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INSTITUTIONALISATION AND QUALITY OF LIFE FOR ELDERLY PEOPLE IN FINLAND

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Abstract – In this paper we examine whether there are systematic differences between the quality of life of an individual who is institutionalised and one who is not, keeping health status and income level constant. We also investigate what determinants are important in explaining why some individuals are in institutions and some are not. In doing this we use a nationally representative data set, the "Health 2000 in Finland". When controlling for health and functional status, demographics and income level, we find that individuals who live in old people's homes actually report significantly higher levels of subjective well-being than those who live at home. We argue that this finding can be explained by the waiting lists for care homes. This implies that there are individuals living at home who are so frail that they should really be living in an institution for elderly people, but because of the waiting lists for these institutions, they are living at home with a decreased quality of life as a consequence.

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1. Introduction

In 2008, the total population of Finland amounted to 5, 299, 772 people. The population aged 65 or over amounted to 875 356 people, or 16,5 % of the total population. In the EU-15, which is a reasonable reference group for Finland, the population aged 65 or over was 17,7% of the total population. The population aged 80 or older in Finland consisted of 229,091 individuals in 2008. This amounted to 4,3% of the population, and in the EU-15, the share was 4,7% of the population in 2008. In 2032, i.e. roughly one generation later, the share of the population in Finland aged 65 or over will have risen to 26,0%. The same share for the EU-15 is projected to be 24,7%. (The total population in Finland in 2031 is estimated to be some 5 568 256 inhabitants) This means that Finland faces a somewhat sharper increase in the population that is 65 or older than is the case in the EU-15. Regarding those 80 or over, it is projected that this share will rise to 8,7% of the total population in 2032 in Finland whereas the corresponding figure for the EU-15 will be 7,5% (Eurostat, population projection, trend scenario). Thus, also in the case of the population aged 80 or more the rise in Finland will be somewhat sharper than in the EU-15 countries as a whole.

Consequently the demand for long-term care of all possible forms will increase in the future, not only in Finland but in the EU as a whole.

In Finland, a clear policy objective in the long-term care debate is to increase possibilities for elderly people to live in their own homes for as long as possible (Ministry of Social Affairs and Health, 2008). At the same time, the number of places in public sector old-age institutions is being cut (Stakes, 2008). Obviously, one reason for this is cost savings, as institutional care is very expensive. Second, there is a perception among policy-makers, probably not unfounded, that living in an institution is associated with a lower quality of life than living in one´s own home.

However, policy-makers are probably right in assuming that people want to live in their own homes for as long as possible, *if their health permits them to do so*. Nevertheless, it is not entirely unlikely that policy-makers are confusing older people's wishes to live in their own home with their wishes to maintain a good enough state of health to be able to remain at home. A more cynical view would be that while policy-makers say that more home care constitutes an improvement in quality of life for elderly people, the true reason is in fact to reduce costs.

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In this paper we set out to test whether elderly individuals are better off in terms of quality of life if they live in institutions or if they live at home, *taking into account their health status*. To the international reader, this may seem somewhat confusing, because should not every elderly person whose health or functional capacity is below a certain threshold be able to live in an institution? This is not necessarily the case in Finland, however, because in the mostly public long-term care system, it is the municipalities that decide who has a place in an institution and who does not. Furthermore, municipalities have great autonomy in deciding which criteria to apply when admitting people to institutions, and it is by no means clear that two individuals with the same limitations in functional status who live in different municipalities will be admitted to an institution at the same time.

There is also a more fundamental reason for hypothesising that admission to an institution may actually increase quality of life. In Finland, access to old-age homes is limited, and there are waiting lists. Old people's homes are subsidised through the tax system, so that most of the residents pay less than the true cost of living there. This means that at any given time, there are some old people waiting for a place in an institution whose health is just as fragile as some of those already living in institutions. Then receiving a place in an institution is going to be increasing utility, because the elderly person is in fact getting an extra subsidy from the public sector. Consequently, it is therefore perfectly plausible that quality of life could increase upon entering an old-age institution if one is controlling both for health and for income.

This paper is structured as follows. First, we briefly describe the long-term care system in Finland. Second, we describe the data set, the "Health 2000 in Finland", which we use in the paper. Third, we investigate the determinants of individual institutionalisation in Finland in some detail. The results of this are compared to the international literature on the subject. Fourth, we test whether quality of life is actually greater for individuals living in institutions, as described above. The final section offers some concluding remarks.

2.   A short description of the Finnish long-term care system

The basic principle of the Finnish LTC system is that it is a publicly funded, universal system that is open to every citizen. The Finnish public administration system consists of three levels: state, province and municipality. Two main laws govern LTC services provision in Finland. They are the Primary Health Care act and the Social Welfare act. They designate the municipalities as responsible for public sector provision of health care and social services, including LTC. However, Finland's municipalities enjoy a very broad autonomy, and state-level regulations and steering in health care in general are not very detailed. Thus, legislation is not very specific regarding how municipalities' duties are to be performed in practice. Indeed, it has been argued that public responsibility for health care and social services are decentralised in Finland to a greater extent than in any other country (Häkkinen & Lehto, 2005).

Once needs have been assessed several forms of LTC are available. In Finland, these forms can be classified according to the intensity and coverage of care (Stakes, 2006). The basic level of service is home-based care. This type of service consists both of services that have a personal or social focus and to some extent also of home nursing care, as many municipalities have merged departments for health services and social services. At the other end of the spectrum there is institutional care. Institutional care is provided both in nursing homes and in the inpatient departments of health care centres. The difference between medical care and long-term care may in this case be somewhat blurred. There may be individuals in the inpatient departments of health care centres that do not require medical care and individuals who live in nursing homes that from time to time require medical care. This medical care could either be in the form of an inpatient period at a hospital or medical care given at the nursing home.

Over the last 10-15 years a new type of service that lies between nursing homes and the inpatient department at health care centres has been developed – sheltered housing (service homes). This type of service can in turn be divided into two categories, ordinary sheltered housing and sheltered housing with 24 hour service. In 24 hour sheltered housing care and medical facilities are available around the clock. Therefore, the distinction between this type of service home and a nursing home may be diffuse.

There are also other types of service that lie between those mentioned above. For instance, social services may provide a kind of day-care centre for elderly people, which offers meals and some care and/or medical services.

In Finland, entitlement to LTC services is based on residence, thus, if an individual is in need of LTC services, he or she or some relative or friend should contact the local municipality. From that point onwards, the municipality together with the elderly person decide on which services should be provided.

3. Previous research

3.1 Earlier research on the determinants of institutionalisation

With populations in the Western world ageing, research on the determinants of why people become institutionalised, i.e. move to an institution offering long-term care for elderly people is expanding. On an international level, there is a substantial body of research on this issue, exemplified by several surveys and meta-analyses, e.g. (Gaugler et al., 2007, Luppa et al., 2010).

Perhaps the first proper quantitative study regarding institutionalisation in a Finnish context deals with the effects of urge incontinence and other disabilities on the individual's probability of ending up in institutional care (Nuotio et al., 2003). In this study a population-based prospective survey involving 366 men and 409 women aged 60 years and over was used. These individuals were followed for a 13-year period. Age-adjusted and multivariate Cox proportional hazard models were used to examine the predictive association of urge incontinence, living arrangements, neurological, cardiovascular, musculoskeletal, and other chronic diseases, activities of daily living (ADL) disability, and depressive symptoms with institutionalisation separately in men and women. Adjusted for age, ADL and other chronic diseases predicted institutionalisation for both men and women. Urge incontinence was found to have an independent effect on institutionalisation.

Utilising data from administrative registers, a research group from the University of Helsinki has published several papers on the determinants of institutionalisation. Their basic data consisted of a 40% random sample of everybody residing in Finland aged 65 and over at the end of 1997, drawn from the population register. This data set contains detailed socio-economic information. The baseline sample was then linked to the causes of death register and with register data on institutional care and prior hospital diagnoses, as well as data on medication. In Finland, the social security institution reimburses expensive prescription drugs, and this information is collected in registers. The effective study sample, representative of the total Finnish community-living older population, consisted of 280,700 persons. These were then followed for institutionalisation or death.

The first published paper stemming from this project dealt with household income and other socio-economic determinants of institutionalisation (Nihtilä & Martikainen 2007). Using the above-mentioned dataset, it was found that the probability of admission to LTC is inversely associated with household income so that women belonging to the lowest household income quintile are 35% more likely to enter LTC that those from the highest income quintile. For men,

the corresponding figure was 58%. Controlling for other socio-economic differences and medical conditions reduces these differences by 59% for women and 78% for men.

Using the same data, the focus of the next paper was on chronic conditions (Nihtilä et al., 2008). It was shown that dementia, Parkinson's disease, stroke, depressive symptoms, other mental health problems, hip fracture, and diabetes increased the risk of entering LTC by 50% or more. Parkinson's disease, stroke, and mental health problems were more closely associated with the risk of institutionalisation than with the risk of death without institutionalisation.

A somewhat more esoteric subject is the topic of the next paper in this series (Nihtilä and Martikainen 2008). Here, the risk of entering LTC after the death of a spouse in relation to the duration of widowhood was investigated. Also examined was whether a high level of education or household income buffeted the effects of bereavement on institutionalisation. The results of the study show that the risk of institutionalisation was highest during the first month following a spouse's death and then decreased over time. The relative effect of the duration of widowhood on institutionalisation did not vary significantly according to levels of education or income.

Next to be considered in this research programme is a paper on why those living with a spouse are less likely to be institutionalised (Nihtilä & Martikainen, 2008). Among men, it was found that those living alone had a 70% higher probability of becoming institutionalised, independent of age and region of residence. The corresponding figure for women was 29%. The lower risk of institutionalisation was partly explained by higher educational level, occupation-based social class, household income, house ownership, house type, better housing conditions, and lower likelihood of having depressive symptoms. However, having a spouse still seemed to have a major independent role in preventing and delaying institutionalisation among older men and women.

A more technical paper is the most recent paper to emerge from this research group (Martikainen et al., 2009). In this paper, both entry into and exit from LTC is considered. Results show that being female, old, living alone, and of low socio-economic status increases the risk of entering LTC. The same factors affect exit, but associations were weaker and go in the opposite direction.

In general, it is fair to say that the Finnish research has come up with risk factors for institutionalisation that are similar to those found in other countries.

4. The Health 2000 in Finland data set

The study in this paper is based on the Health 2000 survey, which comprehensively represents the Finnish population aged 30 years and over. The methods and base results of the survey have been previously described in detail (Heistaro, 2008), and are available at http://www.terveys2000.fi/. Briefly, the survey had a two-stage, stratified cluster sampling design, with double sampling of people over 80 years of age (Aromaa et al., 2004). Data were collected between August 2000 and July 2001. Of the original sample of 8,028 people, 93% participated in at least one part of the study.

4.1 Socio-demographic factors and diagnostics

Data on socio-demographic factors and somatic diseases were collected using structured interviews at home or in an institution, with a participation rate of 88%. Participants were asked whether they had ever been diagnosed for any of 43 specified diseases and conditions by a physician. If they answered yes, detailed condition-specific questions were asked. Twenty-five somatic conditions were included in this analysis, based on their public health importance, chronic nature, and the reliability of self-report diagnostic classification (Saarni et al., 2006).

The conditions were grouped in clinically relevant ICD-10-based categories (Saarni et al., 2007). Chronic obstructive pulmonary disease, chronic bronchitis, and asthma were classified as pulmonary disorders. Heart failure, myocardial infarction, coronary heart disease, and hypertension were classified as cardiovascular disorders. Rheumatoid arthritis, osteoarthritis, and problems of the back or neck requiring a visit to a physician in the previous 12 months were classified as musculoskeletal disorders. Hearing loss and disturbing tinnitus were classified as problems of hearing. Unoperated cataract, glaucoma, and macular degeneration were classified as problems of vision. Migraine, Parkinson's disease, and stroke (as the only exception from the ICD-10, due to its mostly neurological sequela) were classified as neurological disorders. Diabetes, a disturbing allergy requiring a visit to a physician in the previous 12 months, psoriasis, inflammatory bowel disease, cancer, and urinary incontinence were grouped as other disorders.

As psychiatric disorders cannot be reliably diagnosed by self-reporting methods, a structured interview, the Munich version of the Composite International Diagnostic Interview (M-CIDI) (Wittchen et al. 1998) was used to collect data on psychiatric disorders. Of the sample, 75% participated in the CIDI, which lasted 23 minutes, on average, and was used to assess a 12-month prevalence of depressive, alcohol use and anxiety disorders (Pirkola et al., 2005) with DSM-IV (America Psychiatric Association, 2004) criteria. Psychotic disorders were included if self-reported or if the physician conducting the health examination made a diagnosis of probable psychotic disorder.

4.2   Health-related quality of life and subjective well-being

We also use an established health related quality of life (HRQoL) measure: the 15D. 15D, (available at www.15D-instrument.net), includes 15 dimensions: mobility, vision, hearing, breathing, sleeping, eating, speech, elimination, usual activities, mental function, discomfort and symptoms, depression, distress, vitality, and sexual activity (Sintonen, 1994, 1995, 2001). Each dimension has five grades of severity. In calculating the 15D score, valuations elicited from the Finnish population using the multi-attribute utility method were used (Sintonen, 1995). The 15D values range between 1 (full health) and 0 (dead). 15D compares favourably with similar instruments in most of the important properties (Sintonen 1994, 1995, 2001, Stavem et al. 2001, Hawthorne et al. 2001). Subjects with 12 or more completed 15D dimensions were included, and missing values were predicted with linear regression analysis using the other 15D dimensions, age and sex as independent variables (Sintonen, 1994).

Subjective well-being (SWB) was measured by asking: "All things considered, how satisfied have you been with your life as a whole during the past 30 days?" on a scale from 1 to 10, where 0 is anchored as the poorest possible and 10 as the best possible quality of life. This is the type of question that is used in psychology and economics to assess happiness or life satisfaction.

5.   The determinants of institutionalisation in Finland

In this section we present the results of regression analyses of individual institutionalisation using the Health 2000 in Finland data set. Our simple regressions are of a binary type, where the dependent variable takes the value 1 if the individual lives in an institution and 0 otherwise. The differences compared to the research presented in section 4.1 is that we are able, owing to the data, to distinguish between service-home living, and living in an old people's home. Obviously, the Health 2000 data in Finland is a cross-section, and the results should therefore be considered as associations. As explanatory variables, we use the 'usual suspects', such as age, gender, marital status, family income, and various measures of health status.

Descriptive statistics are provided in Table 1. The data covers individuals aged 60 or over, and as can be seen the data has been split into those living at home, those living in a service home, and those living in an old people's institution.

These descriptive statistics hint at large differences between those living at home, those living in a service home, and those living in an old people's institution. Those living at home are the youngest, the healthiest, the happiest, and have the highest incomes. Those living in institutions, on the other hand, are the oldest, have the lowest incomes, and the most health problems. The service home group lie somewhere in between.

In Table 2 results from a binary regression where the dependent variable takes the value 1 if the individual lives in a service home or in an old people's institution and 0 otherwise are presented. Thus the two types of institutional living are lumped together. The first column contains results of a regression where the only explanatory variable is the male dummy, the coefficient of which is negative and statistically significant. This simply reflects the fact that more women than men are institutionalised. In column 2, age, marital status, household income, and education are added as explanatory variables. The coefficients of these generally have the expected signs. The older the individual is, the more likely he or she is to be institutionalised. Being married is associated with a lower probability of being institutionalised, and so does a higher household income, and having secondary education compared to having primary education only. However, the dummy variable for having tertiary education is surprisingly positive, indicating an increased probability of institutionalisation. It is unclear what this is due to, but one possibility may be that the income or age variables pick up some of the health effects of being highly educated. In the third column eight dummy variables capturing various chronic illnesses are introduced into the regression. There are three interesting observations that can be made from this. First, the relationship between having a psychiatric disorder and being institutionalised is very strong .This is in line with earlier research that has established that dementia is a leading cause for institutionalisation among elderly people. Second, it appears that having a hearing problem actually lowers the probability of being institutionalised. Again, it is not clear why this may be the case. Perhaps having a hearing problem correlates positively with some factor that is unobservable in this data set but correlates negatively with the probability of being institutionalised. Third, the relationship between the male dummy and the probability of being institutionalised has changed signs. Thus, taking various chronic illnesses into account, males are actually more likely to be institutionalised than women.

In the fourth column the 15D measure has been added to the regression. The coefficient of this is, as expected, negative and statistically significant. This is because individuals with poor health-related quality of life are more likely to be institutionalised. It should be noted that the coefficient for the psychiatric disorders is still very large in this specification; an indication that the 15D measure does not pick up every aspect of health in the same way.

Table 3 present probit regressions where the dependent variable takes the value 1 if the individual lives in a service home and 0 otherwise. The results are generally quite similar to those in Table 2, although the magnitudes are somewhat smaller. This is not particularly surprising, as the population living in service homes is generally more similar to those living at home. Thus, they are younger, have better health, and have higher incomes than those living in old people's institutions.

Table 4 presents regressions where the dependent variable takes the value 1 if the individual lives in an old-age institution and 0 otherwise. Bearing the information from Tables 2 and 3 in mind, the results in Table 4 are not surprising, as the results of Table 3 are basically a combination of the results of Tables 2 and 4. In Table 4 the coefficients are thus generally bigger than in Table 3, at least regarding the demographic controls. There are some differences

in the case of the controls for the chronic diseases though, but the 15D measure of functional capacity is in any case negative and highly statistically significant.

6. Institutionalisation and happiness

In Table 5 we present results of ordered probit regression where the dependent variable is the stated quality of life for the individuals. In column 1, the main explanatory variables is a dummy variable taking the value 1 if the individual resides in an institution or a service home. Otherwise, the regression contains the normal household and education level coefficients that are normally present in a happiness regression. Looking first at the results in column 1, we find that the coefficient of the institutionalisation dummy is negative and statistically significant at the 10%-level. Those living at home are on average happier that those who do not, given the household and education variables present in the specification. This is the result that seems to be on policy-makers' minds, and would as such give support to policies that decrease the incidence of institutional living. Regarding the demographic and education variables, we can see that they generally look familiar, bearing the present stock of knowledge on the determinants of happiness in mind. The age coefficient is negative, indicating that younger people are happier. The quadratic term in age normally found in happiness regression is not included in this study, as the study population is aged 60 or over. It is of course not to be expected that any nonlinearities can be found in a sample like this. Household income has a positive coefficient, and the more education one has the happier one is.

In column 2, the set of eight chronic diseases is added to the specification. Judging from this, it is clear that suffering from a chronic disease is very detrimental to an individual's quality of life. The largest negative coefficient can be found for the case of psychiatric disorders. Turning then to the main explanatory variable, the institutionalisation dummy, we can see that the negative effect of living in an institution from column 1 has shrunk considerably, and is no longer statistically significant. The demographic and education controls are relatively robust to the addition of the health dummies.

In the third column we add the 15D measure in order to control for health status as comprehensively as possible. This has an interesting effect on the sign of the institutionalisation dummy, which now turns from negative to *positive*. This means that if one controls for health in a rigorous way individuals actually report higher quality of life if they live in institutions. The other control variables are more or less similar to what they were in column 2. It is also interesting to note that although the 15D in principle should control for health-related quality of life, the coefficients for neurological and psychiatric diseases are still negative and statistically significant in this happiness regression. This result is similar to that reported in Böckerman et al. (2010).

The fourth column presents results of a regression where the only health control is the 15D measure. This result shows that the 15D measure is the one that actually drives the positive coefficient for the institution dummy in column 3.

Table 6 presents results from a regression identical to that presented in Table 5, but this time the residential status is modelled as two dummies, one for those living in a service home and one for those living in an old-age institution. The results of this regression show that the result in Table 5 is actually driven by living in old-age institutions. Compared to the reference category, which is living at home, living in service homes is not different from living at home, statistically speaking. However, the old-age institution dummy is negative and significant at the 10%-level, when controlling for health status. It should be noted that the coefficient is considerably larger than the coefficient of living in any institution, in Table 5.

Concluding remarks

In short, two things are delivered in this paper. First, we report results from regressions on the determinants of institutionalisation for individuals aged 60 or over. Second, we examine whether there are differences in quality of life depending on whether an individual is institutionalised or not, taking health and income as constant. In doing this we use a nationally representative data set, the Health 2000 in Finland. Regarding the determinants of institutionalisation, our results are very much in line with the existing body of knowledge. Older, poorer, single, and less healthy individuals are more likely to be institutionalised.

The investigation into the potential differences in the quality of life differences between the modes of living for elderly people revealed some interesting results. When controlling for health status, demographics and income, we find that individuals living in old people's homes actually report higher levels of happiness than those living at home. With cross-section data it is quite difficult to ascertain in great detail what this could be due to, but one possibility is the waiting list argument explained in the introduction. According to this, it is perfectly possible that there are individuals living at home who are so frail that they should really be living in an old people's institution, but because of the waiting lists for these residences, they are living at home and endure a lower quality of life as a consequence.

Table 1. Descriptive statistics of key variables

	Living at home		Service home		Institution	
	Mean	St.dev.	Mean	St.dev.	Mean	St.dev.
Happiness	7.09	1.87	6.14	2.07	5.12	2.74
Age (years)	72.25	8.63	80.89	7.26	84.22	7.17
Male	0.39		0.26		0.21	
Secondary education	0.19		0.11		0.14	
Tertiary education	0.11		0.09		0.05	
Married	0.54		0.15		0.13	
Household income (€/month)	2638.49	14698.29	1115.61	980.64	785.90	678.69
15D score	0.86	0.11	0.71	0.14	0.60	0.16
Pulmonary disorders	0.19		0.19		0.11	
Cardiovascular disorders	0.52		0.51		0.49	
Musculoskeletal disorders	0.48		0.42		0.47	
Hearing problems	0.38		0.40		0.30	
Visual problems	0.22		0.35		0.26	
Psychiatric disorders	0.06		0.06		0.04	
Neurological disorders	0.14		0.21		0.27	
Other disorders	0.42		0.56		0.69	
N	2527		108		139	

Note: Happiness is measured on a 0 to 10 scale with **0 anchored as the poorest possible and 10 as the best possible quality of life**. The gender, education, and disorder variables are dummy variables, and the corresponding figures in the columns are the shares of the subgroups that have that particular disorder or attribute. The 15D score is a **health related quality of life measure ranging from 0 to 1.** Source: The Health 2000 in Finland dataset and authors´ calculations.

Table 2. The probability of living in and institution OR service home

	(1)	(2)	(3)	(4)
Male	-0.267**	0.207	0.286*	0.229
	(0.107)	(0.159)	(0.160)	(0.168)
Age		0.0579***	0.0635***	0.0400***
		(0.00893)	(0.00981)	(0.0100)
Married		-0.444**	-0.392**	-0.477***
		(0.174)	(0.174)	(0.174)
Log hh. Income		-0.441***	-0.459***	-0.443***
		(0.0603)	(0.0622)	(0.0634)
Secondary educ.		-0.392*	-0.440**	-0.425**
		(0.211)	(0.211)	(0.191)
Tertiary educ.		0.395**	0.418**	0.595***
		(0.201)	(0.206)	(0.214)
Pulmonary disorders			-0.132	-0.258
			(0.175)	(0.184)
Cardiovascular disorders			0.0453	0.0211
			(0.137)	(0.142)
Musculoskeletal disorders			0.0276	-0.115
			(0.129)	(0.133)
Hearing problems			-0.309**	-0.339**
			(0.142)	(0.149)
Visual problems			0.0204	-0.0111
			(0.150)	(0.160)
Psychiatric disorders			0.653***	0.418*
			(0.229)	(0.247)
Neurological disorders			0.203	0.0370
			(0.152)	(0.163)
Other disorders			0.294**	0.138
			(0.143)	(0.151)
15D score				-3.428***
				(0.513)
Constant	-1.617***	-3.910***	-4.462***	0.230
	(0.0589)	(0.778)	(0.846)	(1.058)
Observations	1773	1764	1762	1762

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note: The reference categories are female, being single, and having a primary education only.

Table 3. The probability of living in a service home

	(1)	(2)	(3)	(4)
Male	-0.0981	0.282*	0.320*	0.292*
	(0.123)	(0.165)	(0.168)	(0.173)
Age		0.0380***	0.0398***	0.0267***
		(0.00813)	(0.00894)	(0.00937)
Married		-0.498***	-0.475***	-0.520***
		(0.181)	(0.180)	(0.179)
Log hh. Income		-0.240***	-0.240***	-0.205***
		(0.0630)	(0.0643)	(0.0688)
Secondary educ.		-0.397*	-0.422*	-0.423*
		(0.238)	(0.238)	(0.230)
Tertiary educ.		0.340*	0.327	0.387*
		(0.203)	(0.208)	(0.211)
Pulmonary disorders			0.0860	0.0205
			(0.155)	(0.157)
Cardiovascular disorders			0.0455	0.0174
			(0.143)	(0.145)
Musculoskeletal disorders			-0.0427	-0.121
			(0.135)	(0.135)
Hearing problems			-0.114	-0.128
			(0.149)	(0.151)
Visual problems			0.240	0.229
			(0.155)	(0.160)
Psychiatric disorders			0.607**	0.471*
			(0.237)	(0.244)
Neurological disorders			0.0816	0.00633
			(0.163)	(0.177)
Other disorders			0.0927	0.00661
			(0.154)	(0.165)
15D score				-1.862***
				(0.550)
Constant	-1.896***	-3.511***	-3.842***	-1.367
	(0.0701)	(0.731)	(0.805)	(1.010)
Observations	1773	1764	1762	1762

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4. The probability of living in an institution (old-age home)

	(1)	(2)	(3)	(4)
Male	-0.494***	-0.141	-0.0738	-0.175
	(0.164)	(0.309)	(0.329)	(0.303)
Age		0.0752***	0.0953***	0.0636***
		(0.0193)	(0.0227)	(0.0217)
Married		-0.372	-0.272	-0.384
		(0.310)	(0.296)	(0.262)
Log hh. income		-0.424***	-0.518***	-0.475***
		(0.0527)	(0.0625)	(0.0765)
Secondary educ.		-0.242	-0.362	-0.210
		(0.242)	(0.249)	(0.259)
Tertiary educ.		-0.0459	0.147	0.395
		(0.283)	(0.343)	(0.378)
Pulmonary disorders			-1.124***	-1.358***
			(0.334)	(0.395)
Cardiovascular disorders			-0.0175	0.0592
			(0.216)	(0.229)
Musculoskeletal disorders			0.210	0.0136
			(0.203)	(0.222)
Hearing problems			-0.666***	-0.689***
			(0.190)	(0.203)
Visual problems			-0.573***	-0.636***
			(0.181)	(0.210)
Psychiatric disorders			0.475	0.245
			(0.482)	(0.490)
Neurological disorders			0.381*	0.0740
			(0.227)	(0.219)
Other disorders			0.752***	0.468*
			(0.228)	(0.254)
15Dscore				-3.932***
				(0.877)
Constant	-1.978***	-5.874***	-7.399***	-1.768
	(0.0713)	(1.596)	(1.845)	(2.190)
Observations	1773	1764	1762	1762
R-squared	.	.	.	.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Standard errors in parentheses

Table 5. Determinants of happiness – population aged 60 or over

	(1)	(2)	(3)	(4)
Institution or service home	-0.481*	-0.362	0.454**	0.468**
	(0.248)	(0.236)	(0.218)	(0.220)
Pulmonary disorders		-0.432***	-0.101	
		(0.103)	(0.0860)	
Cardiovascular disorders		-0.174**	0.00250	
		(0.0799)	(0.0703)	
Musculoskeletal disorders		-0.531***	-0.236***	
		(0.0857)	(0.0749)	
Hearing problems		-0.142*	-0.0818	
		(0.0814)	(0.0722)	
Visual problems		-0.170*	-0.0253	
		(0.0949)	(0.0819)	
Psychiatric disorders		-0.769***	-0.284**	
		(0.170)	(0.135)	
Neurological disorders		-0.591***	-0.333***	
		(0.117)	(0.104)	
Other disorders		-0.277***	-0.0145	
		(0.0836)	(0.0694)	
15Dscore			8.714***	9.343***
			(0.506)	(0.474)
Male	0.00751	-0.111	0.0369	0.0702
	(0.0890)	(0.0859)	(0.0771)	(0.0749)
Age	-0.0422***	-0.0365***	0.00316	0.00556
	(0.00613)	(0.00603)	(0.00624)	(0.00602)
Married	-0.0878	-0.0966	-0.0238	-0.0146
	(0.0842)	(0.0838)	(0.0763)	(0.0765)
Log hh. income	0.226***	0.209***	0.156***	0.159***
	(0.0713)	(0.0684)	(0.0600)	(0.0602)
Secondary education	0.432***	0.382***	0.286***	0.301***
	(0.101)	(0.0956)	(0.0876)	(0.0897)
Tertiary education	0.714***	0.660***	0.431***	0.431***
	(0.106)	(0.108)	(0.0937)	(0.0924)
Constant	8.896***	9.412***	-1.186	-2.168***
	(0.626)	(0.592)	(0.786)	(0.746)
Observations	1928	1926	1926	1928
R-squared	0.095	0.175	0.366	0.356

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6. Determinants of happiness – population aged 60 or over

	(1)	(2)	(3)	(4)
Service home	-0.366	-0.204	0.355	0.349
	(0.269)	(0.228)	(0.257)	(0.261)
Institution	-0.705	-0.863**	0.654*	0.706*
	(0.470)	(0.341)	(0.391)	(0.389)
Pulmonary disorders		-0.488***	-0.0980	
		(0.0995)	(0.0869)	
Cardiovascular disorders		-0.204***	0.00357	
		(0.0758)	(0.0704)	
Musculoskeletal disorders		-0.559***	-0.236***	
		(0.0818)	(0.0748)	
Hearing problems		-0.160**	-0.0792	
		(0.0771)	(0.0721)	
Visual problems		-0.247**	-0.0219	
		(0.0959)	(0.0821)	
Psychiatric disorders		-0.691***	-0.283**	
		(0.165)	(0.134)	
Neurological disorders		-0.630***	-0.334***	
		(0.106)	(0.104)	
Other disorders		-0.341***	-0.0148	
		(0.0750)	(0.0695)	
15Dscore			8.738***	9.366***
			(0.506)	(0.473)
Male	0.00679	-0.167**	0.0374	0.0711
	(0.0890)	(0.0763)	(0.0774)	(0.0752)
Age	-0.0421***	-0.0341***	0.00309	0.00552
	(0.00616)	(0.00552)	(0.00624)	(0.00602)
Married	-0.0846	-0.142*	-0.0265	-0.0177
	(0.0841)	(0.0823)	(0.0763)	(0.0766)
Log hh. income	0.221***	0.246***	0.160***	0.164***
	(0.0712)	(0.0644)	(0.0609)	(0.0611)
Secondary education	0.433***	0.360***	0.285***	0.300***
	(0.101)	(0.0956)	(0.0879)	(0.0902)
Tertiary education	0.715***	0.605***	0.430***	0.429***
	(0.106)	(0.104)	(0.0940)	(0.0928)
Constant	8.910***	9.180***	-1.225	-2.209***
	(0.626)	(0.536)	(0.790)	(0.748)
Observations	1928	2178	1926	1928
R-squared	0.095	0.190	0.366	0.356

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

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ANCIEN

Assessing Needs of Care in European Nations

FP7 HEALTH-2007-3.2-2

L aunched 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).