



# Is there a relation between residential mobility and well-being among elderly people?

---

Kræn Blume

June 6:2005

akf working paper contains provisional results of studies or preliminary work of reports or articles. Therefore, the reader should be aware of the fact that results and interpretations in the finished report or article may differ from the working paper. akf working paper is not covered by the procedures about quality assurance and editing applying to finished akf reports. akf working paper is only available on [www.akf.dk](http://www.akf.dk) and not in a printed version.

# Is there a Relation between Residential Mobility and Well-Being among Elderly People?\*

*By Kræn Blume\*\**

**Abstract:** *Based on a combination of survey- and register-based data a thorough analysis of the relation between residential mobility and subjective well-being among elderly people is carried out. Subjective well-being is defined along five dimensions: feeling out of sorts, worried, depressed, afraid and lonely. By estimating models for the change in subjective well-being during the period 1997-2002 it is shown that a positive relation between residential mobility and subjective well-being exists. However, the relation seems to be more pronounced among females than among males. The analysis also revealed that factors such as death of spouse, retirement and different measures of the general health status all have an impact on subjective well-being.*

**Keywords:** Elderly, residential mobility, health, fixed effect

---

\* The project was supported financially by akf, institute of local government studies – Denmark; “Aase og Ejnar Danielsens Fond” and “Boligfonden Kuben”. We appreciate comments from colleagues at the institute of local government studies.

\*\* akf, institute of local government studies, Nyropsgade 37, DK-1602 Copenhagen V, Denmark, Email: kbj@akf.dk.

# 1 Introduction

As people become older and retirement age approaches, a new part of life begins. A part of life dominated by more leisure, less obligations for most people, but unfortunately also a worsening of health conditions, possible passing away of spouse, family members or friends etc. These negative age-related effects may reduce individual well-being and may imply that a given current residence no longer meets the needs of the individual. As a response to a reduced well-being, individuals may wish to change residence, i.e. they want to move (Ekström, 1994). Investigation of this potential relation between well-being and residential mobility is the main topic of the present paper. Subjective well-being is defined along five dimensions, including e.g. feeling out of sorts, worried, depressed, afraid and/or lonely.

However, it is not only elderly people who wish to change residence since people of all ages change residence now and then. In Denmark, roughly 20% changed residence during 2002, but with great variation across age groups (Statistics Denmark, 2004). In general, young people tend to have a higher degree of residential mobility than elderly people. For instance, 19% of the age group 25-49 years old changed residence, while only 6% of the age group 50-59 changed residence during 2002. These results are generally in line with results from previous analysis, though slightly higher (Tatsiramos, 2004).

The decision to change residence may be taken either voluntarily or involuntarily. Several factors may cause an involuntary decision to move, e.g. deteriorating health, reduced activity of daily living or changing economic conditions (Chen and Wilmoth, 2004). The factors that cause an involuntary decision to move are referred to as *push-factors*. On the other hand, there are also several factors that bring about a voluntary decision to move. One factor could be a desire to move closer to children/grandchildren or leisure activities or to a smaller residence as children no longer live in the household etc. The factors that cause a voluntary decision to move are referred to as *pull-factors*. However, in many cases it is difficult to distinguish between push- and pull-factors. It is often argued that changing residence in time, while the individual in question is still capable of creating new social networks, may increase the likelihood of a positive relation between subjective well-being and residential mobility.

To make a thorough analysis of residential mobility and its relation to well-being one has to take many other aspects into account, such as health status and changes in household compositions. The analysis carried out in this paper exploits the richness of both survey data and data originating from

Danish administrative registers as they are combined in the Longitudinal Study of Elderly People (LSEP). By estimating models for the change in well-being during the period 1997-2002 among 4,496 elderly people in Denmark, the relation between well-being and residential mobility is investigated. The analysis reveals a positive relation between well-being and residential mobility. Especially changing residence to a cheaper residence or to a residence closer to family members has a positive impact. Furthermore, negative impacts on well-being from other factors are reduced as they coincide with a change of residence. The analysis also shows that deteriorating health, reduced activity of daily living and being recently widowed all have a negative impact on the well-being.

The rest of the paper is organised as follows. Section 2 describes the background and hypothesis of the paper, while Section 3 describes the data used. Section 4 describes the empirical models and Section 5 describes the results from the analysis of the empirical model. Finally, Section 6 concludes.

## 2 The Elderly, Motivation and Hypothesis

Becoming old brings about many changes for an individual and some changes may increase the well-being in general. However, besides positive age-related effects there are also negative effects such as deteriorating health, increasing likelihood of experiencing death of spouse, family members or friends etc. In general, these negative age-related effects have a negative impact on the well-being. This can be formalised in the following equation:

### Equation 2.1

$$V = f[X]$$

where  $V$  is well-being and  $X$  captures these aspects.

As pointed out above, several aspects may affect the well-being and thereby be contained in  $X$ . The main topic of this paper is to analyse the impact of residential mobility on the well-being. Not much research have been conducted on this topic<sup>1</sup>. However, when people become older their residence may no longer meet individual needs and they may wish to change residence (Ekström, 1994). For instance, elderly people often live in big houses with many rooms and floors which is an advantage when children are living within the household, but becomes a hindrance as individuals get older and

---

<sup>1</sup> Some research with a gender perspective has been carried out on this topic, even though it is limited (Magdol, 2002).

children leave the household to live by themselves, i.e. downsizing may become a more attractive option (Tatsiramos, 2004). In that case, their individual needs have changed and to insure an either increasing or non-decreasing well-being, these elderly may wish to change residence to a residence that meets current and future needs. The relation between residential mobility and well-being can be formalized in the following equation:

**Equation 2.2**

$$V = g[RM, X]$$

where  $RM$  refers to residential mobility. However, the decision to move may be chosen on different grounds which can be divided into two categories. The first category is referred to as *pull-effects* where the alternative residence is superior due to positive characteristics of the alternative residence, making the decision to change residence voluntary<sup>2</sup>. The second category is referred to as *push-effects* where the alternative residence is superior due to negative characteristics of the current residence, making the decision to change residence involuntary<sup>3</sup>. In general, there are several push- and pull-effects in relation to the change of residence where some are observed and some are unobserved, and some varies over time while others are time-invariant. Furthermore, each may even be correlated with some of the elements in  $X$ . This can be formalised in the following equation:

**Equation 2.3**

$$V = g[RM(z), X(z)]$$

where  $z$  are factors that are correlated with both the elements in  $X$  and residential mobility. To investigate the relation between well-being and residential mobility, one needs to pay attention to  $z$  as well as the factors contained in  $X$  and  $RM$ .

If those with the best well-being also are among those who are most likely to change residence, this would induce an upward bias in any relation between well-being and residential mobility. However, previous research suggests that this is not the case (Hansen et al., 2005). In fact they point to a negative relation between well-being and the likelihood of changing residence which should minimize negative impacts from this potential bias.

---

<sup>2</sup> *Pull-effects* make alternatives attractive due to positive characteristics of the alternatives (increased well-being obtained by moving, while staying implies status quo). An example of a pull-effect is a wish for a smaller residence.

<sup>3</sup> *Push-effects* make alternatives attractive due to negative characteristics of the current situation (status quo obtained by moving, while staying implies a reduced well-being). An example of a push-effect is deteriorating health which makes the elderly unable to maintain a normal life in their current residence due to e.g. poor accessibility etc.

One important aspect contained in  $X$  relates to different measures of an individual's general health status. Measures of the general health status may include self-reported health, activity of daily living, working capacity etc. In general, self-reported health is a good proxy for an individual's health status. If an individual suffers from some chronic disease, their self-reported health may be much lower than otherwise. On the other hand, the general health status is also determined by working capacity and general activity of daily living. Activity of daily living describes the capability of carrying out specific tasks relating to housekeeping and living. In general, activity of daily living is divided into two categories following e.g. Chen and Wilmoth (2004): ADL (Active of Daily Living) and IADL (Instrumental Active of Daily Living)<sup>4</sup>.

In addition to measures of the general health status of the individual, socioeconomic factors also affect the well-being. Engaging in social activities and having social relations/social interaction are important for the well-being and quality of life (Larson, 1978; Moody, 2000; Gabriel and Bowling, 2004). Furthermore, having a spouse has a positive impact on the well-being and being recently widowed decrease the well-being significantly (Bennett 1998; Baarsen et al., 1999)<sup>5</sup>, especially among men. The experiencing of death can be extended to take the death of children and friends into account, since this could also have an impact on the well-being. Since the probability of death often relates to age, both age of one self and the age of one's spouse could have an impact on the well-being.

Finally, retirement status may influence well-being, as pointed out in previous analyses (Kim and Moen, 2001; Kim and Moen, 2002; Jæger and Holm 2004). One important result in this relation is what is referred to as the "retirement honeymoon", as well-being increases right after retirement, but the positive effect diminishes in the long run and may even be negative (Kim and Moen, 2002). Recent Danish research on this topic suggests that retirement has a negative impact on well-being among males while the well-being of females is unaffected (Jæger and Holm 2004). That the well-being of some groups is affected by retirement suggests that controlling for retirement status may be important when analysing the relation between well-being and residential mobility<sup>6</sup>.

---

<sup>4</sup> See e.g. Chen and Wilmoth (2004) for a description. Chen and Wilmoth focus on the impact of residential mobility on ADL and IADL measures. They find that residential mobility is associated with short-term increases in ADL and IADL measures, especially for those who move for subjective health reasons.

<sup>5</sup> Baarsen et al. (1999) show, that if the death of a spouse is unanticipated, the emotional loneliness that the widowed individual feels is higher than if the death was anticipated.

<sup>6</sup> In the analysis we also included income variables as an experiment. Factors that relate to the economic status, have generally been accepted as a more or less important determinant of well-being (Larson, 1978; Herzog and Rodgers, 1981; George, 1992; Arendt, 2003; Chen and Wilmoth, 2004). Recent research shows that having enough money to

However, different theories predict that *changes* in  $X$  rather than *levels* of  $X$  affect the well-being. One such theory is the theory of adaptation (see e.g. Helson, 1947). Recent research points to the fact that evolution prepared us to make adjustments to external conditions (Diener et al., 1999). This means that we as human beings adjust to both good and bad events of life. This implies that events may affect the well-being, but only in the short run, as expectations adjust and leave well-being more or less unaffected in the long run (Heady and Wearing, 1989; Suh et al., 1996)<sup>7</sup>. In addition, recent research shows that a high degree of acceptance of circumstances that cannot be changed, has a positive impact on the quality of life (Gabriel and Bowling, 2004). However, others argue that the period of adaptation depends on the event and also on the individual. Some people adapt quickly to one type of events, such as changing economic conditions, while the adaptation period is much longer in relation to other events, such as death of spouse, while yet other people adapt differently (Loewenstein and Frederick, 2003). Summarizing these results suggests that it may be difficult to disentangle impacts of various factors on absolute levels of well-being and that a thorough analysis of well-being should focus on *changes in well-being* in relation to events, or changes in various factors, rather than on absolute *levels of well-being*. It is within this context the analysis of the relation between residential mobility and well-being of elderly people will be carried out.

### 3 The Data

The data used in the present analysis are a combination of survey data and register-based data. Together these survey and register data comprise the Longitudinal Study of Elderly People (Platz, 2000; Jæger and Holm 2004). The survey data consist of two waves of a survey conducted among a representative sample of around 5,800 elderly people in Denmark drawn randomly from the 1920, 1925, 1930, 1935, 1940 and 1945 cohorts. The first wave of the survey was conducted in 1997 and the second wave in 2002. Of those participating in the first wave and who did not leave the panel before the second wave, 88% also participated in the second wave yielding a sample of 4,634 individuals. The survey data are then combined with register-based data on income, labour-market

---

meet basic needs has a positive impact on the quality of life (Gabriel and Bowling, 2004) and intuition tells us that financial worries affect the well-being of individuals (George, 1992). However, as factors that relate to the economic status did not contribute to the analysis at all, they have not been included in this final version of the paper.

<sup>7</sup> This is also known as *diminished responsiveness to repeated or continued stimuli* (Helson, 1947).

characteristics, demographics etc., relating to the period 1992-2002. The register-based data originate from official administrative registers collected and administered by Statistics Denmark<sup>8</sup>.

It is required that only males and females who participated in both the first and the second wave of the survey are included in the analysis. Individuals participating in only one of the waves are excluded from the data. Furthermore, it is required that the questions that are central to the analysis were answered properly, yielding an effective sample of 4,496 individuals.

### **The dependent variable**

The dependent variable used in the analysis is the *change in subjective well-being* ( $\Delta SWB$ ) during the period 1997-2002<sup>9</sup> and is defined as in Equation 3.1:

#### **Equation 3.1**

$$\Delta SWB = SWB_{2002} - SWB_{1997}$$

where  $SWB_{1997}$  and  $SWB_{2002}$  correspond to well-being in 1997 and 2002, respectively. Negative values of  $\Delta SWB$  correspond to a decreased subjective well-being during the period 1997-2002 and vice versa. A value of zero corresponds to an unchanged subjective well-being.

In general, different concepts and definitions of subjective well-being have been applied and are continuously subject of debate (see e.g. Ryff, 1989; Higgs et al. 2003). The definition of subjective well-being applied in this paper follows previous Danish analyses of the well-being among elderly (Jæger and Holm, 2004). Subjective well-being is defined along five dimensions or items. The five dimensions are: out of sorts, afraid, worried, depressed and lonely. Each of these questions was posed by “how often do you feel....?” and the answers could fall into four categories “often”, “occasionally”, “rarely” and “never”. To construct the dependent variable, a factor analysis that exploits the correlation between the five items in the construction of one aggregate variable is carried out. The factor loadings of each of the five items in relation to  $SWB_{1997}$  and  $SWB_{2002}$  are described in Table 3.1:

---

<sup>8</sup> See Arendt et al. (2003) for a more detailed description of the variables originating from administrative registers. These variables are combined in a database labelled the “elderly database”.

<sup>9</sup> In appendix C, other variables than well-being are being used as dependent variables. These variables relate to “social strength” and “involuntary loneliness”. The analysis with these alternative dependent variables will not be discussed further in the main body of the paper.

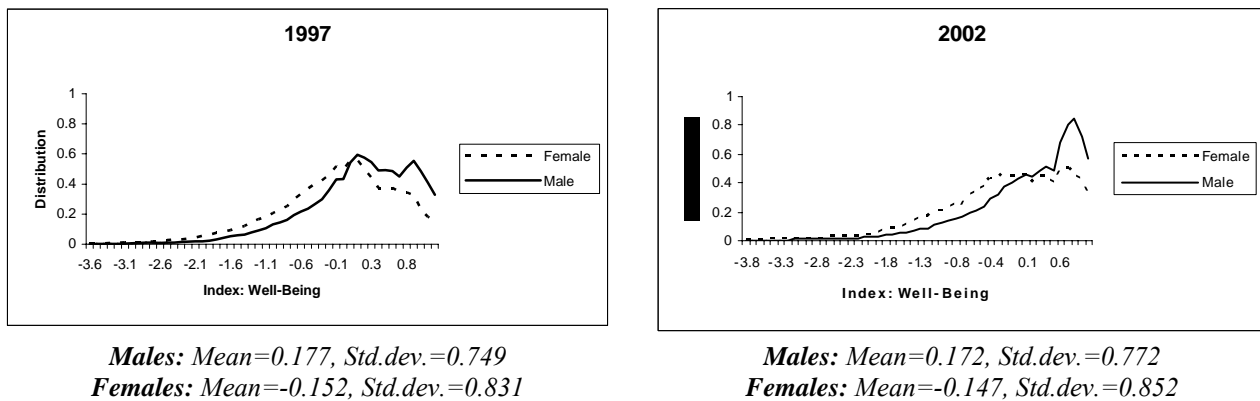


**Table 3.1**  
**Factor loadings for latent scales of SWB**

	Year	
	<i>SWB</i> <sub>1997</sub>	<i>SWB</i> <sub>2002</sub>
<b>Eigenvalue</b>	1.431	1.593
<i>Items:</i>		
<b>Out of sorts</b>	0.400	0.422
<b>Afraid</b>	0.409	0.485
<b>Worried</b>	0.620	0.621
<b>Depressed</b>	0.693	0.720
<b>Lonely</b>	0.488	0.525

As it can be seen from the table, the factors are fairly high, stable and consistent over time. Furthermore, the factor analysis suggested only one latent relation between the five items<sup>10</sup>. Based on the factor analysis, the dependent variables *SWB*<sub>1997</sub> and *SWB*<sub>2002</sub> were predicted. Figure 3.1 presents the distribution of these well-being indexes.

**Figure 3.1**  
**Distribution of SWB index in 1997 and 2002**  
*Males and females*



Note: Kernel densities.

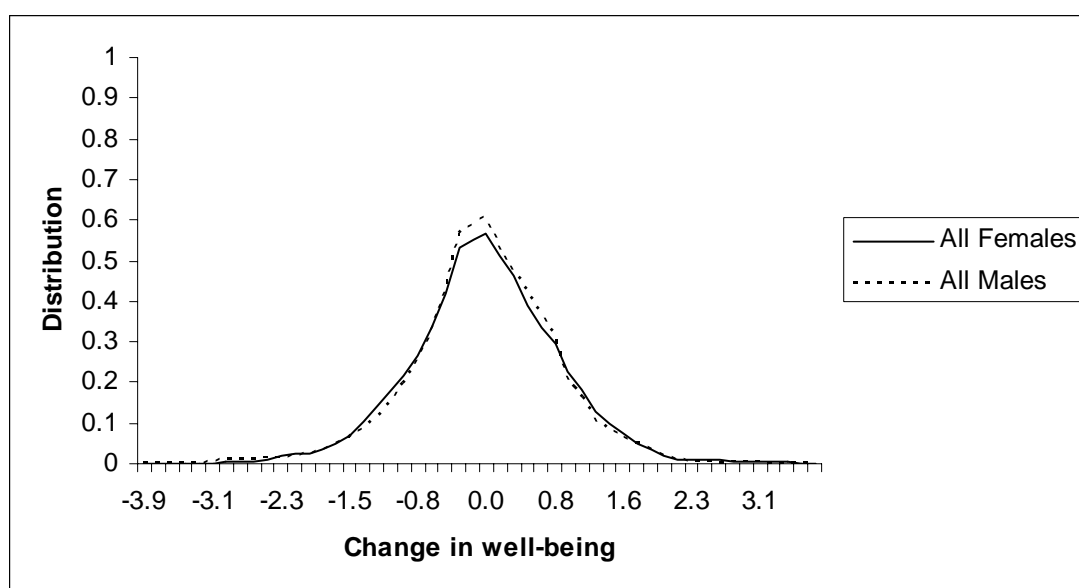
As it can be seen from Figure 3.1, mean subjective well-being of males is much higher than for females, and the distribution is more skewed to the right for males when compared to the

<sup>10</sup> In 1997 one eigenvalue was >0. In 2002 there was two positive eigenvalues, where the one is the one chosen and the other was only slightly larger than zero and was therefore not chosen.

distribution of subjective well-being of females. The fact that the distribution among males is more skewed to the right seems to be even more pronounced in 2002.

The distributions of  $\Delta$ SWB during the period 1997 to 2002 for males and females are presented in Figure 3.2.

**Figure 3.2**  
**Distribution of the  $\Delta$ SWB index between 1997 and 2002**  
*Males and females*



Note: Kernel densities.

As it is evident from Figure 3.2, the distribution of  $\Delta$ SWB during the period 1997-2002 is roughly the same for males as for females despite a slight tendency to a higher concentration around zero for males. This suggests that well-being among elderly males is slightly more stable over time compared to well-being among elderly females.

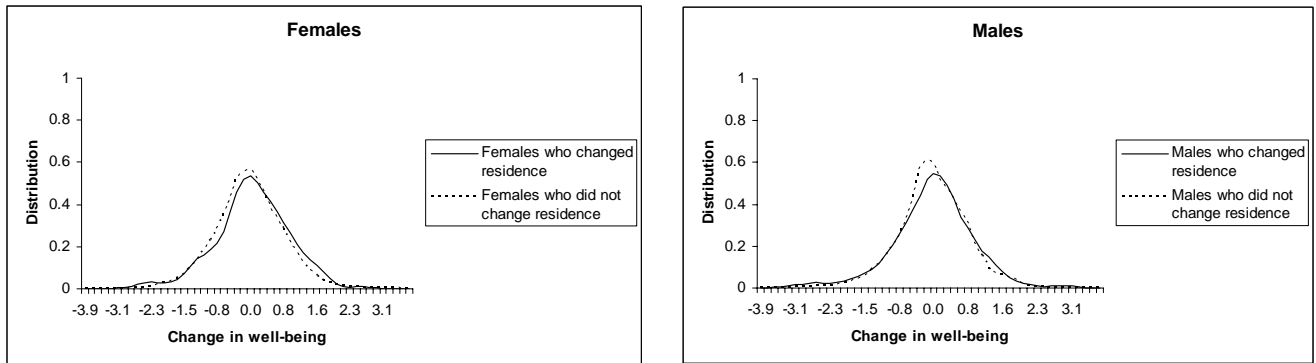
### **The independent variables**

To capture the relation between well-being and residential mobility, several variables that describe characteristics of residential mobility are incorporated. A change of residence has occurred if an individual according to the administrative registers has changed address during the period 1997-2002. The first variable included in the analysis is a variable that describes whether an individual

has *changed residence* during the period 1997-2002. Figure 3.3 presents the distribution of changes in well-being for both males and females split up by residential mobility.

**Figure 3.3**

**Distribution of the change in the Well-being index between 1997 and 2002**  
*Males and females distributed by residential mobility*



Note: Kernel densities.

As it can be seen from the figure, the distribution of those who moved for both males and females tends to be slightly more skewed to the right than the corresponding distributions for those who did not change residence. This suggests a positive relation between well-being and residential mobility.

In addition to the indicator of having changed residence, three other variables are included. These variables relate to characteristics of the change of residence. Conditional on having changed residence, these three variables describe whether the new residence is *smaller*, *cheaper* or is *closer to family members*. Table 3.2 describes how these refinements of the residential mobility relate to changes in well-being.

**Table 3.2**  
**Well-being and residential mobility**

	<b>Share</b>	<b><i>Experienced increased well-being</i></b>
<b>Changed residence</b>	18.4%	53.3%
<b><i>Of those who moved:</i></b>		
<b>Moved to smaller</b>	40.3%	51.1%
<b>Moved to cheaper</b>	40.5%	54.6%
<b>Moved closer to family members</b>	5.7%	53.2%

Note: Own calculations.

Inspecting Table 3.2 reveals that a small majority of those who changed residence during the period 1997-2002 have experienced an increase in well-being. Those who changed residence to a cheaper residence and those who moved closer to family members are among those where the majority of those who experienced an increased well-being is largest. Among those who changed residence to a smaller residence the majority of those who experience an increased well-being is small.

As pointed out above, the degree of ADL (Activity of Daily Living) and IADL (Instrumental Activity of Daily Living) may be strongly related to subjective well-being. It is therefore essential to control for both ADL and IADL in the analysis. Fortunately, the survey contains questions that relate to both ADL and IADL. The questions relating to ADL focus on whether the individual were able to walk around the house, to walk on stairs, to dress, to cut toenails, to bathe and to go outdoors. The questions relating to IADL focus on whether the individual were able to cook their own dinner, to go shopping, to do their laundry, to perform heavy housework and to perform light housework. To construct a measure of ADL and IADL based on these questions, two factor analyses were carried out. The factor loadings from the factor analysis are reported in appendix B. The predicted measures from these factor analyses are then used in the analysis. Table 3.3 shows how changes in the ADL and IADL measures relate to residential mobility.

**Table 3.3**

**Relation between well-being, change of residence and the experience of change in ADL or IADL measures**

	<b>Measure:</b>	
	<i>ADL</i>	<i>IADL</i>
<b>Experienced decreased measure</b>	16.1%	21.6%
<b><u>Experienced decreased measure and changed residence</u></b>	4.4%	4.7%
<i>Of those who experienced decreased measure and changed residence:</i>		
<b>Experienced increased well-being</b>	42.1%	43.4%
<i>Of those who experienced decreased measure and <u>did not</u> change residence:</i>		
<b>Experienced increased well-being</b>	37.8%	40.0%

Note: Own calculations.

As the table reveals, 16.1% experienced a decreased ADL measure, while 21.6% experienced a decreased IADL-measure. Conditioning further on having changed residence, the table shows that 4.4% of the sample both experienced a decreased ADL measure and changed residence, while 4.7%

both experienced a decreased IADL measure and changed residence. How subjective well-being relates to these numbers is presented in the bottom part of Table 3.3. As it can be seen, 42.1% of those who both experienced a decreased ADL measure and changed residence report an increased well-being, while 37.8% of those who experienced a decreased ADL measure, but did not change residence report an increased well-being. For IADL the corresponding figures are 43.4% and 40.0%, respectively. These figures show that the majority of those who experience deteriorated ADL or IADL measures experience a reduced subjective well-being, but also that the majority is smaller among those who also changed residence. This suggests that changing residence may weaken negative impacts from decreased ADL or IADL measures on well-being.

As an extension to ADL and IADL, other variables relating to health and social interaction are included in the analysis. First, a variable that describes self-reported health is included where high values correspond to a good self-reported health and vice versa. Furthermore, working capacity, as a self-reported measure of current working capacity relative to when ones working capacity was at a maximum, is included. This variable only obtains positive values for those who have not yet retired.

A variable that describes some aspects of social integration is also included. The variable is an indicator for the change in social integration during the period 1997-2002. Social integration is described by whether an individual is “socially weak”. Individuals who are socially weak are defined as individuals who rarely have contact with children, grandchildren, other family members or friends (Platz, 2000). A change in retirement status during the period 1997-2002 is also included in the analysis and so is the change in retirement status of the spouse as well.

As suggested previously, experiencing death of spouse, children or close friends may also have a direct impact on subjective well-being. To get a feeling of how this may affect our sample, Table 3.4 relates subjective well-being to experiencing death of spouse, children or close friends combined with a change of residence.

**Table 3.4****Relation between well-being, change of residence and the experience of death among spouse, children or friends**

	<b>Death of:</b>		
	<i>Spouse</i>	<i>Children</i>	<i>Friend</i>
<b>Experienced death of</b>	6.3%	2.0%	35.4%
<b>Experienced death and changed residence</b>	1.9%	0.4%	6.1%
<i>Of those who experienced death and changed residence:</i>			
<b>Experienced increased well-being</b>	46.5%	50.0%	57.7%
<i>Of those who experienced death and <u>did not</u> change residence:</i>			
<b>Experienced increased well-being</b>	44.9%	37.3%	48.4%

Note: Own calculations.

As it is clear from the table, only a limited number of individuals in the sample have experienced death of spouse and children, when we furthermore condition this on having changed residence only 1.9% have experienced death of spouse and 0.4% have experienced death of children, while 6.1% have experienced death of close friends. Among those who experienced death and changed residence the impact on subjective well-being depends on who died. If the spouse died the majority experienced a decreased well-being, but the fraction is slightly higher among those who did not change residence. If children or close friends died those who changed residence have an either improved or unchanged well-being, while the opposite holds for those who did not change residence. The lesson to learn from Table 3.4 is that experiencing death of spouse, children or close friends generally has a negative impact on subjective well-being, but the negative impact seems to be less pronounced among those who changed residence.

Appendix A provides the means of the variables that are included in the analysis presented below.

## 4 The Empirical Model

In this section the statistical model applied in the analysis of residential mobility in relation to changes in well-being is presented.

Assume first that well-being at any given time is determined by Equation 4.1:

**Equation 4.1**

$$SWB_{it} = z_i + \beta X_{it} + \eta R_{it} + \varphi Q_{it} + \varepsilon_{it} \quad , \quad t = \{1997, 2002\}$$

where  $SWB_{it}$  is the subjective well-being of individual  $i$  at time  $t$ ,  $X_{it}$  is a vector of time-dependent explanatory variables,  $R_{it}$  is residence,  $Q_{it}$  contains interaction terms between relevant factors contained in  $X_{it}$  and  $RM_{it}$  and  $\eta$ ,  $\beta$ ,  $\varphi$  are the parameters of interest. In particular,  $\eta$  measures the relation between residence and well-being. The term  $\varepsilon_{it}$  is an idiosyncratic error term. The constant  $z_i$ , captures unobserved individual effects that are constant through time that may be correlated with both  $X_{it}$ ,  $R_{it}$  and  $\varepsilon_{it}$ . However, as described in Jæger and Holm (2004), the problem in analysing the relation between residential mobility and well-being in this context is due to the factors that are suspected to influence both residential mobility as well as other factors contained in  $X$ . This problem was also discussed above. If these factors are not observed, they cannot be conditioned on in an OLS panel regression model. Failing to condition on these factors might induce a spurious correlation between residential mobility and well-being<sup>11</sup>. Following the alternative method used by Jæger and Holm (2004), I use the fixed-effect estimator to remove any dependency between unobserved variables and residential mobility (see also Heckman and Hotz, 1989). The fixed-effect estimator uses only differences in time-dependent variables as described in Equation 4.2.

**Equation 4.2**

$$SWB_i^{2002} - SWB_i^{1997} = (z_i - z_i) + \beta (X_i^{2002} - X_i^{1997}) + \eta (R_i^{2002} - R_i^{1997}) + \varphi (Q_i^{2002} - Q_i^{1997}) + (\varepsilon_i^{2002} - \varepsilon_i^{1997})$$

⇕

$$\Delta SWB_i = \beta \Delta X_i + \eta \Delta R_i + \varphi \Delta Q_i + \Delta \varepsilon_i$$

where  $\Delta R_i$  corresponds to residential mobility. Hence,  $z_i$  disappears out of the estimation problem and  $\eta$  is a consistent estimate of the effect of residential mobility on well-being since spurious correlation between unobserved variables and residential mobility has been taken into account<sup>12</sup>. This is the model that will be estimated in the following section.

<sup>11</sup> Jæger and Holm (2004) point to the fact that most existing studies that use the OLS panel regression model do not take these methodological caveats into account (e.g. George and Maddox, 1977; Reitzes et al., 1996; Gall et al., 1997; Kim and Moen, 2002).

<sup>12</sup> It should be noted that the model does not control for unobserved factors that are time-independent.

## 5 Results

Based on the empirical model presented in section 4 and the data presented in section 3 a thorough analysis of the relation between subjective well-being and residential mobility is carried out. Three models are estimated: one for males and females together, one for males alone and finally one for females alone. For each, four models are estimated. Model 1 includes an indicator for having changed residence during the period 1997-2002, while models 2 to 4 include indicators for having changed residence to a residence, where the new residence is *smaller*, *cheaper* or is *closer to family* members, respectively. All models include interaction terms of relevant variables to minimize impacts from covariations in the explanatory variables. The results from the analysis are presented in table 5.1. Experiments with alternative left-hand side variables are presented in appendix C.



**Table 5.1**

**Estimation of subjective well-being (SWB)**

Dependent variable: Change in SWB during the period 1997 and 2002

	ALL				MEN				FEMALES			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Spouse died recently	-0,1011 * 0,0582	-0,0771 0,0550	-0,1180 ** 0,0527	-0,1180 ** 0,0495	-0,1980 ** 0,1003	-0,1341 0,0926	-0,1907 ** 0,0926	-0,2253 *** 0,0860	-0,0518 0,0724	-0,0452 0,0692	-0,0869 0,0650	-0,0675 0,0613
Child died recently	-0,1251 0,0842	-0,1272 0,0842	-0,1244 0,0842	-0,1259 0,0842	-0,0134 0,1248	-0,0277 0,1247	-0,0157 0,1248	-0,0093 0,1246	-0,2060 * 0,1145	-0,2074 * 0,1146	-0,2062 * 0,1145	-0,2075 * 0,1146
Close friend died recently	-0,0151 0,0248	-0,0165 0,0247	-0,0151 0,0248	-0,0162 0,0248	-0,0540 0,0357	-0,0526 0,0357	-0,0522 0,0357	-0,0544 0,0357	0,0268 0,0344	0,0232 0,0344	0,0248 0,0344	0,0252 0,0344
Retired recently	-0,0867 ** 0,0393	-0,0864 ** 0,0393	-0,0876 ** 0,0393	-0,0854 ** 0,0393	-0,1621 *** 0,0535	-0,1621 *** 0,0535	-0,1634 *** 0,0535	-0,1609 *** 0,0535	-0,0050 0,0575	-0,0043 0,0575	-0,0042 0,0576	-0,0048 0,0576
Spouse retired recently	-0,0215 0,0346	-0,0221 0,0346	-0,0217 0,0346	-0,0195 0,0347	-0,0218 0,0485	-0,0249 0,0485	-0,0219 0,0485	-0,0185 0,0485	-0,0235 0,0493	-0,0236 0,0494	-0,0221 0,0494	-0,0203 0,0494
Change in health	0,3795 * 0,0701	0,3799 *** 0,0701	0,3758 *** 0,0702	0,3838 *** 0,0701	0,3413 *** 0,1058	0,3474 *** 0,1057	0,3401 *** 0,1058	0,3448 *** 0,1058	0,4057 *** 0,0999	0,4079 *** 0,0999	0,4028 *** 0,0999	0,4139 * 0,0999
Change in working capability	0,0437 * 0,0138	0,0434 *** 0,0138	0,0432 *** 0,0138	0,0439 *** 0,0138	0,0892 *** 0,0186	0,0893 *** 0,0186	0,0883 *** 0,0186	0,0895 *** 0,0186	-0,0080 0,0204	-0,0087 0,0205	-0,0086 0,0204	-0,0080 0,0205
Working capability missing	-0,0722 0,0551	-0,0685 0,0551	-0,0724 0,0551	-0,0708 0,0551	-0,1387 * 0,0730	-0,1355 * 0,0729	-0,1365 * 0,0729	-0,1355 * 0,0730	0,0039 0,0838	0,0069 0,0839	-0,0011 0,0838	0,0053 0,0838
Change in IADL score	0,0810 * 0,0298	0,0807 *** 0,0298	0,0822 *** 0,0298	0,0822 *** 0,0298	0,0565 0,0410	0,0558 0,0409	0,0566 0,0410	0,0562 0,0410	0,1209 *** 0,0442	0,1206 *** 0,0442	0,1240 *** 0,0442	0,1234 * 0,0442
Change in ADL score	0,0424 * 0,0153	0,0427 *** 0,0153	0,0420 *** 0,0153	0,0428 *** 0,0153	0,0410 * 0,0239	0,0402 * 0,0238	0,0413 * 0,0238	0,0414 * 0,0239	0,0364 * 0,0207	0,0370 * 0,0207	0,0352 * 0,0207	0,0377 * 0,0207
Has become socially weak	-0,0440 0,0462	-0,0407 0,0462	-0,0453 0,0462	-0,0396 0,0462	-0,1525 ** 0,0619	-0,1523 ** 0,0617	-0,1548 ** 0,0618	-0,1468 ** 0,0617	0,0816 0,0691	0,0843 0,0691	0,0795 0,0691	0,0817 0,0691

*Residential Mobility*

Moved recently	0,0687 ** <i>0,0322</i>			0,0424 <i>0,0464</i>				0,0992 ** <i>0,0449</i>				
Moved to smaller		0,0908 ** <i>0,0396</i>			0,0919 <i>0,0589</i>				0,0974 * <i>0,0536</i>			
Moved to cheaper			0,1051 ** <i>0,0481</i>			0,1251 * <i>0,0684</i>				0,0931 <i>0,0676</i>		
Moved closer to family				0,2203 * <i>0,1261</i>			0,3153 <i>0,1946</i>				0,1628 <i>0,1659</i>	
<b>Interaction terms</b>												
Spouse died × Moved recently	-0,0783 <i>0,1073</i>				-0,1154 <i>0,1844</i>				-0,0677 <i>0,1338</i>			
Spouse died × Moved to smaller		-0,2227 * <i>0,1204</i>				-0,5606 ** <i>0,2221</i>				-0,1119 <i>0,1465</i>		
Spouse died × Moved to cheaper			-0,0426 <i>0,1422</i>				-0,2803 <i>0,2249</i>				0,1589 <i>0,1859</i>	
Spouse died × Moved closer to family				-0,0648 <i>0,3290</i>				-0,3046 <i>0,4432</i>				0,3672 <i>0,4986</i>
Δ(health × working capability)	** -0,0032 * <i>0,0011</i>	** -0,0032 * <i>0,0011</i>	** -0,0032 * <i>0,0011</i>	** -0,0032 *** <i>0,0011</i>	** -0,0050 * <i>0,0015</i>	** -0,0050 * <i>0,0015</i>	** -0,0049 * <i>0,0015</i>	** -0,0050 * <i>0,0015</i>	** -0,0014 <i>0,0016</i>	** -0,0013 <i>0,0016</i>	** -0,0014 <i>0,0016</i>	** -0,0013 <i>0,0016</i>
Δ(health × ADL-score)	-0,0127 <i>0,0089</i>	-0,0129 <i>0,0089</i>	-0,0124 <i>0,0089</i>	-0,0134 <i>0,0088</i>	-0,0104 <i>0,0145</i>	-0,0117 <i>0,0145</i>	-0,0105 <i>0,0145</i>	-0,0109 <i>0,0145</i>	-0,0166 <i>0,0117</i>	-0,0170 <i>0,0117</i>	-0,0165 <i>0,0117</i>	-0,0178 <i>0,0117</i>
Δ(health × IADL-score)	** -0,0375 * <i>0,0091</i>	** -0,0373 * <i>0,0091</i>	** -0,0370 * <i>0,0091</i>	** -0,0375 *** <i>0,0091</i>	** -0,0276 ** <i>0,0116</i>	** -0,0273 ** <i>0,0116</i>	** -0,0271 ** <i>0,0116</i>	** -0,0278 ** <i>0,0117</i>	** -0,0425 * <i>0,0149</i>	** -0,0423 * <i>0,0149</i>	** -0,0418 * <i>0,0149</i>	** -0,0426 *** <i>0,0150</i>
Δ(ADL-score × IADL-score)	** 0,0184 * <i>0,0059</i>	** 0,0183 * <i>0,0059</i>	** 0,0179 * <i>0,0059</i>	** 0,0181 *** <i>0,0059</i>	** 0,0150 * <i>0,0081</i>	** 0,0149 * <i>0,0081</i>	** 0,0147 * <i>0,0081</i>	** 0,0152 * <i>0,0081</i>	** 0,0209 ** <i>0,0086</i>	** 0,0206 ** <i>0,0086</i>	** 0,0200 ** <i>0,0086</i>	** 0,0201 ** <i>0,0086</i>
Constant	0,0364 * <i>0,0187</i>	0,0388 ** <i>0,0183</i>	0,0415 ** <i>0,0181</i>	0,0459 ** <i>0,0179</i>	** 0,0706 * <i>0,0261</i>	** 0,0691 * <i>0,0255</i>	** 0,0692 * <i>0,0254</i>	** 0,0741 * <i>0,0251</i>	0,0009 <i>0,0267</i>	0,0084 <i>0,0261</i>	0,0134 <i>0,0257</i>	0,0170 <i>0,0254</i>
N												

Note: Standard errors in italics. \*\*\* indicates significance at 1%, \*\* at 5% and \* at 10% levels .

### ***Residential mobility and subjective well-being***

Inspecting table 5.1 reveals that having moved recently (model 1) is related to an increase in subjective well-being, when the analysis is not broken down by gender. One explanation for this result could be that people change residence before they become too old to create new social networks in their new residence. If the opposite was the case, the positive relation between subjective well-being and residential mobility would not be so likely. Compared to results from previous analyses, this result is in line with results from an investigation of the relation between residential mobility and activities of daily living, ADL and IADL (Chen and Wilmoth, 2004). They find that residential mobility is associated with increases in ADL and IADL. However, the increases were mainly temporary.

Investigating further the relation between residential mobility and subjective well-being in table 5.1 reveals that the different specifications of the variable describing residential mobility, i.e. whether the new residence is *smaller*, *cheaper* or *closer to family members* (models 2-4, respectively) contribute with new information about the relation between residential mobility and subjective well-being. Especially those who moved closer to family members experience a strong positive relation between subjective well-being and residential mobility. However, this relation is only significant at the 10% level<sup>13</sup>. Moving to a smaller or a cheaper residence has about equal impacts on subjective well-being. These results are in line with previous research which finds that elderly people change residence to a smaller residence (Ermisch and Jenkins, 1999; Tatsiramos, 2004).

Breaking the analysis down by gender reveals that the positive relation between residential mobility and subjective well-being is more pronounced among females than males. Females experience a significantly positive relation between having changed residence recently and subjective well-being while the effect is smaller and insignificant for males. For females, changing residence to a smaller residence (model 2) is also of some importance as it has a positive impact on subjective well-being. However, this effect is only significant at 10% level. The only factor that seems to be of some importance to males is changing residence to a cheaper residence (model 3) which has a positive impact on subjective well-being. However, again this effect is only significant at 10% level. When the analysis is broken down by gender, moving closer to family members (model 4) still has a large positive impact on subjective well-being but the impact is no longer significant. The gender differences may reflect that elderly women traditionally are less economically self-sufficient and

---

<sup>13</sup> Including all four indicators in the same model has been attempted. However, due to their strong correlation, it was not possible to estimate this model with satisfying results.

therefore are more sensitive to changing economic conditions and/or retirement, i.e. they have more to gain from changing residence than males. However, this result relating to gender is in opposition to previous research which finds that females are more negatively affected by changing residence than males (Magdol, 2002)<sup>14</sup>.

### ***Other factors***

Turning to the other factors that are included as explanatory variables in the analysis, it is readily seen that experiencing death among spouse, children or close friends all have a negative relation to subjective well-being. In particular, experiencing death of spouse (being recently widowed) has a large negative impact on subjective well-being. This confirms results from previous analyses on the same topic (Bennett, 1998; Baarsen et al., 1999). However, the effect is only significant in some of the models. As the analysis is broke down by gender, it is revealed from table 5.1 that this effect is largest for males while it is smaller in magnitude for females. Furthermore, the effect is insignificant for females in all models 1 to 4 when the analysis is broken down by gender. This suggests that being recently widowed affects males more than females, which is in line with what is found in previous analyses (Bennett, 1998; Baarsen et al., 1999). One explanation could be that before death occurs, a long period of sickness may have prevailed. In that case, death may of course be a sad occurrence, but may also complete a long period that may have been stressful. On the other hand, experiencing death of children has a larger negative impact on subjective well-being for females than males.

That recent retirement also affects subjective well-being can be seen from table 5.1 as well. Apparently, recent retirement has a negative impact on subjective well-being. This supports previous results related to this topic (Kim and Moen, 2002). However, it should be noted, that the way retirement status is treated in the analysis, the timing of retirement is not dealt with, since the relation between retirement status and subjective well-being is not the main topic of the analysis. Therefore, it is not possible to conclude anything about “retirement honeymoon effects” as described in section 2. The presence of retirement honeymoon effects would imply a positive relation between retirement and subjective well-being, but as times go by, the positive effect diminishes and the relation may become negative. This suggests that the presence of “retirement honeymoon effects” would bias the relation between retirement and subjective well-being upwards.

---

<sup>14</sup> Magdol (2002) investigates changing residence in the US, where geographical distances generally are wider.

Since the estimated relation between retirement and subjective well-being is negative and significant this result may be considered fairly robust as the bias would tend to soften a negative relation. Breaking the analysis down by gender reveals that the negative relation between retirement and subjective well-being can be attributed to males, while the well-being of females is unaffected by retirement. This supports previous results related to this topic conducted on Danish data (Jæger and Holm, 2004). Apparently, recent retirement of one's spouse seems to have no significant impact on one's well-being.

Turning to the different health measures, table 5.1 shows that they all have the expected sign, i.e. improvement in either health measure is positively related to improvements in subjective well-being. Especially self-reported health has a large positive and significant impact on subjective well-being. Breaking the analysis down by gender, does not change this result, i.e. self-reported health seems equally important in relation to subjective well-being for males as well as for females. Also a positive change in working capability for those who have not yet retired is positively related to subjective well-being. However, in this case breaking the analysis down by gender reveals that the significant positive relation can be attributed solely to men, as the relation is negative, though insignificant, for females. Changes in ADL and IADL scores are also positively related to subjective well-being. However, breaking the analysis down by gender reveals that a change in the IADL score only has a significant impact for females, while the effect is insignificant for males. This suggests that being able to carry out tasks relating to daily housekeeping is more important for subjective well-being among females than among males. With respect to a change in the ADL score, it seems to have equal impacts on subjective well-being among both males and females. Finally, becoming socially weak is not related to changes in well-being as the estimated coefficient is insignificant when the analysis is carried out for the whole sample. This result is not exactly in line with what is previously found as engaging in social activities, and having social relations/social interaction is important for the well-being and quality of life (Larson, 1978; Moody, 2000; Gabriel and Bowling, 2004). However, when the sample is broken down by gender it turns out that becoming socially weak is somewhat strongly and negatively related to subjective well-being for males, but still insignificant for females.

Summarizing, residential mobility is positively related to subjective well-being, and especially moving closer to family members has a large impact. However, this result covers up for gender

differences as the relation between residential mobility and subjective well-being is stronger for females than for males. Several other factors affect subjective well-being, e.g. retirement, measures of general health status and experiencing death of spouse, children or friends. All these factors had the expected impact on subjective well-being.

## **6 Conclusion**

The analysis in the present paper shows that residential mobility seems to be positively related to the subjective well-being of elderly people. This result was obtained by carrying out a thorough analysis on a large dataset known as the Longitudinal Study of Elderly People. The dataset are combined survey-data and register-based data.

The point of departure was based on the assumption that elderly people may wish to change residence. One reason could be that their current residence may have become too big or expensive as the children has left and started their own households while another reason could be deteriorating health or death of spouse. Whatever the reason, changing residence to a residence that meets current needs may increase the subjective well-being.

The dependent variable is the change in subjective well-being during the period 1997-2002. This variable is constructed by carrying out a factor analysis of five Likert-type items from the survey data and then using the factor analysis to predict subjective well-being in 1997 and 2002.

The descriptive analysis suggests that those who change residence are more likely to experience increased well-being during the period 1997-2002. This holds when we distinguish between characteristics of the new residence as well, that is, whether it is smaller, cheaper or closer to family members. Furthermore, changing residence seems to offset part of the negative impact from factors that affect subjective well-being negatively.

The descriptive results are confirmed in the estimation of the empirical model. The analysis revealed a positive relation between residential mobility and subjective well-being. Those who moved closer to family members experienced the closest relation between residential mobility and subjective well-being. However, this result seems to be close to insignificant. Breaking the analysis down by gender shows that the positive relation between residential mobility and subjective well-being is more pronounced among females than among males. The gender differences may reflect that elderly women traditionally are less economically self-sufficient and therefore are more

sensitive to changing economic conditions and/or retirement, i.e. they have more to gain from changing residence than males.

The analysis revealed other interesting results in relation to well-being. The experiencing of death of spouse, children or friends has a negative impact on the subjective well-being. In particular, experiencing death of spouse (being recently widowed) has a large negative impact on the subjective well-being, especially for males. It was also revealed by the analysis that retirement affects the subjective well-being negatively, while the retirement status of one's spouse seems to have no impact. Finally, positive changes in different measures of the general health status have a positive impact on subjective well-being, with gender differences, however.

## Literature

- Arendt, J.N.; E.B. Hansen, H. Olsen, M. Rasmussen, J. Bentzen and B. Rimdahl (2003): *Levevilkår blandt folkepensionister uden supplerende indkomst*. SFI 03:15.
- Baarsen, B. van; J.H. Smit, T.A.B. Snijders and K.P.M. Knipscheer (1999): Do personal conditions and circumstances surrounding partner loss explain loneliness in newly bereaved older adults. *Ageing and Society*, 19: 441-469.
- Bennett, K.M. (1998): *Longitudinal Changes in Mental and Physical Health Among Elderly, Recently Widowed Men*. *Mortality*, 3(3): 265-273.
- Chen, P.-C. and J.M. Wilmoth (2004): The Effects of Residential Mobility on ADL and IADL Limitations Among the Very Old Living in the Community. *Journal of Gerontology: Soc Sci*, 59B(3):164-172.
- Diener, E.; E.M. Suh, R. Lucas and H. Smith (1999): Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125: 276-302.
- Ekström, M. (1994): *Residential Relocation, Urban Renewal and the Well-Being of Elderly People*. PhD thesis, Uppsala University, no. 42.
- Ermisch, J.F. and S.P. Jenkins (1999): Retirement and housing adjustment in later life: Evidence from the British Household Panel Survey. *Labour Economics*, 6: 311-333.
- Gabriel, Z. and A. Bowling (2004): Quality of life from the perspectives of older people. *Ageing & Society*, 24(5): 675-691.
- Gall, T.L.; D.R. Evans and J. Howard (1997): The Retirement Adjustment Process: Changes in the Well-Being of Male Retirees across Time. *Journal of Gerontology: Psychological Sciences*, 52B(3): 110-117.
- George, L.K. (1992): Economic Status and Subjective Well-Being: A Review of the Literature and an Agenda for Future Research. In N.E. Cutler; D.W. Gregg and M.P. Lawton, (eds.): *Ageing, Money, and Life Satisfaction*, pp. 69-99. Springer Publishing Company, New York.
- George, L.K. and G.L. Maddox (1977): Subjective Adaptation to Loss of the Work Role: A Longitudinal Study. *Journal of Gerontology*, 32(4): 456-462.
- Hansen, E. B., G. Gottschalk and M. Gleerup (2005): "Ældres flytteovervejelser og faktiske flytninger. Hvad fremmer og hvad hæmmer flytninger? – en analyse blandt 50-80-årige i 1997-2002", *akf-working paper*, April 2005
- Headey, B. and A. Waering (1989): Personality, life events and subjective well-being: Toward a dynamic equilibrium model. *Journal of Personality and Social Psychology*, 57: 731-739.
- Heckman, J.J. and V.J. Hotz (1989): Choosing among alternative non-experimental methods for estimating the impact of social programs: the case of manpower training. *Journal of the American Statistical Association*, 88(408): 862-874.
- Helson, H. (1947): Adaptation level as a frame of reference for prediction of psychophysical data. *American Journal of Psychology*, 60: 1-29.
- Herzog, A.R. and W.L. Rodgers (1981): Age and Satisfaction: Data from Several Large Surveys. *Research on Ageing*, 3(2): 142-165.



- Higgs, P.; M. Hyde, R. Wiggins and D. Blane (2003): Researching Quality of Life in Early Old Age: The Importance of the Sociological Dimension. *Social Policy and Administration*, 37(3): 239-252.
- Jæger, M.M. and A. Holm (2004): *How Stressful is Retirement? New Evidence from a Longitudinal, Fixed-effects Analysis*. CAM-working paper 2004-19.
- Kim, J.E. and P. Moen (2001): Is Retirement Good or Bad for Subjective Well-Being? *Current Directions in Psychological Sciences*, 10: 83-86.
- Kim, J.E. and P. Moen (2002): Retirement Transitions, Gender and Psychological Well-Being: A Life-Course, Ecological Model. *Journal of Gerontology: Psychological Sciences*, 57B: 212-222.
- Larson, R. (1978): Thirty Years of Research on the Subjective Well-Being of Older Americans. *Journal of Gerontology*, 33(1): 109-125.
- Loewenstein, G. and S. Frederick (2003): Hedonic Adaptation: From the Bright Side to the Dark Side. In D. Kahneman; E. Diener and N. Schwarz: *Well-Being: Foundations of Hedonic Psychology*. Russell Sage Foundation, New York.
- Magdol, L. (2002): Is Moving Gendered? The Effects of Residential Mobility on the Psychological Well-Being of Men and Women. *Sex Roles* 47(11-12): 553-560.
- Moody, H.R. (2000): *Aging – Concepts and Controversies*. 3rd edition, Thousand Oaks, Canada, Pine forge Press.
- Platz, M. (2000): Danskere med livserfaring – portrætteret i tal [Danes with life experience – a portrait in numbers]. The Danish National Institute of Social Research, Copenhagen.
- Reitzes, D.C.; E.J. Mutran and M.E. Fernandez (1996): Does Retirement Hurt Well-Being? Factors Influencing Self-Esteem and Depression among Retirees and Workers. *The Gerontologist*, 36(5): 649-656.
- Ryff, C.D. (1989): Happiness Is Everything, or Is It? Explorations on the Meaning of Psychological Well-Being. *Journal of Personality and Social Psychology*, 57(6): 1069-1081.
- Statistics Denmark (2004): *Statistical Yearbook 2004 (Statistisk tiårsoversigt 2004)*. Statistics Denmark (Danish).
- Suh, E.; E. Diener and F. Fujita (1996): Events and subjective well-being: Only recent events matter. *Journal of Personality and Social Psychology*, 70: 1091-1102.
- Tatsiramos, K. (2004): Residential Mobility and the housing adjustment of the elderly: Evidence from the ECHP for 6 European countries. Unpublished, June 2004.

## Appendix A – Description of the Variables

Variable		All		Males		Females	
		Mean	Std.dev	Mean	Std.dev	Mean	Std.dev
Spouse died recently	=1 if spouse died recently; =0 otherwise	0.063	0.243	0.042	0.201	0.082	0.274
Child died recently	=1 if child died recently; =0 otherwise	0.020	0.141	0.019	0.136	0.022	0.145
Close friend died recently	=1 if close friend died recently; =0 otherwise	0.354	0.478	0.334	0.472	0.371	0.483
Retired recently	=1 if the individual has retired recently; =0 otherwise	0.156	0.363	0.171	0.377	0.142	0.349
Spouse retired recently	=1 if the spouse has retired recently; =0 otherwise	0.141	0.348	0.145	0.353	0.138	0.345
Change in health	Difference self-reported health in 1997 and 2002	-0.163	0.914	-0.147	0.916	-0.177	0.912
Change in working capability	Difference self-reported working capability in 1997 and 2002	-0.127	0.926	-0.129	0.974	-0.124	0.881
Working capability missing	=1 if working capability is missing; =0 otherwise	0.080	0.271	0.097	0.297	0.064	0.245
Change in IADL score	Difference in IADL-score based on a factor analysis in 1997 and 2002	0.000	0.938	0.082	1.155	-0.074	0.678
Change in ADL score	Difference in ADL-score based on a factor analysis in 1997 and 2002	0.007	0.969	0.027	0.849	-0.011	1.065
Has become socially weak	=1 if socially weak in 2002 but not in 1997; =0 otherwise	0.071	0.256	0.081	0.273	0.062	0.240
<b>Residential Mobility</b>							
Moved recently	=1 if the individual changed residence during the period 1997-2002; =0 otherwise	0.184	0.387	0.172	0.377	0.195	0.396
Moved to smaller	=1 if the individual changed residence to a smaller residence during the period 1997-2002; =0 otherwise	0.115	0.319	0.098	0.297	0.130	0.336
Moved to cheaper	=1 if the individual changed residence to a cheaper residence during the period 1997-2002; =0 otherwise	0.075	0.263	0.073	0.260	0.076	0.265
Moved closer to family	=1 if the individual changed residence to a residence closer to family during the period 1997-2002; =0 otherwise	0.010	0.102	0.009	0.097	0.011	0.106
<b>Interaction terms</b>							
Spouse died × Moved recently		0.019	0.137	0.013	0.112	0.025	0.156
Spouse died × Moved to smaller		0.014	0.117	0.008	0.086	0.019	0.138
Spouse died × Moved to cheaper		0.009	0.095	0.008	0.086	0.011	0.102
Spouse died × Moved closer to family		0.002	0.039	0.002	0.043	0.001	0.036
Δ(health × working capability)		-6.440	15.031	-7.031	15.602	-5.909	14.483
Δ(health × ADL-score)		-1.243	5.736	-1.067	5.681	-1.401	5.781
Δ(health × IADL-score)		-0.894	5.671	-0.443	6.217	-1.299	5.099
Δ(ADL-score × IADL-score)		-0.583	6.014	-0.008	6.993	-1.100	4.918
N		4497		2126		2370	

## ***Appendix B – Factor Analysis of Selected Variables***

A factor analysis including several items has been used to construct the ADL (Activity of Daily Living) and IADL (Instrumental Activity of Daily Living) measures. The factor loadings are reported below.

### **Factor loadings for latent scales of ADL**

	<b>Year</b>	
	<i>ADL<sub>1997</sub></i>	<i>ADL<sub>2002</sub></i>
<b>Eigenvalue</b>	4.310	3.670
<i>Items:</i>		
<b>Being able to walk around the house</b>	0.850	0.792
<b>Being able to walk on stairs</b>	0.860	0.808
<b>Being able to dress<sup>†</sup></b>	0.904	0.808
<b>Being able to take on shoes<sup>†</sup></b>	0.893	-
<b>Being able to cut toe-nails</b>	0.438	0.626
<b>Being able to bathe</b>	0.602	0.790
<b>Being able to go outdoors</b>	0.824	0.850

<sup>†</sup>In 2002 being able to put on shoes was included in the question relating to being able to dress. In 1997 it was a separate question.

### **Factor loadings for latent scales of IADL**

	<b>Year</b>	
	<i>IADL<sub>1997</sub></i>	<i>IADL<sub>2002</sub></i>
<b>Eigenvalue</b>	2.010	2.526
<i>Items:</i>		
<b>Being able to cook their own dinner</b>	0.513	0.626
<b>Being able to go shopping</b>	0.621	0.721
<b>Being able to do laundry</b>	0.642	0.729
<b>Being able to perform heavy house-work</b>	0.684	0.728
<b>Being able to perform light house-work</b>	0.694	0.744

## Appendix C – Estimation with Alternative Dependent Variables

We have carried out the analysis with alternative dependent variables. The models are estimated as ordered probit models. The first analysis focuses on social strength in 2002 depending on social strength in 1997. The results from this analysis are presented in table C.1.

TABLE C.1  
Dependent variable: Social strength 2002

	Socially weak 1997				Neither socially strong or weak 1997				Socially strong 1997			
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Spouse died recently	0.304 0.196	0.286 0.196	0.269 0.198	0.228 0.198	0.484 ** 0.133	0.481 ** 0.132	0.484 ** 0.132	0.477 ** 0.133	0.183 * 0.110	0.161 0.110	0.188 * 0.110	
Child died recently	0.063 0.533	0.048 0.534	0.053 0.534	0.089 0.533	0.287 0.192	0.289 0.192	0.288 0.192	0.283 0.193	-0.424 ** 0.172	-0.439 ** 0.173	-0.426 ** 0.172	
Close friend died recently	-0.013 0.107	-0.009 0.107	-0.012 0.107	-0.010 0.107	0.071 0.061	0.072 0.061	0.070 0.061	0.073 0.061	0.184 ** 0.055	0.184 ** 0.055	0.182 ** 0.055	
Retired recently	-0.113 0.145	-0.108 0.145	-0.113 0.145	-0.107 0.145	0.251 ** 0.089	0.250 ** 0.089	0.252 ** 0.089	0.250 ** 0.089	0.199 ** 0.075	0.204 ** 0.075	0.201 ** 0.075	
Spouse retired recently	-0.018 0.144	-0.019 0.144	-0.018 0.144	-0.013 0.144	0.144 0.090	0.143 0.090	0.145 0.090	0.152 * 0.090	-0.113 0.074	-0.113 0.074	-0.112 0.074	
Change in health	-0.025 0.056	-0.029 0.056	-0.031 0.056	-0.038 0.056	0.030 0.033	0.030 0.033	0.030 0.033	0.032 0.033	-0.012 0.029	-0.011 0.029	-0.012 0.029	
Change in working capability	-0.002 0.049	0.000 0.049	-0.001 0.049	0.002 0.049	-0.010 0.030	-0.010 0.030	-0.009 0.030	-0.010 0.030	-0.007 0.029	-0.011 0.029	-0.007 0.029	
Working capability missing	-0.161 0.106	-0.167 0.106	-0.167 0.106	-0.178 * 0.106	-0.145 ** 0.064	-0.146 ** 0.064	-0.145 ** 0.064	-0.156 ** 0.064	-0.085 0.062	-0.092 0.062	-0.082 0.062	
Change in IADL score	-0.077 0.063	-0.072 0.063	-0.070 0.063	-0.065 0.063	0.016 0.032	0.017 0.032	0.014 0.033	0.018 0.032	0.034 0.030	0.035 0.030	0.034 0.030	
Change in ADL score	0.006 0.050	0.007 0.050	0.008 0.049	0.015 0.050	0.010 0.029	0.010 0.029	0.009 0.029	0.014 0.030	-0.022 0.031	-0.017 0.031	-0.022 0.031	
Moved recently	-0.160 0.120				-0.027 0.078				-0.012 0.068			
Moved to smaller		-0.054 0.184				0.000 0.118				0.311 ** 0.106		
Moved to cheaper			0.082 0.188				-0.102 0.109				-0.088 0.100	
Moved closer to family				0.625 0.333				0.825 0.322				

Could not be estimated

As it can be seen from table C.1, only few variables are significant, and only one of the variables that relates to residential mobility is. For those who were socially strong in 1997, moving into a smaller residence has a positive impact on the degree of social strength in 2002. However, based on the analysis table C.1 suggests that there is no strong relation between the degree of social strength and residential mobility.

The same type of analysis has been carried out where the dependent variable was whether the individuals were feeling involuntarily alone in 2002. The sample was divided into three parts depending on the degree of loneliness in 1997. The results from this estimation are presented in table C.2.

**TABLE C.2**  
Dependent variable: Feeling alone 2002

	Feeling alone 1997				Occasionally feeling alone 1997				Not feeling alone 1997				
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	
Spouse died recently	0.367 0.363	0.361 0.363	0.368 0.362		0.239 0.242	0.279 0.240	0.224 0.242	0.272 0.241	0.890** 0.087	0.893** 0.087	0.886** 0.087	0.899** 0.087	
Child died recently	0.855 0.609	0.857 0.605	0.825 0.606		-0.419 0.455	-0.449 0.457	-0.407 0.456	-0.417 0.460	-0.030 0.189	-0.033 0.189	-0.027 0.189	-0.034 0.189	
Close friend died recently	-0.250 0.219	-0.259 0.221	-0.252 0.218		-0.139 0.120	-0.148 0.120	-0.139 0.120	-0.154 0.120	0.014 0.059	0.012 0.059	0.013 0.059	0.012 0.059	
Retired recently	0.164 0.314	0.166 0.314	0.200 0.316		-0.219 0.166	-0.202 0.165	-0.214 0.166	-0.203 0.166	-0.064 0.081	-0.065 0.081	-0.067 0.081	-0.064 0.081	
Spouse retired recently	-0.789** 0.327	-0.795** 0.327	-0.764** 0.327		-0.047 0.194	-0.049 0.194	-0.021 0.193	-0.033 0.193	-0.092 0.083	-0.091 0.083	-0.093 0.083	-0.092 0.083	
Change in health	0.094 0.119	0.097 0.120	0.093 0.119		-0.089 0.059	-0.081 0.059	-0.080 0.059	-0.083 0.059	-0.006 0.031	-0.005 0.031	-0.006 0.031	-0.005 0.031	
Change in working capability	0.200 0.146	0.198 0.147	0.196 0.147	Could not be estimated	-0.271** 0.085	-0.281** 0.085	-0.278** 0.084	-0.277** 0.086	-0.037 0.032	-0.038 0.032	-0.039 0.032	-0.038 0.032	
Working capability missing	0.350 0.249	0.338 0.252	0.359 0.250		0.522** 0.147	0.521** 0.147	0.500** 0.147	0.516** 0.147	0.236** 0.068	0.237** 0.068	0.236** 0.068	0.239** 0.068	
Change in IADL score	-0.111 0.112	-0.109 0.111	-0.130 0.113		0.040 0.064	0.039 0.064	0.056 0.064	0.030 0.063	-0.051 0.034	-0.051 0.034	-0.050 0.034	-0.053 0.034	
Change in ADL score	-0.084 0.074	-0.084 0.074	-0.081 0.075		-0.073 0.053	-0.075 0.053	-0.076 0.053	-0.068 0.053	-0.017 0.029	-0.016 0.029	-0.017 0.029	-0.018 0.029	
Has become socially weak	0.370 0.426	0.368 0.426	0.341 0.428		-0.372 0.226	-0.321 0.225	-0.391* 0.226	-0.333 0.225	0.214** 0.103	0.215** 0.103	0.211** 0.103	0.213** 0.103	
Moved recently	0.023 0.216				0.290** 0.136				0.066 0.071				
Moved to smaller		0.106 0.342				0.361* 0.200			0.083 0.102				
Moved to cheaper			-0.249 0.296				0.522** 0.192		0.179* 0.100				
Moved closer to family								0.357 0.453				-0.120 0.279	

Inspecting table C.2 reveals that those who occasionally feel alone 1997 benefit from moving as they feel less alone in 2002. It holds both if they move to a smaller or cheaper residence. For the other groups it is hard to find any clear relation between feeling lonely and residential mobility.