

# Health Change in Retirement

## A Longitudinal Study among Older Workers in the Netherlands

Hanna van Solinge

*Netherlands Interdisciplinary Demographic Institute*

This study examined health change in retirement. Using multiactor panel data on 778 Dutch older workers who experienced the transition into retirement, ordinary least squares regression models were estimated to explain changes in medical consumption, the severity of health problems, and perceived health. The results show that retirement does not categorically harm or benefit health. Instead, health consequences vary across individuals and according to the health measures adopted. The results suggest that employees' failure to control retirement according to their wishes adversely affects health. Older workers who perceived retirement as involuntary showed decreases in perceived health. The results do not provide empirical support for the hypothesis that the health consequences of retirement differ according to working conditions or job characteristics or older workers' access to resources in terms of income and social contacts. Psychological factors play a role: Fear of retirement and self-efficacy are associated with health change in retirement.

**Keywords:** *older workers; retirement; subjective health; medical consumption; seriousness of illness; stressful life event*

This article deals with health change in retirement. This issue has been addressed in many earlier studies and from various disciplinary perspectives (for an overview, see Kasl and Jones 2000; Minkler 1981). Points of view have shifted over time. The older studies, in particular those conducted from 1960 to 1985, started from the assumption that retirement as a potential stressful life change event may have adverse health consequences (Ekerdt 1987; Kremer 1985). More recent studies have acknowledged that retirement may also, or predominantly, have beneficial effects on health, given that people feel less stress and are able to spend more time on healthy

pursuits. Many of these studies have looked at group rather than individual changes over time (Bossé et al. 1987; Midanik et al. 1995) or reported cross-sectional differences between workers and retirees (Drentea 2002; Herzog, House, and Morgan 1991). The empirical evidence on this issue is not uniform, in the sense that no effects (e.g., Ekerdt, Baden, et al. 1983; Mein et al. 2003), positive effects (e.g., Vallery-Masson et al. 1981), or mixed effects (e.g., Tuomi et al. 1991) are reported. These findings suggest that retirement does not categorically harm or benefit health. Instead, it is likely that health consequences vary across individuals and that the circumstances under which retirement takes place matter (Bossé et al. 1991). This article deals with the questions of how health changes in the transitional period from work to retirement and what individual characteristics and retirement conditions play a role in this respect.

Health is a broad concept, which is illustrated by the definition that has been used by the World Health Organization since 1946.<sup>1</sup> The research literature on health and retirement shows a multitude of health concepts. Measures are based on more objective data, such as the presence of disease or health problems identified in medical exams (Ekerdt, Baden, et al. 1983; Vallery-Masson et al. 1981), reported by a person himself or herself (Bossé et al. 1987), or based explicitly on subjective data, such as self-rated health (Ekerdt, Bossé, and LoCastro 1983; Kremer 1985). Instruments appear to measure different aspects of health. Elderly people who are regarded as unhealthy from an objective point of view (medical diagnosis, etc.) do not necessarily feel unhealthy (Helmer et al. 1999). People who feel physically better after retirement are not necessarily healthier in an objective sense (Ekerdt, Bossé, et al. 1983). This suggests that outcomes may vary according to the health measures adopted. This study was conducted to investigate what aspects of health are more inclined to change in retirement, and therefore a distinction was made between more objective and more subjective health measures, namely, medical consumption, the severity of health problems, and self-rated or perceived health.

---

**Author's Note:** This study was based on data collected in the context of a longitudinal study of older workers in the Netherlands conducted at the Netherlands Interdisciplinary Demographic Institute in the Hague. The research reported in this article was supported by the Dutch Organization for Scientific Research (grant 410-12-016). I am grateful to Frits Tazelaar, Kène Henkens, Frans van Poppel, William Gallo, and the three anonymous reviewers for their helpful comments and suggestions. Correspondence concerning this article should be addressed to Hanna van Solinge, Netherlands Interdisciplinary Demographic Institute, P.B. 11650, 2502 AR The Hague, The Netherlands; e-mail: solinge@nidi.nl.

This study addressed three research questions. The first was descriptive and concerned whether older workers experienced health changes in retirement. The second question concerned the conditions under which retirees experienced improvement or deterioration in their states of health. The third question examined the extent to which the findings differed for the three health aspects distinguished. The study was based on panel data on 778 older employees working in Dutch industry and trade. The employees (aged 55 years and older) were interviewed in 1995 and again in 2001. In the intervening period, all older workers except 4 made the transition into retirement. Because of their small number, the workers who did not undergo retirement were excluded from the analysis.

The Netherlands has a mandatory retirement age of 65. Early retirement arrangements are very popular and, as yet, rather generous. Only a few workers remain in the labor force until mandatory retirement. As a result, the effective retirement age is much lower than the official retirement age. For the period from 1997 to 2002, it was 61.0 years for men and 59.1 years for women. In international comparison, the effective retirement age in the Netherlands is low (Organisation for Economic Co-operation and Development 2005). Contrary to the situation in the United States, where retirement is often not a single transition but rather a “blurry” process (Mutchler et al. 1997), in the Netherlands, retirement almost without exception entails the end of paid employment.

## Conceptual Model and Hypotheses

Much of the literature on the impact of retirement on health is grounded in the stressful-life-event approach (Pearlin 1989; Wortman, Cohen Silver, and Kessler 1993). Within the stressful-life-event approach, three lines of research can be distinguished (Schwarzer and Schulz 2002). The so-called response-based perspective, adopted in much biomedical stress research, is based on the assumption that every major event in life produces stress.

In the so-called stimulus-based perspective, emphasis is placed on the event that gives rise to stress (the stimulus). The assumption is that the greater the changes events bring about, the greater the adjustment required and therefore the more stressful these events are (Holmes and Rahe 1967; Miller and Rahe 1997).

The third line of research is the so-called cognitive-stress approach (Lazarus and Folkman 1984). In this approach, an individual plays an active role in the relationship between a life event and its outcome, because he or

she assigns a cognitive and evaluative value to the event. The underlying assumption is that the stressfulness of an event is determined not only by the objective nature of the stressor but also by its subjective interpretation by the individual.

The conceptual model used in this study combined insights from these three perspectives. A step-by-step approach was used to answer the explanatory question of the conditions under which retirees experience improvement or deterioration in their states of health. The first step, more or less in line with the stimulus-based perspective, assumed that health change in retirement is associated with the characteristics of the retirement transition. In the second step, it was additionally assumed that health change in retirement is related to an individual's preretirement job characteristics. In the third step, it was assumed that health change in retirement is also related to an individual's access to financial and social resources. Together, the characteristics of the event, the characteristics of the job, and access to resources form the context in which the transition takes place. In the fourth step, which incorporated elements of the cognitive-stress approach, it was assumed that people respond not only to the objective features of a situation but also to the meaning the situation has for them. Contextual factors and an individual's appraisal of the event determine to what extent retirement affects health. I elaborate on these factors below.

## **Characteristics of the Transition**

The greater the changes caused by an event, thus requiring greater adjustment, the more stressful the event will be. In this study, it was therefore expected that retirement following a long employment history would bring about a greater change than retirement after a shorter or more fragmented career (Hypothesis 1a). Thoits (1983) argued that the stressfulness of an event is determined by factors such as the desirability of the event, the degree of control, and its predictability and irreversibility. These factors are strongly interrelated and jointly affect the degree to which the transition is perceived as voluntary. Expected changes are more easily adapted to than unanticipated events (Moen 1996), and forced retirement is a risk factor for the development of adjustment and health problems (Gallo et al. 2000; He and Marshall 2003; Herzog et al. 1991; van Solinge and Henkens 2005). In this study, it was assumed that involuntary retirement would increase the probability of health deterioration in the transition from work to retirement (Hypothesis 1b). To control for the fact that poor health may invoke premature and/or involuntary retirement (Szinovacz and Davey 2005), information

on the reason for involuntary retirement (health, organizational reasons, other reasons) was included.

Changes in a given domain of life may coincide with changes in other domains of life (e.g., Moen 1996). In many instances, there is even a clear interrelationship between changes, such as in case of retirement migration (Mulder and Hooimeijer 1999). The impact of events is presumed to be additive (Holmes and Masuda 1974; Thoits 1983). If an event coincides with changes in other domains, such as moving one's home, a serious illness in the family, or the loss of one's partner, the impact will be greater. In this study, it was expected that the probability of deterioration in health following retirement would be greater if retirement coincided with other transitions (Hypothesis 1c).

### **Characteristics of the Job**

Events may bring about both loss and gain. Which element predominates will differ from one individual to the next (Murray Parkes 1993). Effects likely depend on a particular job and its features, such as physical demands, workload, and intrinsic value (Shultz, Morton, and Weckerle 1998; Wheaton 1990). There is ample evidence that working conditions increase the onset of health-related problems among older workers (Blekesaune and Solem 2005; Hayward, Friedman, and Chen 1998). Retirement may then come as a relief. In this study, it was assumed that the more physically demanding a job (Hypothesis 2a) and the higher the job pressure (Hypothesis 2b), the greater the advantages of retirement. In such instances, the probability of an improvement in health will be greater. It was also expected that the greater the intrinsic value of a job, for example, because the job offers greater challenges (Hypothesis 2c), and the greater the prestige offered by the job (Hypothesis 2d), the greater the potential loss. In this situation, retirement will likely be more stressful and this will increase the probability of deterioration in health.

### **Access to Resources**

Some people are more vulnerable to change and stress and are therefore likely to be more susceptible to health problems than others. This susceptibility is determined in part by the access an individual has to resources. Social and financial resources are particularly important in this respect (Wortman et al. 1993). Resources can be organized to mitigate or neutralize the negative consequences of an event. Marriage is considered a resource.

Thus, it was expected that ties to a spouse might buffer the potential stressful or negative effects of retirement (Hypothesis 3a). With respect to support given by a partner, I examined to what extent the sole presence of a partner acts as a buffer or whether it is the quality of the partner relationship (in terms of interaction) that makes the difference. Participation in postretirement informal networks is considered to be consequential for the health of retirees (Moen 1996). This possibility is restricted when most people in one's social network are still active in the labor force (Hypothesis 3b). Socioeconomic resources promote health throughout the life course (e.g., Borg and Kristensen 2000), including following retirement (e.g., Deeg and Bath 2003). Financial resources could constrain the economic means for optimal health care, and financial strain can produce stress. It was thus expected that older workers with lower household incomes would be more likely to experience health problems in retirement (Hypothesis 3c). Hobfoll (1989) stated that it is not so much the availability of or access to resources as such but rather a change in the level of resources (notably a loss of resources) that produces stress, particularly if the loss cannot be compensated for. It was thus expected that the greater the drop in income following retirement, the greater the probability of a deterioration in health (Hypothesis 3d).

## **Individual Appraisal**

Individual behavior is influenced not only by the objective characteristics of a situation (the context) but also by the meaning people assign to the situation or event (e.g., Moen 1996; Taylor and Cook 1995). Negative expectations and fears about retirement contribute to delayed retirement (Barnes-Farrell 2003; Fletcher and Hansson 1991; Henkens 1999; Henkens and Tazelaar 1997). Older workers with negative expectations about the consequences of leaving their jobs are likely to experience greater difficulty adjusting to retirement (van Solinge and Henkens 2005). Thus, it was expected in this study that an individual's preretirement appraisal of the impact of retirement predicts to what extent retirement is experienced as a stressful event. The more an older worker expresses fear about retirement, the more likely is a deterioration in health following retirement (Hypothesis 4a).

Various authors (e.g., Gall, Evans, and Howard 1997; Heckhausen and Schulz 1995; Moen 1996; Taylor and Cook 1995) have argued that control, the feeling that one is able to manage transitions and life changes, is an important factor with regard to adjustment to new circumstances and successful aging (Krause and Shaw 2003). Older workers who have confidence in their own ability to cope with change (self-efficacy) have less difficulty

adjusting to retirement (van Solinge and Henkens 2005). It was therefore assumed that self-efficacy would influence the ways in which individuals deal with stressful events. Older workers who feel that they are less able to deal with changes should be more likely to experience stress after retirement and a deterioration in health (Hypothesis 4b).

## **Gender**

Gender structures preretirement employment experiences (Calasanti 1996), and this may lead to significantly different postretirement experiences as well. Most studies on women's retirement assume that women, given their different work histories and general life experiences, may adjust differently than men. It has been suggested that gender-based differences in work commitment, caused by the fact that women's primary role was in the home, result in fewer adjustment problems among women (Gratton and Haug 1983; Moen 1996). Following this line of reasoning, retirement may be less stressful, and one may expect women to be less likely to experience a deterioration of health in retirement (Hypothesis 5). The empirical evidence, however, is mixed (for an overview of this literature, see Slevin and Wingrove 1995).

## **Method**

### **Data Source**

The data were taken from a panel study on retirement behavior. The first wave of this longitudinal study on retirement behavior was carried out in the spring of 1995. Data were collected among older employees working in more than 50 operating companies of two large Dutch multinational companies active in the field of retail and trade and industry. A questionnaire was mailed to all employees aged 55 years and older and their partners. Older workers and partners were asked about their plans and preferences regarding retirement, and information was gathered about their job situations, health, financial situations, and expectations about retirement (for details, see Henkens 1999). Response in the first wave was 78% for older workers and 97% for partners. In the spring of 2001, a follow-up study was conducted. For this follow-up, participants in the first wave were approached. A total of 1,058 questionnaires were sent out. Response after two reminders was 75% for older workers and 97% for partners, which means that 59% of the original sample of older workers participated in both waves. Sensitivity

analysis using multivariate analysis revealed that no selective attrition between the first and second waves could be established with respect to the independent variables in the model.

The 793 questionnaires returned showed that only 4 people had not made the transition into retirement between the two waves of the study. Because of their small numbers, the nonretirees were excluded from the analysis. Complete information was gathered on a total of 778 people who had recently withdrawn from the labor force. Of the sample, 58% were men. The average age of the respondents in 1995 was 57.1 years ( $SD = 1.7$  years). The average age at retirement in the sample was 60.0 years ( $SD = 1.8$  years), almost identical to the effective retirement age in the Netherlands in the period from 1997 to 2002 (Organisation for Economic Co-operation and Development 2005). Only 2.5% of the sample retired at the mandatory retirement age of 65 years. Almost all of the questions were closed-ended questions. The item nonresponse was low (on average less than 3%). Missing data were imputed using the MVA option in SPSS (Acocck 2005).

## Measuring Instruments

Three aspects of health were distinguished: medical consumption, the severity of health problems, and self-rated or perceived health. Following Kremer (1985) and Muller and Boaz (1988), it was assumed that health problems manifest themselves in medical consumption, such as visiting a general practitioner or a medical specialist and using medication. In both waves, data were collected on the last visit to a family doctor, the number of visits to a general practitioner in the past two months, treatment by and/or contact with a medical specialist, and the use of prescribed medicine in the past two weeks. A scale was constructed by summing the standardized and unweighted answers to these five questions ( $\alpha = .67$  in 1995,  $\alpha = .72$  in 2001). The scale was subsequently linearly transformed, and ranged from 0 (*very low medical consumption*) to 10 (*very high medical consumption*).

To measure the severity of health problems, in both waves, older workers were asked if they had any serious health problems at present and if so to describe them. The answers to this open-ended question were coded on the basis of a modified version of the Seriousness of Illness Rating Scale (Bossé et al. 1987). This scale assigns values to a large number of illnesses and conditions corresponding to their seriousness. The values have been assigned by medical specialists on the basis of factors such as prognosis, duration, threat to life, physical limitations, and degree of discomfort (Wyler, Masuda, and Holmes 1967) and range from 3 (a cold) to 124 (cancer). In case of multimorbidity, the condition with the highest score was assigned.



Perceived health was a general self-assessment of physical health. This measure was represented by a single question asking respondents to rate their health at the present time. The five answer categories ranged from 1 (*very good*) to 5 (*very bad*). In national population surveys, global self-rated health has been found to provide a reliable, valid, and cost-effective measure of health (e.g., Cunny and Peri 1991; Van de Water, Boshuizen, and Perenboom 1996). Single-item measures of perceived health have been criticized because there is limited understanding of the complex and varied processes that individuals use to rate their health (Idler et al. 2004; Krause and Jay 1994). Nonetheless, single-item, self-rated health assessments have been consistently shown to predict mortality and functional decline (Grant, Piotrowski, and Chappell 1995; Idler, Hudson, and Leventhal 1999; Wolinsky and Johnson 1992). Perceived health appears to have an added value compared with measures obtained by more objective measurements of health conditions (Deeg and Bath 2003).

Table 1 presents information about the independent variables used. Access to resources, job characteristics, and pretirement expectations were taken from wave 1; transitional characteristics and changes in resources were taken from wave 2. Unfortunately, the measure for self-efficacy was available only in the follow-up study. The measure used here measures the confidence people have in their own ability to effectively cope with general changes (Sherer et al. 1982) as opposed to domain-specific measures, which relate to specific situations or behavior. Although self-efficacy is influenced in part by earlier experiences in life, general self-efficacy appears to be relatively stable over time (Hofstetter, Sallis, and Hovell 1990). This seems to justify the use of this measure as an independent variable in the explanatory model.

The effect of involuntary retirement was captured with dummy variables that combined information on the extent to which retirement was perceived as involuntary (voluntary, a bit involuntary, or very involuntary) and the reason for involuntary retirement (health reasons, organizational reasons, or other reasons). Seven dummies were used in the analysis (a bit involuntary–health reasons, a bit involuntary–organizational reasons, a bit involuntary–other reasons, very involuntary–health reasons, very involuntary–Organizational reasons, and very involuntary–other reasons), with voluntary retirement as a reference.

## Analytical Method

Ordinary least squares regression was used to determine the conditions under which retirement results in a change in health (be it an improvement or a deterioration). A so-called conditional change model was used, in which

*(text continues on page 237)*

**Table 1**  
**Means, Standard Deviations, Coding Algorithms, Wording of Survey Questions, and Psychometric Properties of the Dependent and Independent Variables (N = 778)**

	<i>M</i>	<i>SD</i>	Coding Algorithm	Wording	Psychometric Properties
Context					
Gender	0.6	0.5	Dummy (1 = male)		
Age at baseline (years)	57.1	1.8	Reconstructed from year of birth		
Time elapsed since retirement (years)	3.2	1.5	Year of interview (2001) minus year of exit from labor force		
Transition characteristics					
Involuntary retirement (seven dummies measuring voluntariness of retirement)	0.67	0.47	Voluntary retirement (reference)	Dummy variable combining information on the extent to which retirement was voluntary and reason for involuntary retirement (health, organizational, other reason)	
	0.03	0.18	A bit involuntary–health reason	“Was your decision to retire (early) entirely voluntary, or not?” (Two answer categories: 1 = yes, 2 = not [entirely] voluntary)	
	0.07	0.26	A bit involuntary–organizational reason	“My decision to retire was voluntary.” (Five answer categories: 1 = <i>completely agree</i> , 5 = <i>completely disagree</i> )	
	0.09	0.28	reason		
	0.03	0.18	A bit involuntary–other reason		
	0.08	0.27	Very involuntary–health reason		
	0.02	0.14	Very involuntary–organizational reason		
Work history (years)	39.6	8.0	Very involuntary–other reason	Number of years in labor force	NA
Number of simultaneous events	0.6	0.7	Continuous variable ranging from 7 to 51		NA
			1. Sum of life events between time 1 and time 2	“Have you experienced one of the following life events since the first interview in 1995: moving home, death of spouse, divorce, and serious illness in the family?”	
			2. Weighted sum of events	Weighted using Miller and Rahe (1997)	

Job characteristics						
Demanding job (t1)	0.2	0.4	Dummy (1 = physically and/or environmentally demanding)	"Is your work physically demanding?" (Yes/no)		NA
Job pressure (time 1)	2.6	1.2	Three-item scale ranging from 0 = <i>not challenging at all</i> to 5 = <i>very challenging</i>	"Is your work characterized by many inconveniences (like smell, noise, and draught)?" (Yes/no) "At times, job pressure is so great that it creates tensions." "At times, there is so much work to be done that I'm unable to do everything well." "I often have to do my utmost to perform well." (Five answer categories: 1 = <i>completely agree</i> , 5 = <i>completely disagree</i> )		$\alpha = .87$
Job challenge (time 1)	2.3	1.4	Three-item scale ranging from 0 = <i>not challenging at all</i> to 5 = <i>very challenging</i>	"My work is characterized by many challenging tasks." (Two answer categories: 0 = no, 1 = yes) "The work I am doing is not very challenging." "The work I am doing has become more and more boring and routine." (Five answer categories: 1 = <i>completely agree</i> , 5 = <i>completely disagree</i> )		$\alpha = .70$
High prestige job (t1)	0.1	0.3	Dummy (1 = yes)	Dummy variable indicating whether the respondent assessed his or her job as prestigious		NA
Resources						
Household income (time 1)	36.1	22.3	Sum of worker's and partner's yearly income (in euros divided by 1,000), ranging from 6 to 154	Worker's salary obtained from the Central Salary Administrations, partner's income asked in questionnaire		NA

(continued)

**Table 1 (continued)**

	<i>M</i>	<i>SD</i>	Coding Algorithm	Wording	Psychometric Properties
Replacement rate	81.3	3.2	Continuous variable ranging from 68.8 to 88.4	Net replacement rate is the percentage of the net monthly salary received after retirement (obtained from the Central Salary Administrations)	NA
Marital interaction	0.2	0.4	No partner (reference)	Marital interaction was assessed by a question posed to both older worker and spouse on the extent to which spouse is involved in shared activities/shared interests. The answers were combined in one scale.	$\alpha = .61$
action (time 1)	0.4	0.5	Partner–little interaction	“Do you and your husband/wife share many interests?” (Posed to both worker and partner if available; five answer categories: 1 = <i>yes, many</i> , to 5 = <i>no, very few</i> ; coding reversed)	
(three dummies)	0.4	0.5	Partner–much interaction		
Friends/family have retired (time 1)	2.9	1.0	Two-item scale ranging from 1 = <i>most of the social network active in the labor force</i> to 5 = <i>most of the social network have retired</i>	“Most of my friends have stopped working.” “Most of my brothers and sisters have stopped working.” (Five answer categories: 1 = <i>completely agree</i> , 5 = <i>completely disagree</i> ; coding reversed)	$\alpha = .53$
Individual appraisal					
Fear of retirement (time 1)	2.3	0.8	Summed answers to 6 questions ranging from 1 = <i>not much fear</i> to 5 = <i>strong fear</i>	“To what extent will you miss: Income, social contacts with co-workers, self-esteem, social status, routine, goal in life?” (Five answer categories: 1 = <i>very much</i> , 5 = <i>not at all</i> ; coding reversed)	$\alpha = .80$
Self-efficacy (time 2)	6.4	1.9	Four-item scale ranging from 0 = <i>low level of self-efficacy</i> to 10 = <i>high level of self-efficacy</i>	Shortened version of the General Self-Efficacy Scale (Scherer et al. 1982): “If I make plans, I am convinced I will succeed in executing them”; “If I absolutely want something, it usually goes wrong”; “I doubt myself”; “If I have the impression something new is complicated, I don’t start.” (Five answer categories: 1 = <i>completely agree</i> , 5 = <i>completely disagree</i> )	$\alpha = .57$

Note: NA = not applicable.

the value of the health variable in question at time 2 was predicted on the basis of the value of the same variable at time 1, various independent variables, and a random error term (Finkel 1995). Because the effects of the health of an older worker at time 1 were controlled for, the significant effects of the independent variables could be interpreted as factors that play a role in changes in health. High values for the dependent variables indicated deterioration in health, whereas low values indicated improvement.<sup>2</sup>

Apart from baseline health, age and time since retirement were included as control variables in the models. Age was included to distinguish age-related health declines from health declines following retirement. To account for possible time-dependent (or stage-dependent) variation in health and well-being (Atchley 1976; Gall et al. 1997), time elapsed since retirement was included as a control variable.<sup>3</sup>

## Results

### Descriptive Analysis

Table 2 presents the intercorrelations between the three outcome variables at time 1 (before retirement) as well as time 2 (after retirement). On the basis of the correlation coefficients between the variables at time 1, it can be concluded that there was some overlap. However, the correlations were not sufficiently strong to conclude that parallel measurements were required.

Table 3 provides an overview of respondents' health before and after retirement. The number of older adults who received specialist medical care dropped from 57% to 31% ( $\chi^2 = 112.6$ ,  $df = 1$ ,  $p < .01$ ), and the use of medication declined from 52% to 46% ( $\chi^2 = 5.56$ ,  $df = 1$ ,  $p < .05$ ). The average score on the medical consumption scale was lower in 2001 than in 1995. With respect to the seriousness of illness, no significant changes were observed between 1995 and 2001. Perceived health, finally, was more positive following retirement in 2001 than in 1995 ( $\chi^2 = 6.44$ ,  $df = 2$ ,  $p < .05$ ). These results paint a slightly positive general picture. The average results, however, conceal considerable diversity. In terms of subjective health, 25% of the older workers experienced improvements and 19% deteriorations. In terms of serious health problems, 15% faced improvements and 15% declines.

### Multivariate Analysis

Tables 4a to 4c present the results of the regression analyses to explain changes in health in retirement. Apart from a base model that included the

**Table 2**  
**Intercorrelations between the Three Outcome Variables at**  
**Time 1 (before retirement) and Time 2 (after retirement)**

	Time 1			Time 2	
	Medical Consumption	Seriousness of Health Problems	Perceived Health	Medical Consumption	Seriousness of Health Problems
Time 1					
Medical consumption	—				
Seriousness of health problems	.38**	—			
Perceived health	.28**	.56**	—		
Time 2					
Medical consumption	.29**			—	
Seriousness of health problems		.37**		.48**	—
Perceived health			.46**	.52**	.54**

\*\**p* < .01.

baseline value of the dependent variable (Model 0), four models were estimated for all three dependent variables. The first model included only characteristics of the transition, in addition to the baseline values of the dependent variables and the control variables (Model 1). In the second model, characteristics of the job were added (model 2). The third model additionally included access to resources (Model 3). The fourth model examined the contribution of individual appraisal to explaining health changes in retirement (Model 4).

To investigate gender differences in the response to retirement, the final model was run separately for men and women. To test for differences in coefficients between men and women, a Chow test was performed (Gould 2002). Chow statistics revealed significant gender differences on only one occasion. In the regression analysis explaining changes in perceived health on retirement, coefficients for time elapsed since retirement differed significantly for men and women. The results indicated that men reported more health problems directly after retirement than women.

The results of Model 1 (Tables 4a to 4c) showed that after controlling for age, time since retirement, and baseline health, characteristics of the transition played a role in explaining changes in health in the transition from work to retirement. It is not surprising that older workers who left the labor

**Table 3**  
**Descriptive Statistics for the Dependent Variables in 1995**  
**and 2001 (N = 778)**

Variable	1995: Before Retirement	2001: After Retirement
<b>Medical consumption</b>		
“When was your last visit to your GP?” <sup>a</sup> (%)		
<2 months	34	34
Between 1 and 12 months	40	44
>1 year	26	22
Total	100	100
“Are you receiving specialist care or are you having regular specialist medical checkups?” (%) yes	57	31
“Have you taken any prescription drugs in the past two weeks?” (%) yes	52	46
Average value of medical consumption (0 = <i>very low</i> , 10 = <i>very high</i> )	2.5	2
<b>Seriousness of health problems</b>		
Average value of seriousness of health problems <sup>a</sup> (3 = a cold, 124 = cancer)	33.3	34
<b>Perceived health</b>		
“How would you describe your general state of health?” (%)		
(Very) good	82	86
Not good/not bad	14	11
(Very) bad	4	3
Total	100	100
Average value of perceived health (1 = <i>very good</i> , 5 = <i>very bad</i> )	1.9	1.8

Note: GP = general practitioner.

a. Differences between 1995 and 2001 not significant.

force involuntary for health reasons had lower postretirement scores on all health measures. A comparison of the coefficients for those who retired a bit involuntarily for health reasons and for those who retired very involuntarily revealed that the extent to which a health-induced retirement transition was perceived as forced had only weak additional explanatory power (Tables 4a to 4c).

There was evidence that involuntary retirement for other than health reasons had an impact on perceived health (Table 4c). Compared with workers who retired voluntarily, workers who retired involuntarily for organizational

*(text continues on page 246)*

**Table 4a**  
**Results of the Ordinary Least Squares Regression Explaining Changes in Medical Consumption**

Medical Consumption at Time 2										
	Model 0		Model 1A		Model 2A		Model 3A		Model 4A	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
Constant	1.18**	10.34	1.16	0.54	1.19	0.55	-0.53	-0.16	-0.10	-0.03
Baseline value of medical consumption	0.33**	8.36	0.30**	7.50	0.30	7.42	0.30**	7.43	0.30**	7.38
Gender (1 = male)			-0.04	-0.27	0.00	0.03	-0.15	-0.85	-0.14	-0.80
Age			0.00	0.02	0.00	0.06	0.01	0.22	0.01	0.16
Time elapsed since retirement			0.03	0.60	0.02	0.53	0.01	0.33	0.02	0.42
Context										
Transition characteristics										
Voluntariness of retirement										
Voluntary retirement (reference)										
A bit voluntary—health reasons			0.93**	2.79	0.93**	2.77	0.91**	2.72	0.88**	2.61
A bit voluntary—organ. reasons			0.22	0.92	0.22	0.92	0.24	1.00	0.22	0.92
A bit voluntary—other reasons			0.25	1.15	0.25	1.13	0.25	1.14	0.24	1.11
Very voluntary—health reasons			1.02**	3.04	1.02**	3.03	1.05**	3.13	1.00**	2.96
Very voluntary—organ. reasons			-0.10	-0.46	-0.10	-0.42	-0.08	-0.37	-0.07	-0.32
Very voluntary—other reasons			-0.30**	-0.70	-0.30**	-0.71	-0.20	-0.48	-0.24	-0.58
Number of years in labor force			-0.01	-0.83	-0.01	-0.90	0.00	-0.39	0.00	-0.40
Number of simultaneous events			0.30	3.34	0.30	3.30	0.29**	3.26	0.30**	3.31



Job characteristics									
Demanding job	-0.09	-0.60	-0.07	-0.50	-0.07	-0.07	-0.44		
Job stress	0.00	0.07	0.00	0.05	-0.01	-0.01	-0.14		
Job challenge	-0.02	-0.32	-0.04	-0.79	-0.03	-0.03	-0.54		
Job prestige	0.00	-0.40	-0.01	-1.11	-0.01	-0.01	-0.88		
Resources									
Financial									
Household income			0.08#	1.77	0.08#	0.08#	1.72		
Replacement rate			0.01	0.48	0.01	0.01	0.43		
Marital interaction									
Respondent has no partner (reference)									
Partner–little interaction			0.41*	2.31	0.44*	0.44*	2.40		
Partner–much interaction			0.35*	2.00	0.38*	0.38*	2.20		
Social network									
Friends/family have retired			-0.02	-0.37	-0.02	-0.02	-0.39		
Individual appraisal									
Preretirement fear of retirement									
Self-efficacy	8.3	12.1		13.4			0.45		
Significant <i>F</i> change	0.00	0.00		0.62			-1.73		
<i>R</i> <sup>2</sup>							13.8		
							0.18		

Note: Low values on the dependent variable indicate low medical consumption, and high values indicate high medical consumption.  
#*p* < .10. \**p* < .05. \*\**p* < .01.



Demanding job	3.90	1.64	3.78	1.59	3.67	1.54
Job stress	-0.24	-0.28	-0.31	-0.36	-0.35	-0.41
Job challenge	-0.74	-0.94	-0.60	-0.74	-0.62	-0.75
Job prestige	0.13#	1.73	0.14	1.45	0.16#	1.69
Resources						
Financial						
Household income			0.23	0.32	0.29	0.39
Replacement rate			0.16	0.38	0.23	0.55
Marital interaction						
Respondent has no partner (reference)						
Partner–little interaction			-1.10	-0.39	-0.44	-0.16
Partner–much interaction			0.33	0.12	1.35	0.49
Social network						
Friends/family have retired			-0.96	-0.96	-1.04	-1.03
Individual appraisal						
Preretirement fear of retirement					2.93	2.19
Self-efficacy					-0.07**	-0.13
$R^2$	13.7	17.4	18.0	18.1		18.7
Significant $F$ change	0.00	0.00	0.27	0.90		0.08

Note: Low values on the dependent variable indicate few health problems, and high values indicate many health problems.  
# $p < .10$ . \*\* $p < .01$ .

**Table 4c**  
**Results of the Ordinary Least Square Regression Explaining Changes in Perceived Health**

	Perceived Health at Time 2									
	Model 0		Model 1C		Model 2C		Model 3C		Model 4C	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
Constant	0.99**	16.34	0.16	0.19	0.12	0.14	0.05	0.04	0.27	0.19
Baseline value perceived health	0.43**	14.29	0.39**	12.57	0.39**	12.03	0.39**	12.02	0.39**	12.03
Gender (1 = male)			-0.04	-0.82	-0.04	-0.64	-0.05	-0.77	-0.04	-0.62
Age			0.01	0.85	0.01	0.92	0.01	0.76	0.01	0.56
Time elapsed since retirement			-0.01	-0.80	-0.02	-0.89	-0.02	-0.93	-0.01	-0.56
Context										
Transition characteristics										
Voluntariness of retirement										
Voluntary retirement (reference)										
A bit voluntary—health reasons			0.59**	4.43	0.57**	4.29	0.59**	4.39	0.55**	4.14
A bit voluntary—organ. reasons			-0.02	-0.19	-0.02	-0.21	-0.01	-0.10	-0.03	-0.28
A bit voluntary—other reasons			0.19*	2.18	0.18*	2.14	0.17*	1.99	0.16	1.87
Very voluntary—health reasons			0.62**	4.69	0.62**	4.65	0.63**	4.74	0.58**	4.37
Very voluntary—organ. reasons			0.17#	1.92	0.17*	1.96	0.19*	2.12	0.18*	2.00
Very voluntary—other reasons			-0.15	-0.93	-0.14	-0.86	-0.14	-0.85	-0.19	-1.11
Number of years in labor force			0.00	0.95	0.00	0.97	0.00	1.08	0.00	1.04
Number of simultaneous events			0.04	1.23	0.05	1.29	0.05	1.30	0.05	1.44

Job characteristics												
Demanding job												
Job stress												
Job challenge												
Job prestige												
Resources												
Financial												
Household income												
Replacement rate												
Marital interaction												
Respondent has no partner (reference)												
Partner-few interaction												
Partner-much interaction												
Social network												
Friends/family have retired												
Individual appraisal												
Preretirement fear of retirement												
Self-efficacy												
$R^2$	20.8											
Significant $F$ change	0.00	25.7	0.00	25.9	0.61	26.5	0.37					

Note: Low values on the dependent variable indicate perceived bad health, and high values indicate perceived good health.  
 $\#p < .10$ .  $*p < .05$ .  $**p < .01$ .

or other reasons (e.g., care obligations) were more likely to experience declines in perceived health after retirement. Again, the degree of involuntariness had no additional explanatory power. No significant effects were established for medical consumption (Table 4a) or the seriousness of health problems (Table 4b). Hypothesis 1b was therefore only partially confirmed. The expected influence of accumulation of events on health was confirmed for medical consumption. The more other events experienced around the retirement transition, the greater the probability of an increase in medical consumption. No significant effects were established for the other dependent variables. Hypothesis 1c was thus partly supported.

Interestingly, adding characteristics of the job to the regression equation (Model 2) did not yield a significant improvement in the explanatory power of the models used. Job characteristics appeared to play a minor role in explaining health change after retirement. The assumption that retirement would improve health in instances in which jobs were physically demanding (Hypothesis 2a) or characterized by high job pressure (Hypothesis 2b) was not confirmed. The hypothesis that retirement would be more stressful and would therefore increase the likelihood of a deterioration in health for people who had jobs that offered many challenges (Hypothesis 2c) and large social prestige (Hypothesis 2d) was not confirmed either.

In Model 3, access to resources was added to the regression equation. This did not result in a significant improvement in the model's explanatory power. There was some indication that access to financial resources was related to health in retirement (Hypothesis 3b). Whereas there appeared to be a correlation between household income and medical consumption ( $p < .08$ ) as well as between household income and perceived health ( $p < .06$ ), the direction of these correlations was opposite to what was assumed: Older workers with higher household incomes were more likely to experience increases in medical consumption and decreases in perceived health after retirement. No significant effect was found for social contacts (Hypothesis 3c). A significant correlation was found, however, between medical consumption after retirement and the presence of a partner, but again, the direction of the correlation was opposite to what was assumed (Hypothesis 3a). An increase in medical consumption after retirement was found to be more common among people with partners than among those without partners. The quality of the relationship did not contribute to explaining changes in medical consumption. The hypothesis that a change in the level of resources would produce health problems was not confirmed. The likelihood of deterioration in health after retirement was not significantly greater among people who experienced decreases in income (Hypothesis 3d).

Model 4 was the final model. The results showed that individual appraisal played a role in explaining health changes after retirement. The explanatory power of the model in this step increased significantly for the seriousness of illness and perceived health. The ideas and expectations people have about retirement affect their states of health. The more fears about retirement, the greater the increase in the severity of health problems (Table 4b) and the greater the decrease in perceived health (Table 4c) after retirement (Hypothesis 4a). Furthermore, older workers who felt more uncomfortable about their ability to deal with change (self-efficacy) were more likely to experience deteriorations in health (Table 4c) and increases in medical consumption (Table 4a) (Hypothesis 4b).

In this study, only weak empirical evidence was found for the hypothesis that retirement would have different health consequences for women and men (Hypothesis 5).

## Conclusion and Discussion

The main question pursued in this study was whether and under what conditions individuals experience health reversals in retirement. Seven hundred seventy-eight older workers were followed in their transitions from work to retirement. To understand health as a multifaceted concept, three different measures were used.

This study provides additional empirical evidence for the notion that retirement does not categorically harm or benefit health. Instead, health consequences vary across individuals and according to the health measures adopted. On average, health did not deteriorate and even improved on some of the measures (self-rated health and medical consumption) during a period of 6 years, from age 57 to 63 (average), in which the older workers made the transition into retirement. Compared with the results of current health studies (e.g., Buckley et al. 2004; Van Lindert, Droomers, and Westert 2004), which show a clear negative relationship between age and various health indicators, the average positive effect found here, although relatively small, is remarkable.

Analyses specifying the conditions under which individuals experience health change in retirement reveal that knowledge of the characteristics of the transition contributes to the understanding of health change. The assumption put forward in the stimulus-based perspective (e.g., Holmes and Masuda 1974; Holmes and Rahe 1967) that life events are more stressful and will have more adverse consequences when they involve greater changes is partly

supported. Medical consumption has been found to increase more strongly among people who experience other stressful events at the same time as the transition into retirement. Earlier research has shown that the degree of control over the decision to leave the labor force is an important factor affecting adjustment to retirement (van Solinge and Henkens 2005). This study provides additional evidence that employees' failure to control retirement according to their wishes has adverse effects on health (e.g., Gallo et al. 2000; He and Marshall 2003; Marshall and Clarke 1998). The results of this study, however, indicate that the strong association found in other studies (Herzog et al. 1991; Palmore, Fillenbaum, and George 1984) might be primarily attributable to the fact that forced retirement is often induced by health reasons. The results of this study show that, controlling for health as a reason for leaving the labor force (6% of the total sample, 30% of involuntary retirees), involuntary retirement negatively influences health in subjective terms (i.e., perceived health).

This study does not provide empirical support for the suggestion put forward by Shultz et al. (1998) and Wheaton (1990) that the health consequences of retirement differ according to work conditions and/or job characteristics. I did not find evidence that retiring from a stressful or physically demanding job leads to an improvement in health. This is in line with the findings of other studies (e.g., Marmot and Shipley 1996), suggesting that occupying demanding, lower strata jobs produces more rapid physiological aging as a consequence of the accumulation of hardship over the life course. Although leaving the labor force can give these older workers a sense of relief, it does not lead to an improvement in health.

Only weak support was found for the hypothesis that access to resources in terms of money and social contacts or a decline in income predicts health change in retirement. Nor was strong evidence found for the assumption that the presence of a partner mitigates the negative consequences of stressful situations. Much research into stress assumes that partners act as buffers in stressful situations (e.g., DuPertuis, Aldwin, and Bossé 2001; Lin et al. 1979; Norris and Murrell 1984). The partners of retired workers were found to play a role in medical consumption: Medical consumption tended to increase more strongly among older workers with partners than among those without partners. Contrary to what has been assumed, the quality of the relationship did not play a role. It is known that decisions about retirement are strongly influenced by the older workers' partners (Henkens and van Solinge 2002) and that their reasons for encouraging or discouraging retirement are often related to health (Henkens 1999). This study suggests that partners act as "watchdogs" with respect to older workers' health not only in the period



leading up to retirement but also after retirement. Partners stipulate that older workers seek medical assistance promptly. This underscores the role of spouses as major actors in the retirement transition.

This study also supports the assumption derived from the cognitive-stress approach that an individual's appraisal is a crucial factor in the relationship between a life event and its outcome (Lazarus and Folkman 1984). Further evidence was found for the importance of individual differences in appraisal with regard to health in the transition from work to retirement (e.g., Gall et al. 1997). The results show that preretirement fear about retirement, or retirement anxiety, plays a role in the development of health problems in retirement. Health, both objectively in terms of the severity of health problems and in subjective terms (perceived health), decreased among older workers who had negative expectations about retirement. The results of this study provide strong support for the suggestion put forward by Krause and Shaw (2003) that feelings of personal control are associated with health. Persons who feel more confident about their own ability to cope with changes (high self-efficacy) showed more favorable health change: An increase in perceived health and a decrease in medical consumption were seen, even if the objective facts in terms of the severity of health problems may not have changed.

When evaluating the results presented here, some limitations must be mentioned. First, because almost all respondents made the transition into retirement between the baseline study in 1995 and the follow-up study in 2001, there was no control group of older adults who remained in the labor force. Although the possibility that health change may have occurred prior to retirement was controlled for, it was not possible to determine whether health changes between waves 1 and 2 were the result of retirement as such or whether they could be attributed to the aging process or to other unmeasured determinants. However, the fact that the average trend suggests health improvement rather than deterioration indicates that the aging effect is not of overriding importance. Future studies, however, should also gather information about older adults who do not leave the labor force.

Second, this study examined the experiences of older workers who left paid work via early retirement arrangements or as a consequence of reaching the mandatory retirement age of 65 years. Many older workers in the Netherlands, however, leave the labor force at much younger ages (e.g., 50 to 55 years) as a result of disability or unemployment (de facto early retirement). As a consequence, the older workers who survive in the labor force until (early) retirement will be relatively healthy and the changes in health relatively modest. A sample made up of older individuals with greater variation on all health

measures (e.g., including also persons who left the labor force via de facto early retirement arrangements) would provide a more rigorous test of the manner in which retirement may affect health.

A third point that warrants attention concerns the health measures. Three measures were used in this study, ranging from objective to subjective and jointly offering a broad overview of health. It could be questioned whether medical consumption reflects care-seeking behavior rather than health. The effects of exposure to other life transitions and partner support point in the direction of a utilization effect, which may or may not go together with health change. With respect to self-rated health, it could be argued that this measure may reflect in part the influence of morale and depression. The existence of a correlation between self-rated health and depression among older adults has been demonstrated in a variety of studies (Han 2002; Mulsant, Ganguli, and Seaberg 1997; Pinquart 2001). The mechanism that underlies this association remains unclear (see Kosloski et al. 2005). One possibility is that poor health or a perceived change in one's overall health leads to depression. An alternative possibility is that a depressed state causes a change in the assessment of one's health. The study of Kosloski et al. (2005) on data from the Health and Retirement Study showed that depressive symptomatology has little, if any, effects on self-rated health. Self-rated health, however, clearly affects depressive symptomatology, the conclusion being that global pronouncements of overall health are not simply manifestations of a depressive state. Nevertheless, retirement may have, maybe even in the first instance, repercussions for people's mental health or morale (Gall et al. 1997; Kim and Moen 2002; Reitzes, Mutran, and Fernandez 1996). This issue was not addressed in this study but is worth investigating. Future studies should therefore include one or more psychological measures of health in addition to physical health measures.

Furthermore, one may question whether retirement should still be viewed as a stressful life event. The results of this study suggest that for many older workers, it is not. This holds particularly in cases in which retirement is a voluntary transition. It is increasingly acknowledged that nonevents can be stressful as well (e.g., Schlossberg, Waters, and Goodman 1995). Recent research reveals that many workers anticipate delayed retirement (Velladics, Henkens, and Van Dalen 2006). This "nonretirement" may be potentially stressful as well and may have negative health consequences.

The results of this study clearly show that the possibilities for "healthy retirement" are very much related to the ability of older workers to manage the last years of their careers. These possibilities are often restricted or thwarted by developments in the macro context of an organization or by

institutional arrangements. The incidence of health problems after retirement is influenced not only by the actual control one has over the transition but also by the perceived control (self-efficacy). Older workers who retire involuntarily and people who have little faith in their ability to cope with changes in life constitute a clear risk group in terms of health.

Conversely, the results suggest that retirement has a positive effect on the health of older workers who were free to decide when they wanted to leave the labor force. People for whom retirement was a conscious, positive choice tend to feel better after retirement. For them, retirement may be an investment in health.

Fear of retirement, or retirement anxiety, is another risk factor. Negative expectations about retirement initially lead to delayed exit from the labor force (e.g., Henkens and Tazelaar 1997). Once retired, older workers with negative preretirement expectations have more problems in adjusting to retirement (van Solinge and Henkens 2005) and appear to be less healthy. This effect is probably more pronounced in the Netherlands, because possibilities for postponement are restricted given mandatory retirement at the age of 65 years. In countries that do not have mandatory retirement, such as the United States, older workers will have more opportunities to prolong their careers, preventing them from involuntarily retirement. However, one should note that in the Netherlands, only a few workers remain in the labor force until age 65. As a result, mandatory retirement accounts for only a small proportion of involuntary retirements.

How can the findings of this study be put to use in everyday practice? What the results clearly show is that managers of companies and other organizations could contribute to the healthy retirement of their employees but that they should not overestimate their power to influence the course of affairs. The incidence of health problems following retirement largely depends on individual employees' self-management skills and their ability to manage their own careers.

Self-management is a personal skill and one on which managers have little influence. However, managers could keep a close tab on employees who appear to be very reluctant to retire. These employees could then be offered training programs in preparing themselves for retirement.

The ability of older workers to manage the last years of their careers is often restricted or thwarted by developments in the macro context of an organization. In the years ahead, we can expect to see many older adults becoming involved in restructuring processes, as a result of which they will leave the labor force, whether voluntarily or involuntarily. Against this background, it is important that managers be aware of the fact that they are able

to influence the degree to which their employees feel that they are being forced to retire. Good preparation for retirement, open and honest communication, and a farewell that does justice to an employee's often lengthy contribution to an organization help create a positive attitude toward retirement (Henkens and van Solinge 2003) and thus a greater likelihood of a healthy retirement.

## Notes

1. "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization 2006).

2. The three dependent variables had a skewed distribution, which means that the assumption of normality was violated. I considered two solutions for this problem: the log transformation of the dependent variables and ordered logistic regression. Alternative analyses were performed, with no change in results. For this reason, and because these solutions may have interfered with the analytical strategy (a conditional change model with time 1 dependent variables included), I retained the initial approach using ordinary least squares regression.

3. Stage models of retirement (e.g., Atchley 1976) suggest that the time effect on health change may be curvilinear rather than linear. Curvilinearity was explored using four dummy variables as well as interactions between time elapsed since retirement and other predictors. Because the results of these analyses did not provide evidence for a curvilinear effect, neither dummies nor interaction terms are presented.

## References

- Acock, Alan C. 2005. "Working With Missing Values." *Journal of Marriage and the Family* 67:1012-28.
- Atchley, Robert C. 1976. *The Sociology of Retirement*. New York: John Wiley.
- Barnes-Farrell, Janet L. 2003. "Beyond Health and Wealth: Attitudinal and Other Influences on Retirement Decision-Making." Pp. 159-87 in *Retirement: Reasons, Processes and Results*, edited by G. A. Adams and T. A. Beehr. New York: Springer.
- Blekesaune, Morten and Per Erik Solem. 2005. "Working Conditions and Early Retirement: A Prospective Study of Retirement Behavior." *Research on Aging* 27:3-30.
- Borg, Vilhelm and Tage S. Kristensen. 2000. "Social Class and Self-Rated Health: Can the Gradient Be Explained by Differences in Life Style or Work Environment?" *Social Science & Medicine* 51:1019-30.
- Bossé, Raymond, Carolyn M. Aldwin, Richard Levenson, and David J. Ekerdt. 1987. "Mental Health Differences Among Retirees and Workers: Findings From the Normative Aging Study." *Psychology and Aging* 2:383-89.
- Bossé, Raymond, Carolyn M. Aldwin, Richard Levenson, and Kathryn Workman-Daniels. 1991. "How Stressful Is Retirement? Findings From the Normative Aging Study." *Journal of Gerontology: Psychological Sciences* 46:P9-14.
- Buckley, Neil J., Frank T. Denton, A. Leslie Robb, and Byron G. Spencer. 2004. "The Transition From Good to Poor Health: An Econometric Study of the Older Population." *Journal of Health Economics* 23:1013-34.

- Calasanti, Tony. 1996. "Gender and Life Satisfaction in Retirement: An Assessment of the Male Model." *Journal of Gerontology: Social Sciences* 51B:S18-29.
- Cunney, Kelly A. and Matthew Peri. 1991. "Single-Item vs. Multiple-Item Measures of the Quality of Health." *Psychological Reports* 69:127-30.
- Deeg, Dorly J. H. and Peter A. Bath. 2003. "Self-Rated Health, Gender, and Mortality in Older Persons: Introduction to a Special Section." *The Gerontologist* 43:369-71.
- Drenea, Patricia. 2002. "Retirement and Mental Health." *Journal of Aging and Health* 14:167-94.
- DuPertuis, Leslee L., Carolyn M. Aldwin, and Raymond Bossé. 2001. "Does the Source of Support Matter for Different Health Outcomes?" *Journal of Aging and Health* 13:494-510.
- Ekerdt, David J. 1987. "Why the Notion Persists That Retirement Harms Health." *The Gerontologist* 27:454-57.
- Ekerdt, David J., Lynn Baden, Raymond Bossé, and Eliane Dibbs. 1983. "The Effect of Retirement on Physical Health." *American Journal of Public Health* 73:779-83.
- Ekerdt, David J., Raymond Bossé, and J. S. LoCastro. 1983. "Claims That Retirement Improves Health." *Journal of Gerontology* 38:231-36.
- Finkel, Steven E. 1995. *Causal Analysis With Panel Data*. London: Sage Ltd.
- Fletcher, Wesla L. and Robert O. Hansson. 1991. "Assessing the Social Components of Retirement Anxiety." *Psychology and Aging* 6:76-85.
- Gall, Terry L., David R. Evans, and John H. Howard. 1997. "The Retirement Adjustment Process: Changes in Well-Being of Male Retirees Across Time." *Journal of Gerontology: Social Sciences* 52B:S110-17.
- Gallo, William T., Elizabeth H. Bradley, Michelle Siegel, and Stanislav Kasl. 2000. "Health Effects of Involuntary Job Loss Among Older Workers: Findings From the Health and Retirement Survey." *Journal of Gerontology: Social Sciences* 55B:S131-40.
- Gould, William. (2002). *Chow tests*. Retrieved August, 2005, from <http://www.stata.com/support/faqs/stat/chow3.html>
- Grant, Mark D., Zdzislaw H. Piotrowski, and Rick Chappell. 1995. "Self-Reported Health and Survival in the Longitudinal Study of Aging, 1984-1986." *Journal of Clinical Epidemiology* 48:375-87.
- Gratton, Brian and Marie R. Haug. 1983. "Decision and Adaptation. Research on Female Retirement." *Research on Aging* 5:59-76.
- Han, Beth. 2002. "Depressive Symptoms and Self-Rated Health in Community-Dwelling Older Adults: A Longitudinal Study." *Journal of the American Geriatrics Society* 50:1549-56.
- Hayward, Mark D., Samantha Friedman, and Hsinmu Chen. 1998. "Career Trajectories and Older Men's Retirement." *Journal of Gerontology: Psychological Science* B53:S91-103.
- He, Y. E. and Victor W. Marshall. 2003. "Later-Life Career Disruption and Self-Rated Health: An Analysis of General Social Survey Data." *Canadian Journal of Aging* 22:45-57.
- Heckhausen, Jutta and Richard Schulz. 1995. "A Life-Span Theory of Control." *Psychological Review* 102:284-304.
- Helmer, Catherine, Pascale Barberger-Gateau, Luc Letteneur, and Jean-Francois Dartigues. 1999. "Subjective Health and Mortality in French Elderly Women and Men." *Journal of Gerontology: Social Sciences* 54B:S84-92.
- Henkens, Kène. 1999. "Retirement Intentions and Spousal Support: A Multi-Actor Approach." *Journal of Gerontology: Social Sciences* 54B:S63-74.
- Henkens, Kène and Frits Tazelaar. 1997. "Explaining Retirement Decisions of Civil Servants in the Netherlands." *Research on Aging* 19:139-73.
- Henkens, Kène and Hanna van Solinge. 2002. "Spousal Influence on the Decision to Retire." *International Journal of Sociology* 32:55-73.

- . 2003. *Het Eindspel: Werknemers, Hun Partners en Leidinggevenden Over Uittreding uit het Arbeidsproces* [The Endgame: Ideas of Older Workers, Their Partners and Supervisors About Retirement]. Assen, the Netherlands: Van Gorcum/Stichting Management Studies.
- Herzog, A. Regula, James S. House, and James N. Morgan. 1991. "Relation of Work and Retirement to Health and Well-Being in Older Age." *Psychology and Aging* 6:202-11.
- Hobfoll, Stevan E. 1989. "Conservation of Resources: A New Attempt of Conceptualizing Stress." *American Psychologist* 44:513-24.
- Hofstetter, C. Richard, James F. Sallis, and Melbourne F. Hovell. 1990. "Some Health Dimensions of Self-Efficacy: Analysis of Theoretical Specificity." *Social Science Medicine* 31:1051-56.
- Holmes, Thomas H. and Minoru Masuda. 1974. "Life Change and Illness Susceptibility." Pp. 45-72 in *Stressful Life Events: Their Nature and Effects*, edited by B. S. Dohrenwend and B. P. Dohrenwend. New York: John Wiley.
- Holmes, Thomas H. and Richard H. Rahe. 1967. "The Social Readjustment Rating Scale." *Journal of Psychosomatic Research* 11:213-18.
- Idler, Ellen L., Shawna V. Hudson, and Howard Leventhal. 1999. "The Meanings of Self-Ratings of Health." *Research on Aging* 21:458-76.
- Idler, Ellen L., Howard Leventhal, Julie McLaughlin, and Eliane Leventhal. 2004. "In Sickness but Not in Health: Self-Ratings, Identity and Mortality." *Journal of Health and Social Behavior* 45:336-56.
- Kasl, Stanislav V. and Beth A. Jones. 2000. "The Impact of Job Loss and Retirement on Health." Pp. 118-36 in *Social Epidemiology*, edited by L. F. Berkman and I. Kawachi. Oxford, UK: Oxford University Press.
- Kim, Jungmeen E. and Phyllis Moen. 2002. "Retirement Transitions, Gender and Psychological Well-Being: A Life-Course Ecological Model." *Journal of Gerontology: Psychological Science* 57B:P212-22.
- Kosloski, Karl, Donald E. Stull, Kyle Kercher, and Daniel J. Van Dussen. 2005. "Longitudinal Analysis of the Reciprocal Effects of Self-Assessed Global Health and Depressive Symptoms." *Journal of Gerontology: Psychological Science* 60:P296-303.
- Krause, Neal and Gina M. Jay. 1994. "What Do Global Self-Rated Health Items Measure?" *Medical Care* 32:930-32.
- Krause, Neal and Benjamin A. Shaw. 2003. "Role-Specific Control, Personal Meaning and Health in Late Life." *Research on Aging* 25:559-86.
- Kremer, Yael. 1985. "The Association Between Health and Retirement: Self-Health Assessment of Israeli Retirees." *Social Science Medicine* 20:61-66.
- Lazarus, Richard S. and Susan Folkman. 1984. *Stress, Appraisal and Coping*. New York: Springer.
- Lin, Nan, Walter M. Ensel, Ronald S. Simeone, and Wen Kouo. 1979. "Social Support, Stressful Life Events, and Illness: A Model and Empirical Test." *Journal of Health and Social Behavior* 20:108-19.
- Marmot, Michael G. and Martin J. Shipley. 1996. "Do Socioeconomic Differences in Mortality Persist After Retirement? 25 Year Follow Up of Civil Servants From the First Whitehall Study." *BMJ* 313:1117-80.
- Marshall, Victor W. and Philippa J. Clarke. 1998. "Facilitating the Transition From Employment to Retirement." Pp. 171-207 in *Canada Health Action: Building the Legacy: Determinants of Health, Adults and Seniors*, edited by NFO. Quebec, Canada: Editions Multimondes.

- Mein, Gill, Pekka Martikainen, Harry Hemingway, Stephan A. Stansfeld, and Michael G. Marmot. 2003. "Is Retirement Good or Bad for Mental and Physical Health Functioning? Whitehall II Longitudinal Study of Civil Servants." *Journal of Epidemiology and Community Health* 57:46-49.
- Midanik, Lorrain T., K. Soghikian, Laura J. Ransom, and Irene S. Tekawa. 1995. "The Effect of Retirement on Health and Health Behaviors: The Kaiser Permanent Retirement Study." *Journal of Gerontology: Social Sciences* 50B:S59-61.
- Miller, Mark A. and Richard H. Rahe. 1997. "Life Changes Scaling for the 1990s." *Journal of Psychosomatic Research* 43:279-92.
- Minkler, Meredith. 1981. "Research on the Health Effects of Retirement: An Uncertain Legacy." *Journal of Health and Social Behavior* 22:117-30.
- Moen, Phyllis. 1996. "A Life Course Perspective on Retirement, Gender and Well-Being." *Journal of Occupational Health Psychology* 1:131-44.
- Mulder, Clara H. and Pieter Hooimeijer. 1999. "Residential Relocations and the Life Course." Pp. 159-86 in *Population Issues: An Interdisciplinary Focus*, edited by L. J. G. van Wissen and P. A. Dykstra. New York: Kluwer Academic.
- Muller, Charlotte F. and Rachel F. Boaz. 1988. "Health as a Reason or a Rationalization for Being Retired?" *Research on Aging* 10:37-55.
- Mulsant, Benoit H., Mary Ganguli, and Eric C. Seaberg. 1997. "The Relationship Between Self-Rated Health and Depressive Symptoms in an Epidemiological Study of Community-Dwelling Older Adults." *Journal of the American Geriatrics Society* 45:954-58.
- Murray Parkes, Colin. 1993. "Bereavement as a Psychosocial Transition: Process of Adaptation to Change." Pp. 91-101 in *Handbook of Bereavement: Theory, Research and Intervention*, edited by M. Stroebe, W. Stroebe, and R. O. Hansson. Cambridge, UK: Cambridge University Press.
- Mutchler, Jan E., Jeffrey A. Burr, Amy M. Pienta, and M. P. Massagli. 1997. "Pathways to Labor Force Exit: Work Transitions and Work Instability." *Journal of Gerontology: Social Sciences* 52B:S4-12.
- Norris, Fran H. and Stanley A. Murrel. 1984. "Protective Function of Resources Related to Life Events, Global Stress, and Depression in Older Adults." *Journal of Health and Social Behavior* 25:424-37.
- Organisation for Economic Co-operation and Development. 2005. *Ageing and Employment Policies: Netherlands*. Paris: Organisation for Economic Co-operation and Development.
- Palmore, Erdman B., Gerda K. Fillenbaum, and Linda K. George. 1984. "Consequences of Retirement." *Journal of Gerontology* 39:109-16.
- Pearlin, Leonard I. 1989. "The Sociological Study of Stress." *Journal of Health and Social Behavior* 30:241-56.
- Pinquart, Martin. 2001. "Correlates of Subjective Health in Older Adults: A Meta-Analysis." *Psychology and Aging* 16:414-26.
- Reitzes, Donald C., Elizabeth J. Mutran, and Maria E. Fernandez. 1996. "Does Retirement Hurt Well-Being? Factors Influencing Self-Esteem and Depression Among Retirees and Workers." *The Gerontologist* 36:649-56.
- Schlossberg, Nancy K., E. B. Waters, and Jane Goodman. 1995. *Counseling Adults in Transition*. New York: Springer.
- Schwarzer, Ralf and Ute Schulz. 2002. "The Role of Stressful Life Events." Pp. 27-49 in *Comprehensive Handbook Of Psychology, Vol. 9: Health Psychology*, edited by A. M. Nezu, C. M. Nezu, and P. A. Geller. New York: John Wiley.

- Sherer, Mark, James E. Maddux, Blaise Mercandante, Steven Prentice-Dunn, Beth Jacobs, and Ronald W. Rogers. 1982. "The Self-Efficacy Scale: Construction and Validation." *Psychological Reports* 51:663-71.
- Shultz, Kenneth S., Kelly R. Morton, and Joelle R. Weckerle. 1998. "The Influence of Push and Pull Factors on Voluntary and Involuntary Early Retirees' Retirement Decision and Adjustment." *Journal of Vocational Behavior* 53:45-57.
- Slevin, Kathleen F. and C. Ray Wingrove. 1995. "Women in Retirement: A Review and Critique of Empirical Research Since 1976." *Social Inquiry* 65:1-21.
- Szinovacz, Maximiliane E. and Adam Davey. 2005. "Predictors of Perceptions of Involuntary Retirement." *The Gerontologist* 45:26-35.
- Taylor, Mary Ann and Kelli Cook. 1995. "Adaptation to Retirement: Role Changes and Psychological Resources." *Career Development Quarterly* 44:67-82.
- Thoits, Peggy A. 1983. "Dimensions of Life Events That Influence Psychological Distress: An Evaluation and Synthesis of the Literature." Pp. 33-103 in *Psychosocial Stress: Trends in Theory and Research*, edited by H. B. Kaplan. New York: Academic Press.
- Tuomi, Kaija, Erkki Järvinen, Leena Eskelinen, Juhani Ilmarinen, and Matti Klockars. 1991. "Effect of Retirement on Health and Work Ability Among Municipal Employees." *Scandinavian Journal of Work Environment and Health* 17:75-81.
- Vallery-Masson, Janine, Jean Poitrenaud, Gilles Burnat, and Marie-Rose Lion. 1981. "Retirement and Morbidity: A Three Year Longitudinal Study of a French Managerial Population." *Age and Ageing* 10:271-76.
- Van de Water, Harry P. A., Hendriek C. Boshuizen, and Rom J. M. Perenboom. 1996. "Health Expectancy in the Netherlands." *European Journal of Public Health* 6:21-28.
- Van Lindert, Hanneke, Mariel Droomers, and Gert P. Westert. 2004. *Tweede Nationale Studie Naar Ziekten en Verrichtingen in de Huisartspraktijk: Een Kwestie van Verschil: Verschillen in Zelfgerapporteerde Leefstijl, Gezondheid en Zorggebruik*. Utrecht/Bilthoven, the Netherlands: NIVEL/Rijksinstituut Voor Volksgezondheid en Milieu.
- van Solinge, Hanna and Kène Henkens. 2005. "Couples' Adjustment to Retirement: A Multi-Actor Panel Study." *Journal of Gerontology: Social Sciences* 60B:S11-20.
- Velladics, Katalin, Kène Henkens, and Hendrik P. van Dalen. 2006. "Do Different Welfare States Engender Different Policy Preferences? Opinions on Pension Reforms in Eastern and Western Europe." *Ageing and Society* 26:475-95.
- Wheaton, Blair. 1990. "Life Transitions, Role Histories and Mental Health." *American Sociological Review* 55:209-23.
- Wolinsky, Frederic D. and Robert J. Johnson. 1992. "Perceived Health Status and Mortality Among Older Men and Women." *Journal of Gerontology* 47:S304-12.
- World Health Organization. (2006). "Frequently Asked Questions." Available at <http://www.who.int/suggestions/faq/en/index.html>
- Wortman, Camille B., Roxane Cohen Silver, and Ronald C. Kessler. 1993. "The Meaning of Loss and Adjustment to Bereavement." Pp. 349-66 in *Handbook of Bereavement: Theory, Research and Intervention*, edited by M. Stroebe, W. Stroebe, and R. O. Hansson. Cambridge, UK: Cambridge University Press.
- Wyler, Allen R., Minoru Masuda, and Thomas H. Holmes. 1967. "Seriousness of Illness Rating Scale." *Journal of Psychosomatic Research* 11:363-64.

**Hanna van Solinge** is a researcher in the Aging & Labor Market Research Program Department at the Netherlands Interdisciplinary Demographic Institute in the Hague. In October 2006, she finished her PhD thesis, *Changing Tracks: Studies on Life After Early Retirement in the Netherlands*.