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Assessing Needs of Care in European Nations

# **DETERMINANTS OF THE PROBABILITY OF OBTAINING FORMAL AND INFORMAL LONG-TERM CARE IN EUROPEAN COUNTRIES**

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## **Abstract**

The aim of this report is to identify patterns in the utilisation of formal and informal long-term care (LTC) across European countries and discuss possible determinants of demand for different types of care. It addresses specific research questions on the volume of different types of care and the conditions under which care is provided. The latter include demographic factors, especially population ageing, health status and the limitations caused by poor health, family settings and social networking. The analysis indicates substantial differences in the receipt of LTC across European countries, depending on traditions and social protection models, which determine both the availability of institutional care and the provision of informal care. In countries with a Scandinavian approach, where the levels of state responsibility and provision of institutional care are high, informal care is less prominent and is mostly provided on an irregular basis by caregivers outside the family. As needs for care increase, formal settings are more common. Countries in the Continental Europe group are less uniform, with a high share of individuals using formal settings of care, but also combining formal and informal care. In Mediterranean countries, the provision of informal care, including personal care, plays a much greater role than formal LTC.



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# Determinants of the Probability of Obtaining Formal and Informal Long-Term Care in European Countries

ENEPRI Research Report No. 99/November 2011

Izabela Marcinkowska and Agnieszka Sowa\*

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## 1. Introduction and study objectives

The objective of this study is to identify patterns in the utilisation of formal and informal long-term care (LTC) in European countries and to discuss possible determinants of the demand for (and choice of) different types of care. The analysis is based to a large extent on the identification of clusters of countries with diverse LTC systems that was developed in Work Package 1 (WP1) of the ANCIEN project. Moreover, the analysis serves as the background for further research on the choice of care that is being conducted in WP3 as well as in WP6 of the project. The research is based on reduced form models that do not take into account the interrelations between various types of care (formal and informal), as that is the subject of task 3 of the same WP. Specifically, the research attempts to measure the volumes of different forms of care provided in European countries and the conditions under which these forms of care are obtained. The latter include demographic factors, especially population ageing, the population's health status and limitations caused by poor health, and social networking, which affect the availability of care and are influenced by an individual's socio-economic situation. The analysis does not address the supply of care, understood as the availability of various institutional settings of care, nor does it discuss the legal regulations in the individual European countries. Nevertheless, we approximate these determinants at a later stage of the estimates and we keep them in mind when interpreting the results.

The analysis has been performed as part of WP3 of the ANCIEN project, entitled "Availability of formal and informal care". The research seeks to cover four European countries that were selected as a result of the cluster analysis performed in WP1, "Overview of the LTC systems", and which represent the models of provision and regulation of LTC that are identified in the countries. The selected countries are Germany, the Netherlands, Spain and Poland. Yet owing to data constraints (described in more detail in section 3 of this report), the analysis of formal care has had to be supplemented by information on Italy, which represents the same cluster as Poland. To complement the analysis with the factors mentioned above (institutional differences among countries as well as legal regulations), which are not included in the dataset of the Survey of Health, Ageing and Retirement in Europe (SHARE), we provide the same kinds of estimates for the whole sample controlling for country (or the cluster to which it belongs).

## 2. Brief overview of the characteristics of countries covered by the analysis

The selection of countries representing different models of provision of LTC in Europe is a result of the cluster analysis based on the level of expenditure on LTC (including the level of

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private expenditure), the relative importance of informal vs. formal care, the support given to informal care providers, targeting and the role of cash benefits (Willeme and Mot, 2010).

Among the countries selected, the Netherlands is characterised by a higher level of public than private spending. The Netherlands' LTC system is based on social insurance; however, domestic care services are funded from general taxes. Additionally, there is an income-dependent co-payment for almost all types of services, including contributions to boarding costs in institutional care. The high level of public expenditure is related to the high usage of formal care services, with a relatively frequent use of residential care when compared with other EU countries, especially those of Central, Eastern and southern Europe (Mot, 2010). Governmental policy is aimed at shifting the balance from expensive institutional care to less expensive home care and support for informal care. The services available under home care include personal care and assistance, nursing and treatment. Informal care is marginal in the Netherlands, despite its potential given the large degree of labour market flexibility. Still, the state is viewed as the main provider of care for the elderly. Overall, the approach in the Netherlands represents a Scandinavian model for the provision of care, with state responsibility playing a strong role and the expectation that formal public care will be provided to elderly citizens in need (Pommer et al., 2007).

In Germany, the LTC system is also a subsidiary one and is based on social insurance, which was introduced in 1994. The provision of services, however, has a mixed public-private and formal-informal character. The level of public expenditure is lower than in the Netherlands and private expenditure on LTC services constitutes a substantial part of total funding. Similar to the Netherlands, the German system uses co-payments, particularly for institutional care and to cover boarding costs. Individuals who are not able to cover the additional costs of care are eligible for means-tested social assistance, which covers the costs of care. The latter is used mostly in residential care (Schulz, 2010). In addition to residential care, the services available include benefits in cash and in kind, personal care and assistance, day care and night care, and nursing. The government's policy is to support care provided in the home environment, as well as by informal care providers; thus some of the LTC policy instruments are targeted at these groups. The latter include social security benefits for informal care providers and benefits for care providers who take leave to provide LTC, training courses and counselling. Indeed, informal care is an important part of the system, but it is provided mostly to dependent individuals under age 80 who are not single, as most of the care is provided by a spouse. At the same time, the proportion of elderly persons with impairments in need of formal care has been increasing over the last decade (Schulz, 2010). In the classification of countries, Germany is viewed as a Continental country with mixed responsibilities for the care of elderly persons in need (Pommer et al., 2007). Some responsibilities are given to the nuclear family and supported by public means. There is a high degree of access to public services among individuals with more severe impairments.

In contrast to the Netherlands and Germany, the provision of LTC has been viewed solely as a family task in Spain (Gutierrez et al., 2010), which is typical of Mediterranean countries, where the extended family traditionally plays an important caretaking role (Pommer et al., 2007). Only in 2006 was a new legal regulation introduced defining the LTC pillar of the welfare system. The regulation shifted some of the responsibilities for elderly individuals with health impairments to the state. The law introduced the public provision of residential care, day care, and home care services, such as home help and personal care. Like Germany, the state supports informal care by offering its main instrument of financial support to informal care providers. Despite efforts to introduce various institutional instruments for care provision, the size of the informal care sector is still large: it is estimated that 70% of the dependent elderly solely receive informal care (Gutierrez et al., 2010).

While these three countries fall under the earlier classifications that distinguish various models of LTC (Pommer et al., 2007), the research in WP1 allowed us to identify a fourth cluster. Countries in this fourth cluster are characterised by a high degree of family responsibility and a low level of public provision of care, and by high private expenditures accompanied by a profound level of decentralisation and a disintegration of public care (Willeme and Mot, 2010). Poland and Italy are two countries that are representative of this cluster. In Poland, informal care is the dominant source of care for the elderly in need (Golinowska, 2010). Unlike the other countries included in the analysis, the LTC system in Poland is not comprehensively covered by a specific legal regulation, and services are dispersed across the health care system and the social assistance system, with the availability of services dependent upon a means test. This makes it difficult to estimate total public expenditures on LTC, although they are thought to be among the lowest in the EU. The formal LTC services include residential care provided in LTC nursing homes and social welfare homes, as well as home nursing care and home care services. Again, the boarding services in residential care are covered by an individual co-payment. Still, the basic sources of funds for LTC services are health insurance and tax-based resources. Although the main responsibility for care provision rests with the family, the state does not support informal care providers, as there are no cash benefits for the dependent person or benefits supporting the informal caregivers.

Since an analysis of formal care utilisation has not been possible for Poland, the research has been supplemented by information on LTC in Italy, as its LTC system shares many similarities with the Polish one. Formal care is fragmented between the health care system (which is responsible for residential care) and social services, and a means test is used as a criterion for access to home care services (Tediosi and Gabriele, 2010). The funding of the LTC services is tax-based and free of charge within the health care system. A co-payment is only involved in home services. Overall, a large proportion of care is still provided within the family, although informal caregivers are not supported. Additionally, a large part of the sector is private, with the costs of services paid out of pocket. The traditional differentiation of Italy between its northern and southern regions is also reflected in the organisation of LTC, with the northern regions more oriented towards the public provision of care while in the southern regions the burden of care rests mostly with families.

### **3. Data used and data constraints**

The estimations of the probability of obtaining formal care in the selected European countries are based on SHARE<sup>1</sup> data, wave 2, for 2006. To our knowledge, these are the only data covering a range of European countries with comparable information on the receipt and provision of LTC – both formal and informal – among the most vulnerable population, which are the elderly. But there are many drawbacks of the data, some of which are due to the construction of the survey and others to mistakes in the coding of some variables. Most of the information on the provision of formal care is limited to formal care provided in the home environment and it covers formal institutional care in a very restrictive manner. This is because the survey was targeted at individuals living in households. Individuals were mainly questioned in their homes and they were surveyed in institutions only if they had already been in the sample in the previous wave and had moved to the nursing institution. Thus, individuals who use some institutional care services, including staying overnight in a nursing home during the 12 months preceding the survey, but do not stay in institutions on a daily basis, are included in the survey. Consequently, one has to keep in mind that the analyses of formal care mainly concern home-

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<sup>1</sup> Information on the sample design is available on the SHARE website (<http://www.share-project.org/>).

based care. The problem is further discussed in section 5.1, which presents the ways in which the different types of formal care are provided.

The selection of countries was determined by the cluster analysis briefly presented in the paragraph above. Italy was chosen as an alternative to Poland for the analysis of the determinants of the probability of receiving formal care. This decision stems from the fact that the SHARE data include a mistake in the data codes for formal care in Poland. For the question on obtaining nursing care, 99.9% of all answers were recorded “no” and only one answer was recorded “I don’t know”. In response to the question on obtaining formal home care, all questions were recorded “I don’t know”. As a result, no reliable information on obtaining formal care in Poland is available.

According to the classification of the countries presented in WP1 of the ANCIEN project, we have defined four clusters. Yet because not all of the countries necessary for our analysis are covered by SHARE data, cluster 4 is represented by only one country, which slightly limits the estimates, especially of the provision of formal LTC. This issue is further explained in section 5.1.

#### *Sample characteristics*

The survey is based on a sample of elderly persons aged 50 and older who provided all of the necessary information relevant for the scope of our analysis. The share of the countries’ subpopulation aged 50 and older in the sample is presented in Table 1.

*Table 1. Number of observations among the subpopulation aged 50+, by country and cluster*

<b>Country</b>	<b>Number of observations</b>	<b>Cluster</b>	<b>Number of observations</b>
Germany	2,528	1	8,377
Netherlands	2,615	2	7,861
Spain	2,182	3	6,377
Italy	2,927	4	5,356
Poland	2,429		

*Source:* Own calculations based on SHARE, 2006 data.

Not all of the countries grouped in the various clusters in WP1 are represented in the SHARE database; thus only countries where the survey research was conducted are represented in the cluster multivariate analysis. The clusters specified in WP1 and those that are the subject of this research are contrasted in Table 2.

*Table 2. Comparisons of countries included in the cluster analysis of WP1 and in the multivariate analysis on the receipt of care*

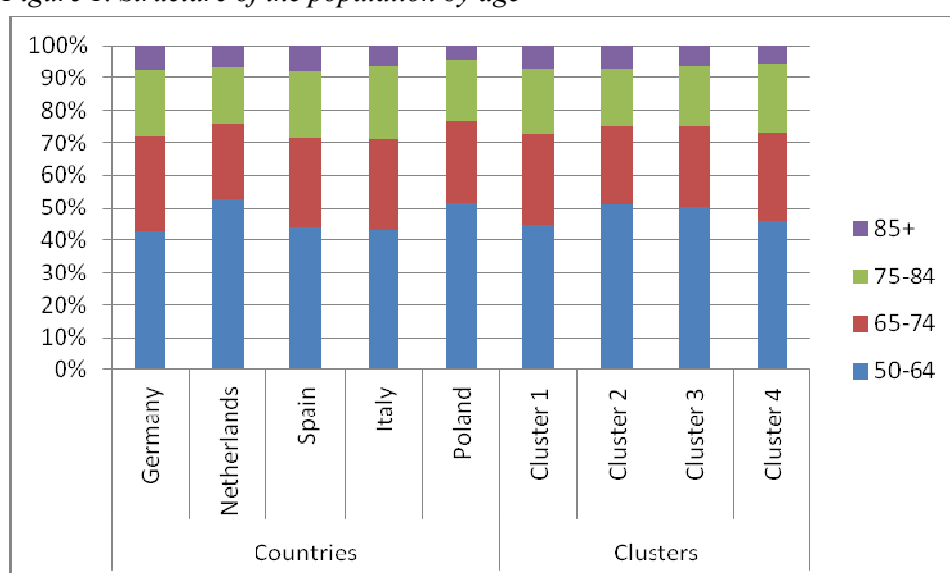
<b>Cluster</b>	<b>Countries grouped in clusters in WP1</b>	<b>Countries included in the SHARE survey by cluster</b>
Cluster 1	Belgium, the Czech Republic, Germany, Slovakia	Belgium, the Czech Republic, Germany
Cluster 2	Denmark, the Netherlands, Sweden	Denmark, the Netherlands, Sweden
Cluster 3	Austria, Finland, France, Spain, the Great Britain	Austria, France, Spain
Cluster 4	Hungary, Italy, Poland	Italy, Poland

*Source:* Own compilation based on the WP1 report and SHARE, 2006 data.

The response rate for the main questions on the utilisation of LTC differs depending on the question and the filters that are incorporated in the survey. The response rate to the question on the use of formal home care and formal nursing care is high: on average the rate is about 86% for each country. The response rate to the question on the use of informal care provided by the family or within the household is much lower, covering approximately half of the sample for each country.

The structure of the population by age is comparable among countries and clusters. Figure 1 shows that persons aged 50-64 constitute 40-50% of the country and cluster samples. Those aged over 85 constitute the smallest fraction of the sample, being well represented (8% of the sample) in Germany, the Netherlands and the respective clusters, and poorly represented in Poland (4% of the sample). The latter's share stems from the fact that Poland, like other new member states, has only recently started to undergo the process of population ageing, which is more advanced in the countries of the EU-15. Another important factor is that average life expectancy in Poland is much lower than in the EU-15 countries (life expectancy at birth in 2008 in Poland was 71.5 for males and 80.0 for females compared with 77.8 for males and 83.6 for females in the EU-15).<sup>2</sup>

Figure 1. Structure of the population by age



Source: Own calculations based on SHARE, 2006 data.

The populations of the selected countries differ greatly in terms of health status, which is reflected in morbidity and mortality rates, but also – especially at older ages – in variations in self-sufficiency. The latter quality is often assessed by the number of activities of daily living (ADLs) and instrumental activities of daily living (IADLs) that an individual is able to perform without the assistance of another person. This measure is of special importance, as it is often used as a criterion for the provision of formal home care (i.e. it is part of the needs assessment for benefits in the Netherlands, Germany, Spain and in some regions of Italy, and for cash benefits in the Czech Republic). The SHARE questionnaire allows for the assessment of self-sufficiency based on the list of ADLs and IADLs that an individual is not able to perform

<sup>2</sup> Eurostat data ([http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search\\_database](http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database)).

because of physical, mental or emotional distress or problems with memory. The list of ADLs for which the SHARE questionnaire seeks information includes the following:

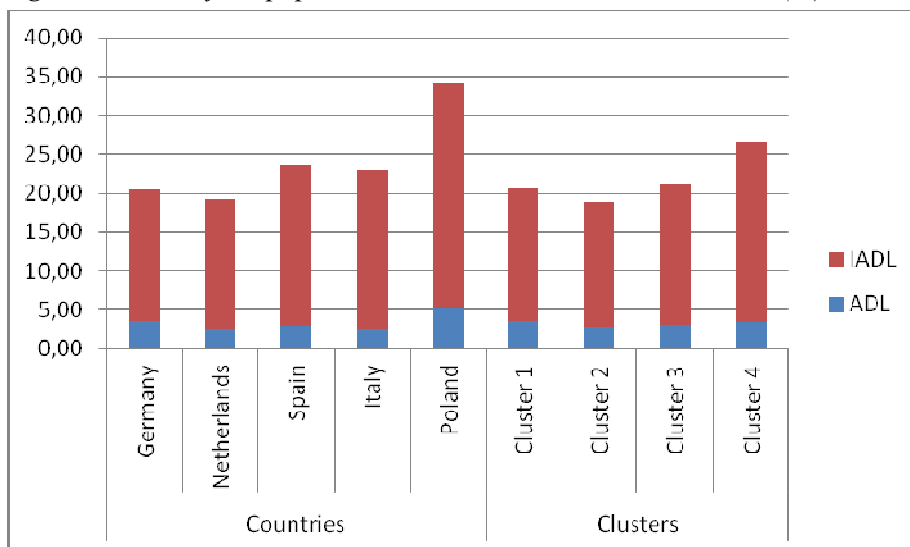
- putting on clothes, including socks and shoes;
- walking across the room;
- taking a bath/shower;
- eating, such as cutting up one's food;
- getting up/lying down; and
- using the toilet.

The list of IADLs with which an individual could have a problem includes these activities:

- using a map to find directions in an unknown place;
- preparing a hot meal;
- shopping;
- making telephone calls;
- taking medicine;
- doing housework or gardening; and
- managing money (paying bills, following up expenses).

Figure 2 shows that Poland has the highest share of the population reporting inability to perform these activities, reaching 34% of the population aged 50+, while in other countries the share varies from 19% (the Netherlands) to 24% (Spain). Also in Poland, the fraction of the population with limitations in basic activities is twice as large (5%) as is the case in the Netherlands, Spain and Italy. When representative countries are compared with cluster averages, one sees that while Germany and the Netherlands are very close to the average, the extent of such limitations reported in Spain is greater than on average in cluster 3. Cluster 4 is simply an average of the extent of limitations reported in an Italian and Polish survey, as Hungary is not represented in the SHARE research of 2006.

Figure 2. Share of the population with limitations in ADLs/IADLs (%)



Source: Own calculations based on SHARE, 2006 data.



#### 4. Model

To estimate the probability of individuals obtaining long-term care, a simple logit model has been applied:

$$y_n = x_n\beta + \varepsilon_n,$$

where  $y_n = 1$  if LTC is obtained

$= 0$ , otherwise,

$x_n$  includes all independent variables that theoretically influence the probability of obtaining LTC,  $\beta$  is a vector of coefficients representing the effect of the various characteristics on the probability of obtaining LTC and  $\varepsilon_n$  is a disturbance term representing other forces that may not be explicitly measured.

The choice of explanatory variables that are potential determinants of the receipt of different types of LTC is based on the rich literature on the topic, an extensive description of which can be found in Norton (2000), but also in other research on the determinants of the utilisation of LTC (Litwin and Attias-Donfut, 2009) and the provision of caregiving hours (Jimenez-Martin and Prieto, 2009). For our estimates, we have chosen only those variables that are statistically significant for at least one country/cluster taken in the analysis. Consequently, the following factors have been used to account for the most important determinants of LTC demand: demographic characteristics (gender, age, level of education); family situation (living with a partner, living with at least one child), health status (limitations in daily activities) and financial factors (reported income). Several other determinants found to be significant in the literature have also been considered in the estimates. These include additional demographic characteristics (age and education of a partner, number of children, their gender, occupation and place of living), health conditions (health status in the past and type of limitation), and employment and income (current job situation and types of household income). They also include living conditions (area of living, number of rooms in the home, access to public goods and services), well-being (feelings of loneliness, happiness and satisfaction with life). Yet in our estimates, all these variables are statistically insignificant for all countries and thus excluded from the analysis.

To provide representative descriptive statistics, calibrated cross-sectional weights on the main sample of respondents and non-respondents have been used. According to the SHARE guide, calibrated weights compensate for problems of unit non-response and sample attrition. They are computed at the household and the individual levels for respondents and non-responding partners.

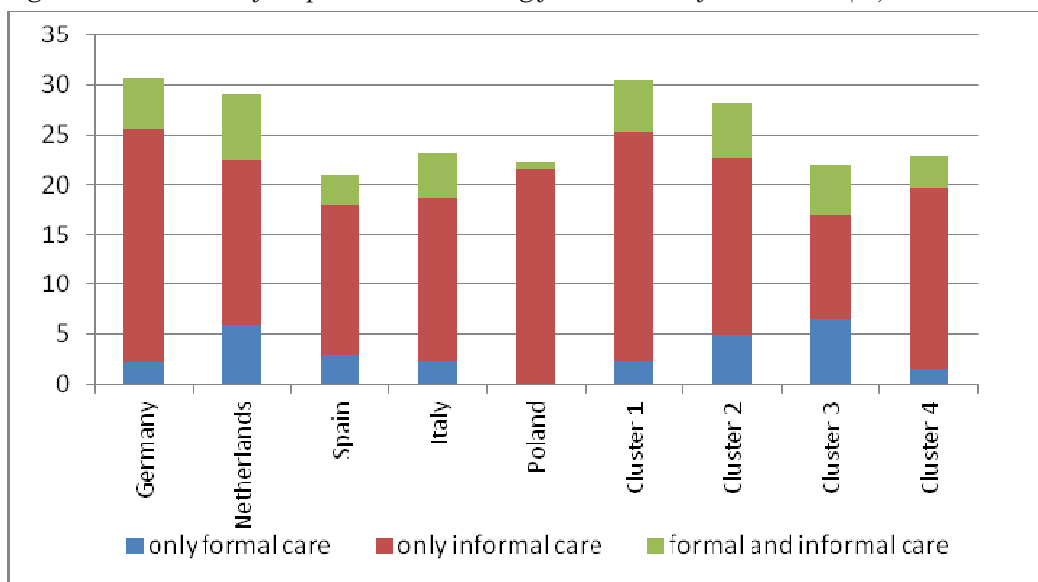
#### 5. Determinants of the probability of receiving long-term care

The analysis of obtaining long-term care covers any type of care provided on a regular basis. This includes publicly provided formal care (home-based care and nursing care), care funded from private resources and informal care. Naturally, respondents can receive different types of care simultaneously. According to the data, in every country analysed the highest share of respondents solely receive informal care, provided by the family or by friends or neighbours. This might be partly attributable to the definition of informal care (given in more detail in section 5.2), which is quite broad and includes assistance provided from outside the household that is received regularly, but not on a daily basis.

The highest share of the population receiving formal care is observed in the Netherlands, followed by Spain, Italy and Germany. In the Netherlands, the fraction of the population receiving a combination of informal and formal care is also the highest. Nevertheless, the cluster

analysis shows that the volume of formal care is also high in cluster 3, consisting of Austria, France and Spain. Overall, the highest volume of care is provided in Germany and its respective cluster, followed by the Netherlands and cluster 2. In clusters 3 and 4 as well as their representative countries, the volume of care is reported to be lower (Figure 3).

Figure 3. The share of respondents obtaining formal and informal care (%)



Note: It should be noted that formal LTC mainly covers home-based care (shown in Figure 4).

Source: Own calculations based on SHARE, 2006 data.

## 5.1 Formal care

### 5.1.1 Sample characteristics

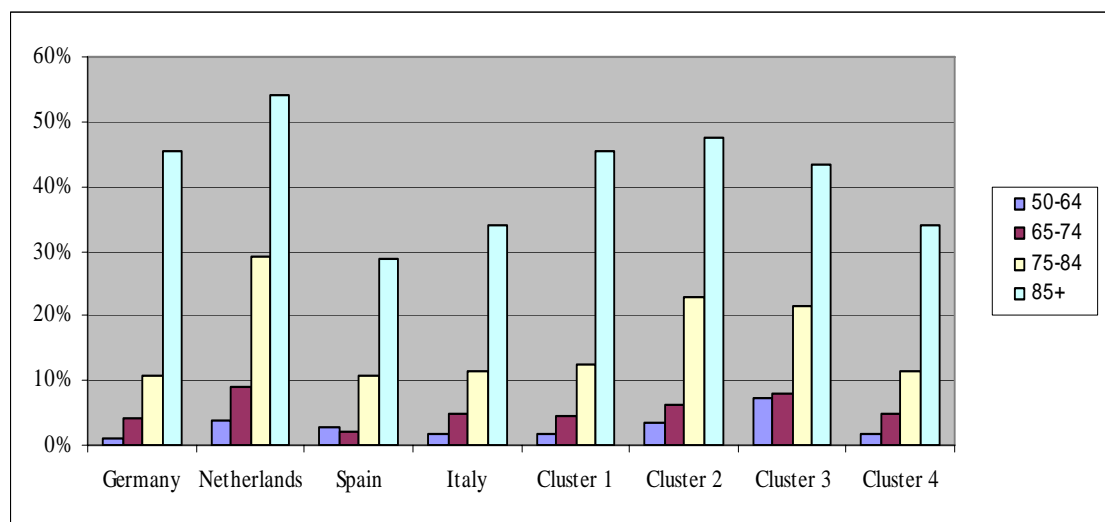
Here we analyse the factors that influence the use of formal LTC. Formal care within this dataset is defined in the same way for all countries according to the questionnaire, which guarantees the comparability of the results among countries. It includes publicly provided formal care as well as formal care that is paid for out of pocket. Formal public care consists of spending the night in a nursing home (question hc029\_) and home care received in one's own place of living, such as nursing or personal help, domestic help and meals-on-wheels (variables hc032d1, hc032d2 and hc032d3). The following types of formal care received from private providers were also included in the analysis: care in a nursing home, home-based care and paid domestic help (questions hc039d9, hc039d10 and hc039d11).<sup>3</sup> As previously mentioned, however, information on the provision of formal care concentrates on formal care provided in the home environment and covers formal institutional care in a very restrictive way. As stated in Klevmarken et al. (2005),<sup>4</sup> for some countries (like Italy or Spain), only those persons living in

<sup>3</sup> The SHARE questionnaire is available on the SHARE website (<http://www.share-project.org/>).

<sup>4</sup> See N.A. Klevmarken, B. Swensson and P. Hesselius, "The SHARE Sampling Procedures and Calibrated Design Weights", in A. Börsh-Supan and H. Jürges, *The Survey of Health, Ageing and Retirement in Europe – Methodology*, Mannheim Research Institute for the Economics of Aging (MEA), Mannheim, 2005, pp. 28-69.

institutions with fewer than 20 residents are included. Yet as presented in Figure 4, the fraction of people obtaining formal LTC is very small in each country and does not influence the results of the estimates. Consequently, without losing the comparability of the data, we have decided to keep both types of care recipients.<sup>5</sup>

Figure 4. Formal care obtained by age



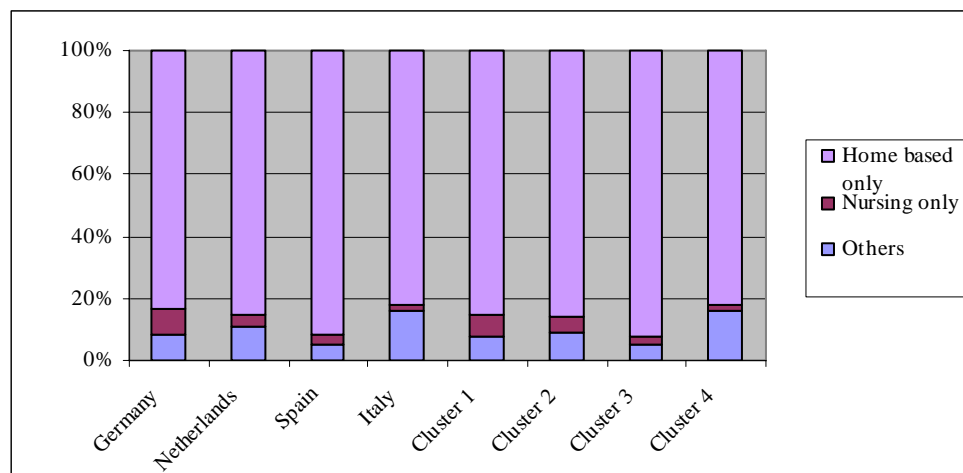
Note: Due to data constraints, cluster 4 is represented only by Italy.

Source: Own calculations based on SHARE, 2006 data.

Before commencing estimations, we provide simple descriptive statistics. Overall, the highest volume of formal care provision is observed in the Netherlands, followed by Germany, Spain and Italy. The highest amount of formal LTC provision is observed in cluster 3, followed by clusters 2, 1 and 4. Such a situation might stem from the fact that cluster 3 includes countries that are not uniform, like Spain and Austria, where there is a relatively low probability of obtaining formal LTC (4-6%), and France, where the provision of formal LTC is comparable to that of the Netherlands (about 16%). When we break down the total provision of formal care into the provision of home-based care, institutional care and other types of care (such as private care or a mixture of these three), we find that in all countries and clusters, formal home-based care prevails (Figure 5). At the same time, this phenomenon needs to be considered with caution, as it is strongly influenced by the methodology adopted when generating data from the SHARE survey. Receiving nursing care alone is most common in Spain and in the corresponding cluster 3, whereas in Italy other types of care prevail (mainly private LTC together with public home-based care). Clusters are ranked in a similar way as their representative countries.

<sup>5</sup> Some preliminary estimates have been provided for the restricted sample. The results were in perfect accordance with the estimates for the whole sample, so we decided not to add additional restrictions to the data and left the sample unchanged.

Figure 5. Shares of different types of formal care provided



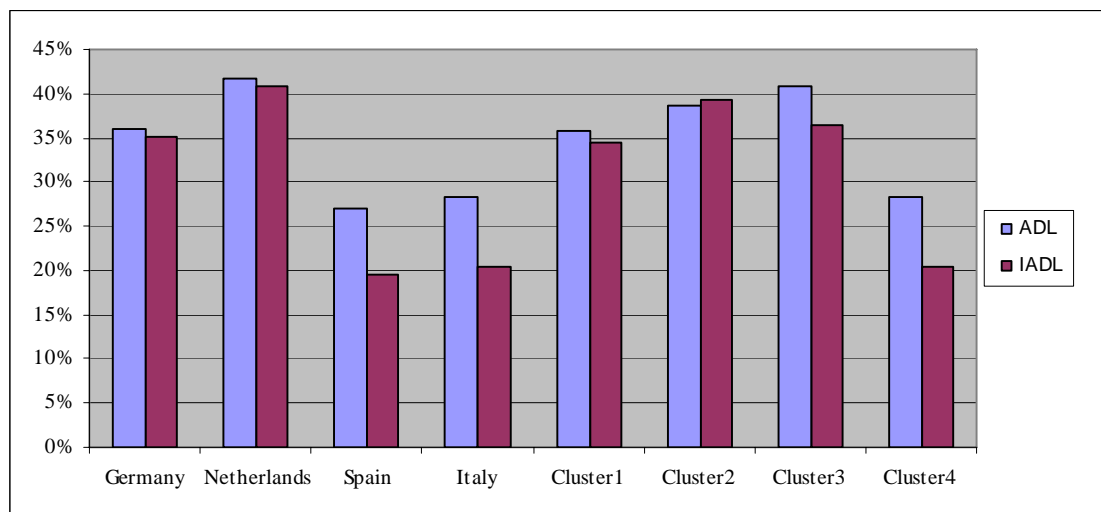
Note: Due to data constraints, cluster 4 is represented only by Italy.

Source: Own calculations based on SHARE, 2006 data.

As expected, the use of formal care increases with age in all countries, as the health status of the elderly worsens and they need more public help (as shown in Figure 4 above). The Netherlands has the highest proportion of individuals who obtain formal care in all age groups. The reason may be that the public sector has primary responsibility for persons in need of care and the provision of LTC is the most developed in this country. In Mediterranean countries such as Spain and Italy, public services are very restricted and are probably only available to individuals lacking informal recourses (Pommer et al., 2007). Thus, the provision of formal LTC in all age groups is the lowest in this country. The same reasoning accounts for the comparison of differences among all the clusters. In countries where the formal LTC system is more developed (clusters 1 and 2), the provision of this type of care is slightly higher in all age groups than in other clusters.

Receipt of formal care due to limitations in basic and instrumental activities of daily living is comparable in countries like Germany and the Netherlands, as well as in clusters 1 and 2 (Figure 6). The statistics confirm that in countries in which the LTC system is relatively better regulated, services are provided for the elderly with limitations in basic ADLs as well as for those with limitations in IADLs. The situation is different in Mediterranean countries like Spain and Italy. Individuals who have IADL limitations receive less formal care than those with limitations in basic ADLs. Cluster 3, which includes not only Spain but also Finland and Austria, is characterised by a high probability of receiving formal care among persons who are limited in ADLs as well as IADLs. Yet, as in the case of Spain, those who are hampered in basic ADLs have a greater likelihood of obtaining long-term care than individuals who have difficulties with IADLs. Owing to data constraints, it is impossible to analyse this phenomenon in cluster 4.

Figure 6. Formal care obtained, by limitations in ADLs/IADLs



Note: Due to data constraints cluster 4 is represented only by Italy.

Source: Own calculations based on SHARE, 2006 data.

### 5.1.2 Estimation results

The results of the analyses of the main factors determining the likelihood of receiving formal care are described below. First, the probability of obtaining formal LTC in each representative country is provided in order to compare differences in the deterministic characteristics among them. Second, to take into account the differences among countries in institutional settings and legal regulations, the estimations are provided on the pooled sample as well as on the sample created by the four representative countries: Germany, the Netherlands, Spain and Italy. Controlling for country/cluster is expected to account for all possible factors that are not present in the SHARE database, but are significant for the sake of consistency in the estimates.

To analyse the impact of personal, financial and household characteristics on the probability of receiving formal care within representative countries, a multivariate analysis is provided separately for each country (Table 3).

Being a man decreases the probability of obtaining formal LTC. In general, women tend to outlive their partners and at older ages they are more likely to have limitations in activities of daily living. Consequently, women are typically more likely to obtain formal LTC. This variable is insignificant in Spain, probably because a lower level of access to LTC makes it more difficult to receive formal LTC, regardless of gender. As expected, age is significant and positively correlated with the demand for formal LTC, as this personal characteristic is negatively related to health status. The poor health status of a person expressed by ADL and IADL limitations has a positive impact on the receipt of formal LTC in all countries. This phenomenon can also be related to the provision of benefits depending mainly on IADL limitations in these systems. Elderly persons are less likely to obtain formal LTC when they live with someone else in the same household (a partner or a child) in the Netherlands. In this country, the public sector does not have a legal duty to provide care when the partner of a person in need is available. Living with a partner decreases the chances of receiving formal care, whereas living with a child is statistically insignificant in Germany. In Continental countries like Germany, the family is identified as the primary care unit, and thus living with a partner decreases the probability of obtaining formal care. In Spain and Italy, despite the fact that the family has a legal duty to support its relatives (Pommer et al., 2007), these variables are

mainly statistically insignificant. This might be caused by the relatively restricted and disorganised provision of formal LTC (Tediosi et al., 2010).

*Table 3. Probability of obtaining formal care, by country*

Variable/country	Germany	Netherlands	Spain	Italy
Male (ref. female)	-1.006*** (0.326)	-0.734*** (0.198)	-0.259 (0.261)	-0.502** (0.214)
Age 65-74 (ref. 50-64)	0.446 (0.432)	0.662** (0.263)	-0.198 (0.419)	0.621** (0.289)
Age 75-84	1.222** (0.441)	1.945*** (0.252)	0.981*** (0.368)	1.041*** (0.308)
Age 85+	2.098*** (0.529)	3.079*** (0.360)	1.399*** (0.444)	1.664*** (0.401)
Living together with a partner	-0.786* (0.425)	-0.434* (0.247)	-0.009 (0.299)	-0.352 (0.244)
At least one child in the household	0.699 (0.519)	-0.542* (0.345)	-0.518** (0.320)	-0.179 (0.315)
Years of education	0.072 (0.051)	-0.004 (0.028)	0.028 (0.029)	0.075*** (0.025)
Income 1 <sup>st</sup> (ref. income 4 <sup>th</sup> quartile)	1.000 (0.659)	0.277 (0.452)	0.234 (0.669)	-0.355 (0.340)
Income 2 <sup>nd</sup>	0.371 (0.624)	-0.378 (0.428)	-0.200 (0.716)	0.053 (0.313)
Income 3 <sup>rd</sup>	0.524 (0.658)	-0.393 (0.441)	0.259 (0.726)	0.219 (0.298)
ADLs	1.328*** (0.331)	1.217*** (0.253)	1.378*** (0.304)	1.261*** (0.252)
IADLs	2.247*** (0.347)	1.779*** (0.204)	1.295*** (0.311)	1.187*** (0.257)
Pred. probability	0.042	0.120	0.060	0.057
Pseudo – R <sup>2</sup>	0.405	0.315	0.259	0.195
Number of observations	1,945	2,103	1,357	2,567

\*\*\* significant at <1%, \*\* significant at <5%, \* significant at 10%, blank – statistically insignificant

*Note:* Standard errors in parentheses.

*Source:* Own calculations based on SHARE, 2006 data.

The financial determinants of formal LTC demand are statistically insignificant for all countries. This lack of significance might be caused by the provision of benefits being mainly tied to the level of dependence of an individual in all the countries analysed and much less (or even not at all) on the family income.

Table 4 presents the results of the logit model provided on a pooled sample of all representative clusters (model 1) and countries (model 2).

*Table 4. Pooled multivariate analysis of obtaining formal care*

	<b>Model I – representatives clusters</b>	<b>Model II – representative countries</b>
Male (ref. female)	-0,344*** (0.060)	-0,269*** (0.089)
Age 65-74 (ref. 50-64)	0,228*** (0.081)	0,272** (0.117)
Age 75-84	1,129*** (0.077)	0,883*** (0.121)
Age 85+	1,913*** (0.102)	1,474*** (0.162)
Living together with a partner	-0,656*** (0.076)	-0,888*** (0.108)
At least one child in the household	-0,465*** (0.092)	-0,751*** (0.115)
Years of education	0,019** (0.008)	0,045*** (0.011)
Income 1 <sup>st</sup> (ref. income 4 <sup>th</sup> quartile)	-0,119 (0.139)	-0,589*** (0.182)
Income 2 <sup>nd</sup>	-0,006 (0.138)	0,169 (0.178)
Income 3 <sup>rd</sup>	-0,206 (0.142)	-0,035 (0.182)
ADLs	0,872*** (0.072)	0,758*** (0.109)
IADLs	1,497*** (0.067)	1,318*** (0.108)
Germany/cluster 1 (ref. Netherlands/cluster 2)	0,024 (0.074)	-1,282*** (0.138)
Spain/cluster 3	0,396*** (0.076)	-0,362*** (0.138)
Italy/cluster 4	-1,217*** (0.190)	-0,772*** (0,123)
Pseudo – R <sup>2</sup>	0,248	0,201
Number of observations	22 827	10 342

\*\*\* significant at <1%, \*\* significant at <5%, \* significant at 10%, blank – statistically insignificant

Notes: Standard errors in parentheses; due to data constraints, cluster 4 is solely represented by Italy.

Source: Own calculations based on SHARE, 2006 data.

The characteristics that significantly influence the probability of obtaining formal care are the same in both samples. Being a man decreases the chances of receiving LTC due to the longer lifespan of women. Age significantly and positively influences the probability of obtaining formal LTC in both samples. Living together with a partner or having at least one child in a household decreases the chances of receiving formal care. The attainment of a higher educational level or having limitations in basic ADLs or IADLs increases the chances of

obtaining this type of care service. As expected, a person's income level is statistically insignificant in almost all cases, suggesting that the provision of benefits depends primarily on the personal impairments of individuals and much less on their financial situation.

After controlling for all significant variables in the process for the receipt of formal LTC, the differences among clusters are taken into consideration in model 1. As expected, there is not much difference in the probability of receiving formal LTC between clusters 1 and 2. Citizens of countries included in cluster 3 have higher chances of receiving formal LTC. This situation could be explained by the fact that this cluster is not uniform. While the probability is lower in Spain and Austria, it is much higher in France. Model 2 analyses the differences among representative countries. Here, the results are in accordance with expectations. After controlling for all personal characteristics, individuals are less likely to obtain formal LTC in Germany, Spain and Italy compared with the Netherlands. The results confirm that among the significant characteristics influencing the provision of LTC are the national regulations concerning the LTC system.

In conclusion, according to SHARE data, in all European countries in this analysis formal care is mainly provided in home-based situations. Yet one has to bear in mind that these data do not cover institutional care in a fully representative manner, so this result must be interpreted with caution. The distribution in terms of the amount of formal LTC provided differs across countries. It is highest in the Netherlands (and the corresponding cluster 2). It is also high in the case of Germany (cluster 1), while it is lowest in the cases of Spain and Italy. The provision of formal LTC is positively related to the age of a person and his or her health status (represented by limitations in basic ADLs and IADLs).

The logit estimations of the determinants of the probability of receiving formal LTC within countries have revealed some interesting conclusions. The factors that are statistically significant and influence the probability of obtaining formal LTC are mainly related to the legal regulations enforced in countries whose LTC systems are relatively better developed, while they are mainly statistically insignificant in countries whose LTC systems are relatively less advanced. Moreover, in these countries the provision of formal care is mostly restricted to the elderly who are most in need (i.e. older and with more health problems).

The analysis provided on the pooled samples has provided some additional results. After controlling for country/cluster in both models, the probability of obtaining formal LTC increases with age, worsening health status (with limitations in ADLs and IADLs) and years of education. Family structure – namely living with at least one family member – decreases the chances of receiving formal LTC, whereas the financial situation of an individual is statistically insignificant. There are significant differences among countries. In countries with a relatively high degree of access to LTC, better quality assurance and clearer legal rules (cluster 1, represented by the Netherlands and cluster 2, by Germany), the probability of receiving formal LTC is highest. It decreases for Mediterranean countries like Italy and Spain, which have less advanced LTC systems.

## **5.2 Informal care**

### **5.2.1 Sample characteristics**

In this section we analyse the factors that influence the use of informal care services, using a similar methodology to that adopted for the analysis of formal care utilisation. Again, before moving to the estimations, the sample characteristics of informal care are provided. Two types of informal care are defined in the SHARE questionnaire – namely care provided from outside the household and personal care provided on a daily basis within the household by cohabiting family members. Care provided from outside the household is defined as care by any family

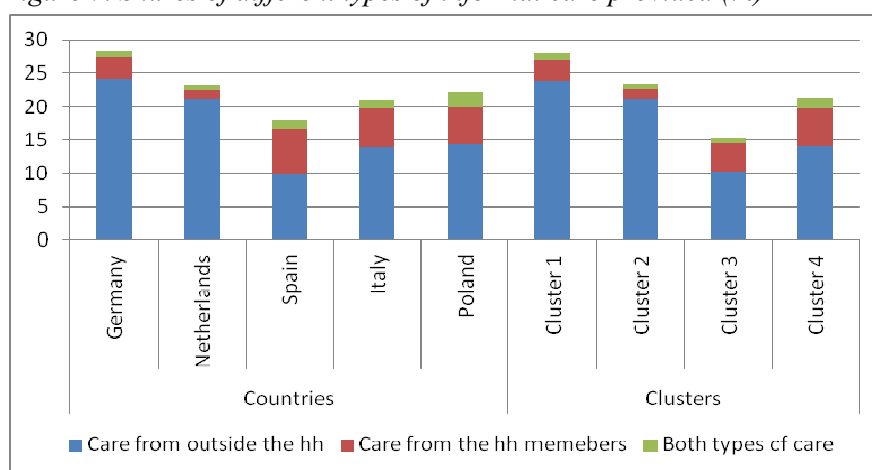


member who does not live with the patient or by a friend or neighbour within 12 months preceding the survey (variable sp002). This type of care consists of practical household assistance, help with paperwork and personal care. On the other hand, care provided by household members includes personal care and assistance in basic activities (getting up, washing, putting on clothes) received daily or almost daily within three months preceding the survey (variable sp020). Further in the analysis, the two types of care described are referred to as ‘care from outside the household (hh)’ and ‘personal care by household (hh) members’.

Additionally, a variable for obtaining any type of informal care has been constructed. It identifies individuals who receive informal care from outside the household (variable sp002), informal care by household members (variable sp020) or both types of care. In other words, it proposes the most general approach to analysing the determinants of the probability of receiving informal care, not distinguishing between different types of care.

Overall, the highest volume of informal care is observed in Germany, followed by the Netherlands, Poland, Italy and Spain. The results for clusters are similar to their representative countries. A high volume of informal care provision in countries where the primary obligation of care falls on the state or nuclear family might seem surprising, but the type of care that is provided in different countries and clusters varies greatly. In the Continental and Scandinavian countries in clusters 1 and 2, informal care provided from outside the household dominates, while in countries in clusters 3 and 4, the proportion of care provided by the family living with the care recipient is much higher. In the Netherlands and other countries in cluster 2, care from outside the household constitutes about 90% of the total volume of informal care. Also in Germany and the other countries of cluster 1, the provision of care from outside the household dominates, but the role of informal personal care is slightly higher than in the Netherlands. Meanwhile, in Mediterranean Spain, where the family takes primary responsibility for assuring that basic needs (including care) are met, personal care provided within the family makes up half of the total volume of informal care. In the other countries of cluster 3 (Austria and France), the amount of care received from a family member living with the elderly person is slightly lower. The two countries of cluster 4 have a very similar pattern, with a high amount of care provided within the family, constituting approximately a third of the total volume of informal care (Figure 7).

Figure 7. Shares of different types of informal care provided (%)



Source: Own calculations based on SHARE, 2006 data.

Corresponding to the findings above on the volume and types of informal care, differences can also be observed from the side of care providers. These differences provide more insight into the

kinds of social networks present in the countries included in the analysis and reflect differences in traditions and responsibilities in the provision of care. In the Netherlands and Germany, social ties within the family are less strong than in Spain and Poland. While care from outside the household is provided mainly by children, friends, neighbours and other acquaintances in the Netherlands and Germany, it is provided primarily by children and the extended family in Spain and Poland. Similarly, care by household members is mostly provided by members of a nuclear family who live with an elderly person in the Netherlands and Germany (a spouse or a child), while in Spain and Poland, the extended family plays a greater role.

As a result, two different models for the provision of care can be distinguished: in the Netherlands and Germany, the nuclear family and networks outside the family, including local society, are the main care providers. Indeed, in the Netherlands the networks of available care are the most extended, not only covering friends and colleagues but also frequently including other acquaintances. In Spain, and even more so in Italy and Poland, the function of care provision is fully performed by the extended family, including siblings, grandchildren and children-in-law (Box 1).

*Box 1. Comparison of social networks and provision of care*

**Care from outside the household**

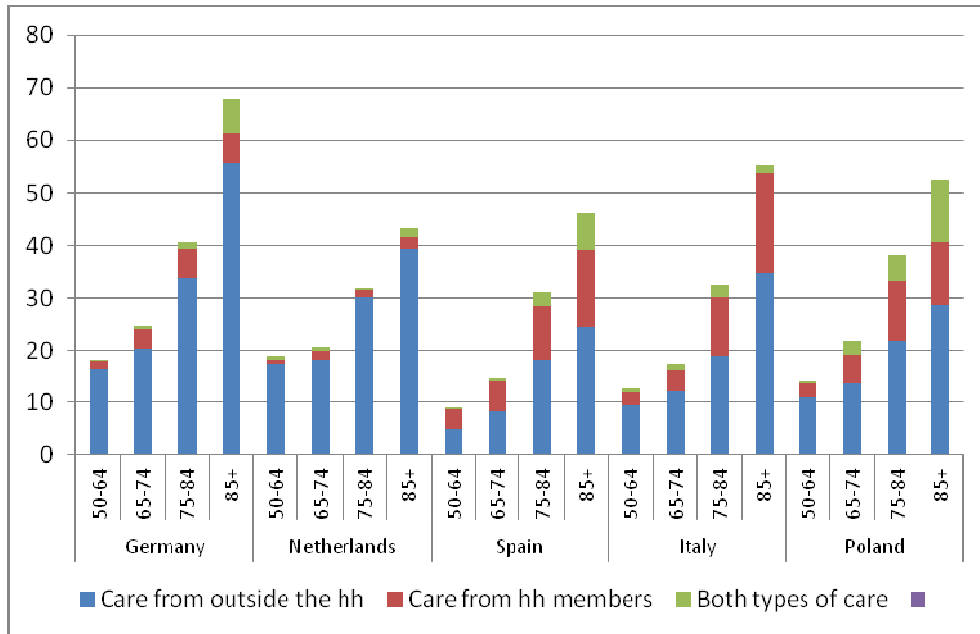
- In the *Netherlands* and *Germany*, care is provided mostly by children, friends, neighbours and acquaintances (NL).
- In *Spain* and *Poland*, care is provided mostly by children, then by other relatives or children-in-law (PL) and neighbours.

**Personal care by household members**

- In the Netherlands and Germany, care is provided by the spouse and children.
- In Spain, care is provided by the spouse, children or other relatives.
- In Poland and Italy, care is given by the spouse, siblings, children, grandchildren or children-in-law.

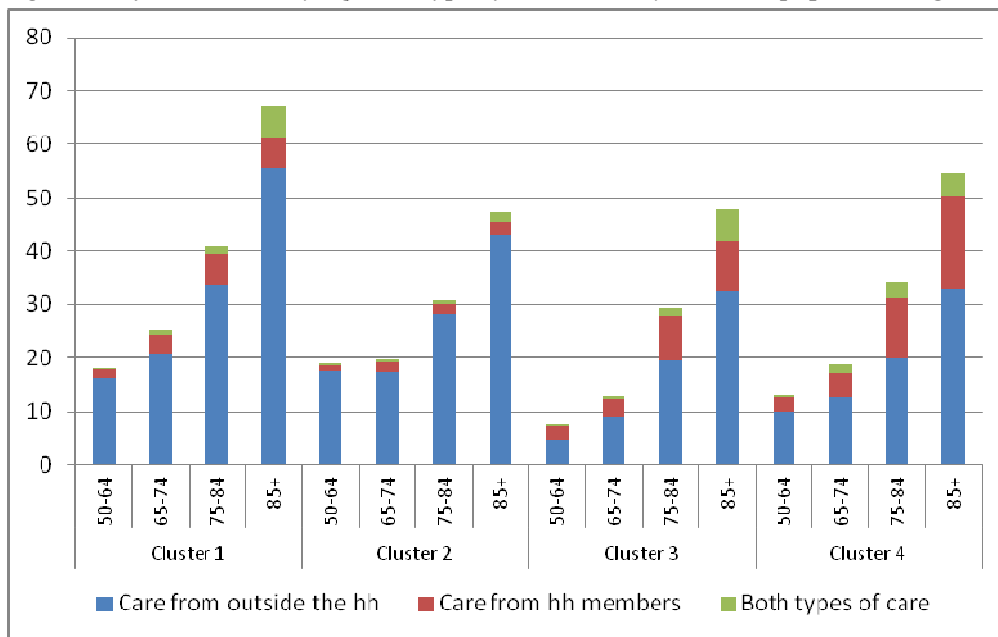
Figures 8 and 9 show that the need for informal care increases almost linearly with age – a result that holds for all countries and clusters. At the age of 85 and older in Germany and its respective cluster, almost 70% of the population receives different forms of informal care. In other clusters, the proportion is just under 50%. Although the volume of care received by different age groups is similar across clusters, in all of the clusters except for that including Germany the type of informal care varies. In clusters 3 and 4, the share of care provided within the family is much higher than in clusters 1 and 2, where it constitutes only about 5-15% of the total volume of care. At the same time, care from outside the household is slightly more skewed towards the younger elderly (up to age 65), while care provided within the household is slightly skewed towards the oldest (above age 75). This is especially the case for the countries in clusters 1, 3 and 4.

Figure 8. Informal care, by age and type of care in selected countries, population aged 50+ (%)



Source: Own calculations based on SHARE, 2006 data.

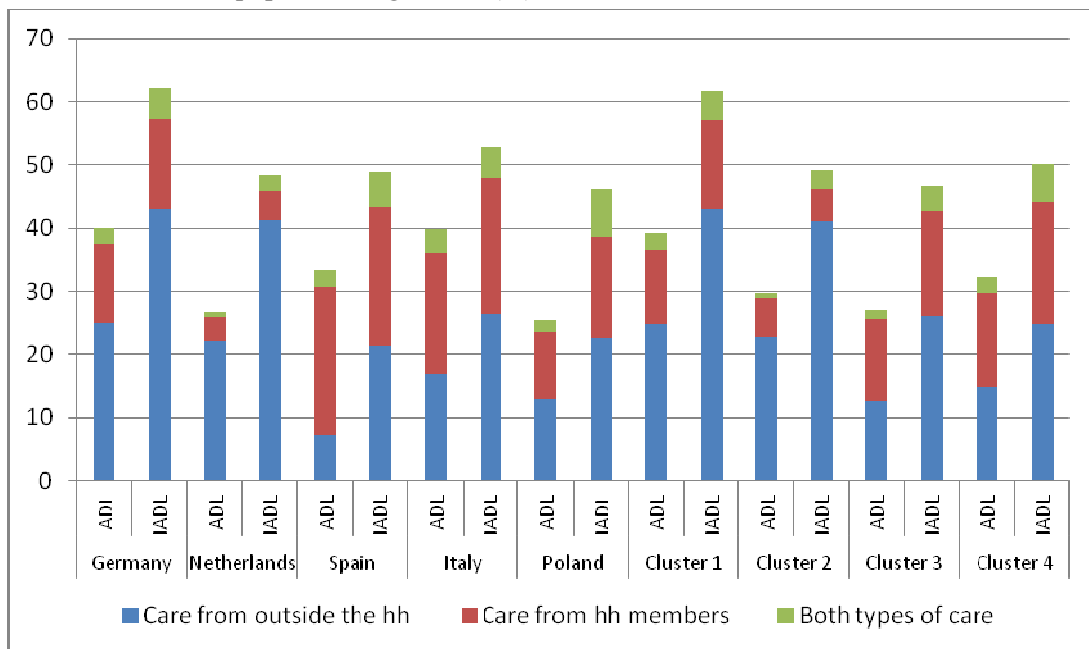
Figure 9. Informal care, by age and type of care, country clusters, population aged 50+ (%)



Source: Own calculations based on SHARE, 2006 data.

The picture of trends in obtaining informal LTC by age is very clear, while the receipt of informal care according to the existence of limitations in basic and instrumental activities of daily living is more fuzzy. The main trend depicted is that informal care is more commonly obtained by individuals with limitations in IADLs than ADLs. This is especially true in countries with a high volume of care provided from outside the household, but it is also observable in Poland. In Spain and Italy, where a higher proportion of individuals with limitations in ADLs obtain informal care, the provision of care within the family is also much higher. Descriptive statistics at the cluster level allow for smoothing out country differences. They confirm that informal care is more commonly received by individuals with limitations in IADLs. There are similar trends in all clusters. Looking at the broader picture of clusters also smoothes out differences in the types of care obtained, depending on the limitations in self-sufficiency. Cluster 2 is the only exception, where despite the type of limitation, the provision of care within a cohabiting family is low (Figure 10).

Figure 10. Informal care, by limitations in ADLs/IADLs and type of care, countries and clusters, population aged 50+ (%)



Source: Own calculations based on SHARE, 2006 data.

### 5.2.2 Estimation results

Following a broad, descriptive analysis of the receipt of informal care, the logit model allows us to examine the determinants of obtaining informal care of any type, from either family members or individuals not living with the care recipient or family members living in the same household (Table 5). First, models concentrating on the analysis of the probability of obtaining different types of informal care and determinants in each of the selected countries are discussed. Second, pooled models that allow for the classification of countries and clusters depending on the type of informal care are presented.

Table 5. Probability of obtaining any type of informal care

Variable/country	Germany	Netherlands	Spain	Italy	Poland
Male (ref. female)	-0.306*** (0.123)	-0.073 (0.123)	-0.221 (0.174)	0.038 (0.126)	-0.176 (0.124)
Age 65-74 (ref. 50-64)	0.015 (0.141)	-0.080 (0.153)	0.040 (0.235)	0.184 (0.155)	-0.145 (0.155)
Age 75-84	0.371** (0.172)	-0.125 (0.183)	0.597*** (0.237)	0.509*** (0.178)	0.318* (0.175)
Age 85+	0.960*** (0.342)	0.082 (0.312)	0.563* (0.332)	1.012*** (0.300)	0.419 (0.318)
Living together with a partner	-0.355*** (0.141)	-0.536*** (0.149)	-0.626 (0.212)	-0.376*** (0.142)	-0.707*** (0.129)
At least one child in the household	-0.005 (0.188)	-0.238 (0.177)	-0.175 (0.189)	-0.159 (0.137)	-0.281** (0.125)
Years of education	0.039** (0.020)	0.048*** (0.017)	-0.035* (0.020)	0.026* (0.016)	-0.037* (0.022)
Income 1 <sup>st</sup> (ref. Income 4 <sup>th</sup> quartile)	0.332 (0.239)	0.475* (0.293)	-0.426 (0.378)	0.044 (0.202)	-0.150 (1.063)
Income 2 <sup>nd</sup>	0.210 (0.210)	0.102 (0.268)	-0.296 (0.394)	-0.089 (0.191)	-0.414 (1.079)
Income 3 <sup>rd</sup>	-0.012 (0.217)	-0.268 (0.272)	-0.806* (0.439)	0.070 (0.188)	0.036 (1.078)
ADLs	0.660*** (0.194)	0.737*** (0.217)	1.354*** (0.219)	1.467*** (0.166)	1.069*** (0.138)
IADLs	0.988*** (0.181)	0.975*** (0.159)	1.140*** (0.200)	1.081*** (0.150)	0.818*** (0.143)
Pred. probability	0.2842	0.2417	0.1515	0.1914	0.2117
Pseudo – R <sup>2</sup>	0.083	0.070	0.203	0.162	0.150
Number of observations	1,576	1,668	1,101	2,142	1,962

\*\*\* significant at <1%, \*\* significant at <5%, \* significant at 10%, blank – statistically insignificant

Note: Standard errors in parentheses.

Source: Own calculations based on SHARE, 2006 data.

The estimated probability of receiving any type of informal care responds to the actual frequency of obtaining informal care presented in Figure 8 above, with the highest frequency and probability of obtaining care being in Germany and the lowest in Spain. The category of informal care is very broad, however, covering regular care received from different parties not living with the care recipient and personal care from family members living in the same household. In these two cases, not only does the type of care differ, but also the reasons for taking up care might vary. Thus a more in-depth analysis of taking up different types of care is presented further. Table 6 shows that the probability of receiving care solely from outside the household is highest in Germany and the Netherlands and lowest in Spain. With respect to personal care provided exclusively by family members living in the same household, the results are the opposite, with the highest probability of receiving care being in Spain and Italy, and the lowest in Germany and the Netherlands. The estimate of the probability of receiving personal care in Poland is less specific because personal care provided by household members is very often combined with care from outside the household. Moreover, this combination of different types of care is not taken into account in the estimates presented. As a result, the estimates of

the probability of receiving care from cohabiting family members seem too low when compared with the total observed volume of informal care.

Table 6. Probability of obtaining informal care from outside the household

Variable/country	Care from outside the hh					Personal care by hh members				
	DE	NL	ES	IT	PL	DE	NL	ES	IT	PL
Male (ref. female)	-0.430 *** (0.128)	-0.058  (0.127)	-0.468 ** (0.225)	-0.306 ** (0.147)	-0.228 * (0.140)	0.536 * (0.296)	0.215  (0.372)	0.122  (0.243)	0.647 *** (0.208)	-0.001  (0.223)
Age 65-74 (ref. 50-64)	-0.072  (0.147)	-0.179  (0.159)	-0.021  (0.299)	0.099  (0.178)	-0.367 * (0.178)	0.365  (0.383)	0.918 ** (0.464)	0.155  (0.343)	0.513 * (0.290)	0.224  (0.292)
Age 75-84	0.317 ** (0.178)	-0.075  (0.185)	0.578 ** (0.295)	0.350 * (0.204)	0.016  (0.197)	0.150  (0.435)	-0.029  (0.575)	0.343  (0.343)	0.713 ** (0.305)	0.730 ** (0.306)
Age 85+	0.784 ** (0.323)	0.107  (0.318)	0.502  (0.431)	0.819 *** (0.317)	0.157  (0.341)	-0.137  (0.581)	0.564  (0.768)	0.377  (0.417)	1.024 *** (0.406)	0.193  (0.518)
Living together with a partner	-0.426 *** (0.151)	-0.584 *** (0.158)	-1.369 *** (0.361)	-0.748 *** (0.183)	-0.990 *** (0.138)	0.249  (0.319)	-0.270  (0.429)	0.171  (0.271)	0.377 * (0.221)	0.883 *** (0.277)
At least one child in the household	-0.157  (0.202)	-0.244  (0.183)	-0.452 ** (0.247)	-0.474 *** (0.165)	-0.649 *** (0.144)	0.337  (0.418)	-0.053  (0.598)	0.181  (0.259)	0.279  (0.216)	0.383 ** (0.220)
Years of education	0.050 ** (0.020)	0.039 ** (0.018)	-0.026  (0.025)	0.041 ** (0.018)	-0.029  (0.024)	-0.041  (0.051)	0.043  (0.052)	-0.041 * (0.028)	0.005  (0.027)	-0.064 * (0.042)
Income 1 <sup>st</sup> (ref. income 4 <sup>th</sup> quartile)	0.745 *** (0.251)	0.647 ** (0.296)	-0.556  (0.451)	0.235  (0.226)	-0.772  (0.996)	-1.653 *** (0.623)	-1.770  (1.483)	-0.397  (0.528)	-0.001  (0.338)	11.448  (592.6)
Income 2 <sup>nd</sup>	0.275  (0.227)	0.041  (0.273)	-0.764 * (0.485)	-0.411 * (0.239)	-0.998  (1.081)	-0.103  (0.461)	0.711  (1.097)	0.238  (0.543)	0.523 * (0.311)	10.408  (592.6)
Income 3 <sup>rd</sup>	0.121  (0.234)	-0.344  (0.279)	-0.880 * (0.523)	0.112  (0.213)	-0.736  (1.016)	-0.295  (0.505)	0.780  (1.100)	-0.667  (0.636)	-0.040  (0.319)	11.564  (592.6)
ADLs	-0.428 * (0.224)	0.028  (0.234)	-0.560 * (0.327)	0.038  (0.213)	0.037  (0.168)	2.293 *** (0.358)	2.389 *** (0.457)	2.024 *** (0.282)	2.086 *** (0.238)	2.166 *** (0.283)
IADLs	0.507 *** (0.197)	0.761 *** (0.166)	0.687 *** (0.266)	0.611 *** (0.183)	0.509 *** (0.170)	1.705 *** (0.363)	1.323 *** (0.456)	1.182 *** (0.286)	1.290 *** (0.252)	0.982 *** (0.278)
Pred. probability	0.2345	0.2142	0.0767	0.1290	0.1927	0.0367	0.0194	0.064	0.0559	0.0173
Pseudo – R <sup>2</sup>	0.041	0.051	0.083	0.063	0.078	0.331	0.249	0.263	0.268	0.249
Number of observations	1,576	1,668	1,101	2,142	1,962	1,576	1,668	1,101	2,142	1,962

\*\*\* significant at <1%, \*\* significant at <5%, \* significant at 10%, blank – statistically insignificant

Note: Standard errors in parentheses.

Source: Own calculations based on SHARE, 2006 data.

While the observed and predicted volumes of care vary among countries, the picture of the determinants of care does not indicate clear differences among them.

The gender of the recipient of informal care is significantly correlated to receiving care in Germany, Spain, Italy and Poland. But the study shows that women have a higher probability of receiving informal care from outside the household than men, while men tend to have a higher probability of obtaining care from family members who live with them (in Germany and Italy). It seems that women are more independent in caring for themselves, often needing some form of regular assistance but not personal care. On the other hand, in Germany and especially in Italy, men need personal care provided by a spouse or a family member living with them more often than women. This coefficient is negatively related to receiving informal care in the Netherlands and in Poland.

In most of the countries, age and physical limitations determine the need for care. In Germany and Italy, the probability of obtaining informal care from outside the household is very significant and higher for elderly persons aged 75-84 and over 85 when compared with those aged 50-64. This result might be related to the observation that 75% of beneficiaries of informal care who also receive formal cash support are elderly and only two-thirds of them have substantial impairments (the lowest level of impairments) in the German LTC system (Schulz 2010). Moreover, the number of elderly persons with lower levels of health who required informal care increased over the period 1999–2007. In Spain, the result is very significant for the population aged 75-84, while for the older population the relationship is weaker. When personal care provided by household members is considered, the elderly are more likely to rely on their family members in countries representing cluster 4, i.e. Italy and Poland.

In all of the countries, limitations in the activities of daily living are significantly and positively correlated with obtaining informal care. Limitations in both basic and instrumental activities of daily living increase the probability of taking up informal assistance; however, while having limitations in IADLs increases the likelihood of needing care from outside the household, hindrances in basic ADLs decrease this probability in Germany and Spain. At the same time, limitations in basic ADLs are positively correlated with receiving personal care from family members. The result is very significant in all of the countries. The picture of dependence and self-sufficiency that emerges from the research seems to be clear: when the elderly are capable of performing basic everyday tasks and need assistance around the house (i.e. cleaning) or in outside activities (i.e. shopping), then they obtain care from family members, friends or individuals who do not live in the same household. On the other hand, when the elderly become dependent in performing daily tasks and need personal care, they obtain assistance from family members who live with them.

Another group of possible correlates examined are variables describing social networks. These are co-residence with a spouse or children (or both). Living with a spouse significantly decreases the probability of obtaining informal care from outside the household. Similarly, living with a child is negatively correlated to receiving care from outside the household in Spain, Italy and Poland. This indicates that especially in clusters characterised by a high level of provision of informal care, the closest family members take responsibility for the person in need whenever possible. This finding is further confirmed for Poland and Italy by the higher probability of personal care in households where spouses or at least one child (or both) live with the person needing assistance.

Variables representing the economic status of individuals include years of education and income. In Germany, the Netherlands and Italy, more years of education were significantly correlated with obtaining informal care from outside the household. At the same time, in Spain

and Poland, the more highly educated have lower chances of receiving care from family members. This may be because education and social position are often correlated, so the highly educated are more likely to have well-educated children living on their own, while the poorly educated are more likely to have children with lower levels of education, who in some cases cannot afford to live independently and in time become caregivers for elderly parents in need. This is a hypothesis that would need further research, as the relationship between level of education and receipt of care is not very strong.

The least conclusive is the correlation between income level and receipt of care, which is found to be significant in several cases. A lower income level increases the probability of obtaining informal care from outside the household in Germany and the Netherlands. It decreases the likelihood of receiving informal personal care in Germany.

A pooled multivariate analysis with dummy variables representing countries allows for the classification of countries and clusters with respect to the receipt of different types of informal care (Table 7). The analysis is complementary to the above research on determinants of care and the volume of care in selected countries. Three models have been analysed:

- model I with dummy variables representing selected countries and cluster 4 represented by Italy;
- model II with dummy variables representing selected countries and cluster 4 represented by Poland; and
- model III with dummy variables representing clusters.

Again, the model combining two different types of informal care seems to be too broad and the classification of countries and clusters is unclear. When countries are compared, the likelihood of obtaining care is higher in Germany and in Italy/Poland than in the Netherlands, while the results for Spain are not significant. Yet the cluster analysis does not provide a clear picture that is consistent with previous research presented in WP1 and WP3, as the probability of providing informal care would be lower in clusters 3 and 4 than in cluster 1. This contradictory result is most likely caused by the high volume of informal care provided through broader social networks in countries in cluster 1 and indicates a need for further investigation into more specific types of care, distinguishing between care from outside the household and personal care provided by the family.

Distinguishing different types of care allows for clearer conclusions. First of all, the picture of the main determinants of informal care described above is confirmed. Second, a classification of countries and clusters is possible.

The probability of obtaining *informal care from outside the household* is higher in Germany than in the Netherlands, but lower in Spain, while for Italy the result is not significant. When clusters are considered, the difference between clusters 1 and 2 is not significant, whereas the probability of receiving care from outside the household is significant and lower in clusters 3 and 4.

At the same time, the probability of obtaining *informal personal care from cohabiting family members* is higher in Germany (in model I the result for Germany is not significant), Spain and Poland/Italy than in the Netherlands. Likewise, the elderly in clusters 1, 3 and 4 have a higher probability of receiving personal care within the household than in cluster 2 (Table 8). These results are consistent with the results of a similar analysis presented in the section devoted to the analysis of determinants of the probability of receiving care.



Table 7. Pooled multivariate analysis of obtaining any type of informal care

	Model I – 4 <sup>th</sup> cluster represented by Italy	Model II – 4 <sup>th</sup> cluster represented by Poland	Model III – clusters
Male (ref. female)	-0,161*** (0.060)	-0,155*** (0.060)	-0,200*** (0.038)
Age 65-74 (ref. 50-64)	0,024 (0.074)	0,031 (0.074)	0,035 (0.046)
Age 75-84	0,486*** (0.081)	0,493*** (0.081)	0,390*** (0.052)
Age 85+	0,834*** (0.135)	0,840*** (0.134)	0,781*** (0.086)
Living together with a partner	-0,429*** (0.066)	-0,498*** (0.070)	-0,404*** (0.043)
At least one child in the household	-0,131* (0.069)	-0,145** (0.070)	-0,105** (0.049)
Years of education	-0,013* (0.008)	-0,019** (0.008)	0,007 (0.005)
Income 1 <sup>st</sup> (ref. income 4 <sup>th</sup> quartile)	0,183* (0.119)	0,035 (0.121)	0,399 (0.087)
Income 2 <sup>nd</sup>	-0,058 (0.119)	-0,098 (0.118)	0,013 (0.088)
Income 3 <sup>rd</sup>	-0,051 (0.121)	-0,091 (0.120)	0,013 (0.089)
ADLs	1,159*** (0.076)	1,132*** (0.076)	0,917*** (0.054)
IADLs	1,016*** (0.073)	1,006*** (0.072)	0,995*** (0.0470)
Germany/cluster 1 (ref. Netherlands/cluster 2)	0,909*** (0.083)	0,909*** (0.080)	0,195*** (0.048)
Spain/cluster 3	-0,031 (0.098)	-0,010 (0.098)	-0,580*** (0.058)
Italy/cluster 4	0,133* (0.084)	--	-0,444*** (0.061)
Poland/cluster 4	-	0,223** (0.095)	
Pseudo – R <sup>2</sup>	0,155	0,156	0,116
Number of observations	8714	8714	18929

\*\*\* significant at <1%, \*\* significant at <5%, \* significant at 10%, blank – statistically insignificant;

Note: Standard errors in parentheses.

Source: Own calculations based on SHARE, 2006 data.

Table 8. Pooled multivariate analysis of obtaining care from outside the hh/by hh members

Variables/models	Informal care from outside the hh			Informal care by hh members		
	Model I 4 <sup>th</sup> cluster represented by Italy	Model II 4 <sup>th</sup> cluster represented by Poland	Model III - clusters	Model I 4 <sup>th</sup> cluster represented by Italy	Model II 4 <sup>th</sup> cluster represented by Poland	Model III clusters
Male (ref. female)	-0.351*** (0.067)	-0.352*** (0.067)	-0.322*** (0.040)	0.405*** (0.107)	0.417*** (0.107)	0.344*** (0.081)
Age 65-74 (ref. 50-64)	-0.064 (0.082)	-0.061 (0.082)	-0.054 (0.050)	0.241* (0.145)	0.264* (0.145)	0.308*** (0.108)
Age 75-84	0.375*** (0.090)	0.389*** (0.090)	0.294*** (0.055)	0.480*** (0.149)	0.481*** (0.149)	0.429*** (0.113)
Age 85+	0.805*** (0.140)	0.835*** (0.140)	0.723*** (0.087)	0.162 (0.207)	0.132 (0.206)	0.156 (0.157)
Living together with a partner	-0.684*** (0.076)	-0.783*** (0.081)	-0.620*** (0.048)	0.445*** (0.114)	0.467*** (0.119)	0.567*** (0.088)
At least one child in the household	-0.424*** (0.081)	-0.470*** (0.082)	-0.309*** (0.055)	0.239** (0.117)	0.295*** (0.117)	0.271*** (0.097)
Years of education	-0.001 (0.009)	0.000 (0.009)	0.021*** (0.005)	-0.031** (0.115)	-0.047*** (0.014)	-0.046*** (0.011)
Income 1 <sup>st</sup> (ref. income 4 <sup>th</sup> quartile)	0.402*** (0.133)	0.276** (0.136)	0.637*** (0.096)	-0.235 (0.217)	-0.320 (0.221)	-0.502*** (0.179)
Income 2 <sup>nd</sup>	-0.162 (0.135)	-0.168 (0.134)	0.010 (0.097)	0.334 (0.214)	0.213 (0.212)	0.174 (0.181)
Income 3 <sup>rd</sup>	-0.012 (0.136)	-0.028 (0.135)	0.054 (0.098)	-0.085 (0.225)	-0.144 (0.224)	-0.080 (0.187)
ADLs	-0.019 (0.094)	-0.050 (0.094)	-0.046 (0.062)	2.133*** (0.127)	2.119*** (0.127)	2.008*** (0.095)
IADLs	0.606*** (0.085)	0.600*** (0.085)	0.669*** (0.052)	1.292*** (0.132)	1.285*** (0.131)	1.282*** (0.100)
Germany/ cluster 1 (ref. Netherlands/ cluster 2)	0.816*** (0.086)	0.930*** (0.084)	0.057 (0.049)	0.438*** (0.176)	0.094	0.830*** (0.128)
Spain/cluster 3	-0.572*** (0.120)	-0.393*** (0.120)	-0.806*** (0.062)	1.048*** (0.157)	0.584*** (0.153)	0.813*** (0.136)
Italy/cluster 4	-0.102 (0.093)	--	-0.639*** (0.067)	0.673*** (0.150)	--	0.662*** (0.140)
Poland/cluster 4	--	0.406*** (0.103)	--	--	-0.448*** (0.170)	--
Pseudo – R <sup>2</sup>	0.084	0.086	0.078	0.272	0.268	0.250
Number of observations	8,714	8,714	18,929	8,714	8,714	18,929

\*\*\* significant at <1%, \*\* significant at <5%, \* significant at 10%, blank – statistically insignificant;

Notes: Standard errors in parentheses; x – only for care from outside the household.

Source: Own calculations based on SHARE, 2006 data.

To sum up, when considering the receipt of informal care in European countries, it is important to look at what type of care is being taken into account. Simply saying that informal LTC is rare in Scandinavian and even Continental countries such as the Netherlands and Germany is untrue in the light of the research presented. In reality, care is regularly provided, but often not by family members living with the elderly person or even by people within the family, but through broader social networks. This situation is more common in these countries than in southern or Eastern European countries. On the other hand, in the latter two groups of countries, care provided within the household and with the family bearing the primary responsibility is much more common. The results of both types of analyses, on the probability of receiving care in the selected countries and the cluster classifications, confirm this view.

The determinants of care provision do not vary widely among countries and clusters. First, informal care is provided to the ‘older among the elderly’. This holds for Germany, Italy, Spain and Poland and is clearly shown in pooled models for countries and clusters. Second, the level of physical limitations in taking care of oneself is very important. But there is a significant variation: care from outside the household is provided mainly to individuals who have some limitations in instrumental activities of daily living, such as shopping, using technology, cooking or other types of household activities. Whenever limitations are more severe, then care within the family living with the care recipient is needed and provided, despite the countries’ traditions or cluster. The third important group of determinants is related to family settings. When care is available from a spouse or children living with the elderly person, then obviously informal LTC provided within the household is more common.

## 6. Conclusions

This analysis indicates substantial differences in obtaining long-term care across European countries, depending on traditions and social protection models, which determine the availability of institutional care and provision of informal care. The provision of different types of long-term care is clearly related to the level of development of the LTC system in a specific country.

The analysis of the pooled sample indicates that in countries with a Scandinavian approach, where the levels of state responsibility and provision of institutional care are high, informal care is less prominent. If received, it is mostly provided from outside the family by individuals who do not live with the elderly person, owing to the more extended social networks in these countries. In the Netherlands, which represents a cluster of Scandinavian countries, formal care is a basic type of care provided according to need, while informal care is seen as supplemental. The SHARE data show the special importance of home care, which is dominant; however, information on residential care is incomplete in the questionnaire, and thus comparisons between the level and determinants of utilisation of residential and home-based care are impossible.

Countries of the Continental Europe group, represented in this study by Germany, are less uniform, with a high share of individuals using formal care settings, as well as combining formal and informal care. This is most likely related to an attempt to support informal care provision with policy measures that target some of the LTC benefits at recipients of informal care. Similar to the Netherlands, the share of individuals receiving less substantial types of informal care provided from outside the household is high. Thus here again, elderly individuals with high levels of needs are more likely to turn to formal providers for help.

In Spain, the provision of formal care is lower than in the countries representing clusters 1 and 2, and informal care plays a much greater role. First of all, the primary responsibility for the provision of care lies within the family. This is exemplified by the results of the analysis, which show that the extended family provides personal care on a daily basis to elderly family members

in need, who tend to live together in the same household much more commonly than in other countries. In the Netherlands this type of care is marginal. Formal care is less available, and thus receiving this type of care is also less probable, although in light of the SHARE data, the use of home-based care is still substantial in Spain.

In countries representing cluster 4, the results are less conclusive because of data constraints and the need to combine information from different countries in order to obtain a common picture. Nevertheless, the important observation is that public formal care is less available in these countries and the provision of daily, personal care for the elderly in need is relatively high. In Italy, owing to poor access to public formal care, private care is often used.

While the differences in the provision of different types of care are quite substantial among the clusters, the differences in the determinants of receiving different types of care, although observable, are less sound. Regardless of the country, the provision of informal care is determined mostly by limitations and inabilities. Thus it is not ageing but health status that is the deciding factor when considering the demand for informal care, and the type of health limitation. Obviously, the demand is higher in more traditional countries with poorer formal LTC settings, represented in this study by Spain and Poland. Simultaneously, the provision of formal LTC in all countries depends mostly on age and health status. The probability of receiving formal care due to limitations and old age is highest in the countries with easier access to care, such as the Netherlands and Germany. Naturally, the level of impairment is important, as access to formal care is subjected to the evaluation of an individual's self-sufficiency in all of the countries. The financial situation of the household is of less significance in all of the countries.

In conclusion, the volume of care and the impact of demographic and household characteristics on the provision on formal vs. informal LTC differ among countries. The elderly in need of care and whose disabilities are less severe have higher chances of obtaining formal LTC in countries with LTC systems that are better developed and organised (clusters 1 and 2). The lower the access to formal LTC within the country/cluster (clusters 3 and 4), the lower are the chances of the 'younger elderly' with basic limitations obtaining LTC. Also, the provision of informal personal care is greater, determined mostly not by age but by the level of individual limitations and inability to live independently.

The results presented are in accordance with the typology of countries developed in WP1 of this project. They also represent a comprehensive starting point for deeper estimations provided in the other tasks of WP3.

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## **About the Center for Social and Economic Research – CASE**

We are an independent non-profit economic and public policy research institution founded on the idea that evidence-based policy making is vital to the economic welfare of societies. Established in 1991 in Warsaw, CASE scholars and researchers assisted policy-makers during the early years of transition, before turning their attention to the challenges inherent in the European Union enlargement process and then EU key policy challenges in the globalized world. While remaining focused on our five core thematic areas of: (1) European Neighbourhood Policy, enlargement, trade and economic integration, (2) labour markets, human capital and social policy, (3) innovation, competitiveness and entrepreneurship, (4) reforms, growth and poverty reduction in developing and transition countries, (5) macroeconomics and public finance, we want to contribute to new debates facing Europe, including the economic impact of climate change mitigation policies and the economics of energy policy. In addition to consolidating our position in the European research market, we are also broadening our geographic horizons by going beyond our traditional countries of interests, i.e., the Western Balkans and the Commonwealth of Independent States. Starting in 2006, we became active in the Middle East and Africa, where we hope to strengthen our presence by competing for technical assistance projects. Networking and communications activities remain central to our organisational development. As CASE entered its eighteenth year of existence in 2008, we want to build on our relationships with our own internal network, associated organisations, and membership in international and external networks, partnerships and alliances to make our research and expertise available and have a growing impact in the European policy debate. Reaching out to an increasing number of international experts is another of our priorities.

# ANCIEN

## Assessing Needs of Care in European Nations



*FP7 HEALTH-2007-3.2-2*

**L** launched in January 2009, ANCIEN is a research project financed under the 7th EU Research Framework Programme. It runs for a 44-month period and involves 20 partners from EU member states. The project principally concerns the future of long-term care (LTC) for the elderly in Europe and addresses two questions in particular:

- 1) How will need, demand, supply and use of LTC develop?
- 2) How do different systems of LTC perform?

The project proceeds in consecutive steps of collecting and analysing information and projecting future scenarios on long term care needs, use, quality assurance and system performance. State-of-the-art demographic, epidemiologic and econometric modelling is used to interpret and project needs, supply and use of long-term care over future time periods for different LTC systems.

The project started with collecting information and data to portray long-term care in Europe (WP 1). After establishing a framework for individual country reports, including data templates, information was collected and typologies of LTC systems were created. The collected data will form the basis of estimates of actual and future long term care needs in selected countries (WP 2). WP 3 builds on the estimates of needs to characterise the response: the provision and determinants of formal and informal care across European long-term care systems. Special emphasis is put on identifying the impact of regulation on the choice of care and the supply of caregivers. WP 6 integrates the results of WPs 1, 2 and 3 using econometric micro and macro-modelling, translating the projected needs derived from WP2 into projected use by using the behavioral models developed in WP3, taking into account the availability and regulation of formal and informal care and the potential use of technological developments.

On the backbone of projected needs, provisions and use in European LTC systems, WP 4 addresses developing technology as a factor in the process of change occurring in long-term care. This project will work out general principles for coping with the role of evolving technology, considering the cultural, economic, regulatory and organisational conditions. WP 5 addresses quality assurance. Together with WP 1, WP 5 reviews the policies on LTC quality assurance and the quality indicators in the EU member states, and assesses strengths, weaknesses, opportunities and threats of the various quality assurance policies. Finally WP 7 analyses systems performance, identifying best practices and studying trade-offs between quality, accessibility and affordability.

The final result of all work packages is a comprehensive overview of the long term care systems of EU nations, a description and projection of needs, provision and use for selected countries combined with a description of systems, and of quality assurance and an analysis of systems performance. CEPS is responsible for administrative coordination and dissemination of the general results (WP 8 and 9). The Belgian Federal Planning Bureau (FPB) and the Netherlands Bureau for Economic Policy Analysis (CPB) are responsible for scientific coordination.

*For more information, please visit the ANCIEN website (<http://www.ancien-longtermcare.eu>).*