pero, cuando consideramos solo a individuos con alguna limitación en las Actividades de la Vida Diaria (ADL), la importancia de algunas variables cambia. En el caso de la demanda de atención formal, una edad avanzada, estar permanentemente enfermo o con discapacidad y vivir en una zona rural se asocia significativamente con una mayor atención formal. Mayor edad, el hecho de ser mujer, cualquier nivel de educación, ser viudo/a y los ingresos del hogar están significativamente asociados con la demanda de cuidado informal. Con respecto a la variable ficticia para los años posteriores a la implementación de la Ley de dependencia, indicar que es importante en el caso de la atención formal.

## 1. INTRODUCTION

Many countries are facing a consistent growth in the number and proportion of elderly people in their populations. This significant social transformation is likely to have implications for the health and social protection systems, extended to virtually all sectors of society (Christensen *et al.*, 2009; European Commission, 2017).

Ageing and longevity have shaped the research agenda, although long-term care (LTC) came into focus only over a couple of decades ago. Thus, LTC is defined as a range of services and assistance required by people with a reduced degree of functional capacity, physical or cognitive, and who depend for an extended time period on help with basic activities of daily living or with need of some permanent nursing care (Colombo *et al.*, 2011).

Moreover, population aging in developed countries has created new challenges to improve the well-being of individuals at different age cohorts. This issue is especially significant for European countries, where aging societies have worse health and less socio-economic resources (Cantarero *et al.*, 2018).

Public spending on LTC, including health care and social services for those with chronic conditions who require continuing assistance, in the Organization for Economic Cooperation and Development (OECD) was on average 1.4% of GDP in 2014. This figure ranges from 4% of GDP in The Netherlands to less than 0.5% of GDP in some other countries such as Israel, Latvia and Poland. Moreover, those numbers are estimated to more than double by 2050 (Colombo and Mercier, 2012; OECD Health Statistics, 2018). The expected growth in LTC expenditures as a share of GDP and of public and private spending can be explained by the increasing demand for LTC services due to the population ageing, the greater probability of survival to older age, and the decline in the supply of informal caregiving.

The latter is closely related to some major social changes, such as new family structures, declining household size, increased prevalence of unstable partner relationships and lower marriage rates, greater geographical mobility that may hinder children in taking care of dependent parents, or higher female labour market participation (Pezzin and Steinberg Schone, 1999; Costa-Font *et al.*, 2015).

Population ageing increases care costs and long-term care expenditures (Fernández *et al.*, 2009). Different policy options have been proposed, although they can be synthesized into two groups: private sector solutions or universal systems that cover the entire population at significantly higher costs. Thus, it must consider the funding of LTC because the increasing numbers of older people in Europe on expenditures for LTC must be considered (Saltman *et al.*, 2006)

From another point of view, there are four major differences between LTC and acute medical care (Norton, 2000). Firstly, LTC is required by people who suffer from chronic illness or disability, while medical care treats acute health problems. And chronicity, usually, perpetuates over the life span and is associated to lasting, and sometimes catastrophic, expenditures on both medical and long-term care. Secondly, institutional care is predominantly provided in for-profit facilities and faces excess demand, while hospitals are mainly managed by the public sector or by non-for-profit

organizations. Thirdly, older individuals rely on informal care by family, relatives and friends to attend their LTC needs, while medical care is provided by paid qualified professionals. Moreover, health and LTC insurance differ in many aspects like coverage, take-up rate, copayments, etc.

International differences in LTC have been studied from different points of view. Bakx *et al.* (2015) conclude that LTC use is strongly affected by country-specific eligibility criteria for public LTC coverage and comprehensiveness of the public LTC system. In fact, the differences between the Netherlands and Germany are largely explained by differences in eligibility rules and social preferences. Obviously, the increased relevance of LTC has motivated different studies and proposed different indicators.

Thus, Ilinca *et al.* (2017) analysed differences in home care utilization between community-dwelling Europeans in nine countries based on concentration indexes and horizontal inequality indexes for each country. These authors conclude that households' characteristics are an important contributor to inequality, while education and geographical locations hold less explanatory power. In fact, it is important to weigh aspects related to costs and sustainability with distributional and fairness concerns. Besides, Spain is one of the European countries with the lowest degree of health polarization when we focus on those countries whose median category is "good" health (Pascual *et al.*, 2018). These authors examine inequality and polarization in self-assessed health using data from the European Health Interview Survey (EHIS) to investigate the relationship between health inequality and polarization across 27 European countries.

In the case of Spain at the end of 2006, a new System for Promotion of Personal Autonomy and Assistance for Persons in a Situation of Dependency was released in Spain through the approval of the Act 39/2006 of 14th December (the Dependency Act). The Dependency Act (DA) recognised the universal entitlement of Spanish citizens to social care services according to their degree of dependency. Nevertheless, the recent economic crisis added more uncertainty to several dimensions of the system process, mainly due to existing inequality in access to LTC services between regions. Several modifications and improvements need to be made on the state of the Spanish Dependency System, ranging from the governance quality and transparency to a more intensive coordination between healthcare and social services, as well as greater recipients' engagement in decision-making (Peña-Longobardo *et al.*, 2016).

The aim of this study is to assess the impact that the implementation of the Spanish System for Personal Autonomy and Dependency might have had in the demand of formal and informal care, which will be defined later in this document, attending to several characteristics of the Spanish population. We use all the available waves of the Survey of Health, Ageing and Retirement in Europe (SHARE), which is a longitudinal survey with information on household characteristics, individual socio demographic variables, health status and healthy lifestyle factors, social support services and use of healthcare and non-healthcare resources.

We attempt to contribute to the literature in several dimensions. Firstly, we improve the existing evidence on this issue because we have extended the results for the overall sample by considering individuals with some limitation in the Activities of Daily Living (ADLs). In doing so, we transmit a distinction on previous contributions and we provide new highlights for chronic limitations in Spain.

The structure of this part is as follows. In Section 2 we briefly describe the 2006 Dependency Act implementation and current situation. Then, in Section 3, we provide a description of the dataset used as well as the description of the selected variables that are part of our analysis. Moreover, the econometric model is set within the context of our data. Empirical results are presented in Section 4, which will be discussed and compared with the existing literature in Section 5 that also concludes. Finally, there are several appendices that include relevant background information.

## 2. THE 2006 DEPENDENCY ACT

The System for Promotion of Personal Autonomy and Assistance for Persons in Situation of Dependency (SAAD) entered as the fourth pillar of Spain's Welfare State (García-Armesto *et al.*, 2010) after the approval of the Act 39/2006 on the 14th December from 2006 (Dependency Act or DA) (BOE, 2006). The DA granted universal entitlement to social services according to the degree of dependency of the individual, supposing a deep change in the organization of LTC in Spain.

The accurate eligibility of beneficiaries and the ability to determine their needs are the cornerstones of the Spanish system. Three levels of dependency were defined by the DA (mild, moderate, severe) with dependents classified according to an official scale (BOE, 2007a; 2011), which consisted of 47 tasks later grouped into ten activities of daily living (feeding, control of physical needs, toileting, other physical care, dressing, maintaining one's health, mobility, moving inside and outside the household, and being able to do housework). The final score was the sum of the weights of the tasks for which the individual had any difficulty, times the degree of supervision required, and the weight assigned to each activity.

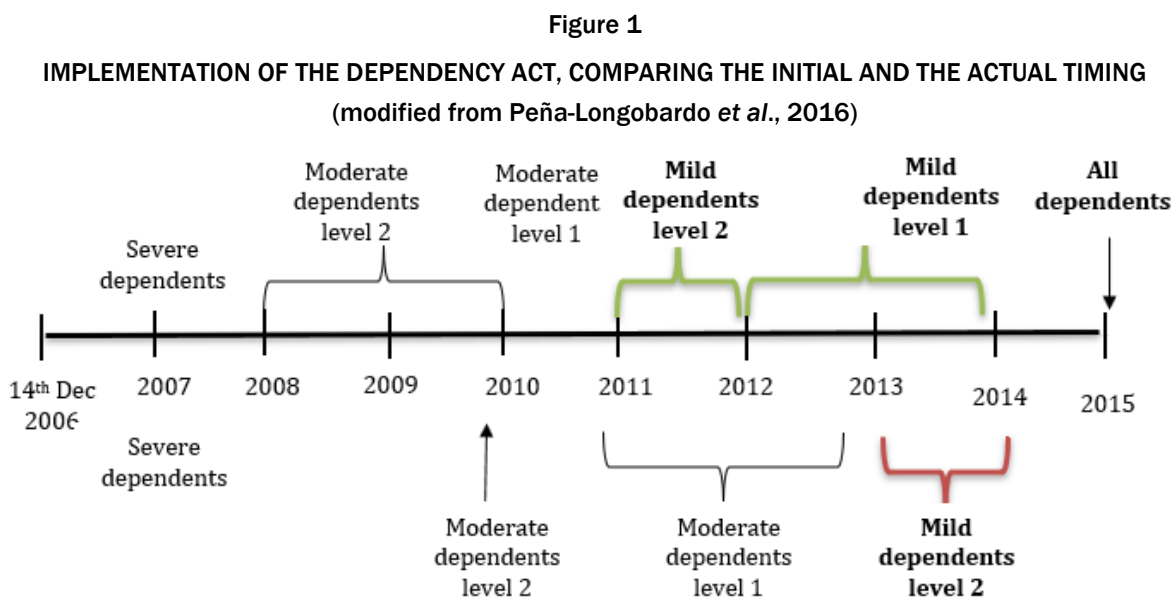
According to the result, the severity of the dependency was classified as: not eligible (0-24 points); mild level 1 (25-39 points) and level 2 (40-49 points); moderate level 1 (50-64 points) and level 2 (65-74 points); and severe level 1 (75-89 points) and level 2 (90-100 points). Although the classification of individuals was established from the beginning of the implementation of the DA in 2006, the Royal Decree 727/2007 began to determine the intensity of services provided to the beneficiary according to the dependency level (BOE, 2007b). However, other new regulations reduced the intensity of in-kind and cash benefits (BOE, 2012). At the end of the year 2013, 1,644,284 applications had been received. From these, around 60% (944,345 requests) were eligible, but only 753,842 were actually receiving their benefits by December 2013 (BOE, 2018).

Despite the SAAD's design to provide universal coverage to dependents, users still share the associated costs through co-payments, reaching one third of the total financing contribution towards the SAAD (Ministry of Labour and Social Services, 2006) and with large differences in the magnitude of the copayments across regions and the economic status of the beneficiaries (Ministry of Labour and Social Services, 2005). Differences between regions might be since the autonomous regions are responsible for the provision of benefits and services determined by the DA and the additional resources that complement the minimum contributions made by the national government. In fact, when the SAAD was fully active in 2015, the financial contributions would be supported by the autonomous communities by a 42.6%, 23.7% by the central government and 33.7%

through co-payments afforded by the individuals who benefited from the DA (Ministry of Labour and Social Services, 2006).

However, in spite of the initial forecasts, the actual implementation of the DA was altered, as Figure 1 shows, by several issues (Peña-Longobardo *et al.*, 2016): firstly, three Royal Decrees delayed the execution of the act in three-four years approximately, even blocking the requests from potential eligible dependents. Also, the economic crisis led to huge cuts in national budgets and a decrease in services intensity reducing, for example, the number of hours of home helping support. Finally, what was called the “dependency limbo”, which referred to people who were announced to be granted with the benefits provided according to the DA, but finally received none.

According to Figure 1, mild dependents level 2 suffered from a delay of two years, approximately, as well as mild dependents level 1, who entered the system in July 2015, but the time during which all mild dependents will be covered by the SAAD was not established.



Note: over the line: initial planning on the timing of the implementation of the Dependency Act; under the line: actual implementation of the Dependency Act.

### 3. DATA AND METHODS

#### 3.1. Sample data

The data used for the current analyses comes from the Survey of Health, Ageing and Retirement in Europe (SHARE). It is a longitudinal survey with information on more than 120,000 individuals aged 50 years old and above from 27 European countries plus Israel. SHARE consists of twenty different modules which collect information on household characteristics (number of people living the household, number of children), socio demographic variables (age, gender, marital and employment status, household income), health status, lifestyle factor (smoking, drinking, physical exercise), cognitive impairment, mental health, social support and use of healthcare and non-healthcare resources.



The period of analysis will cover the years 2004 (wave 1), 2006/07 (wave 2), 2010 (wave 4), 2013 (wave 5) and 2015 (wave 6)<sup>1</sup>.

Given the aim of the study, we select the Spanish subjects with a minimum follow-up of three waves, which should be: the time before the DA (wave 1, year 2004), in the year of the introduction (wave 2, year 2006/07) and after the DA (wave 4, year 2010; wave 5, year 2013; or wave 6, year 2015). Hence, the original sample size of the Spanish population in the SHARE database was 22,668 observations. However, when we selected the observations with information on at least three waves (being two of them wave 1 and 2 and then, at least, wave 4, 5 or 6), the sample was further reduced to 5,283 observations. Furthermore, after selecting the individuals with non-missing values in any of the variables considered in our analysis, our sample further decreased to 3,845 observations.

This study could be completed using data obtained from the European Union Statistics on Income and Living Conditions (EU-SILC) over the period 2004 to 2017 (the most recent data). The EU-SILC is an annual, EU-wide, survey which allows us to obtain information on the income and living conditions of different types of households and individuals in the European Union. It has been established to provide data to be used for the structural indicators of social cohesion. EU-SILC includes rich information about income, education, employment, health, etc. Also, it is designed to insure the comparability between the European Union countries. This survey contains timely and comparable cross-sectional and longitudinal micro-data on income, poverty, social exclusion and living conditions. It provides data which verify the requirements to be considered high quality statistics: relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity. However, health information is more detailed in the case of the SHARE. This is the reason because we have selected this one.

### 3.2. Selection of variables

#### *Dependent variables*

Two dependent variables comprise the outcomes of the current study: formal care and informal care use. In case of the former, information will be taken from the questionnaire on whether the individual has received professional help at home, as well as nursing home use, either permanent or temporarily, in the previous twelve months. Professional help at home<sup>2</sup> can be identified as the questionnaire contains information on whether the individual has received professional help at home with different matters, such as personal care, domestic tasks, meals-on-wheels and other activities. Nursing home in SHARE was defined as *institutions sheltering older persons who need assistance in activities of daily living, in an environment where they can receive nursing care, for short or long stays*. Thus, the dependent variable took value 1 if the respondent had made use of any of the professional services mentioned above, and 0 otherwise.

<sup>1</sup> Wave 3 was excluded due to a change in the questionnaire (the SHARELIFE questionnaire), which registered information on individuals' childhood health and, hence, the information provided in Wave 3 was not useful for our analysis.

<sup>2</sup> One limitation that should be remarked is that the question related to home care was excluded in the questionnaire of Wave 4. Hence, the only measure of formal care available in Wave 4 is nursing home care.



For informal care, SHARE allows for the identification of whether a non-professional caregiver, from inside or outside the household, has helped the survey respondent due to any limitation in the activities of daily living during the previous twelve months.

### *Independent variables*

Bearing in mind our motivation and the literature search results, the main independent variables of interest were the functional impairment and the health status of the individuals. Talking about the former, SHARE contains responses to the Katz Activities of Daily Living Index (Katz, 1970; 1983). This index, usually referred to as the Katz ADL, evaluates functional status as a measurement of the person's ability to carry out six activities of daily living independently. These are bathing, dressing, toileting, transferring, continence and feeding. Moreover, SHARE also includes information on the number of limitations in the Instrumental Activities of Daily Living (IADL).

This scale, usually referred to as the Lawton's IADL scale, evaluates the individual's ability to perform eight instrumental activities of daily living (Lawton and Brody, 1969). These are telephone use, shopping, cooking, housekeeping, laundry, transportation, preparation of own medication and financing.

With respect to health status, different variables entered the analysis. First, the self-assessed health status has widely been used in the health economics literature (Hernández-Quevedo *et al.*, 2005; Miilunpalo *et al.*, 1997). Respondents are then asked to rate their health status, from excellent to poor. We also consider the number of chronic conditions that a person has ever been diagnosed or told by a doctor to suffer from. These are: heart attack, high blood pressure or hypertension, high blood cholesterol, a stroke or cerebrovascular disease, diabetes or high blood sugar, chronic lung disease, cancer or malignant tumour, stomach or duodenal or peptic ulcer, Parkinson disease, cataracts and hip or femoral fracture. Since mental health diseases are not included within the number of chronic conditions, we also included a dummy variable for depression. Respondents were classified as being depressed if they answered affirmatively to having 4 or more components of the EUROD scale for depression (feeling sad or depressed, pessimism, suicidal ideation, guilt, sleep, lack of interest, irritability, loss of appetite, fatigue, concentration problems, lack of enjoyment and tearfulness).

Moreover, other variables were also considered as need or predisposing factors towards the demand of formal and/or informal care. These were age, gender, level of education (no education, low, medium and high according to ISCED-97 codes), marital and employment status, household income, number of children and grandchildren, whether any children live in the household, and distance of these children to the respondent's household and body mass index categories (underweight, normal weight, overweight and obesity according to the calculation of the weight in kilograms divided by the square of height in metres).

A detailed description of the variables included in the analysis can be found in Table A1, in Appendix.

### **3.3. Statistical analyses**

In a first step of this study, we estimate univariate logit models for the list of covariates and our two binary dependent variables: formal and informal care reception. By doing so, we will be able

to evaluate the relevance of the association between each independent variable and both outcome measures.

Then, we estimate a multivariate probit regression with clustered standard errors at the individual level to take into account within individual autocorrelation in the analysis (Heij *et al.*, 2004; Rabe-Hesketh and Skrondal, 2008). Clustering standard errors is also convenient in our analysis since we are using data from five different waves.

Let  $\phi(t) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}t^2}$  be the standard normal density function with values stretching between zero and one, and let

$$Pr[\text{formalcare}_{it} = 1 | x_{it}] = \phi(x'_{it}\beta) \quad (1)$$

where  $i$  represents the individual, and  $t$  year.  $\text{formalcare}_{it}$  is a dummy variable indicating that respondent  $i$  is receiving formal care in year  $t$ .  $x_{it} = (\text{SE}_{it}, \text{HI}_{it}, \text{time dummies})'$  is a vector of explanatory variables.  $\text{SE}_{it}$  denote the set of socioeconomic variables. In other words, we can rewrite model (1) as:

$$Pr[\text{formalcare}_{it} = 1 | x_{it}] = \phi(\beta_0 + \beta'_1 SD_{it} + \zeta_t + \varepsilon_{it}) \quad (2)$$

where  $SD_{it}$  represents the set of sociodemographic characteristics (age, gender, education and marital status);  $\zeta_t$  is the wave time effects; and  $\varepsilon_{it}$  denotes the idiosyncratic error term.

Model 2 adds to Model 1 socioeconomic status, in which we include employment status and household income. Then, in Model 3 we additionally control for living conditions, which would consist of living in a rural area and the number of children or grandchildren and whether any of these children live within the household. In model 4, the number of limitations in the Activities of Daily Living (ADLs) and the Instrumental Activities of Daily Living (IADLs) are both included.

Finally, in model 5, variables related to the health status (self-assessed health status, number of chronic conditions and depression) and the healthy lifestyles (body mass index categories) are added to model 4.

The same procedure is followed for our second outcome of interest, to receive informal care, either within or outside the household.

Moreover, given the criteria to be eligible for the benefits from the Dependency Act, we ran the same regression models only for those individuals from the sample with at least one limitation in any of the ADLs. All the statistical analyses are run using Stata 14.

## 4. RESULTS

### 4.1. Summary statistics

Table 1.1 shows the summary statistics of the sample for the set of covariates included in the analysis by year. The proportion of people demanding formal care was lower in the year 2006/07, when the DA was announced, than in the year 2004, but the proportion of formal care receivers

increased in the following years after the implementation of the DA<sup>3</sup>. However, the increase in the demand for formal care services between years seems to be driven by the demand for homecare rather than nursing home care. On the other hand, the proportion of people receiving informal care (inside or outside the household) increased between years but decreased in the last year included in the analysis. The same trend was followed for both types of informal care, inside and outside the household.

In this regard, Table 1.1 also shows some differences in the socio demographic characteristics and living conditions of the individuals. People are older in later years, more likely to be female and with low education.

The percentage of people married decreases from the year 2004 to 2015 (from 84% to 75%), whereas the percentage of widowers increases (from 11% in the year 2004 to 19.5% in 2015). A similar trend is observed in employment status, switching from employed (from 19% in the year 2004 to 6.5% in 2015) to retired (from 35% in the year 2004 to 58% in 2015). Mean household income decreases from €23,300, approximately, in 2004 to €16,800. The percentage of people living in rural areas decreases between the years observed, as well as the percentage of children living in the same household than their parents. Moreover, the number of grandchildren has increased.

With respect to the functional and health status, individuals seem to be less healthy in later years than at the beginning of SHARE, as the number of limitations in ADLs increases (from 0.14 in the year 2004, on average, to 0.27 in 2015), as well as the number of chronic conditions (from 1.13 in 2004 to 1.43 in the year 2015). Furthermore, the percentage of people reporting their health status as excellent has decreased from about 4.6% to 2.8% from 2004 to 2015, while the percentage of people rating their health as poor have raised from 9.6% to 13.7%. Moreover, the prevalence of obesity has increased.

**Table 1.1**  
**DESCRIPTIVE STATISTICS OF THE SAMPLE BY YEAR, n=3,845**

Variables	Wave 1, year 2004 (N=888)	Wave 2, year 2006/07 (N=898)	Wave 4, <sup>4</sup> year 2010 (N=770)	Wave 5, year 2013 (N=704)	Wave 6, year 2015 (N=585)	Comparison of means p-value
<i>Formal care</i>	6.31	5.35	0.13	7.24	7.35	0.000***
Nursing home	0.34	0.22	0.13	0.14	-	0.341
Homecare	5.97	5.12	-	7.24	7.35	0.000***
<i>Informal care</i>	15.99	17.48	19.09	21.16	15.21	0.000***
Informal care from outside the household	12.39	11.92	14.94	15.91	12.14	0.000***
Informal care from inside the household	4.62	6.79	7.14	8.52	5.64	0.000***

<sup>3</sup> The result from year 2010 (Wave 4) should be interpreted with caution, as information on home care was excluded in the questionnaire of Wave 4. Hence, the only measure of formal care available in wave 4 is nursing home care.

<sup>4</sup> The question about home care was excluded in the questionnaire of wave 4. Hence, the only measure of formal care available in wave 4 is nursing home care. The results from wave 4 should then be interpreted with caution.

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Wave 1, year 2004 (N=888)	Wave 2, year 2006/07 (N=898)	Wave 4, <sup>4</sup> year 2010 (N=770)	Wave 5, year 2013 (N=704)	Wave 6, year 2015 (N=585)	Comparison of means p-value
<i>Age categories</i>						
Age 50 to 65	50.23	44.54	29.74	26.28	20.85	0.000***
Age 65 to 80	44.71	46.99	53.51	55.68	58.63	0.000***
Age 80+	5.06	8.47	16.75	18.04	20.51	0.000***
Gender: female	57.88	58.57	57.92	58.95	59.15	0.000***
<i>Education</i>						
No education	21.40	20.71	21.56	18.04	17.95	0.004***
Low education	65.65	65.70	64.68	66.48	65.98	0.087*
Medium education	6.19	6.46	6.62	7.67	7.35	0.038**
High education	6.76	7.13	7.14	7.81	8.72	0.016**
<i>Marital status</i>						
Married	84.35	82.74	78.18	76.72	74.86	0.000***
Registered partnership	0.34	0.22	0.26	0.28	0.17	0.041**
Separated	1.80	1.67	1.43	1.56	1.54	0.070*
Never married	0.90	1.00	0.78	0.99	1.03	0.064*
Divorced	1.35	1.56	1.43	2.13	2.91	0.021**
Widowed	11.26	12.81	17.92	18.32	19.49	0.008***
<i>Current job situation</i>						
Retired	34.80	40.42	49.86	54.83	57.60	0.000***
Employed or self-employed	18.69	17.04	11.04	8.24	6.50	0.000***
Unemployed	4.39	2.34	2.47	2.98	2.05	0.014**
Permanently sick or disabled	4.17	3.56	2.99	3.41	3.59	0.058*
Homemaker	37.95	36.64	33.64	30.54	30.26	0.007***
Household net income (SD)	23,320.75 (25,752.48)	20,745.34 (29,897.92)	20,659.32 (31,421.78)	17,919.91 (12,964.64)	16,813.1 (11,067.22)	0.000***
Living in a rural area	46.17	48.78	48.57	49.72	48.03	0.032**
Number of children (SD)	2.90 (1.54)	2.87 (1.48)	2.88 (1.45)	2.82 (1.40)	2.83 (1.46)	0.793
Number of grandchildren (SD)	2.76 (3.25)	3.02 (3.02)	3.48 (3.18)	3.44 (3.13)	3.53 (3.14)	0.000***
Children living in house- hold	58.22	50.89	43.12	40.06	36.07	0.000***
Number of ADLs (SD)	0.14 (0.52)	0.17 (0.65)	0.31 (0.89)	0.31 (0.92)	0.21 (0.70)	0.000***
Number of IADLs (SD)	0.05 (0.27)	0.05 (0.30)	0.09 (0.44)	0.13 (0.55)	0.05 (0.32)	0.000***

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Wave 1, year 2004 (N=888)	Wave 2, year 2006/07 (N=898)	Wave 4, <sup>4</sup> year 2010 (N=770)	Wave 5, year 2013 (N=704)	Wave 6, year 2015 (N=585)	Comparison of means p-value
<i>Self-perceived health</i>						
Excellent	4.62	3.12	2.35	2.41	2.73	0.000***
Very good	13.96	8.24	9.87	9.66	11.28	0.000***
Good	40.77	41.09	35.71	36.93	37.44	0.022**
Fair	31.08	34.63	36.62	36.51	34.87	0.060*
Poor	9.57	12.92	15.45	14.49	13.68	0.000***
Number of chronic conditions (SD)	1.13 (1.16)	1.11 (1.08)	1.38 (1.21)	1.43 (1.26)	1.43 (1.15)	0.000***
Depression	35.81	31.96	36.62	31.68	32.31	0.997
<i>Body Mass Index categories</i>						
Underweight	0.23	0.56	0.91	0.71	0.68	0.008***
Normal weight	25.22	24.72	24.81	23.73	26.84	0.000***
Overweight	48.31	46.77	47.27	48.15	47.18	0.044**
Obesity	26.24	27.95	27.01	27.41	25.30	0.000***

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Means are presented as percentages, unless indicated otherwise.

## 4.2. Regression results

Next, we present the following regression tables for the two outcomes (formal and informal care) and for general (overall sample) and those that have at least one limitation. Tables A2 to A5 in Appendix contain the coefficients from the probit regressions performed. Due to their qualitative interpretation in terms of positive or negative association with the outcome of analysis, we also imputed the average marginal effects for every independent variable, since, apart from interpreting the sign, we can estimate their quantitative effect.

### *Overall sample*

Table 1.2 reports the Average Marginal Effects from the probit regression on formal care for the overall sample. Concerning the results column, statistically significant effects are obtained for many of the main variables. Overall, older age, being a female, being permanently sick or disabled, the number of limitations in Activities of Daily Living and number of limitations in the Instrumental Activities of Daily Living, the number of chronic conditions, and being depressed are significant and positively associated with the demand of formal care. On the other hand, living in a rural area and having children living in the household are significant and negatively associated with the probability of demanding formal care. Finally, within the dummy variables introduced for the wave variables, being in wave 4 (year 2010) is significant and negatively associated with formal care, denoting that the demand for formal care in the year 2010 decreased, compared with the year 2006 when the Dependency Act was implemented.

Similar arguments are obtained for Table 1.3 where it is estimated the Average Marginal Effects from the probit regression on informal care for the overall sample. Older age, being widowed, being permanently sick or disabled, living in a rural area, the number of limitations in Activities of

Daily Living and number of limitations in the Instrumental Activities of Daily Living, and having a poor self-perceived health status are significant and positively associated with the demand of informal care. On the other hand, higher educational level is significant and negatively associated with the probability of demanding informal care.

Finally, within the dummy variables introduced for the wave variables, being in wave 4 (year 2010) is not significantly associated with informal care, denoting that the demand for informal care in the year 2010 did not change significantly, compared with the year 2006 when the Dependency Act was implemented. It was only significant in the full model. But, being in wave 6 (year 2015) is significantly associated with a lower demand of informal care, compared with wave 2 (year 2006).

#### *Individuals with some limitation in the Activities of Daily Living (ADLs)*

In Table 1.4, the Average Marginal Effects from the probit regression on formal care for the limited sample (at least limitations in one ADL) are included. In relation with the results column, statistically significant effects are obtained for many of the main variables. Overall, higher age, being permanently sick or disabled, a higher number of instrumental activities of daily living and of chronic conditions would increase the probability of formal care demand. Contrariwise, living in a rural area is significant and negatively associated with a lower formal care demand. Finally, the dummy variable for wave 4 (year 2010) is also significant and negatively associated with the demand for formal care, pointing to a decrease in the formal care demand after the implementation of the Dependency Act.

Table 1.5 shows the Average Marginal Effects from the probit regression on informal care for the limited sample (at least limitations in one ADL). The results show that being older, female, the number of limitations in Activities of Daily Living and number of limitations in the Instrumental Activities of Daily Living are significant and positively associated with the demand of informal care. On the other hand, higher educational level, being widowed, and higher household income are significant and negatively associated with the probability of demanding informal care. Finally, within the dummy variables introduced for the wave variables, being in wave 4 (year 2010) is not significantly associated with informal care, denoting that the demand for informal care in the year 2010 did not change significantly, compared with the year 2006 when the Dependency Act was implemented. But, being in wave 1 (year 2004) is significantly associated with a lower demand of informal care, compared with wave 2 (year 2006), pointing towards a lower demand of informal care before the Dependency act was introduced.

**Table 1.2**

#### **AVERAGE MARGINAL EFFECTS FROM THE PROBIT REGRESSION OF FORMAL CARE FOR THE OVERALL SAMPLE**

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Age categories</i>					
Age 65 to 80	0.0347*** (0.0101)	0.0332*** (0.0113)	0.0312*** (0.0120)	0.0254** (0.0113)	0.0227** (0.0114)
Age 80+	0.178*** (0.0286)	0.171*** (0.0310)	0.163*** (0.0321)	0.110*** (0.0283)	0.111*** (0.0289)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
Gender: female	0.0237*** (0.00822)	0.0192* (0.0101)	0.0165 (0.0109)	0.0131 (0.0108)	0.00598 (0.0112)
<i>Education</i>					
Low education	-0.00448 (0.00966)	-0.00150 (0.00917)	-0.00632 (0.0101)	0.000212 (0.00946)	0.00323 (0.00940)
Medium education	0.0192 (0.0220)	0.0292 (0.0225)	0.0198 (0.0233)	0.0263 (0.0225)	0.0383 (0.0249)
High education	0.0170 (0.0214)	0.0267 (0.0231)	0.0194 (0.0247)	0.0299 (0.0236)	0.0410* (0.0249)
<i>Marital status</i>					
Registered partnership	-	-	-	-	-
Separated	-0.0179 (0.0196)	-0.0197 (0.0194)	-0.0190 (0.0202)	-0.0206 (0.0203)	-0.0176 (0.0214)
Never married	-0.0183 (0.0333)	-0.00976 (0.0368)	-0.00928 (0.0377)	-0.0121 (0.0304)	-0.0116 (0.0295)
Divorced	0.00733 (0.0286)	0.00260 (0.0275)	0.00327 (0.0282)	0.00652 (0.0279)	0.0110 (0.0310)
Widowed	0.0163 (0.0123)	0.00847 (0.0114)	0.0124 (0.0125)	0.0101 (0.0121)	0.0138 (0.0121)
<i>Employment status</i>					
Employed or self-employed		-0.00627 (0.0162)	0.000510 (0.0182)	-0.00116 (0.0173)	0.00603 (0.0183)
Unemployed		-0.0271 (0.0189)	-0.0268 (0.0191)	-0.0299* (0.0165)	-0.0238 (0.0177)
Permanently sick or disabled		0.116*** (0.0324)	0.133*** (0.0339)	0.0898*** (0.0300)	0.0747*** (0.0279)
Homemaker		-0.000453 (0.0103)	0.00160 (0.0106)	0.00187 (0.0107)	0.00392 (0.0101)
Household net income		-1.13e-07 (1.58e-07)	-7.42e-08 (1.63e-07)	-8.87e-08 (1.43e-07)	1.51e-08 (1.43e-07)
Living in a rural area			-0.0167** (0.00763)	-0.0147** (0.00741)	-0.0187** (0.00751)
Number of children			0.000637 (0.00359)	-0.000439 (0.00350)	-0.00145 (0.00364)
Number of grandchildren			0.00102 (0.00165)	0.000518 (0.00167)	0.000456 (0.00174)
Children in the household			-0.0158* (0.00883)	-0.0197** (0.00851)	-0.0152* (0.00851)
Number of ADLs				0.0148*** (0.00423)	0.0112** (0.00445)
Number of iADLs				0.0198*** (0.00707)	0.0123 (0.00806)



*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Self-perceived health status</i>					
Very good					-
Good					-
Fair					-
Poor					-
Number of chronic conditions					0.00732** (0.00313)
Depression					0.0227** (0.00961)
<i>Body Mass Index categories</i>					
Underweight					0.0853 (0.0537)
Overweight					0.00160 (0.00912)
Obesity					0.000479 (0.0110)
<i>Waves</i>					
Wave 1	0.0134 (0.0121)	0.0184 (0.0119)	0.0224* (0.0127)	0.0229* (0.0127)	0.0289** (0.0131)
Wave 4	-0.0602*** (0.00850)	-0.0587*** (0.00825)	-0.0653*** (0.00852)	-0.0696*** (0.00851)	-0.0672*** (0.00863)
Wave 5	0.00709 (0.0112)	0.00557 (0.0109)	0.00205 (0.0117)	-0.00928 (0.0112)	-0.00879 (0.0113)
Wave 6	0.00519 (0.0135)	0.00512 (0.0132)	0.0110 (0.0145)	0.00511 (0.0141)	0.00147 (0.0145)
N (Observations)	3,964	3,964	3,964	3,964	3,964
N (Individuals)	1,060	1,060	1,060	1,060	1,060
Log-pseudolikelihood	-773.15	-751.71	-680.23	-647.62	-572.47
Prob > chi <sup>2</sup>	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).

**Table 1.3**

**AVERAGE MARGINAL EFFECTS FROM THE PROBIT REGRESSION ON INFORMAL CARE FOR THE OVERALL SAMPLE**

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Age categories</i>					
Age 65 to 80	0.0446*** (0.0161)	0.0343* (0.0190)	0.0333* (0.0197)	0.0168 (0.0173)	0.00745 (0.0169)
Age 80+	0.253*** (0.0307)	0.233*** (0.0342)	0.221*** (0.0372)	0.114*** (0.0326)	0.0992*** (0.0310)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
Gender: female	0.0301* (0.0155)	0.0302 (0.0195)	0.0336* (0.0199)	0.0155 (0.0179)	-0.00431 (0.0178)
<i>Education</i>					
Low education	-0.103*** (0.0217)	-0.0986*** (0.0211)	-0.0902*** (0.0227)	-0.0749*** (0.0200)	-0.0515*** (0.0195)
Medium education	-0.181*** (0.0298)	-0.172*** (0.0304)	-0.174*** (0.0322)	-0.146*** (0.0308)	-0.109*** (0.0317)
High education	-0.172*** (0.0289)	-0.158*** (0.0302)	-0.140*** (0.0330)	-0.109*** (0.0302)	-0.0688** (0.0317)
<i>Marital status</i>					
Registered partnership	-	-	-	-	-
Separated	0.110 (0.0726)	0.107 (0.0709)	0.128* (0.0724)	0.129* (0.0660)	0.140** (0.0657)
Never married	-0.00532 (0.0624)	-0.000756 (0.0639)	-0.0485 (0.0586)	-0.0299 (0.0558)	-0.0266 (0.0604)
Divorced	0.0743 (0.0633)	0.0720 (0.0636)	0.0975 (0.0648)	0.0894 (0.0583)	0.0731 (0.0563)
Widowed	0.0548** (0.0231)	0.0438* (0.0226)	0.0448* (0.0244)	0.0366 (0.0225)	0.0334 (0.0218)
<i>Employment status</i>					
Employed or self-employed		-0.0470* (0.0262)	-0.0332 (0.0276)	-0.0239 (0.0248)	-0.00542 (0.0253)
Unemployed		0.00511 (0.0446)	0.0152 (0.0453)	0.0185 (0.0408)	0.0342 (0.0423)
Permanently sick or disabled		0.129*** (0.0416)	0.148*** (0.0425)	0.0452 (0.0341)	-0.0109 (0.0293)
Homemaker		-0.0131 (0.0205)	-0.00700 (0.0210)	0.00192 (0.0195)	-0.00213 (0.0183)
Household net income		-1.35e-07 (3.04e-07)	6.99e-08 (3.20e-07)	-4.89e-08 (4.18e-07)	7.33e-08 (3.57e-07)
Living in a rural area			0.0412*** (0.0144)	0.0419*** (0.0133)	0.0428*** (0.0131)
Number of children			0.00233 (0.00637)	-0.00409 (0.00592)	-0.00312 (0.00576)
Number of grandchildren			0.00207 (0.00323)	0.00180 (0.00284)	0.00117 (0.00280)
Children in the household			-0.00998 (0.0148)	-0.0185 (0.0133)	-0.0207 (0.0131)
Number of ADLs				0.0944*** (0.00812)	0.0782*** (0.00832)
Number of iADLs				0.0314** (0.0155)	0.0293 (0.0178)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Self-perceived health status</i>					
Very good					-0.00677 (0.0381)
Good					0.00857 (0.0346)
Fair					0.0334 (0.0360)
Poor					0.169*** (0.0425)
Number of chronic conditions					0.00620 (0.00544)
Depression					0.0571*** (0.0152)
<i>Body Mass Index categories</i>					
Underweight					-0.000422 (0.0595)
Overweight					0.000726 (0.0150)
Obesity					0.00982 (0.0179)
<i>Waves</i>					
Wave 1	-0.0138 (0.0166)	-0.0102 (0.0166)	-0.00475 (0.0172)	-0.00352 (0.0166)	0.00354 (0.0168)
Wave 4	-0.0112 (0.0169)	-0.0110 (0.0168)	-0.0106 (0.0170)	-0.0278* (0.0161)	-0.0319** (0.0160)
Wave 5	0.00938 (0.0180)	0.00555 (0.0179)	0.00947 (0.0183)	-0.0124 (0.0176)	-0.0136 (0.0174)
Wave 6	-0.0581*** (0.0195)	-0.0601*** (0.0193)	-0.0570*** (0.0197)	-0.0672*** (0.0187)	-0.0584*** (0.0181)
Observations	3,964	3,964	3,964	3,964	3,964
N (Individuals)	1,060	1,060	1,060	1,060	1,060
Log-pseudolikelihood	-1,789.92	-1,774.02	-1,652.35	-1,505.31	-1,385.35
Prob > chi2	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).

**Table 1.4**

**AVERAGE MARGINAL EFFECTS FROM THE PROBIT REGRESSION ON FORMAL CARE FOR THE LIMITED SAMPLE (at least limitations in one ADL)**

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Age categories</i>					
Age 65 to 80	0.0652 (0.0491)	0.0592 (0.0562)	0.0902 (0.0574)	0.0706 (0.0543)	0.101 (0.0618)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
Age 80+	0.204*** (0.0619)	0.203*** (0.0698)	0.247*** (0.0750)	0.163** (0.0772)	0.296*** (0.102)
Gender: female	0.0922*** (0.0356)	0.0661 (0.0435)	0.0350 (0.0477)	0.0526 (0.0469)	0.125** (0.0518)
<i>Education</i>					
Low education	-0.0203 (0.0366)	-0.00868 (0.0350)	-0.0221 (0.0369)	-0.0205 (0.0359)	-0.0472 (0.0482)
Medium education	0.196 (0.123)	0.242* (0.127)	0.101 (0.150)	0.113 (0.127)	0.0787 (0.176)
High education	0.0101 (0.146)	0.0648 (0.153)	0.0118 (0.141)	0.0128 (0.127)	-0.0456 (0.134)
<i>Marital status</i>					
Registered partnership	0.103 (0.198)	0.111 (0.199)	0.129 (0.206)	0.118 (0.210)	0.125 (0.262)
Separated	0.136 (0.141)	0.165 (0.126)	-	-	-
Never married	-	-	-	-	-
Divorced	-0.0210 (0.0428)	-0.0407 (0.0393)	-0.0157 (0.0421)	-0.0227 (0.0407)	-0.00611 (0.0502)
Widowed	0.0163 (0.0123)	0.00847 (0.0114)	0.00882 (0.0114)	0.00705 (0.0110)	0.0129 (0.0110)
<i>Employment status</i>					
Employed or self-employed		-0.0606 (0.0963)	0.0227 (0.121)	0.0311 (0.117)	0.145 (0.179)
Unemployed		0.0229 (0.122)	-	-	-
Permanently sick or disabled		0.108* (0.0648)	0.151** (0.0636)	0.120* (0.0615)	0.223** (0.0903)
Homemaker		0.00747 (0.0416)	0.0153 (0.0419)	0.0148 (0.0433)	0.0624 (0.0525)
Household net income		-1.42e-06 (1.53e-06)	-1.66e-07 (6.52e-07)	-2.17e-07 (5.01e-07)	2.64e-06 (1.73e-06)
Living in a rural area			-0.0374 (0.0332)	-0.0336 (0.0320)	-0.0983** (0.0480)
Number of children			0.00595 (0.0123)	0.00411 (0.0115)	0.00628 (0.0162)
Number of grandchildren			-0.00142 (0.00561)	-0.00407 (0.00542)	-0.00566 (0.00810)
Children in the household			-0.0380 (0.0348)	-0.0467 (0.0337)	-0.0264 (0.0422)
Number of ADLs				0.00571 (0.0136)	0.0214 (0.0169)
Number of iADLs				0.0546*** (0.0168)	0.0459* (0.0260)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Self-perceived health status</i>					
Very good					-
Good					-
Fair					-
Poor					-
Number of chronic conditions					0.0417*** (0.0142)
Depression					0.00361 (0.0470)
<i>Body Mass Index categories</i>					
Underweight					-
Overweight					-0.0395 (0.0673)
Obesity					-0.0866 (0.0693)
<i>Waves</i>					
Wave 1	-0.0321 (0.0584)	-0.0153 (0.0571)	-0.00487 (0.0583)	0.00222 (0.0582)	0.0339 (0.0560)
Wave 4	-0.188*** (0.0437)	-0.187*** (0.0420)	-0.211*** (0.0409)	-0.219*** (0.0412)	-
Wave 5	0.0371 (0.0549)	0.0238 (0.0541)	0.0126 (0.0550)	-0.0144 (0.0527)	-0.0231 (0.0517)
Wave 6	0.0699 (0.0695)	0.0522 (0.0689)	0.0720 (0.0729)	0.0557 (0.0703)	0.0168 (0.0725)
Observations	530	530	530	530	530
N (Individuals)	323	323	323	323	323
Log-pseudolikelihood	-220.25	-213.26	-180.14	-171.18	-110.45
Prob > chi2	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).

**Table 1.5**

**AVERAGE MARGINAL EFFECTS FROM THE PROBIT REGRESSION ON INFORMAL CARE FOR THE LIMITED SAMPLE (at least limitations in one ADL)**

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Age categories</i>					
Age 65 to 80	0.100* (0.0582)	0.0591 (0.0658)	0.0769 (0.0702)	0.0587 (0.0650)	0.101 (0.0703)
Age 80+	0.254*** (0.0633)	0.213*** (0.0713)	0.227*** (0.0753)	0.149** (0.0761)	0.228*** (0.0764)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
Gender: female	0.103** (0.0513)	0.128** (0.0625)	0.138** (0.0632)	0.147** (0.0581)	0.168*** (0.0629)
<i>Education</i>					
Low education	-0.140*** (0.0482)	-0.120** (0.0476)	-0.125** (0.0513)	-0.121** (0.0493)	-0.0883 (0.0560)
Medium education	-0.267* (0.153)	-0.232 (0.154)	-0.368** (0.168)	-0.389*** (0.131)	-0.425*** (0.132)
High education	-0.322** (0.163)	-0.268 (0.173)	-0.212 (0.175)	-0.186 (0.161)	-0.180 (0.155)
<i>Marital status</i>					
Registered partnership	-	-	-	-	-
Separated	0.171 (0.182)	0.167 (0.172)	0.191 (0.167)	0.190 (0.153)	0.176 (0.166)
Never married	-0.0836 (0.174)	-0.0154 (0.186)	-	-	-
Divorced	0.0666 (0.202)	0.0627 (0.193)	0.0629 (0.193)	0.0355 (0.192)	-0.0521 (0.217)
Widowed	-0.130** (0.0532)	-0.157*** (0.0510)	-0.151*** (0.0541)	-0.163*** (0.0517)	-0.163*** (0.0577)
<i>Employment status</i>					
Employed or self-employed		-0.188 (0.122)	-0.168 (0.133)	-0.117 (0.122)	-0.0688 (0.115)
Unemployed		-0.231 (0.211)	-0.144 (0.234)	-0.121 (0.221)	-0.0722 (0.213)
Permanently sick or disabled		0.0256 (0.0700)	0.0608 (0.0713)	0.0226 (0.0683)	-0.0170 (0.0790)
Homemaker		-0.0792 (0.0622)	-0.0708 (0.0638)	-0.0678 (0.0590)	-0.104* (0.0613)
Household net income		-1.31e-06* (7.73e-07)	-1.33e-06* (7.45e-07)	-1.43e-06** (6.34e-07)	-1.27e-06* (6.79e-07)
Living in a rural area			0.0593 (0.0453)	0.0596 (0.0438)	0.0221 (0.0505)
Number of children			-0.000670 (0.0165)	-0.0103 (0.0168)	0.000872 (0.0190)
Number of grandchildren			-0.00103 (0.00780)	-0.000474 (0.00795)	-0.00137 (0.00916)
Children in the household			0.0248 (0.0437)	0.0245 (0.0425)	0.00810 (0.0464)
Number of ADLs				0.0610*** (0.0177)	0.0594*** (0.0199)
Number of iADLs				0.0447* (0.0235)	0.0596** (0.0301)

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Variables	Average Marginal Effects Model 1	Average Marginal Effects Model 2	Average Marginal Effects Model 3	Average Marginal Effects Model 4	Average Marginal Effects Model 5
<i>Self-perceived health status</i>					
Very good					-
Good					-
Fair					-
Poor					-
Number of chronic conditions					-0.0112 (0.0190)
Depression					-0.0199 (0.0524)
<i>Body Mass Index categories</i>					
Underweight					0.117 (0.189)
Overweight					-0.0113 (0.0676)
Obesity					0.104 (0.0695)
<i>Waves</i>					
Wave 1	-0.163** (0.0671)	-0.144** (0.0659)	-0.144** (0.0703)	-0.132** (0.0670)	-0.133* (0.0712)
Wave 4	-0.0381 (0.0668)	-0.0387 (0.0655)	-0.00943 (0.0659)	-0.0254 (0.0623)	-0.0414 (0.0700)
Wave 5	0.0116 (0.0611)	-0.00114 (0.0603)	0.0147 (0.0631)	-0.0281 (0.0621)	-0.0649 (0.0681)
Wave 6	-0.0786 (0.0775)	-0.104 (0.0785)	-0.0683 (0.0812)	-0.104 (0.0791)	-0.0506 (0.0903)
Observations	530	530	530	530	530
N (Individuals)	323	323	323	323	323
Log-pseudolikelihood	-332.87	-325.16	-287.69	-273.64	-223.56
Prob > chi2	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).

## 5. DISCUSSION AND CONCLUSIONS

In this study, we aim to evaluate the impact that the implementation of the SAAD might have had in the demand of formal and informal care using five waves of the SHARE that it is a longitudinal survey. This research is related to the previous literature in several dimensions because we have extended the results for the overall sample by considering individuals with some limitation in the Activities of Daily Living.



In our results we can observe that statistically significant effects are obtained for many of the main variables. For the overall sample, as expected for all the models considered, a higher age would increase the risk of formal care. The same applies for being female, unemployed, sick or disabled, living in a rural area, have children in the household, activity daily limitations, chronic conditions or depression. Similar arguments are obtained for informal care for the overall sample, but when we consider individuals with some limitation in the Activities of Daily Living (ADLs) the significance of some variables has changed.

Besides, as Bauer and Sousa-Poza (2015) suggest, the review of the research on the effect of informal care is based on three different domains of the carer's life: employment, psychological health and family dynamics and living arrangements. The main conclusion drawn from the analysis is that informal caregiving has adverse consequences on all the domains of the life of those providing informal assistance and it calls for flexible policies that can adjust to adequately meet the carer's needs. In the same line, our results can be compared with the ones obtained in a comparative study by Wagner and Brandt (2017) where they try to determine whether and how regional formal LTC provision impacts the well-being of spousal caregivers across European countries. They show that spousal caregivers' well-being, proxied by life satisfaction, loneliness and depression, is positively related to the availability of public LTC services.

Another point of interest could be the association between the provision of LTC services and caregiver's quality of life. For example, Verbakel (2014) compared 18 European countries and, from their conclusions, it can be observed that there is less difference in well-being between informal carers and non-carers in countries with more generous LTC systems. However, their findings vary across countries because policy instruments designed to support informal caregivers do not significantly improve well-being. In this regard, the new population structure (ageing population, combined with increased life expectancy and falling birth rates), the weakened family ties and increased participation of women in the labour market and withdrawal of early retirement policies have shrunk the provision of informal care, which is likely to increase the demand for formal LTC (Siciliani, 2013).

In conclusion, within the next future, the population of Europe will reflect a greater share of older people that push up social services expenditure, but their extent will depend on whether or not there will be a reorganization of morbidity and disability in the elderly. Nevertheless, research on LTC must fill data gaps and coordination of health and social services should be improved to enhance the efficiency and equity in their joint provision.

## APPENDIX

**Table A1**  
**LIST OF VARIABLES AND CODING**

Variable	Label	Coding
Formal care	Whether the individual has received professional help at home or has been in a nursing home in the previous twelve months.	1: respondent has received professional help at home or has been institutionalized; 0: otherwise.
Nursing home admission	“During the last twelve months, have you been in a nursing home overnight?”	1: respondent has been to a nursing home in the last twelve months, temporary or permanently; 0: otherwise.
Home care	Whether the individual has received professional help at home with different matters, such as personal care, domestic tasks, meals-on-wheels and other activities.	1: respondent has received professional help at home; 0: otherwise.
Informal care	Whether a non-professional caregiver, from inside or outside the household, has helped the survey respondent due to any limitation in the activities of daily living during the previous twelve months.	1: respondent has received non-professional help inside or outside the household; 0: otherwise.
Informal care inside the household	Whether a non-professional caregiver, from inside the household, has helped the survey respondent due to any limitation in the activities of daily living during the previous twelve months.	1: respondent has received non-professional help from inside the household; 0: otherwise.
Informal care outside the household	Whether a non-professional caregiver, from outside the household, has helped the survey respondent due to any limitation in the activities of daily living during the previous twelve months.	1: respondent has received non-professional help from outside the household; 0: otherwise.
Age50to65	Age of respondent.	1: age of respondent is between 50 to 65; 0: otherwise.
Age65to80	Age of respondent.	1: age of respondent is between 65 to 80; 0: otherwise.
Age80plus	Age of respondent.	1: age of respondent is older than 80 years old; 0: otherwise.
Female	Gender of respondent.	1: female; 0: male.
Education	ISCED-97 coding of education.	0: no education; 1: low education; 2: medium education; 3: high education.
Marital status	Current marital status.	1: married; 2: with a registered partner; 3: separated; 4: never married; 5: divorced; 6: widowed.
Employment status	“How would you describe your current situation?”	1: respondent is retired; 2: employed or self-employed; 3: unemployed; 4: permanently sick or disabled; 5: homemaker.

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Variable	Label	Coding
Household income	Household income	
Rural	Area of location (residence).	1: respondent lives in a large or small town or in a rural area or village; 0: respondent lives in a city.
Number of children	Number of children that are still alive.	
Number of grandchildren	Number of respondents' grandchildren.	
Children in household	Whether at least one child lives in the same household or the same building as respondent.	1: child lives in the same household or building as respondent; 0: otherwise.
Number of ADLs	Number of limitations in Activities of Daily Living (ADLs).	
Number of IADLs	Number of limitations in Instrumental Activities of Daily Living (IADLs).	
Self-perceived health	Self-perceived health status.	1: excellent; 2: very good; 3: good; 4: fair; 5: poor.
Number of chronic conditions	Number of chronic illnesses.	
Depression		
Body Mass Index categories	Body Mass Index, according to weight in kg divided by the square of height in metres.	1: underweight; 2: normal weight; 3: overweight; 4: obesity.
Wave 1	Whether the data collected belongs to wave 1.	1: data was collected from wave 1; 0: otherwise.
Wave 2	Whether the data collected belongs to wave 2.	1: data was collected from wave 2; 0: otherwise.
Wave 4	Whether the data collected belongs to wave 4.	1: data was collected from wave 4; 0: otherwise.
Wave 5	Whether the data collected belongs to wave 5.	1: data was collected from wave 5; 0: otherwise.
Wave 6	Whether the data collected belongs to wave 6.	1: data was collected from wave 6; 0: otherwise.

**Table A2**

**COEFFICIENTS FROM THE PROBIT REGRESSION ON FORMAL CARE FOR THE OVERALL SAMPLE**

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
<i>Age categories</i>					
Age 65 to 80	0.331*** (0.0948)	0.327*** (0.110)	0.311*** (0.119)	0.268** (0.119)	0.252** (0.127)
Age 80+	1.057*** (0.122)	1.051*** (0.135)	1.021*** (0.146)	0.793*** (0.152)	0.833*** (0.160)
Gender: female	0.238*** (0.0867)	0.197* (0.107)	0.168 (0.115)	0.140 (0.119)	0.0670 (0.127)

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Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
<i>Education</i>					
Low education	-0.0441 (0.0936)	-0.0154 (0.0941)	-0.0636 (0.0997)	0.00232 (0.104)	0.0382 (0.113)
Medium education	0.164 (0.176)	0.252 (0.176)	0.171 (0.189)	0.245 (0.191)	0.366* (0.208)
High education	0.147 (0.175)	0.233 (0.185)	0.168 (0.201)	0.274 (0.196)	0.387* (0.206)
<i>Marital status</i>					
Registered partnership	-	-	-	-	-
Separated	-0.209 (0.267)	-0.235 (0.273)	-0.226 (0.281)	-0.263 (0.312)	-0.237 (0.341)
Never married	0.0701 (0.261)	0.0259 (0.269)	0.0326 (0.276)	0.0668 (0.275)	0.117 (0.306)
Divorced	0.148 (0.104)	0.0811 (0.105)	0.117 (0.112)	0.102 (0.116)	0.144 (0.118)
Widowed	0.0701 (0.261)	0.0259 (0.269)	0.0326 (0.276)	0.0668 (0.275)	0.117 (0.306)
<i>Employment status</i>					
Employed or self-employed		-0.0690 (0.184)	0.00550 (0.196)	-0.0131 (0.196)	0.0699 (0.206)
Unemployed		0.743*** (0.162)	0.840*** (0.167)	0.657*** (0.175)	0.610*** (0.183)
Permanently sick or disabled		0.704*** (0.182)	0.775*** (0.192)	0.603*** (0.212)	0.678*** (0.227)
Homemaker		-0.00476 (0.108)	0.0171 (0.113)	0.0206 (0.118)	0.0462 (0.119)
Household net income		-1.13e-06 (1.57e-06)	-7.36e-07 (1.62e-06)	-9.30e-07 (1.50e-06)	1.68e-07 (1.58e-06)
Living in a rural area			-0.166** (0.0759)	-0.154** (0.0777)	-0.208** (0.0835)
Number of children			0.00632 (0.0356)	-0.00460 (0.0367)	-0.0161 (0.0403)
Number of grandchildren			0.0101 (0.0163)	0.00543 (0.0175)	0.00504 (0.0192)
Children in the household			-0.158* (0.0887)	-0.210** (0.0905)	-0.170* (0.0950)
Number of ADLs				0.155*** (0.0441)	0.124** (0.0493)
Number of iADLs				0.207*** (0.0743)	0.136 (0.0894)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
<i>Self-perceived health status</i>					
Very good					-
Good					-
Fair					-
Poor					-
Number of chronic conditions					0.0810** (0.0347)
Depression					0.242** (0.0998)
<i>Body Mass Index categories</i>					
Underweight					0.646** (0.302)
Overweight					0.0179 (0.102)
Obesity					0.00538 (0.124)
<i>Waves</i>					
Wave 1	0.105 (0.0942)	0.146 (0.0940)	0.172* (0.0963)	0.178* (0.0975)	0.227** (0.102)
Wave 4	-1.037*** (0.159)	-1.046*** (0.164)	-1.364*** (0.229)	-1.590*** (0.267)	-1.939*** (0.435)
Wave 5	0.0573 (0.0908)	0.0473 (0.0929)	0.0174 (0.0993)	-0.0852 (0.103)	-0.0846 (0.110)
Wave 6	0.0424 (0.110)	0.0436 (0.112)	0.0887 (0.116)	0.0431 (0.118)	0.0133 (0.131)
N (Observations)	3,964	3,964	3,964	3,964	3,964
N (Individuals)	1,060	1,060	1,060	1,060	1,060
Log-pseudolikelihood	-773.15	-751.71	-680.23	-647.62	-572.47
Prob > chi <sup>2</sup>	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).

**Table A3**

**COEFFICIENTS FROM THE PROBIT REGRESSION ON INFORMAL CARE FOR THE OVERALL SAMPLE**

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
<i>Age categories</i>					
Age 65 to 80	0.179*** (0.0647)	0.138* (0.0773)	0.136* (0.0808)	0.0755 (0.0777)	0.0352 (0.0800)
Age 80+	0.810*** (0.0873)	0.759*** (0.0987)	0.731*** (0.109)	0.441*** (0.112)	0.410*** (0.114)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
Gender: female	0.121* (0.0628)	0.122 (0.0794)	0.137* (0.0820)	0.0694 (0.0807)	-0.0203 (0.0840)
<i>Education</i>					
Low education	-0.360*** (0.0711)	-0.351*** (0.0706)	-0.326*** (0.0770)	-0.300*** (0.0753)	-0.224*** (0.0803)
Medium education	-0.740*** (0.145)	-0.706*** (0.148)	-0.746*** (0.167)	-0.689*** (0.178)	-0.543*** (0.182)
High education	-0.684*** (0.132)	-0.628*** (0.137)	-0.555*** (0.147)	-0.467*** (0.143)	-0.310** (0.151)
<i>Marital status</i>					
Registered partnership	-	-	-	-	-
Separated	0.388* (0.229)	0.381* (0.226)	0.452** (0.225)	0.489** (0.217)	0.550** (0.221)
Never married	-0.0220 (0.261)	-0.00311 (0.264)	-0.222 (0.299)	-0.147 (0.293)	-0.137 (0.332)
Divorced	0.273 (0.213)	0.267 (0.217)	0.354* (0.212)	0.356* (0.207)	0.312 (0.216)
Widowed	0.206** (0.0821)	0.168** (0.0829)	0.174* (0.0898)	0.157* (0.0919)	0.152 (0.0946)
<i>Employment status</i>					
Employed or self-employed		-0.201* (0.117)	-0.142 (0.122)	-0.112 (0.119)	-0.0259 (0.122)
Unemployed		0.0198 (0.172)	0.0597 (0.175)	0.0798 (0.172)	0.152 (0.180)
Permanently sick or disabled		0.435*** (0.129)	0.500*** (0.131)	0.187 (0.134)	-0.0528 (0.144)
Homemaker		-0.0523 (0.0823)	-0.0285 (0.0855)	0.00853 (0.0865)	-0.0101 (0.0868)
Household net income		-5.41e-07 (1.22e-06)	2.83e-07 (1.29e-06)	-2.18e-07 (1.87e-06)	3.46e-07 (1.68e-06)
Living in a rural area			0.166*** (0.0580)	0.187*** (0.0592)	0.202*** (0.0617)
Number of children			0.00944 (0.0258)	-0.0183 (0.0264)	-0.0147 (0.0272)
Number of grandchildren			0.00840 (0.0131)	0.00807 (0.0127)	0.00555 (0.0132)
Children in the household			-0.0404 (0.0599)	-0.0828 (0.0598)	-0.0981 (0.0620)
Number of ADLs				0.422*** (0.0378)	0.369*** (0.0402)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
Number of iADLs				0.141** (0.0700)	0.139 (0.0847)
<i>Self-perceived health status</i>					
Very good					-0.0368 (0.205)
Good					0.0447 (0.184)
Fair					0.164 (0.189)
Poor					0.672*** (0.199)
Number of chronic conditions					0.0293 (0.0257)
Depression					0.257*** (0.0651)
<i>Body Mass Index categories</i>					
Underweight					-0.00202 (0.284)
Overweight					0.00346 (0.0715)
Obesity					0.0460 (0.0841)
<i>Waves</i>					
Wave 1	-0.0543 (0.0652)	-0.0404 (0.0653)	-0.0189 (0.0686)	-0.0149 (0.0705)	0.0157 (0.0748)
Wave 4	-0.0436 (0.0660)	-0.0433 (0.0664)	-0.0427 (0.0682)	-0.123* (0.0717)	-0.152** (0.0766)
Wave 5	0.0356 (0.0680)	0.0214 (0.0688)	0.0369 (0.0712)	-0.0533 (0.0761)	-0.0624 (0.0802)
Wave 6	-0.247*** (0.0865)	-0.259*** (0.0867)	-0.249*** (0.0901)	-0.325*** (0.0966)	-0.296*** (0.0965)
Observations	3,964	3,964	3,964	3,964	3,964
N (Individuals)	1,060	1,060	1,060	1,060	1,060
Log-pseudolikelihood	-1,789.92	-1,774.02	-1,652.35	-1,505.31	-1,385.35
Prob > chi2	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).



*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

**Table A4**  
**COEFFICIENTS FROM THE PROBIT REGRESSION ON FORMAL CARE FOR THE LIMITED SAMPLE**  
**(at least limitations in one ADL)**

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
<i>Age categories</i>					
Age 65 to 80	0.281 (0.212)	0.264 (0.252)	0.436 (0.288)	0.360 (0.285)	0.496 (0.318)
Age 80+	0.814*** (0.242)	0.837*** (0.280)	1.047*** (0.318)	0.738** (0.330)	1.176*** (0.388)
Gender: female	0.429** (0.181)	0.310 (0.216)	0.170 (0.237)	0.274 (0.255)	0.672** (0.323)
<i>Education</i>					
Low education	-0.0880 (0.156)	-0.0394 (0.158)	-0.104 (0.171)	-0.103 (0.177)	-0.221 (0.220)
Medium education	0.684* (0.392)	0.860** (0.411)	0.409 (0.560)	0.483 (0.496)	0.314 (0.656)
High education	0.0417 (0.596)	0.265 (0.586)	0.0529 (0.622)	0.0609 (0.596)	-0.212 (0.663)
<i>Marital status</i>					
Registered partnership	0.390 (0.680)	0.427 (0.693)	0.522 (0.754)	0.509 (0.815)	0.511 (0.949)
Separated	0.499 (0.467)	0.608 (0.417)	-	-	-
Never married	-	-	-	-	-
Divorced	-0.0928 (0.192)	-0.189 (0.189)	-0.0756 (0.205)	-0.117 (0.214)	-0.0293 (0.242)
Widowed	0.390 (0.680)	0.427 (0.693)	0.522 (0.754)	0.509 (0.815)	0.511 (0.949)
<i>Employment status</i>					
Employed or self-employed		-0.335 (0.615)	0.113 (0.583)	0.159 (0.575)	0.672 (0.710)
Unemployed		0.104 (0.537)	-	-	-
Permanently sick or disabled		0.438* (0.248)	0.633** (0.255)	0.542** (0.267)	0.952*** (0.361)
Homemaker		0.0350 (0.195)	0.0772 (0.212)	0.0777 (0.228)	0.330 (0.279)
Household net income		-6.32e-06 (6.82e-06)	-7.83e-07 (3.08e-06)	-1.09e-06 (2.51e-06)	1.25e-05 (8.28e-06)
Living in a rural area			-0.176 (0.156)	-0.168 (0.159)	-0.463** (0.232)
Number of children			0.0281 (0.0582)	0.0206 (0.0576)	0.0298 (0.0770)

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
Number of grandchildren			-0.00672 (0.0265)	-0.0204 (0.0272)	-0.0269 (0.0386)
Children in the household			-0.180 (0.166)	-0.235 (0.170)	-0.125 (0.200)
Number of ADLs				0.0286 (0.0683)	0.102 (0.0800)
Number of iADLs				0.274*** (0.0872)	0.218* (0.125)
<i>Self-perceived health status</i>					
Very good					-
Good					-
Fair					-
Poor					-
Number of chronic conditions					0.198*** (0.0698)
Depression					0.0172 (0.224)
<i>Body Mass Index categories</i>					
Underweight					-
Overweight					-0.169 (0.280)
Obesity					-0.398 (0.301)
<i>Waves</i>					
Wave 1	-0.120 (0.220)	-0.0577 (0.216)	-0.0184 (0.221)	0.00871 (0.228)	0.155 (0.256)
Wave 4	-1.117*** (0.245)	-1.143*** (0.245)	-1.566*** (0.336)	-1.709*** (0.341)	-
Wave 5	0.127 (0.190)	0.0856 (0.196)	0.0466 (0.204)	-0.0575 (0.211)	-0.116 (0.259)
Wave 6	0.232 (0.228)	0.182 (0.237)	0.250 (0.247)	0.206 (0.255)	0.0792 (0.337)
Observations	530	530	530	530	530
N (Individuals)	323	323	323	323	323
Log-pseudolikelihood	-220.25	-213.26	-180.14	-171.18	-110.45
Prob > chi2	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).

*Differences in the provision of formal and informal care services after the implementation of the dependency act: the Spanish case*

**Table A5**  
**COEFFICIENTS FROM THE PROBIT REGRESSION ON INFORMAL CARE FOR THE LIMITED SAMPLE**  
**(at least limitations in one ADL)**

Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
<i>Age categories</i>					
Age 65 to 80	0.289* (0.173)	0.172 (0.195)	0.231 (0.215)	0.184 (0.207)	0.322 (0.228)
Age 80+	0.731*** (0.200)	0.622*** (0.220)	0.685*** (0.246)	0.465* (0.241)	0.730*** (0.266)
Gender: female	0.286** (0.141)	0.365** (0.178)	0.402** (0.186)	0.453** (0.180)	0.526*** (0.201)
<i>Education</i>					
Low education	-0.394*** (0.138)	-0.346** (0.140)	-0.369** (0.153)	-0.375** (0.155)	-0.271 (0.172)
Medium education	-0.731* (0.413)	-0.651 (0.423)	-1.068** (0.525)	-1.201*** (0.451)	-1.420** (0.571)
High education	-0.883* (0.454)	-0.751 (0.484)	-0.612 (0.491)	-0.567 (0.476)	-0.550 (0.473)
<i>Marital status</i>					
Registered partnership	-	-	-	-	-
Separated	0.577 (0.734)	0.583 (0.720)	0.694 (0.759)	0.726 (0.726)	0.622 (0.666)
Never married	-0.240 (0.488)	-0.0468 (0.563)	-	-	-
Divorced	0.204 (0.650)	0.199 (0.639)	0.203 (0.649)	0.118 (0.652)	-0.166 (0.686)
Widowed	-0.368** (0.155)	-0.459*** (0.155)	-0.452*** (0.167)	-0.512*** (0.169)	-0.519*** (0.192)
<i>Employment status</i>					
Employed or self-employed		-0.516 (0.334)	-0.467 (0.368)	-0.347 (0.357)	-0.216 (0.356)
Unemployed		-0.635 (0.595)	-0.401 (0.646)	-0.358 (0.649)	-0.227 (0.665)
Permanently sick or disabled		0.0735 (0.202)	0.179 (0.213)	0.0695 (0.211)	-0.0540 (0.250)
Homemaker		-0.220 (0.174)	-0.199 (0.180)	-0.203 (0.177)	-0.326* (0.195)
		-0.516	-0.467	-0.347	-0.216
Household net income		-3.79e-06* (2.24e-06)	-3.95e-06* (2.22e-06)	-4.45e-06** (2.00e-06)	-3.99e-06* (2.15e-06)
Living in a rural area			0.174 (0.133)	0.184 (0.135)	0.0689 (0.158)
Number of children			-0.00199 (0.0490)	-0.0320 (0.0523)	0.00273 (0.0595)

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Variables	Coefficients Model 1	Coefficients Model 2	Coefficients Model 3	Coefficients Model 4	Coefficients Model 5
Number of grandchildren			-0.00304 (0.0231)	-0.00148 (0.0248)	-0.00431 (0.0287)
Children in the household			0.0735 (0.129)	0.0763 (0.132)	0.0254 (0.145)
Number of ADLs				0.190*** (0.0569)	0.186*** (0.0635)
Number of iADLs				0.139* (0.0746)	0.187* (0.0958)
<i>Self-perceived health status</i>					
Very good					-
Good					-
Fair					-
Poor					-
Number of chronic conditions					-0.0352 (0.0597)
Depression					-0.0626 (0.166)
<i>Body Mass Index categories</i>					
Underweight					0.366 (0.605)
Overweight					-0.0346 (0.207)
Obesity					0.324 (0.218)
<i>Waves</i>					
Wave 1	-0.446** (0.185)	-0.406** (0.187)	-0.413** (0.203)	-0.404** (0.206)	-0.411* (0.220)
Wave 4	-0.107 (0.189)	-0.112 (0.191)	-0.0280 (0.196)	-0.0801 (0.197)	-0.130 (0.220)
Wave 5	0.0335 (0.176)	-0.00337 (0.178)	0.0440 (0.189)	-0.0885 (0.197)	-0.202 (0.213)
Wave 6	-0.218 (0.216)	-0.296 (0.225)	-0.199 (0.237)	-0.319 (0.245)	-0.158 (0.282)
Observations	530	530	530	530	530
N (Individuals)	323	323	323	323	323
Log-pseudolikelihood	-332.87	-325.16	-287.69	-273.64	-223.56
Prob > chi2	0.000***	0.000***	0.000***	0.000***	0.000***

Clustered standard errors at the individual level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Reference categories: age 50 to 65, male, no education, married, retired, excellent self-perceived health status, with normal weight and wave 2 (years 2006/07).

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