

# Analyzing expenditures of Dutch elderly

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## Abstract (in Dutch)

Om de toereikendheid van financiële middelen op de oude dag te beoordelen is niet alleen inzicht nodig in de financiële middelen, maar ook in de bestedingen. Onderzoek laat zien dat bestedingsbehoeften afnemen als mensen ouder worden. Anderzijds lijken bestedingsbehoeften toe te nemen wanneer de gezondheid achteruit gaat. De vraag rijst wat het netto effect is van deze twee tegenovergestelde ontwikkelingen en welke uitgaven toenemen en afnemen. In dit paper beantwoorden we de volgende vragen: Hoe verschillen de consumptiepatronen van mensen met en zonder gezondheidsproblemen, die wel of geen partner hebben? Hoeveel geven ouderen uit aan meer specifieke consumptie categorieën, zoals woongerelateerde uitgaven als huur en energiekosten? Hoeveel geven gepensioneerden uit aan zorg gerelateerde producten? We vergelijken uitgaven van gezonde en ongezonde mensen op verschillende leeftijden en onderzoeken de veranderingen over tijd. Daarbij bekijken we tevens de gevolgen van recente hervormingen in de ouderenzorg op particuliere uitgaven aan zorg en ondersteuning en op overige bestedingen.

## 1. Introduction

To obtain insight into the financial position of elderly research, usually analyzes the evolution of wealth and income of elderly households (see for example Min. SZW 2014, De Bresser and Knoef 2015, Van Ooijen et al. 2015, and Knoef et al. 2016). For a better understanding of whether the retirement savings of elderly are adequate it is, however, also important to gain more insight into their spending patterns. The spending pattern of households changes over the life cycle because of changing needs when people retire (e.g. lower expenses related to work and children).<sup>2</sup> Spending may also change in the period after retirement when leisure time increases and changes such as widowhood or the onset of health problems may influence both medical and nonmedical expenditures.

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<sup>1</sup>Preliminary. Comments welcome. Please do not cite without author's permission. This paper is financially supported by Netspar (Netspar topicality project Quantitative research into expenditures on elderly care and support). We are grateful to the comments of the participations of the Kick-off meeting on May 2015 in The Hague and the Netspar Workshop on Pension Adequacy on 15 October 2015 and 19 April 2016 in Leiden. We thank Miquelle Marchand and Boukje Cuelenaere from CentERdata for making additional questions about health related expenditures available in the LISS panel and Arthur van Soest for helpful suggestions as well as for making the consumption data available.

<sup>2</sup> See for example Soede 2012, Kalwij et al. 2015 and Dudel et al. 2016.

In the past few years, the funding of the Dutch health care system has been subject to reform. In 2012 notable cuts were made in the basic health care package, resulting in, among other things, less compensation for physiotherapy and seeing the psychologist for mental health problems. In 2013 mandatory deductibles in health insurance were increased significantly, from EUR 220 in 2012 to EUR 360 in 2013. In that same year common mobility devices, such as walkers, were no longer covered in the basic health care package. Finally, in 2013 asset-based means-testing for long term care increased and since 2013 the Dutch government aims at more extramural long-term health care. This goal to have elderly live longer in their own homes motivated the decision to carry over responsibility of long-term care to municipalities as of 2015. Accompaniment, daytime activities, and informal care among other things are no longer financed by one national scheme, but may now differ from one municipality to another. These reforms thus imply a shift away from publicly provided long-term care to private providers, as well as more individual responsibility. The question arises whether the elderly are able to handle the implications of these recent reforms when confronted with a worsening health.

This paper investigates the relationship between expenditures and health. The main focus is on the Dutch elderly population but we consider the whole life cycle. First, we analyze how total non-durable expenditures vary with age and health. We then disaggregate expenditures on various categories of goods and describe how expenditure shares develop over the life cycle and change with deteriorating health. We examine how the presence of partner influences expenditure patterns; having a partner who is able to provide informal care might reduce health related expenditures. Finally, we investigate how those patterns evolved over time as reforms were implemented in the Dutch health and long-term care system. Our data start in the pre-2010 period when out-of-pocket expenses were low and changes in health did not imply (partly) non-discretionary changes in medical spending. Neither income nor medical expenses of retirees were strongly affected by their health in that period, allowing us to analyze how preferences for different types of consumption change with health. Tracking the same individuals over time allows us to explore whether those shifts in expenditures changed as out-of-pocket medical expenditures became relatively more important over time.

We draw on data from a nationally representative sample from the Netherlands with detailed information regarding spending on various categories of goods and services. The main advantage of this dataset over other sources, such the Dutch Budget Survey (or the analogous and widely used Consumer Expenditures Survey for the US), is that both household and personal expenditures are measured over time for the same individual. Having longitudinal data is important to distinguish between the effect of age on expenditures and cohort differences in expenditures. Different year-of-birth cohorts have lived through different circumstances influencing lifetime income and consequently expenditures. The panel structure of the data also allows us to account for unobserved household-specific effects influencing both health status as well as expenditures. Doing this is important because health is closely related to lifetime income and consequently with expenditure levels.

Another advantage of the dataset is that it contains a rich set of health indicators, measuring general health as well as problems with activities of daily living for all household members. We also observe whether people actually receive care. In the analysis we will take the health status of the partner and spouse into consideration.

To analyze the effect of health on expenditures we will not only consider total expenditures but also consider the different expenditure subcategories. For example, a person in poor health may spend less on leisure activities. More specifically, we first document how a deterioration of health affects total expenditures and we subsequently explore how total expenditures is divided among different expenditures categories. This is analogous to the well-known Almost Ideal specification of the demand system by Deaton and Muellbauer (1980).

We find that total per capita monthly spending declines after mid-age from EUR 1750 per month at age 50 to EUR 1400 per month at age 85. However, we document distinct spending patterns for different categories over the life cycle. We observe four broad patterns: First, spending on housing services (but also utilities) seems to decline after mid age. Second, there is a hump shaped pattern in expenditures on transport, clothing and food at home, which is likely explained by labor market status. Third, for insurance, personal care and out-of-pocket medical expenditures we observe an increase in spending over the life cycle. We document that out-of-pocket medical expenditures were less relevant before the health and long-term care reforms of the past few years. For the highest age group median per capita monthly out of pocket medical expenditures doubled from EUR 25 in the years before 2013 to almost EUR 50 in 2015. We also document an increase in the variability of out of pocket expenditures for all age groups. Fourth, for cleaning and maintenance, housing and food away, we noticed an increase in expenditures in the final stage of the life cycle (after age 75). This might be related to a deterioration in health.

Next, we examined to what extent a deterioration of health can explain the observed spending pattern and to what extent this can be attributed to age. Our estimates reveal intuitively plausible variation in the impact of health on expenditures across singles and couple households. It seems that singles are more strongly affected in the longer run, while couples adjust their behavior mostly in the short run and only if both partners suffer a worsening health. We document a redirection away from transport (only for singles) towards cleaning and maintenance, medical expenditures and (depending on which health measure we use) also insurance. However, the impacts of ADL impairments and poor subjective health on total household spending are less robust, underlining the multi-dimensional nature of health. Thus, conditional on income we do not find convincing evidence that health status effects total expenditures. The observed increase in out of pocket medical spending when health deteriorates is particularly relevant for older individuals with ADL impairments. Moreover, the increase in medical spending is mainly driven by increased expenditures in 2015. We found that unhealthy couples allocate on average an additional 2%-point of their budget to medical expenditures. We also find that the increase in out-of-pocket medical

expenditures is significant for persons without a healthy partner. Those persons have to rely to a large extent on formal care. Finally, we documented that out-of-pocket expenditures are the highest among persons who receive care at home. The most important spending categories are expenditures on services such as nursing care and domestic care (with a prevalence of 34% and 66% and average yearly expenditures of EUR 725 and EUR 560). Spending on aids, such as a wheelchair, seems less relevant. Home-adaptions are common among this group: almost half of the persons who receive care at home modified their home with an average cost of EUR 17,000.

The remainder of this paper is organized as follows. In Section 2 we examine relevant literature. In Section 3, we closely examine the consumption and health data at hand. Section 4 provides descriptive evidence on consumption patterns. Section 5 presents the model we use to estimate the parameters of interest. Results of the estimation are presented and discussed in Section 6. In final section, we conclude and discuss policy implications of our findings.

## **2. Literature**

This paper examines the relationship between expenditures on different types of goods and services and health. The economic concept that captures the value of consumption to the consumer is that of marginal utility, which is the added benefit from consuming one additional unit of a good. Previous research has identified various ways in which one can establish whether consumption becomes more or less attractive as health changes (Finkelstein et al., 2009). Unfortunately, these different approaches sometimes yield different conclusions. The first approach is to look at the willingness to pay for health insurance. In good health, one pays for health insurance to be provided with payoffs in case of deteriorating health. One's willingness to pay for health insurance is therefore an indication that consumption becomes more valuable when health deteriorates. A second approach is to make use of utility proxies such as subjective well-being. One may then infer how this proxy changes with health and how this varies for households with different consumption levels. This approach is implemented by Finkelstein et al. (2013) using permanent income as a proxy for consumption. They find a substantial negative effect on the marginal utility of consumption in case of deteriorating health. A third approach is to examine consumption profiles and changes associated with health directly. According to economic theory, individuals should consume more when marginal utility is high and additional consumption yields high utility. Observationally equal individuals of which one experiences an unexpected health shock should allow for inference about the effect of health on the marginal utility of consumption through changing consumption patterns. Lillard and Weiss (1997) make use of panel data on consumption, inferred from income flows and asset changes, and find a substantial positive effect of an adverse health shock on the marginal utility of consumption following this approach. This approach may, however, be sensitive to what is assumed about the bequest motive. For example, a decline in consumption following an unexpected negative health shock may be evidence for decreasing marginal utility of consumption in poor health, but it may also be contributed to a strategic bequest motive, i.e., raising bequests to induce informal care from one's relatives.

In this paper, we examine the relationship between health and aggregate non-durable expenditures as well as expenditures on various categories of goods and services. We use panel data that directly measures expenditures, moving along the lines of the last mentioned approach. We base our approach on Blundell, Levell, Smith, and Banks (2015). Their method compares non-durable expenditures in the US and the UK between 1988 and 2009. They observe large differences between the consumption profiles of households in these two countries. They report an average annual rate of decline in spending on non-durable goods between the ages of 45 and 75 of 1% in the US and over 3% in the UK. Closely examining various factors that could explain the difference, they find that about a quarter of the gap can be attributed to the level of medical expenditures, which are considerably higher in the US. The rest of the gap is filled by the uncertainty that households have about future medical expenditures. US households are inclined to save much more, hence consume less, in their earlier years for precautionary reasons. Consequently, at older ages, they have much more left to spend as most of this saving turns out superfluous. Roughly speaking, one could say the Dutch system is moving closer to that of the US. Policy makers may therefore expect to see more precautionary saving in the future.

### **3. Data**

Survey data is taken from the Longitudinal Internet Studies for the Social Sciences (LISS panel).<sup>3</sup> This panel is recruited through address-based sampling (no self-selection), and households without a computer and/or internet connection receive an internet connection and computer for free. This roughly nationally representative household panel (Van der Laan, 2009) of about 5000 households receives online questionnaires each month, on different topics. When respondents complete a questionnaire they receive a monthly incentive. A variety of data is available from studies conducted in the LISS panel.

#### **3.1. Expenditure data**

This paper uses a survey on time use and consumption which has been issued in 2009, 2010, 2012 and 2015 and a yearly survey on health. We select the years for which we have data on expenditures: 2009, 2010, 2012 and 2015.

While the main focus of the paper is on the expenditure patterns of elderly persons we will also consider younger persons. This gives a broader perspective of expenditure developments over the life cycle to highlight the potential relevance of health effect over and above the effect of age. We exclude households (with a household head) below age 25 and households older than age 85 because of the small number of observations in those groups. We end up with a sample containing 7156 households (3411 single person households and 3745 couples), which are approximately equally divided over the years.

Regarding consumption of the households, the LISS provides detailed information on a broad set

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<sup>3</sup> For more information, see <http://www.lissdata.nl/lissdata/>.

of expenditure categories. Our expenditure measures are based on survey questions on personal and household non-durable spending per month. This type of elicitation is noisier than, for example, diary based measures. Nonetheless, it provides a good measure on spending (Crossley, and Weber and Browning, 2003). The questionnaire asks for two types of expenditures: non-durable goods and services that are non-assignable within the household and non-durables that are assignable to the members of the household. The questions and the consumption categories are listed in Table 1. These will generally be of interest to us and the names of the categories will appear as variables, albeit abbreviated, throughout the paper.

Table 1: List of consumption categories elicited in questionnaire

“Can you indicate for each type of expenditure how many euros <i>your household</i> spends on this on average, per month?”
Mortgage
Rent
General utilities
Transport and means of transport
Insurance
Expenditure on cleaning the house or maintaining the garden
Food at home
Household leisure time expenditures
Other household expenditures
“For each type of expenditure, please indicate how many euros <i>you</i> spend on this personally per month, on average”.
Food and drinks away
Cigarettes and other tobacco products
Clothing
Personal care products and services
Medical care and health costs NOT covered by insurance
Personal leisure time expenditures
(Further) schooling
Donations and gifts
Other personal expenditures

For homeowners, we do not observe the rent equivalent that they would pay for a house with similar characteristics to the one they own. This would be a good proxy for expenditures on housing services. We unfortunately lack the proper data to come up with this measure of imputed rent. Instead, for homeowners we will use gross mortgage expenditures to measure expenditures on housing services. In the analysis we will account for remaining differences in expenditures between homeowners and renters. We exclude expenditures on alimony and debts and loans from the analysis as the magnitude is negligible in our sample. Moreover, we exclude expenditures for

childcare from the main analysis since this only relevant for a very specific period of the life course.

In 2015 personal expenditures were asked as an aggregate category with the exception of medical expenditures and health costs not covered by insurance. As a result, in main the analysis, we cannot distinguish between the different personal expenditure categories, except for out of pocket medical expenditures. The (non-medical) personal expenditure categories were aggregated across categories in all years so to be similar to the measure we have in 2015. We combine the ‘personal non-medical’ expenditures together with ‘other household’ expenditures in the category ‘other’ expenditures. We end up with eight spending categories. For the years 2009-2012 we observe how ‘other’ expenditures is divided over six subcategories.

We exclude households who report zero expenditures for trivial categories (i.e. food at home, insurance and utilities) or households with missing information for one of the categories (excluding ‘other’ expenditures).<sup>4</sup> Table 1b shows the average expenditures for the spending categories by age group for singles and couples.

Table 1b: Average expenditures by age group (2009-2015)

	<i>Singles</i>				<i>Couple</i>			
	25-45	45-59	60-74	75+	25-45	45-59	60-74	75+
<i>Housing</i>	548	503	413	367	872	643	447	328
<i>Utilities</i>	160	186	200	202	222	254	235	231
<i>Transport</i>	106	100	94	77	169	167	143	124
<i>Insurance</i>	156	171	182	197	266	296	288	285
<i>Cleaning and maintenance</i>	23	30	37	67	40	46	42	52
<i>Food at home</i>	220	241	226	217	368	438	398	377
<i>Medical</i>	27	30	39	61	42	63	85	102
<i>Other</i>	407	394	364	378	710	771	725	635
<i>Leisure</i>	73	72	56	53	247	281	274	249
<i>Food away</i>	62	47	45	42	73	73	56	43
<i>Tobacco</i>	31	26	19	12	23	30	22	6
<i>Clothing</i>	67	60	58	71	134	135	126	124
<i>Personal care</i>	30	30	31	35	55	59	58	61
<i>Other</i>	156	155	162	185	189	204	203	176
<b><i>Total expend.</i></b>	<b>1648</b>	<b>1656</b>	<b>1556</b>	<b>1567</b>	<b>2688</b>	<b>2677</b>	<b>2362</b>	<b>2133</b>
<i>Observations</i>	798	1057	1164	392	855	1116	1447	327

<sup>4</sup> We also excluded some clear outliers which we define as households with a consumption growth (decline) of more than 500 percent. We further excluded a few households of which non-durable consumption surpassed more than 5 times their net-household income. Finally, we excluded a few households with total expenditures exceeding EUR 10,000.

### 3.2. Health measures

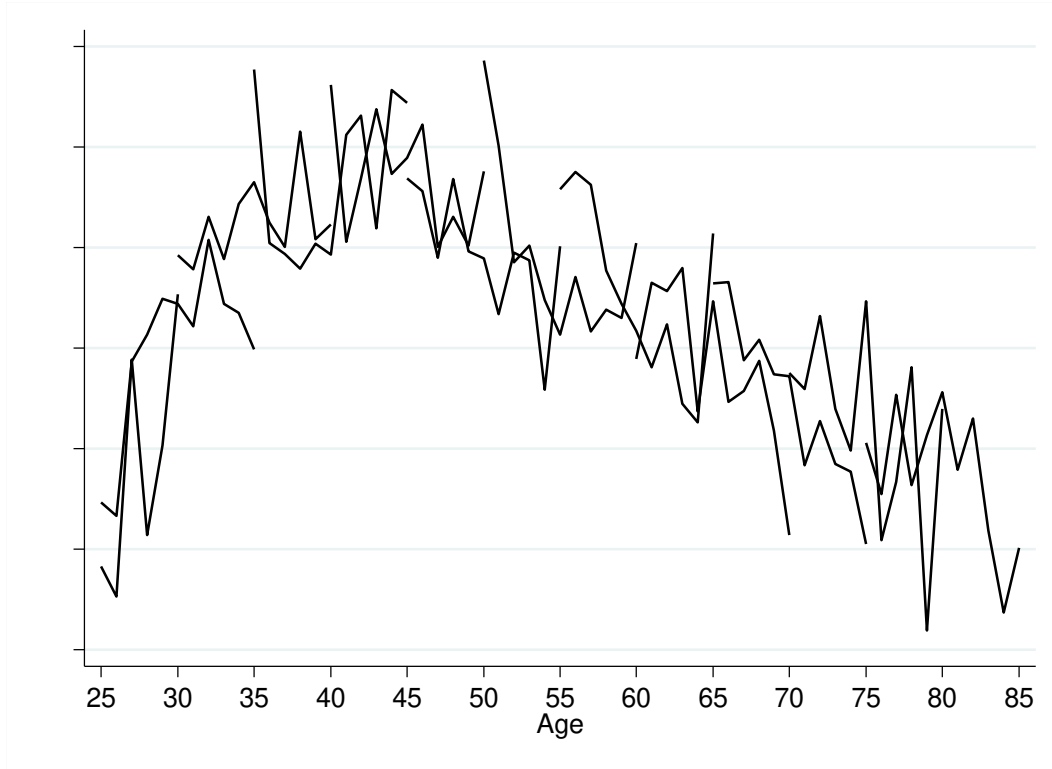
Regarding health we use a measure of limitations, derived from the question: “To what extent did your physical health or emotional problems hinder your daily activities over the past month, for instance in going for a walk, walking upstairs, dressing yourself, washing yourself, visiting the toilet?” With five response categories ranging from “not at all” to “very much”. We also use a self-reported health measure derived from the question ‘How would you describe your health, generally speaking?’. Respondents answer on a 5-point scale ranging from poor to excellent with moderate, good, and very good in between. We notice plausible differences between age groups in the data: older people report on average relatively worse health and differences are larger for the oldest group. Notably, people rarely report ‘poor’ or ‘excellent’ health. Moreover, qualitatively, ‘good’, ‘very good’ and ‘excellent’ are contrasted by ‘poor’ and ‘moderate’, leading to the decision to take them together and divide them into good and bad health.

### 4. Life cycle expenditures

To analyze life cycle profiles of total expenditures it is important to distinguish between differences in the expenditure patterns of individuals of the same age who are born in different periods since they may have different lifetime resources. In figure 2, each line represents the average expenditures by age of 5-year birth cohorts. The figure shows a hump-shaped life cycle expenditure profile: there is a steep increase in expenditures until age 40 and gradually decline after age 50. This hump-shaped pattern is partly driven by demographic changes within households. In the first part of life expenditures increase when people get children, in mid-age expenditures decline when the children leave house, and expenditures decline gradually in the final stage of life because of family dissolution.

A simple way to account for changing needs when the household composition changes is to use equivalent scales which are for example published by the OECD. The OECD equivalence scales assume that a couple needs 50% more income to be financially as well off as a single. For every child an additional X% is added. A disadvantage of using equivalence scales is that they are the same for all households, irrespective of, for example, their age and their health status. Moreover, equivalent scales are computed for total expenditures and are not applicable for subcategories.

Figure 2. Total expenditures across age and birth cohort



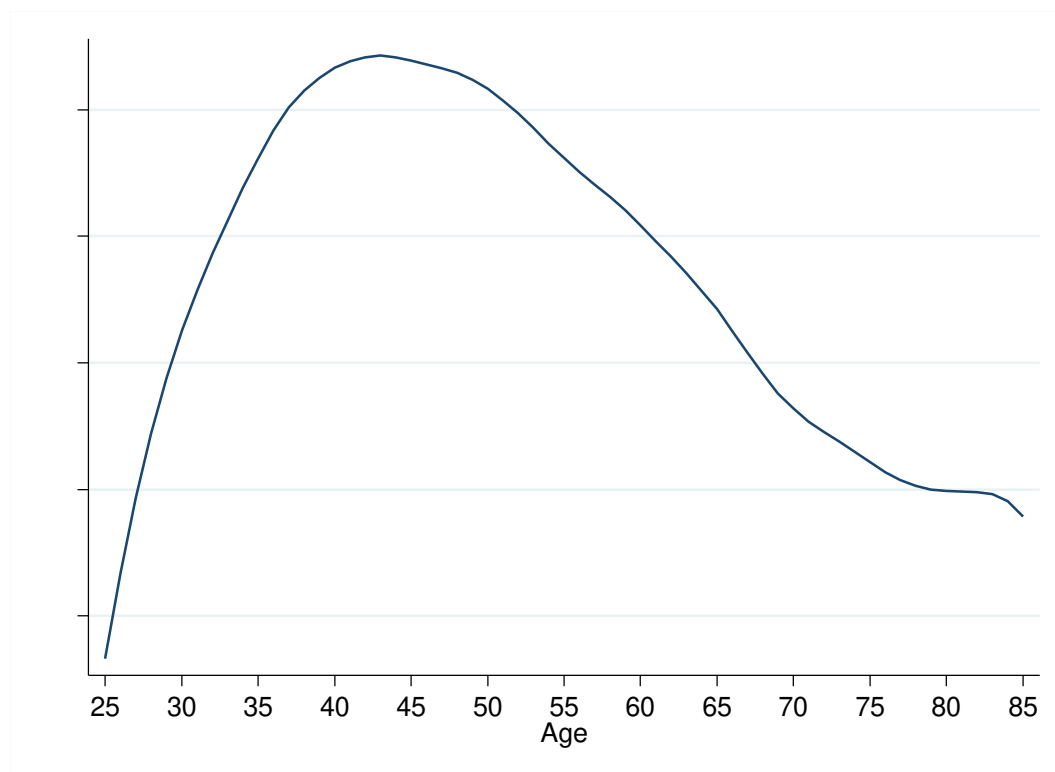
To derive a per capita life cycle profile of total expenditures we estimate the following regression model:

$$C_{ht} = \alpha_0 + \alpha_1 Age_{ht} + \alpha_2 Cohort_{ht} + \alpha_3 Period_t + \alpha_4 Couple_{ht} + \alpha_5 Children_{ht} + \epsilon_{ht}$$

Where the dependent variable  $C_{ht}$  measures total expenditures of household  $h$  in period  $t$ ,  $Age$  is a vector of dummies indicating the age of the head of household  $h$  in period  $t$ , whereas  $Cohort$  indicates the year of birth. The Period dummies are normalized according to the method by Deaton (1997), which implies that the period coefficients represent divisions from a linear time trend and add up to zero. We account in a flexible way for differences in expenditures between household with a different composition by including a dummy variable for being a couple and separate dummies for the number of children living in the household. We use a spline function for age to derive a smooth pattern (parallel to the method of Fernández-Villaverde and Dirk Krueger 2007).

Figure 3 plots the estimated coefficients for age. Average per-capita expenditures rise slightly, from EUR 1250 at age 25 to approximately EUR 1750 at age 50 and gradually decline afterwards to approximately EUR 1400 at age 85. A very similar life cycle patterns of total expenditures is documented by Fernández-Villaverde and Dirk Krueger (2007) for US households.

Figure 3. Total expenditure over the life cycle



Which categories are responsible for the decline in consumption after mid-age? To examine this questions what drives the decline in spending when people age we estimate the same model as for total expenditures for each category separately. We use a slightly different procedure to recover the life cycle profile by controlling for household fixed effects using the panel dimension of the data. The advantage of this method is that unobserved differences across households are accounted for in a robust way. The recovered age profile shows the change in the level of consumption as from age 25 which we normalize to zero. We use a spline function for age to derive a smooth pattern (parallel to the method of Fernández-Villaverde and Dirk Krueger 2007).

Figure 4 shows the development of several expenditure categories over the life cycle. Expenditures on housing services increase on average with approximately EUR 300 between the age of 20 and 50 and slightly decline with approximately EUR 80 up to age 75 after which expenditures again slightly increase. The small increase in cost of living at the end of life might be explained by people who move to a adapted home. Note that this increase in expenditures cannot be explained by the transition from an owner occupied house to a rental home because we have isolated this effect by adding a control for homeownership. Expenditures on utilities evolve in line with expenditures on housing services, but unlike housing services we notice a decline in spending in the final stage of life.

For expenditures on food at home, transport and clothing we observe a hump-shaped pattern with a peak around age 55. Aguiar and Hurst (2013) also show that these spending categories are an important driver of the hump-shaped profile for US households. They document that these

expenditures are work-related. For example, when people retire spending on transport declines, people need fewer (and less expensive clothes) and people spend more time on shopping and preparing food at home which reduces costs. We do not observe that people substitute food at home for food away: spending on eating (and drinking) out of home is the highest when people are young and declines gradually with age. Similarly, expenditures on leisure activities rapidly decline around age 65. For cleaning and maintenance we also observe a hump shaped pattern with a slight increase at the end of the life cycle (when people probably become more dependent).

There are three spending categories which show an increasing life cycle pattern: insurance, personal care and medical expenditures (not covered by insurance). Higher spending on insurance may be explained by people extending the coverage of health insurance as they age. Also insurances related to housing and durables (such as cars) may increase, when the value of one's house increases and people collect more valuable goods over the life cycle. For medical expenditures we also observed an important time trend due to the reforms in 2015.<sup>5</sup> Figure 5 reports the evolution of per capita spending on medical services conditional on having positive expenditures. For the years 2009-2012, median real expenditures are relatively minor, about EUR 20 (per person) r month for all age groups. The variability in out of pocket medical expenditures, measured by the interquartile range (IQR) is small for all age groups. For 2015, we observe a noticeable increase in both the median out-of-pocket medical expenditures, as well as, the variability in out-of-pocket medical expenditures. This increase is the largest among the oldest age group. For the oldest age group median medical expenditures increase to about EUR 40 (per person) per month while the expenditures of people in the third quartile are EUR 75 (per month).<sup>6</sup>

We thus observe four broad patterns regarding expenditures over the life cycle: spending on housing services (but also utilities) seems to decline after mid-age. There is a hump shaped pattern in expenditures on transport, clothing and food at home, which is likely explained by labor market status. For insurance, personal care and medical expenditures we observe an increase in spending over the life cycle. For cleaning and maintenance, food away (but also housing) we noticed an increase in expenditures in the final stage of the life cycle (after age 75).

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<sup>5</sup> It should be noted that this violates the normalizing assumption of the linear time trend. Therefore, we either included cohort effects or year effects when we estimated the life cycle profile for medical expenditures. As we expected, the estimated life cycle profile was very sensitive to whether we attribute this increase to cohort effects or year effects. The figure shows the estimated life cycle profile with only year effects.

<sup>6</sup> In 2015, almost all respondents notified that OOP expenditures did increase over the last two years.

Figure 4. Expenditure patterns over the life cycle

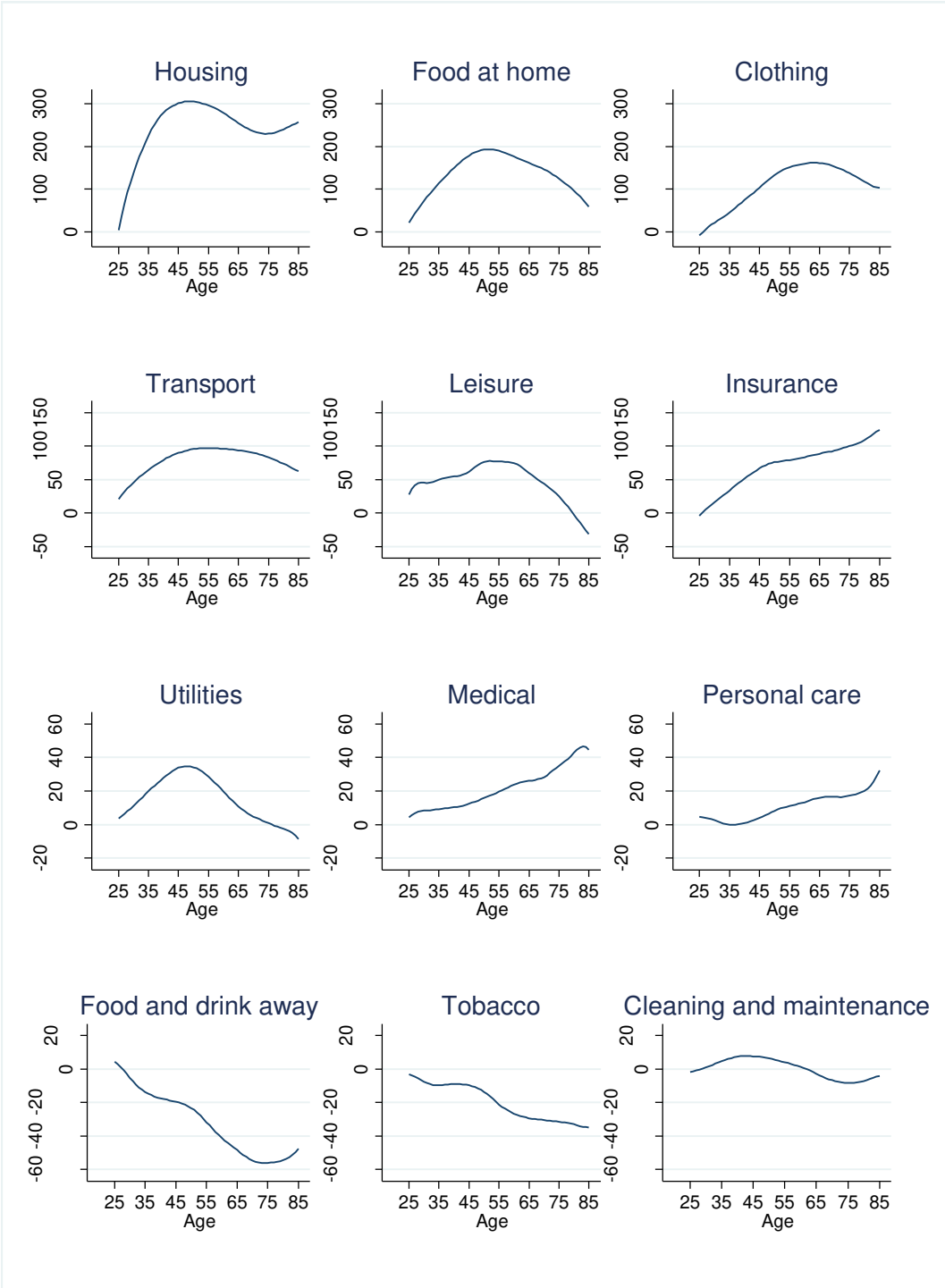
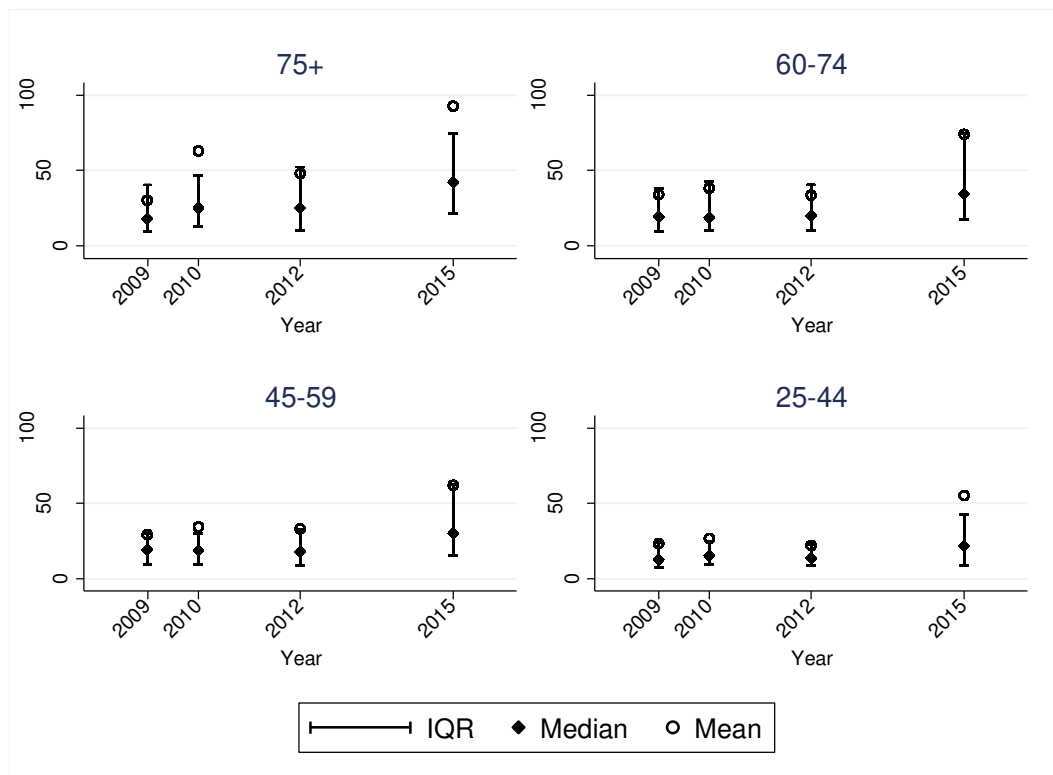


Figure 5: Per capita monthly medical spending by age groups in four different years



## 5. Model

Next, we will examine to what extent a deterioration of health can explain the observed pattern in the separate expenditure categories (and to what extent this can be attributed to age). To accomplish this, we first document how both age and health affects total expenditures. Next, we investigate how expenditure is allocated across different categories *conditional on a given level of total expenditure* and whether this differs by age and health.

Therefore, we use the well-known Almost Ideal Demand System (AIDS) developed by Deaton and Muellbauer (1980). This model allows us to examine in detail how consumption varies with demographics and in particular health. Specifically, the dependent variables in this system are the expenditure shares of the categories mentioned earlier to be subject of research. By design, the system shows how increased demand for one group of goods is financed by decreased demand for another group. Hence, differences in budget allocations to the specific consumption categories as a result of a change in health allows us to identify which are complement and which are substitute to bad health. Moreover, it allows us to examine and compare these health-related shifts in the before-reforms period (roughly 2009-2012) and the after-reform period (represented by the data available in 2015).

We write the model as:

$$w_{kht} = \beta_k^0 + \beta_k^1 z_{ht} + \beta_k^2 \ln \frac{x_{ht}}{P_t} + u_h + \varepsilon_{ht}$$

where  $w_{kht}$  is the budget share of household  $h$  at time  $t$  for good/service  $k$ ,  $z_{ht}$  includes all to-be-specified demographic variables of household  $h$  at time  $t$ ,  $x_{ht}$  is total non-durable spending on all goods/services included in the demand system which is deflated by  $P_t$  which is the consumer price index at time  $t$ . This model is almost equal to the earlier mentioned AIDS model under the assumption that relative prices have been constant over time.<sup>7</sup> The model is finalized by the inclusion of the following parameter restrictions ensuring that the budget shares sum to one:

$$\begin{aligned} \sum_{k=1}^K \beta_k^0 &= 1, \\ \sum_{k=1}^K \beta_k^i &= 0, \quad \forall i \in \{1,2,3\}. \end{aligned}$$

This model is estimated though three-stage least squares; a combination of IV regression and Seemingly Unrelated Regression, where the total non-durable spending variable  $x_{ht}$  is regarded as endogenous and is instrumented by net income.

## 6. Results

Our unique dataset allows us to examine shifts within the budget from one category to another. In this section, we will fully exploit this feature and gain interesting insights in the within-budget dynamics. We first document how a deterioration of health affects total expenditures and we subsequently explore how total expenditures is divided among different expenditures categories.

We relate total household expenditures and expenditure shares for different types of goods and services to household characteristics and to the health status of household members. Regarding the latter, we define dummies corresponding to different numbers of adults in poor health. Households with only healthy adults make up the baseline against which we compare households with one or two unhealthy adults. Note that only couples can contain two unhealthy adults, while both singles and couples can have a single adult in poor health. Our specification includes an interaction between the dummy for one unhealthy adult with an indicator for couples, to allow that poor health may affect consumption differently depending on whether someone is a single or member of a couple. In this way our specification captures the possibility of informal care between partners, which may change the impact of health on consumption for couples compared to singles.

Our estimated models allow one to disentangle variation in health between different households and within a given household over time. Longitudinal variation in health within the household is informative of the short run impact of changes in health. It provides us with a clean comparison by ruling out the confounding influence of time-constant unobserved factors that are correlated with health. Between-household variation, on the other hand, may reflect such unobserved factors and

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<sup>7</sup> Given that there might be different trends in good specific prices we prefer to add these good specific prices to a subsequent version of the paper.

for that reason does not provide as convincing evidence of causal relationships. However, it may be able to capture the long-run consequences of changes in health better than variation over time, especially since our panel only spans seven years. We achieve this decomposition econometrically by including household averages of the health variables in our model, so-called Mundlak fixed effects. We interpret the coefficients on the health variables themselves as measures of the short-run impact of health changes. The coefficients corresponding to household averages are estimated from between-household variation and may thus reflect long term consequences of health shocks, as well as unobserved differences between households.

### **6.1. Effects of health on disaggregated consumption**

Estimation results for our baseline models are presented in Tables 3 and 4. The dependent variables in both tables are the shares of expenditures on different categories relative to total expenditures (columns 1-7), and the log of total expenditures (column 8). The estimates in Table 3 are based on a health measure defined in terms of limitations in Activities of Daily Living (ADLs), such as dressing, washing and walking short distances. Bad health is defined as having experienced limitations in at least one such activity during the previous month. The health measure used in Table 4 is self-reported health on a five-point scale, where bad health is defined as either “poor” or “moderate” health (the lowest two categories).

Based on the definition of health in terms of ADL limitations, Table 3, we don’t find any evidence to suggest that the health of singles affects their expenditures in the short run. The dummy for one person in bad health is insignificant in all models and the estimated coefficients are all close to zero. This suggests that the onset of limitations in ADLs among singles neither affects the allocation nor the total value of expenditures. For couples we also find that a single adult in poor health does not affect expenditures. However, if both individuals develop ADL limitations, they allocate a larger part of their budget to insurance (+1.2%-points) and medical expenditures (+0.6%-points) and a smaller part to food at home (-1.3%-points). The net effect on total expenditures is small and statistically insignificant. The Mundlak terms show that while the expenditures of singles are not affected by health in the short run, variation between singles in good and in poor health does hint at a long term impact. They re-shuffle their budget away from transport (-1.0%-point) and towards cleaning and maintenance (+1.0%-point) and medical care (+0.6%-point). Interestingly, no such effects are present for couples in which one person experiences ADL limitations: the interaction terms cancel out the main effects. This suggests that couples with a single partner that is ADL impaired may be better able to find ways to deal with these limitations. The only long-run impact of health for couples occurs when both adults experience ADL issues, in which case they spend a larger share of their budget on cleaning and maintenance (+0.7%-point) and their total spending declines by 7.4%.

The estimates in Table 4 confirm that the short run impact of poor health on expenditures of singles is limited, though they do show that a decline to poor health decreases total expenditures by 4%. For couples there is no short run impact of a health shock to one partner and the effects of health

shocks to both partners that were present for the ADL-based health measure are not found for subjective health. However, many long run effects obtained from the health measure based on ADL limitations are corroborated using the alternative measure of health based on respondents' subjective evaluations. For singles we find the same redirection of expenditures away from transport (-1.1%-point) and towards cleaning and maintenance (+0.6%-point) and medical spending (+0.8%-point). Unlike ADL limitations, however, bad subjective health is also associated with higher spending on insurance (+1.1%-point) and 5.2% higher expenditures overall (in the long-run). The finding that couples with one partner in poor health do not adjust spending in the long run is confirmed using the subjective health measure. Furthermore, couples in which both partners are unhealthy are again found to spend relatively more on cleaning and maintenance (+0.8%-point). They also spend a larger fraction of their budget on medical expenditures (+1.9%-point) and they do not spend less overall.

The estimates reveal intuitively plausible variation in the impact of health on expenditures across singles and couple households. It seems that singles are more strongly affected in the longer run, while couples adjust their behavior mostly in the short run and only if both partners suffer a worsening health. Both measures of health lead to similar long run reallocations in the budgets of households (a redirection away from transport (only for singles) towards cleaning and maintenance, medical spending and, depending on which health measure we use, also insurance. However, the impacts of ADL impairments and poor subjective health on total household spending are less robust, underlining the multi-dimensional nature of health. Thus, conditional on income we do not find convincing evidence that health status effects total expenditures.

## **6.2. Socio demographic differences in disaggregated consumption**

In addition to the health-related variables discussed so far, we also control for various socio-demographic covariates. The relationships between these household characteristics and expenditures are robust across both sets of health variables. Age clearly matters: older individuals spend a smaller share of their budget on housing and more on utilities, insurance, cleaning and maintenance, food at home and medical care. Total expenditures decrease with age, they are 9.6% lower among those aged 75 and older compared to the baseline of households with a head younger than 45. Differences across education groups are smaller, but some do exist. For instance, for a given level of current income household with a head in the low education category spend 3.0% less than those headed by someone in the middle education group, while highly educated households spend 8.2% more. These differences in spending across education groups for a given level of income may reflect differences in lifetime resources, such as permanent income, between these groups. Due to the relatively low supply of rental housing in the private sector in the Netherlands, and the resulting high rents, it is not surprising that homeowners spend a smaller share of their budget on housing than do renters (-8.3%-points). However, homeowners spend larger fractions on utilities, transport, insurance and cleaning and maintenance, and they spend 5.3% more overall. Each additional child is associated with 2.8% higher total expenditures and shifts resources towards utilities, insurance and food at home and away from cleaning and maintenance and transport.

Compared to singles, couples spend 32% more on average. They spend relatively more on insurance, food at home and medical care and less on housing, transport and cleaning and maintenance. Households that spend more tend to allocate larger shares of their budget to housing, transport and cleaning and maintenance, while they spend smaller parts on utilities, insurance and food at home. The income elasticity of expenditures is positive and estimated at 0.38, so an increase in income of 10% increases total spending by close to 4%. The year dummies show that medical expenditures took up a 2.9%-point larger share of total expenditures in 2015 than before, corroborating the descriptive evidence reported above that medical spending become more important in 2015.

### **6.3. Effects of health on disaggregated consumption for different age groups**

In addition to the baseline models, we test whether the effects of health vary across age groups. Specifically, the age groups 25-44, 45-59, 60-74 and 75 and older. The results in appendix A show that physical limitations increase the share of medical expenditures for the age groups 60-74 and 75 and older. Furthermore, unhealthy singles in the age group 25-44 have relatively low housing expenditures compared to healthy singles. However, with age these differences disappear. Finally, expenditures on utilities increase significantly when singles in the age group 25-44 experience a negative health shock. On the other hand, when we compare unhealthy singles aged 25-44 with unhealthy singles of 45 and older, the oldest group spends significantly more on utilities.

### **6.4. Increased contributions for long term care**

As mentioned in the introduction, the Dutch long term care system was reformed in recent years. Increased contributions for the use of long term care may have changed expenditure patterns of households with unhealthy individuals. We expect higher budget allocations to medical spending in 2015 (compared to the years 2009-2012) and we are interested how this affects other expenditures. The results in appendix B show that medical expenditures of couples with limitations increased significantly in 2015. Furthermore, limitations increased expenditures on cleaning and maintenance for physically limited singles and couples (where both members are physically limited). Finally, the effects of health on the transport expenditures of couples increased significantly in 2015. Probably, subsidies for transportation decreased. Total expenditures for households with physically limited individuals did not increase significantly in 2015.

### **6.5. Composition of health-related expenses**

The previous section showed that expenditures decline with age. For most expenditures, the observed “life cycle pattern” seems unrelated with health. An exception are expenditures on insurance, cleaning and maintenance and health services. These health related expenditure became in particular relevant in 2015 for households without a healthy partner who is not well able to provide informal care.

A relevant question is with what kind of health expenses elderly are confronted. We acquired additional information about the composition of health-related expenses on services, equipment

and home adaptations in 2014. Table 5 shows that the risk of out-of-pocket expenditures on services and medical aids is generally low among elderly people. Only 59 percent of the elderly between age 55 and 75 used their full deductible of EUR 360 for health care, and 56 percent paid a contribution for medicines (with average costs of EUR 106 per year). The prevalence of nursing or domestic help (via a home care organization) and other aids is less than 5 percent. Yet, health related expenditures seem very relevant for people who receive care at home. About one-third of people who receive care at home make use of nursing and one-third makes use of domestic care via a home care organization. Average expenditures on these services are EUR 724 and EUR 563 per year. About 50 percent makes use of aids such as a scooter (28%), rollator (23%), wheelchair (11%) or stair lift (9%). Expenditures on aids can be substantial, for example average out-of-pocket expenditures on a scooter were EUR 324 in 2014 and expenditures on a Stairlift were EUR 3335 in 2014.

Investments on home adaptations which allow disabled persons to live independently are very common among persons who receive home care. About 43 percent of people who receive care at home adjusted their home in the last 5 years, with average expenditures of EUR 17,000. For most persons this is a one-time investment, but expenditures are nevertheless significant.

People who receive home care reported that out-of-pocket expenditures on average add up to EUR 1875 in 2015. However, there are important differences in out-of-pocket medical expenditures between persons. Table 5 shows that the distribution of out-of-pocket expenditures is skewed: i.e. median expenditures (of EUR 600) are well below the mean. There are a few persons with substantial expenditures: the 5% and the 1% with the largest out-of-pocket expenditures pay EUR 6,000 and EUR 36,000 per year.

Table 5: Prevalence (%) and out-of pocket payments (per year) for health care and devices in 2014 - age 55-75

	All	Home care	Poor health	ADL problem	Amount (All)	N
Used full deductible for health care	59.2	81.6	84.6	78.2	360	(1031)
Contribution for Medicines	55.7	70.4	66.0	63.0	106	(941)
Taxi reimbursement	2.5	34.0	8.6	6.5	-	
Domestic help (via a home care organization)	3.0	66.0	9.9	9.0	724	(44)
Nursing (via a home care organization)	1.7	30.2	4.7	3.8	563	(13)
Scooter	1.9	28.3	7.0	6.1	324	(14)
Rollator	2.1	22.6	7.3	6.5	72	(18)
Wheelchair	1.5	11.3	4.4	4.2	5	(12)
Stair lift	1.0	9.4	2.9	2.5	3,335	(7)

Lifting aid	0	0	0	0	-	(0)
Toilet or shower seat	2.5	24.5	8.1	7.5	56	(17)
None of these aids	94.8	49.1	82.8	84.5		
Home adjustments (last 5 years)	14.7	42.3	25.4	23.9	17,035	(147)
<hr/>						
Out-of-pocket medical expenditures						
Non-zero	87.0	82.7	86.7	88.9		
Mean (non-zero)	1181.6	1875.9	1371.5	1294.5		
First quartile	240	360	300	300		
Median	480	600	600	600		
Third quartile	1,020	1,200	1,200	1,200		
Largest 5 percent	4,500	6,000	4,860	4,800		
Largest 1 percent	12,000	36,000	12,000	12,000		
Increased over the last two years	36.2	57.7	44.7	43.6		
Mean increase	848.3	1200.4	788.4	871.5		
Observations	1850	53	384	477		

## 7. Conclusion and discussion

This paper examines expenditure patterns over the life cycle and investigates how health affects expenditures. Using detailed data on consumption patterns of households and health, we gain insights in the health state dependence of the total consumption level as well as of levels of specific consumption categories. Moreover, we study health effects for different age groups.

We find that total per capita monthly spending declines after mid-age from EUR 1750 per month at age 50 to EUR 1400 per month at age 85. However, we document distinct spending patterns for different categories over the life cycle. We observe four broad patterns: First, spending on housing services seems to decline after mid age. Second, there is a hump shaped pattern in expenditures on transport, clothing and food at home, which is likely explained by labor market status. Third, for health related expenditures, such as insurance, personal care and out-of-pocket medical expenditures we observe an increase in spending over the life cycle. We examined to what extent a deterioration of health can explain the observed spending pattern and to what extent this can be attributed to age. We find evidence that an deterioration of health leads to higher expenditures on medical services (not covered by insurance), cleaning and maintenance and insurance. We find no convincing evidence that total expenditures decline in poor health. Moreover, it seems that preferred spending on categories which are not directly related to health do not change in poor health. We also find that health-related expenditures are in particularly relevant for singles and couples without a healthy partner; presumably because having a partner who is able to provide informal care might reduce expenditures.

We, furthermore, took a first look at effects of the recent (2013-2015) reforms. The expected result of these reforms were an increased budget allocation to (necessary) medical spending in case of deteriorating health. Indeed we find, a higher increase in medical spending in 2015 relative to 2009-

2012 following a bad health shock. Finally, we documented that out-of-pocket expenditures are the highest among persons who receive care at home. The most important spending categories are expenditures on services such as nursing care and domestic care (with a prevalence of 34% and 66% and average yearly expenditures of EUR 725 and EUR 560). Spending on aids, such as a wheelchair, seems less relevant. Home-adaptions are common among this group: almost half of the persons who receive care at home modified their home with an average cost of EUR 17,000.

We believe that these results have important policy implications. It is questionable whether people take the declining needs as they age into account when they plan for retirement. The decline in desired non-medical consumption with age allows households to pay a larger share of long-term care expenses out-of-pocket. For a future research several directions are explored. An important point of is the measurement of health. We have chosen two measure of health, but with a more specific purpose of what effect one wants to estimate, different health measures may be considered. Besides necessary spending on medical goods and services, there is also a luxury component. Recent reforms in the Dutch health care system may reveal medical preferences that could not be observed in the old system in which many health-related goods and services were reimbursed. This makes for interesting subject of study and might lead to better policy on what should and should not be in the basic health care package. There is also very limited insight in the private expenditures on long-term care and how sensitive these expenditures are for the price that people have to pay for these expenses (i.e. the willingness to pay for long term care). To measure the willingness to pay for long term care among households with different characteristics we have designed a discrete choice experiment. We will address this interesting question in future research.

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Table 3: Mundlak FE estimates of models of disaggregated expenditures; health measure based on ADL limitations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Housing	Utilities	Transport	Insurance	Cleaning maint.	Food at home	Medical care	Log(total exp.)
1 pers. ADL limitation	8.98e-05 (0.00548)	-0.00338 (0.00307)	0.00259 (0.00230)	-0.00148 (0.00350)	-0.00156 (0.00150)	-0.000554 (0.00378)	0.00105 (0.00264)	-0.00439 (0.0152)
1 pers. ADL limitation * couple	0.000967 (0.00652)	0.00381 (0.00351)	-0.00117 (0.00296)	0.00203 (0.00433)	0.00303 (0.00194)	-0.00578 (0.00467)	0.000688 (0.00341)	0.00423 (0.0195)
2 pers. ADL limitation	-0.00124 (0.00763)	0.00387 (0.00329)	-0.00192 (0.00332)	0.0116* (0.00665)	0.00200 (0.00252)	-0.0126** (0.00550)	0.00616* (0.00364)	0.0169 (0.0260)
Mundlak 1 pers. ADL limitation	-0.00417 (0.00980)	0.00687 (0.00451)	-0.0102*** (0.00375)	0.00337 (0.00478)	0.00963*** (0.00245)	-0.00833 (0.00552)	0.00679** (0.00333)	-0.0182 (0.0249)
Mundlak 1 pers. ADL limitation * couple	0.000467 (0.0127)	-0.00853 (0.00543)	0.00976** (0.00478)	-0.00856 (0.00630)	-0.00676** (0.00324)	0.0166** (0.00721)	-0.00422 (0.00441)	-0.00277 (0.0330)
Mundlak 2 pers. ADL limitation	0.0167 (0.0147)	-0.00658 (0.00534)	-0.00280 (0.00504)	-0.0102 (0.00901)	0.00724** (0.00317)	0.0118 (0.00960)	0.00249 (0.00543)	-0.0735** (0.0375)
Age 45-59	-0.0468*** (0.00512)	0.0180*** (0.00188)	0.00131 (0.00194)	0.0119*** (0.00219)	0.00328*** (0.000845)	0.0225*** (0.00259)	0.00482*** (0.00117)	-0.0302** (0.0129)
Age 60-75	-0.0850*** (0.00576)	0.0267*** (0.00201)	-0.000142 (0.00217)	0.0240*** (0.00238)	0.00597*** (0.00102)	0.0295*** (0.00283)	0.0109*** (0.00143)	-0.0602*** (0.0132)
Age >=75	-0.125*** (0.00860)	0.0331*** (0.00318)	-0.00640** (0.00273)	0.0321*** (0.00357)	0.0228*** (0.00227)	0.0312*** (0.00473)	0.0165*** (0.00251)	-0.0958*** (0.0211)
Educ. low	0.00816 (0.00549)	0.00573*** (0.00206)	-0.00151 (0.00189)	0.000952 (0.00239)	-0.000763 (0.00105)	-0.00398 (0.00292)	0.00243* (0.00141)	-0.0302** (0.0135)
Educ. high	-0.00202 (0.00564)	-0.00275 (0.00183)	0.000321 (0.00195)	-0.00209 (0.00226)	0.00123 (0.00102)	-0.00164 (0.00269)	0.00266** (0.00128)	0.0816*** (0.0132)
Homeowner	-0.0833*** (0.00529)	0.0203*** (0.00200)	0.0107*** (0.00194)	0.0171*** (0.00213)	0.00883*** (0.00107)	0.00530* (0.00287)	-0.000194 (0.00135)	0.0531*** (0.0131)
Number of children	0.00363 (0.00267)	0.00728*** (0.000870)	-0.00261*** (0.000884)	0.00277** (0.00110)	-0.00123*** (0.000412)	0.0110*** (0.00136)	-0.000193 (0.000552)	0.0276*** (0.00648)
Year 2010	0.00989*** (0.00300)	-0.00174 (0.00136)	0.00395*** (0.00131)	0.00208 (0.00173)	0.000219 (0.000834)	-0.00379* (0.00193)	0.00230** (0.000944)	-0.0225*** (0.00871)
Year 2012	0.0163*** (0.00328)	-5.63e-06 (0.00138)	0.00464*** (0.00133)	0.00565*** (0.00176)	2.35e-05 (0.000831)	-0.00278 (0.00204)	0.000512 (0.000802)	-0.0100 (0.00924)
Year 2015	0.0385*** (0.00374)	0.00155 (0.00158)	0.00677*** (0.00144)	0.00892*** (0.00185)	-0.000444 (0.000850)	0.00475** (0.00220)	0.0288*** (0.00156)	-0.0704*** (0.00988)
Couple	-0.0706*** (0.00882)	0.00390 (0.00320)	-0.00897*** (0.00318)	0.0320*** (0.00355)	-0.00918*** (0.00175)	0.0320*** (0.00462)	0.0109*** (0.00214)	0.320*** (0.0180)
Log(total expenditures)	0.0352*** (0.0130)	-0.0623*** (0.00520)	0.0206*** (0.00470)	-0.0500*** (0.00527)	0.0115*** (0.00262)	-0.0385*** (0.00702)	-0.00889*** (0.00334)	
Log(HH income)								0.380*** (0.0228)
Constant	0.108 (0.0942)	0.545*** (0.0380)	-0.0992*** (0.0338)	0.447*** (0.0384)	-0.0751*** (0.0190)	0.405*** (0.0510)	0.0663*** (0.0243)	4.524*** (0.163)

**Table 4** Table 4: Mundlak FE estimates of models of disaggregated expenditures; health measure based on subjective health

VARIABLES	(1) housing	(2) utilities	(3) transport	(4) insurance	(5) cleanmaint	(6) homefood	(7) medicare	(8) Intotal
1 pers. poor health	0.00553 (0.00753)	0.00172 (0.00416)	-4.70e-05 (0.00320)	-0.00646 (0.00450)	0.00126 (0.00243)	-0.00369 (0.00502)	0.00192 (0.00354)	-0.0420** (0.0199)
1 pers. poor health * couple	-0.00901 (0.00863)	-0.00381 (0.00461)	0.00295 (0.00398)	0.00216 (0.00553)	-0.00210 (0.00344)	0.00786 (0.00608)	8.82e-05 (0.00456)	0.00957 (0.0253)
2 pers. poor health	-0.0124 (0.00790)	-0.00808* (0.00489)	-0.00135 (0.00548)	0.0139 (0.0102)	0.00207 (0.00398)	-0.00202 (0.00713)	-0.00513 (0.00450)	-0.00537 (0.0365)
Mundlak 1 pers. poor health	-0.0150 (0.0110)	0.00807 (0.00536)	-0.0110** (0.00429)	0.0105* (0.00598)	0.00620** (0.00314)	-0.00202 (0.00642)	0.00823* (0.00428)	0.0523* (0.0278)
Mundlak 1 pers. poor health * couple	0.00787 (0.0140)	-0.00396 (0.00629)	0.00878 (0.00550)	-0.00581 (0.00768)	-0.00367 (0.00461)	0.00383 (0.00824)	-0.00525 (0.00559)	-0.0357 (0.0372)
Mundlak 2 pers. poor health	0.0121 (0.0157)	0.00328 (0.00717)	-0.00541 (0.00693)	-0.00861 (0.0118)	0.00770* (0.00394)	0.00164 (0.0117)	0.0186** (0.00725)	-0.0238 (0.0487)
Age 45-59	-0.0459*** (0.00513)	0.0175*** (0.00188)	0.00158 (0.00195)	0.0116*** (0.00219)	0.00335*** (0.000857)	0.0223*** (0.00260)	0.00457*** (0.00116)	-0.0330** (0.0129)
Age 60-75	-0.0841*** (0.00575)	0.0263*** (0.00200)	-4.08e-05 (0.00218)	0.0237*** (0.00240)	0.00617*** (0.00101)	0.0290*** (0.00283)	0.0107*** (0.00142)	-0.0630*** (0.0132)
Age >=75	-0.124*** (0.00849)	0.0323*** (0.00317)	-0.00651** (0.00271)	0.0317*** (0.00359)	0.0237*** (0.00225)	0.0301*** (0.00471)	0.0170*** (0.00255)	-0.103*** (0.0210)
Educ. low	0.00833 (0.00547)	0.00566*** (0.00205)	-0.00149 (0.00188)	0.000876 (0.00238)	-0.000645 (0.00106)	-0.00422 (0.00293)	0.00242* (0.00141)	-0.0318** (0.0135)
Educ. high	-0.00193 (0.00564)	-0.00279 (0.00182)	0.000340 (0.00194)	-0.00211 (0.00226)	0.00127 (0.00102)	-0.00170 (0.00269)	0.00266** (0.00127)	0.0818*** (0.0132)
Homeowner	-0.0838*** (0.00530)	0.0204*** (0.00199)	0.0107*** (0.00194)	0.0173*** (0.00214)	0.00867*** (0.00106)	0.00563** (0.00286)	-0.000141 (0.00134)	0.0553*** (0.0131)
Number of children	0.00345 (0.00266)	0.00723*** (0.000871)	-0.00260*** (0.000884)	0.00288*** (0.00111)	-0.00127*** (0.000419)	0.0110*** (0.00136)	-0.000201 (0.000550)	0.0277*** (0.00649)
Year 2010	0.00994*** (0.00299)	-0.00171 (0.00136)	0.00391*** (0.00131)	0.00206 (0.00173)	0.000208 (0.000835)	-0.00371* (0.00193)	0.00229** (0.000946)	-0.0226*** (0.00869)
Year 2012	0.0162*** (0.00327)	6.32e-05 (0.00138)	0.00460*** (0.00133)	0.00572*** (0.00176)	-8.22e-06 (0.000829)	-0.00273 (0.00205)	0.000569 (0.000797)	-0.00945 (0.00924)
Year 2015	0.0383*** (0.00374)	0.00175 (0.00159)	0.00669*** (0.00144)	0.00913*** (0.00186)	-0.000587 (0.000856)	0.00491** (0.00221)	0.0289*** (0.00157)	-0.0685*** (0.00994)
Couple	-0.0672*** (0.00852)	0.00378 (0.00303)	-0.00872*** (0.00302)	0.0301*** (0.00340)	-0.00847*** (0.00170)	0.0320*** (0.00446)	0.0107*** (0.00211)	0.321*** (0.0172)
Log(total expenditures)	0.0329** (0.0129)	-0.0612*** (0.00515)	0.0199*** (0.00469)	-0.0491*** (0.00521)	0.0113*** (0.00262)	-0.0378*** (0.00699)	-0.00813** (0.00327)	
Log(HH income)								0.382*** (0.0231)
Constant	0.126 (0.0931)	0.536*** (0.0377)	-0.0934*** (0.0338)	0.441*** (0.0379)	-0.0734*** (0.0190)	0.399*** (0.0507)	0.0607** (0.0237)	4.499*** (0.165)

## Appendix A: estimation results from models with age-health interactions

VARIABLES	(1) housing	(2) utilities	(3) transport	(4) insurance	(5) cleanmaint	(6) homefood	(7) medcare	(8) Intotal
1 pers. ADL limitation	-0.00700 (0.0148)	-0.00592 (0.00781)	0.00395 (0.00403)	-0.00156 (0.00764)	-0.00100 (0.00298)	-0.00650 (0.00896)	-1.88e-05 (0.00404)	-0.0384 (0.0396)
1 pers. ADL limitation* couple	0.0174 (0.0169)	0.0113 (0.00835)	-0.00381 (0.00551)	0.00447 (0.00907)	0.00626* (0.00339)	0.00246 (0.00987)	0.00661 (0.00499)	0.00443 (0.0439)
2 pers. ADL limitation	-0.00104 (0.0175)	-0.00306 (0.0110)	0.00758 (0.00752)	-0.00562 (0.0131)	0.00139 (0.00241)	-0.0125 (0.00960)	-0.00739 (0.00673)	0.0145 (0.0598)
1 pers. ADL limitation _>=75	0.0394* (0.0210)	-0.00117 (0.0113)	0.00197 (0.00636)	0.0117 (0.0138)	0.00266 (0.00623)	-0.0131 (0.0125)	0.00322 (0.00950)	0.0959* (0.0561)
1 pers. ADL limitation * couple>=75	-0.0469** (0.0233)	-0.00426 (0.0130)	0.00463 (0.00834)	-0.0121 (0.0164)	-0.0154** (0.00776)	-0.00125 (0.0156)	-0.0103 (0.0111)	-0.0157 (0.0669)
2 pers. ADL limitation _>=75	0.00870 (0.0266)	0.0113 (0.0141)	-0.00942 (0.0105)	0.0382 (0.0244)	-0.0112** (0.00552)	8.78e-05 (0.0194)	0.0229* (0.0120)	0.00424 (0.0828)
1 pers. ADL limitation _60-75	0.0140 (0.0170)	0.00202 (0.00892)	-0.00729 (0.00580)	-0.00532 (0.00892)	0.00134 (0.00356)	0.0130 (0.0105)	0.00128 (0.00587)	0.0318 (0.0455)
1 pers. ADL limitation *couple_60-75	-0.0247 (0.0195)	-0.00632 (0.00970)	0.00575 (0.00745)	0.00214 (0.0109)	-0.00556 (0.00425)	-0.0174 (0.0120)	-0.00663 (0.00775)	0.0145 (0.0525)
2 pers. ADL limitation _60-75	-0.00448 (0.0198)	0.00358 (0.0119)	-0.0102 (0.00887)	0.0160 (0.0151)	0.00196 (0.00352)	0.00242 (0.0119)	0.0185** (0.00836)	0.0227 (0.0688)
1 pers. ADL limitation _45-59	-0.0131 (0.0170)	0.00613 (0.00865)	0.00278 (0.00492)	0.000300 (0.00893)	-0.00475 (0.00338)	0.0107 (0.0107)	0.000456 (0.00521)	0.0253 (0.0429)
1 pers. ADL limitation *couple_45-59	-0.00242 (0.0195)	-0.0158* (0.00944)	0.00112 (0.00727)	-0.00371 (0.0109)	0.00246 (0.00422)	-0.00817 (0.0122)	-0.00632 (0.00672)	0.00115 (0.0507)
2 pers. ADL limitation _45-59	-0.00300 (0.0204)	0.00925 (0.0135)	-0.0112 (0.00874)	0.0106 (0.0145)	0.00435 (0.00498)	-0.00750 (0.0123)	0.00329 (0.00841)	-0.00787 (0.0694)
Mundlak_1 pers. ADL limitation	-0.0439** (0.0215)	0.00167 (0.0103)	-0.00496 (0.00769)	-0.00167 (0.00925)	0.00292 (0.00361)	0.0153 (0.0111)	0.0160** (0.00700)	0.000997 (0.0472)
Mundlak_1 pers. ADL limitation*couple	0.0670** (0.0265)	-0.00334 (0.0111)	-0.000627 (0.00945)	-0.00740 (0.0114)	-0.00544 (0.00417)	-0.0182 (0.0136)	-0.0185** (0.00828)	0.0766 (0.0580)
Mundlak_2 pers. ADL limitation	0.0384 (0.0346)	0.00693 (0.0105)	-0.0111 (0.0148)	0.00293 (0.0194)	-0.00576 (0.00418)	0.00468 (0.0153)	0.0202* (0.0115)	-0.00381 (0.0873)
Mundlak_1 pers. ADL limitation _>=75	-0.00421 (0.0308)	-0.00498 (0.0150)	-0.0105 (0.0106)	-0.0106 (0.0152)	0.0146* (0.00877)	-0.0164 (0.0172)	-0.00468 (0.0120)	-0.0625 (0.0742)
Mundlak_1 pers. ADL limitation *couple _>=75	-0.0616* (0.0375)	-0.00663 (0.0178)	0.0141 (0.0132)	0.0138 (0.0202)	-0.00314 (0.0120)	0.0260 (0.0225)	0.0261* (0.0151)	-0.127 (0.0991)
Mundlak_2 pers. ADL limitation _>=75	-0.0220 (0.0497)	-0.0261 (0.0175)	0.0130 (0.0182)	-0.0307 (0.0297)	0.0165 (0.0112)	0.00433 (0.0276)	-0.0272 (0.0236)	-0.0382 (0.117)
Mundlak_1 pers. ADL limitation _60-75	0.0565** (0.0255)	0.00574 (0.0120)	-0.00288 (0.00989)	0.0149 (0.0116)	0.00483 (0.00505)	-0.0307** (0.0137)	-0.0155* (0.00833)	-0.0377 (0.0596)
Mundlak_1 pers. ADL limitation *couple60-75	-0.0940*** (0.0314)	-0.0127 (0.0131)	0.0115 (0.0121)	-0.0104 (0.0142)	0.00232 (0.00612)	0.0565*** (0.0169)	0.0205** (0.0105)	-0.0882 (0.0725)
Mundlak_2 pers. ADL limitation _60-75	-0.0130 (0.0403)	-0.0136 (0.0128)	0.00840 (0.0161)	-0.0195 (0.0231)	0.0126* (0.00659)	0.00453 (0.0203)	-0.0267* (0.0137)	-0.166 (0.105)
Mundlak_1 pers. ADL limitation _45-	0.0615**	0.0129	-0.00679	0.00579	0.00766*	-0.0324**	-0.00953	0.00238

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	(0.0259)	(0.0121)	(0.00908)	(0.0117)	(0.00455)	(0.0138)	(0.00825)	(0.0573)
Mundlak_1 pers. ADL limitation								
*couple_45-59	-0.0792**	-0.000397	0.0120	0.000300	-0.00273	0.0327*	0.0110	-0.108
	(0.0327)	(0.0140)	(0.0115)	(0.0148)	(0.00572)	(0.0172)	(0.0100)	(0.0740)
Mundlak_2 pers. ADL limitation _45-59								
	-0.0367	-0.0112	0.00750	0.00474	0.0179***	0.0169	-0.00266	0.0135
	(0.0443)	(0.0161)	(0.0175)	(0.0238)	(0.00693)	(0.0246)	(0.0142)	(0.107)
Age 45-59	-0.0459***	0.0155***	0.000372	0.0106***	0.00250**	0.0240***	0.00636***	-0.0241
	(0.00597)	(0.00222)	(0.00231)	(0.00264)	(0.000992)	(0.00320)	(0.00135)	(0.0157)
Age 60-75	-0.0866***	0.0280***	0.000549	0.0232***	0.00445***	0.0281***	0.0126***	-0.0448***
	(0.00691)	(0.00239)	(0.00257)	(0.00282)	(0.00125)	(0.00342)	(0.00163)	(0.0159)
Age >=75	-0.118***	0.0395***	-0.00697*	0.0315***	0.0199***	0.0381***	0.0135***	-0.0906***
	(0.0123)	(0.00425)	(0.00357)	(0.00458)	(0.00339)	(0.00677)	(0.00286)	(0.0291)
Educ. low	0.00684	0.00569***	-0.00127	0.000824	-0.000965	-0.00375	0.00263*	-0.0311**
	(0.00549)	(0.00205)	(0.00190)	(0.00241)	(0.00103)	(0.00291)	(0.00142)	(0.0135)
Educ. high	-0.00212	-0.00274	0.000302	-0.00220	0.00133	-0.00173	0.00267**	0.0815***
	(0.00561)	(0.00182)	(0.00195)	(0.00226)	(0.00102)	(0.00269)	(0.00128)	(0.0132)
Homeowner	-0.0836***	0.0201***	0.0107***	0.0171***	0.00878***	0.00574**	-0.000225	0.0524***
	(0.00533)	(0.00199)	(0.00194)	(0.00213)	(0.00106)	(0.00287)	(0.00135)	(0.0131)
Number of children	0.00180	0.00704***	-0.00229***	0.00270**	-0.00138***	0.0116***	-1.18e-05	0.0257***
	(0.00271)	(0.000879)	(0.000883)	(0.00112)	(0.000412)	(0.00137)	(0.000556)	(0.00655)
Year 2010	0.00985***	-0.00182	0.00391***	0.00207	0.000331	-0.00379**	0.00243**	-0.0230***
	(0.00299)	(0.00136)	(0.00131)	(0.00173)	(0.000832)	(0.00193)	(0.000951)	(0.00870)
Year 2012	0.0159***	-0.000300	0.00459***	0.00553***	0.000265	-0.00280	0.000613	-0.0118
	(0.00329)	(0.00138)	(0.00134)	(0.00177)	(0.000830)	(0.00206)	(0.000797)	(0.00926)
Year 2015	0.0376***	0.00115	0.00666***	0.00862***	-6.87e-05	0.00486**	0.0288***	-0.0737***
	(0.00381)	(0.00160)	(0.00147)	(0.00186)	(0.000861)	(0.00224)	(0.00159)	(0.00995)
Couple	-0.0679***	0.00393	-0.00965***	0.0319***	-0.00859***	0.0314***	0.0105***	0.321***
	(0.00891)	(0.00320)	(0.00320)	(0.00356)	(0.00178)	(0.00463)	(0.00215)	(0.0181)
Log(total expenditures)	0.0330**	-0.0615***	0.0215***	-0.0497***	0.0106***	-0.0380***	-0.00874***	
	(0.0131)	(0.00521)	(0.00471)	(0.00530)	(0.00268)	(0.00703)	(0.00334)	
Log(HH income)								0.379***
								(0.0228)
Constant	0.126	0.539***	-0.105***	0.446***	-0.0676***	0.400***	0.0642***	4.525***
	(0.0948)	(0.0381)	(0.0339)	(0.0386)	(0.0194)	(0.0510)	(0.0242)	(0.163)

VARIABLES	(1) housing	(2) utilities	(3) transport	(4) insurance	(5) cleanmaint	(6) homefood	(7) medicare	(8) Intotal
1 pers. poorhealth	0.0302 (0.0187)	0.0191** (0.00878)	-0.00394 (0.00540)	-0.0142 (0.00929)	-0.00171 (0.00237)	0.00817 (0.0113)	-0.00577 (0.00772)	-0.00984 (0.0494)
1 pers. poorhealth* couple	-0.0348 (0.0214)	-0.0144 (0.0101)	0.00641 (0.00777)	0.00854 (0.0118)	0.00574 (0.00363)	-0.000658 (0.0129)	0.00356 (0.00862)	-0.0339 (0.0564)
2 pers. poorhealth	-0.0230 (0.0156)	0.0160 (0.0121)	0.0171 (0.0131)	-0.00947 (0.0125)	0.00184 (0.00456)	-0.00508 (0.0160)	-0.00882 (0.00682)	-0.0308 (0.0639)
1 pers. poorhealth _>=75	-0.0241 (0.0261)	-0.0245* (0.0126)	0.00417 (0.00706)	0.0103 (0.0122)	0.00277 (0.00782)	-0.0264* (0.0144)	0.0132 (0.0108)	-0.0672 (0.0636)
1 pers. poorhealth * couple _>=75	0.0393 (0.0305)	0.0173 (0.0147)	0.00818 (0.0108)	-0.0202 (0.0177)	-0.0152* (0.00881)	0.0225 (0.0178)	-0.00852 (0.0134)	0.0641 (0.0780)
2 pers. poorhealth _>=75	0.0364 (0.0234)	-0.0204 (0.0183)	-0.0148 (0.0151)	0.0429 (0.0420)	-0.0171** (0.00746)	-0.0319 (0.0266)	0.00540 (0.0141)	0.0445 (0.107)
1 pers. poorhealth _60-75	-0.0234 (0.0217)	-0.0173* (0.0104)	0.00489 (0.00802)	0.00443 (0.0121)	0.00399 (0.00372)	-0.00925 (0.0137)	0.00992 (0.00953)	-2.86e-05 (0.0557)
1 pers. poorhealth *couple _60-75	0.0300 (0.0247)	0.00811 (0.0118)	-0.00510 (0.0101)	-0.00158 (0.0148)	-0.00787 (0.00510)	0.00229 (0.0158)	-0.00125 (0.0111)	0.00117 (0.0650)
2 pers. poorhealth _60-75	0.0132 (0.0193)	-0.0293** (0.0138)	-0.0152 (0.0143)	0.0294 (0.0184)	0.00326 (0.00664)	0.00177 (0.0181)	0.00807 (0.00945)	0.0346 (0.0753)
1 pers. poorhealth _45-59	-0.0411* (0.0216)	-0.0212* (0.0111)	0.00461 (0.00612)	0.0143 (0.0101)	0.00314 (0.00331)	-0.00978 (0.0131)	0.00421 (0.00891)	-0.0660 (0.0537)
1 pers. poorhealth *couple _45-59	0.0276 (0.0248)	0.0149 (0.0125)	-0.00755 (0.00893)	-0.00892 (0.0133)	-0.00934 (0.00691)	0.00922 (0.0156)	-0.00457 (0.0109)	0.109* (0.0652)
2 pers. poorhealth _45-59	4.48e-05 (0.0250)	-0.0291** (0.0144)	-0.0325* (0.0171)	0.0136 (0.0164)	0.00400 (0.00735)	0.0211 (0.0192)	-0.000394 (0.00930)	0.00758 (0.0998)
Mundlak_1 pers. poorhealth	-0.0858*** (0.0217)	-0.0120 (0.0100)	-0.00384 (0.00840)	0.0180 (0.0111)	0.00205 (0.00360)	0.00125 (0.0130)	0.0230** (0.0114)	0.0487 (0.0576)
Mundlak_1 pers. poorhealth*couple	0.104*** (0.0292)	0.0164 (0.0122)	0.00106 (0.0116)	-0.00573 (0.0149)	-0.00393 (0.00503)	-0.0172 (0.0161)	-0.0153 (0.0133)	0.0283 (0.0753)
Mundlak_2 pers. poorhealth	-0.0780* (0.0435)	-0.00707 (0.0125)	0.0102 (0.0214)	0.0298 (0.0250)	0.000624 (0.00594)	0.0147 (0.0203)	0.0299 (0.0221)	0.159* (0.0963)
Mundlak_1 pers. poorhealth *couple _>=75	0.0786** (0.0350)	0.0273* (0.0154)	-0.00339 (0.0117)	-0.0283* (0.0160)	0.0167 (0.0111)	-0.00274 (0.0193)	-0.0186 (0.0140)	-0.00451 (0.0850)
Mundlak_1 pers. poorhealth _>=75	-0.124*** (0.0456)	-0.0312* (0.0182)	0.00247 (0.0161)	0.0284 (0.0263)	-0.00418 (0.0159)	0.0226 (0.0246)	0.0155 (0.0178)	-0.128 (0.115)
Mundlak_2 pers. poorhealth _>=75	0.0562 (0.0558)	0.00369 (0.0221)	-0.0332 (0.0260)	-0.0494 (0.0373)	0.0121 (0.0144)	0.0195 (0.0374)	0.00236 (0.0451)	-0.0689 (0.139)
Mundlak_1 pers. poorhealth _60-75	0.0838*** (0.0270)	0.0212* (0.0124)	-0.00941 (0.0113)	0.00263 (0.0151)	0.00409 (0.00568)	0.00613 (0.0163)	-0.0201 (0.0135)	-0.0509 (0.0700)
Mundlak_1 pers. poorhealth *couple _60-75	-0.115*** (0.0351)	-0.0234 (0.0146)	0.00752 (0.0145)	-0.0137 (0.0192)	-0.00282 (0.00740)	0.0269 (0.0203)	0.00954 (0.0158)	0.0182 (0.0914)
Mundlak_2 pers. poorhealth _60-75	0.122** (0.0494)	0.00365 (0.0161)	-0.0215 (0.0228)	-0.0493 (0.0301)	0.00680 (0.00819)	-0.0174 (0.0256)	-0.0184 (0.0242)	-0.267** (0.120)
Mundlak_1 pers. poorhealth _45-59	0.0916*** (0.0274)	0.0234* (0.0130)	-0.0102 (0.00926)	-0.0135 (0.0130)	0.000996 (0.00482)	-0.0182 (0.0157)	-0.0123 (0.0127)	0.0590 (0.0674)
Mundlak_1 pers. poorhealth *couple _45-59	-0.109*** (0.0369)	-0.0206 (0.0165)	0.0149 (0.0134)	0.00108 (0.0180)	0.00853 (0.00986)	0.0236 (0.0198)	0.0127 (0.0159)	-0.187** (0.0902)
Mundlak_2 pers. poorhealth _45-59	0.0780 (0.0542)	0.0313* (0.0180)	-0.00452 (0.0257)	-0.0271 (0.0311)	0.00418 (0.00825)	-0.0237 (0.0289)	-0.00956 (0.0240)	-0.125 (0.130)
Age 45-59	-0.0471*** (0.00570)	0.0177*** (0.00206)	0.00248 (0.00220)	0.0119*** (0.00243)	0.00292*** (0.000945)	0.0241*** (0.00293)	0.00545*** (0.00124)	-0.0259* (0.0148)
Age 60-75	-0.0896*** (0.00570)	0.0275*** (0.00206)	0.00102 (0.00220)	0.0240*** (0.00243)	0.00539*** (0.000945)	0.0268*** (0.00293)	0.0117*** (0.00124)	-0.0527*** (0.0148)

	(0.00650)	(0.00219)	(0.00239)	(0.00265)	(0.00114)	(0.00318)	(0.00149)	(0.0149)
Age >=75	-0.128***	0.0334***	-0.00791**	0.0361***	0.0211***	0.0329***	0.0167***	-0.0797***
	(0.0102)	(0.00389)	(0.00320)	(0.00441)	(0.00264)	(0.00594)	(0.00310)	(0.0264)
Educ. low	0.00789	0.00544***	-0.00155	0.000732	-0.000771	-0.00407	0.00250*	-0.0322**
	(0.00547)	(0.00206)	(0.00188)	(0.00238)	(0.00105)	(0.00292)	(0.00143)	(0.0136)
Educ. high	-0.00158	-0.00282	0.000235	-0.00227	0.00135	-0.00172	0.00264**	0.0816***
	(0.00562)	(0.00181)	(0.00194)	(0.00225)	(0.00102)	(0.00269)	(0.00127)	(0.0132)
Homeowner	-0.0841***	0.0204***	0.0106***	0.0175***	0.00849***	0.00598**	-0.000156	0.0573***
	(0.00533)	(0.00200)	(0.00194)	(0.00214)	(0.00105)	(0.00287)	(0.00135)	(0.0131)
Number of children	0.00280	0.00699***	-0.00267***	0.00281**	-0.00148***	0.0113***	-0.000207	0.0281***
	(0.00268)	(0.000882)	(0.000889)	(0.00112)	(0.000430)	(0.00137)	(0.000553)	(0.00654)
Year 2010	0.00987***	-0.00167	0.00399***	0.00200	0.000224	-0.00374*	0.00227**	-0.0225***
	(0.00298)	(0.00136)	(0.00131)	(0.00172)	(0.000832)	(0.00193)	(0.000951)	(0.00870)
Year 2012	0.0161***	0.000291	0.00463***	0.00547***	0.000104	-0.00242	0.000424	-0.00980
	(0.00328)	(0.00138)	(0.00134)	(0.00177)	(0.000821)	(0.00205)	(0.000794)	(0.00928)
Year 2015	0.0383***	0.00184	0.00656***	0.00886***	-0.000297	0.00535**	0.0286***	-0.0703***
	(0.00379)	(0.00160)	(0.00145)	(0.00187)	(0.000862)	(0.00223)	(0.00156)	(0.0100)
Couple	-0.0661***	0.00422	-0.00857***	0.0300***	-0.00784***	0.0321***	0.0106***	0.320***
	(0.00861)	(0.00303)	(0.00302)	(0.00341)	(0.00173)	(0.00444)	(0.00213)	(0.0172)
Log(total expenditures)	0.0318**	-0.0617***	0.0196***	-0.0490***	0.0106***	-0.0384***	-0.00805**	
	(0.0130)	(0.00519)	(0.00470)	(0.00522)	(0.00265)	(0.00697)	(0.00329)	
Log(HH income)								0.383***
								(0.0231)
Constant	0.137	0.539***	-0.0920***	0.439***	-0.0675***	0.402***	0.0597**	4.489***
	(0.0938)	(0.0379)	(0.0338)	(0.0379)	(0.0192)	(0.0504)	(0.0238)	(0.164)

**Appendix B: estimation results from models with interaction between year 2015 and health  
(no Mundlak fixed effects)**

VARIABLES	(1) housing	(2) utilities	(3) transport	(4) insurance	(5) cleanmaint	(6) homefood	(7) medcare	(8) Intotal
1 pers. ADL limitation	-0.00634 (0.00649)	0.00352 (0.00284)	-0.00238 (0.00239)	0.00121 (0.00290)	0.00441*** (0.00153)	-0.00521 (0.00344)	0.00367** (0.00158)	-0.0233 (0.0162)
1 pers. ADL limitation * couple	0.0121 (0.00814)	-0.00409 (0.00333)	0.00379 (0.00299)	-0.00313 (0.00372)	-0.000490 (0.00193)	0.00311 (0.00433)	-0.00384* (0.00203)	0.0129 (0.0208)
2 pers. ADL limitation	0.00935 (0.00979)	0.000790 (0.00388)	-0.00671** (0.00281)	0.000749 (0.00548)	0.00746** (0.00340)	-0.00224 (0.00622)	0.00264 (0.00303)	-0.0236 (0.0259)
1 pers. ADL limitation * 2015	0.0121 (0.0101)	-0.00732* (0.00441)	-0.00669** (0.00328)	-0.00105 (0.00486)	0.00192 (0.00237)	-0.00383 (0.00529)	0.00672 (0.00511)	0.0229 (0.0248)
1 pers. ADL limitation * couple limitation * 2015	-0.0388*** (0.0116)	0.00651 (0.00480)	0.00562 (0.00398)	-0.00268 (0.00591)	-0.00453 (0.00281)	0.00798 (0.00654)	0.00764 (0.00645)	-0.0411 (0.0301)
2 pers. ADL limitation limitation * 2015	-0.00147 (0.0162)	-0.00487 (0.00600)	0.0116* (0.00647)	0.0147 (0.0114)	-0.00274 (0.00453)	-0.00783 (0.00979)	0.0199** (0.00891)	-0.0290 (0.0459)
Age 45-59	-0.0468*** (0.00509)	0.0180*** (0.00188)	0.00119 (0.00193)	0.0120*** (0.00219)	0.00351*** (0.000837)	0.0225*** (0.00259)	0.00508*** (0.00116)	-0.0314** (0.0128)
Age 60-75	-0.0851*** (0.00572)	0.0267*** (0.00200)	-0.000383 (0.00217)	0.0239*** (0.00238)	0.00625*** (0.00101)	0.0296*** (0.00282)	0.0111*** (0.00141)	-0.0614*** (0.0131)
Age >=75	-0.125*** (0.00853)	0.0334*** (0.00318)	-0.00696** (0.00272)	0.0320*** (0.00352)	0.0234*** (0.00227)	0.0311*** (0.00470)	0.0166*** (0.00250)	-0.0976*** (0.0209)
Educ. low	0.00819 (0.00547)	0.00587*** (0.00206)	-0.00159 (0.00189)	0.00100 (0.00239)	-0.000613 (0.00105)	-0.00406 (0.00292)	0.00241* (0.00141)	-0.0309** (0.0135)
Educ. high	-0.00185 (0.00563)	-0.00273 (0.00183)	0.000341 (0.00195)	-0.00203 (0.00227)	0.00127 (0.00102)	-0.00169 (0.00269)	0.00260** (0.00128)	0.0818*** (0.0132)
Homeowner	-0.0831*** (0.00528)	0.0203*** (0.00199)	0.0110*** (0.00194)	0.0172*** (0.00213)	0.00864*** (0.00107)	0.00531* (0.00287)	-0.000479 (0.00134)	0.0540*** (0.0132)
Number of children	0.00356 (0.00267)	0.00736*** (0.000875)	-0.00265*** (0.000885)	0.00282** (0.00110)	-0.00122*** (0.000413)	0.0109*** (0.00136)	-0.000222 (0.000557)	0.0279*** (0.00647)
Year 2010	0.00998*** (0.00300)	-0.00173 (0.00136)	0.00386*** (0.00131)	0.00209 (0.00172)	0.000324 (0.000834)	-0.00383** (0.00193)	0.00237** (0.000947)	-0.0227*** (0.00869)
Year 2012	0.0163*** (0.00328)	-2.04e-05 (0.00138)	0.00465*** (0.00133)	0.00571*** (0.00176)	1.97e-05 (0.000831)	-0.00284 (0.00204)	0.000522 (0.000802)	-0.00982 (0.00924)
Year 2015	0.0406*** (0.00443)	0.00296* (0.00180)	0.00767*** (0.00176)	0.00913*** (0.00211)	-0.000413 (0.000929)	0.00503* (0.00257)	0.0248*** (0.00175)	-0.0696*** (0.0116)
Couple	-0.0702*** (0.00837)	0.00309 (0.00304)	-0.00838*** (0.00302)	0.0308*** (0.00335)	-0.00919*** (0.00165)	0.0340*** (0.00441)	0.0107*** (0.00212)	0.317*** (0.0170)
Log(total expenditures)	0.0350*** (0.0129)	-0.0624*** (0.00518)	0.0210*** (0.00466)	-0.0499*** (0.00526)	0.0109*** (0.00260)	-0.0385*** (0.00695)	-0.00929*** (0.00331)	
Log(HH income)								0.381*** (0.0228)
Constant	0.109 (0.0937)	0.546*** (0.0379)	-0.103*** (0.0335)	0.447*** (0.0383)	-0.0702*** (0.0188)	0.404*** (0.0504)	0.0711*** (0.0241)	4.515*** (0.163)

VARIABLES	(1) housing	(2) utilities	(3) transport	(4) insurance	(5) cleanmaint	(6) homefood	(7) medicare	(8) Intotal
1 pers. poorhealth	-0.0103 (0.00757)	0.0103*** (0.00328)	-0.00926*** (0.00251)	0.00329 (0.00308)	0.00660*** (0.00180)	-0.00540 (0.00376)	0.00605*** (0.00193)	-0.0152 (0.0175)
1 pers. poorhealth * couple	0.00720 (0.00952)	-0.00863** (0.00400)	0.00909*** (0.00319)	-0.00335 (0.00413)	-0.00505** (0.00227)	0.00852* (0.00490)	-0.00466* (0.00249)	-0.00825 (0.0232)
2 pers. poorhealth	0.00218 (0.0127)	-0.00398 (0.00452)	-0.00539 (0.00412)	0.00378 (0.00677)	0.00972** (0.00388)	-0.000972 (0.00767)	0.00267 (0.00388)	-0.0257 (0.0320)
1 pers. poorhealth * 2015	0.0140 (0.0107)	-0.00775* (0.00470)	0.00220 (0.00362)	-0.00539 (0.00554)	-0.00178 (0.00257)	0.000439 (0.00581)	0.00722 (0.00560)	0.0434 (0.0269)
1 pers. poorhealth * 2015 * couple	-0.0306** (0.0129)	0.00378 (0.00528)	0.00327 (0.00485)	-0.000930 (0.00688)	6.37e-05 (0.00310)	0.00842 (0.00761)	0.00563 (0.00713)	-0.0415 (0.0345)
2 pers. poorhealth * 2015	-0.0259 (0.0174)	-0.00447 (0.00646)	-0.000414 (0.00599)	0.0171 (0.0142)	-0.00679 (0.00462)	0.00128 (0.0103)	0.0210* (0.0112)	0.0221 (0.0531)
Age 45-59	-0.0463*** (0.00511)	0.0177*** (0.00187)	0.00140 (0.00194)	0.0118*** (0.00218)	0.00346*** (0.000857)	0.0223*** (0.00259)	0.00483*** (0.00116)	-0.0319** (0.0128)
Age 60-75	-0.0844*** (0.00572)	0.0264*** (0.00199)	-0.000191 (0.00217)	0.0238*** (0.00239)	0.00630*** (0.000990)	0.0291*** (0.00282)	0.0109*** (0.00141)	-0.0620*** (0.0131)
Age >=75	-0.124*** (0.00846)	0.0326*** (0.00316)	-0.00683** (0.00270)	0.0320*** (0.00357)	0.0239*** (0.00226)	0.0300*** (0.00470)	0.0169*** (0.00255)	-0.101*** (0.0209)
Educ. low	0.00828 (0.00547)	0.00575*** (0.00206)	-0.00160 (0.00187)	0.000975 (0.00238)	-0.000587 (0.00106)	-0.00427 (0.00293)	0.00245* (0.00141)	-0.0317** (0.0135)
Educ. high	-0.00187 (0.00564)	-0.00280 (0.00182)	0.000298 (0.00194)	-0.00204 (0.00226)	0.00127 (0.00102)	-0.00175 (0.00269)	0.00269** (0.00128)	0.0818*** (0.0132)
Homeowner	-0.0836*** (0.00529)	0.0203*** (0.00198)	0.0107*** (0.00194)	0.0174*** (0.00214)	0.00857*** (0.00105)	0.00555* (0.00286)	-0.000369 (0.00133)	0.0549*** (0.0131)
Number of children	0.00347 (0.00266)	0.00723*** (0.000872)	-0.00261*** (0.000883)	0.00286*** (0.00111)	-0.00126*** (0.000422)	0.0110*** (0.00136)	-0.000233 (0.000554)	0.0277*** (0.00649)
Year 2010	0.00998*** (0.00299)	-0.00180 (0.00136)	0.00398*** (0.00131)	0.00205 (0.00173)	0.000142 (0.000834)	-0.00370* (0.00193)	0.00228** (0.000945)	-0.0223** (0.00869)
Year 2012	0.0164*** (0.00327)	-8.08e-05 (0.00138)	0.00475*** (0.00133)	0.00567*** (0.00176)	-0.000131 (0.000826)	-0.00271 (0.00204)	0.000456 (0.000801)	-0.00954 (0.00921)
Year 2015	0.0393*** (0.00425)	0.00304* (0.00173)	0.00612*** (0.00165)	0.00989*** (0.00200)	-0.000223 (0.000923)	0.00385 (0.00244)	0.0256*** (0.00172)	-0.0754*** (0.0109)
Couple	-0.0671*** (0.00834)	0.00385 (0.00297)	-0.00863*** (0.00296)	0.0300*** (0.00333)	-0.00839*** (0.00171)	0.0322*** (0.00435)	0.0109*** (0.00210)	0.320*** (0.0168)
Log(total expenditures)	0.0332** (0.0129)	-0.0614*** (0.00516)	0.0203*** (0.00469)	-0.0494*** (0.00524)	0.0111*** (0.00262)	-0.0378*** (0.00699)	-0.00899*** (0.00329)	
Log(HH income)								0.381*** (0.0230)
Constant	0.123 (0.0935)	0.537*** (0.0378)	-0.0967*** (0.0338)	0.443*** (0.0381)	-0.0714*** (0.0190)	0.399*** (0.0507)	0.0684*** (0.0240)	4.511*** (0.163)