



# Health as a predictor of early retirement before and after introduction of a flexible statutory pension age in Finland



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## ABSTRACT

**Background:** Little is known of how pension reforms affect the retirement decisions of people with different health statuses, although this is crucial for the understanding of the broader societal impact of pension policies and for future policy development. We assessed how the Finnish statutory pension age reform introduced in 2005 influenced the role of health as a predictor of retirement.

**Methods:** We used register-based data and cox regression analysis to examine the association of health (measured by purchases of psychotropic medication, hospitalizations due to circulatory and musculoskeletal diseases, and the number of any prescription medications) with the risk of retirement at age 63–64 among those subject to the old pension system with fixed age limit at 65 (pre-reform group born in 1937–1941) and the new flexible system with 63 as the lower age limit (post-reform group born in 1941–1945) while controlling for socio-demographic factors.

**Results:** Retirement at age 63–64 was more likely among the post- than the pre-reform group (HR = 1.50; 95% CI 1.43–1.57). This reform-related increase in retirement was more pronounced among those without a history of psychotropic medication or hospitalizations due to circulatory and musculoskeletal diseases, as well as among those with below median level medication use. As a result, poor health became a weaker predictor of retirement after the reform.

**Conclusion:** Contrary to the expectations of the Finnish pension reform aimed at extending working lives, offering choice with respect to the timing of retirement may actually encourage healthy workers to choose earlier retirement regardless of the provided economic incentives for continuing in work.

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## 1. Introduction

Efforts to lengthen working lives may face challenges related to health problems among older workers. People with poor physical, mental and self-rated health are more likely to retire early; ill health is a strong predictor of disability retirement in particular, but it also increases the likelihood of other types of early retirement (Leijten et al., 2015; van Rijn et al., 2014). However, labour market participation among older people is influenced not only by individual factors but by institutional factors as well (Börsch-Supan et al., 2009; De Preter, Van Looy and Mortelmans, 2013; Engelhardt, 2012; Gupta et al., 2015). For example, social security

incentives and eligibility ages for different types of pensions contribute to the timing of retirement (Coile, 2015; Gruber and Wise, 2004). While health is an important individual-level predictor of early retirement, institutional factors largely contribute to between-country variation in retirement behaviour (Börsch-Supan et al., 2009; Engelhardt, 2012).

The complex associations of health and pension age policies with the timing of retirement may be approached through the concepts of push and pull factors, which may operate both on the individual and the institutional level (Kohli and Rein, 1991). Health is typically perceived as a push factor, since individuals with poor health are often driven from the labour market involuntarily (Szinovacz and Davey, 2005; van Solinge and Henkens, 2007). They may also prefer to retire early due to a shorter subjective life expectancy (Griffin et al., 2012; Hurd et al., 2004; van Solinge and

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Henkens, 2010) or due to an excess advantage gained from the removal of work-related demands (Kim and Moen, 2002). In contrast, the availability of early retirement options are likely to operate as pull factors inducing retirement on a more voluntary basis. Moreover, retirement decisions may be influenced by the interplay between health status and pension age policies. On the one hand, policies providing better opportunities to choose the timing of retirement — i.e. institutional pull factors — may excessively attract individuals with better health into retirement since they are more likely to afford early retirement and may have better opportunities for taking part in different leisure activities. On the other hand, such policies may allow a larger push of individuals with poorer health and work ability into retirement. It has nevertheless been suggested that individuals with poorer health are likely to exit the labour market early regardless of institutional retirement ages (Bernal and Vermeulen, 2014; Bound et al., 2010; Staubli and Zweimüller, 2013), whereas individuals with better health may be better able to adjust their retirement decisions according to the eligibility criteria for different types of pensions.

In the recent decades policies have been introduced in many countries to lengthen working lives of older workers (OECD, 2015). Pension reforms provide a natural experiment setting for assessing the influence of the institutional context on individual-level retirement decisions. A recent review indicates that changes in the eligibility ages and incentives of the pension system have resulted in changes in actual retirement behaviour (Coile, 2015). However, less is known of how pension reforms affect the labour market decisions of different population groups, although this is crucial for the understanding of the broader societal impact of pension policies and for future policy development. Only few previous studies have assessed the role of health when examining the effects of pension reforms on labour market participation. A US study found no variation by health status in the extent to which pension receipt was postponed as a response to raising of the statutory retirement age (Behaghel and Blau, 2012). An Austrian study, in turn, found that people with better health increased their employment more as a response to raising of the eligibility age for early retirement (Staubli and Zweimüller, 2013). Accordingly, another US study (Bound et al., 2010) and a Dutch study (Bernal and Vermeulen, 2014), based on simulations of incentive-related effects of potential raises in the eligibility age for pensions, have predicted larger increases in employment among people with better health. Health is often strongly associated with socio-demographic factors, which may further modify the effect of pension reforms on labour market participation. However, previous findings on socioeconomic variation in the behaviour responses to pension age reforms have also been mixed (Behaghel and Blau, 2012; Cribb et al., 2014; Hanel, 2010; Hanel and Riphahn, 2012; Mastrobuoni, 2009; Staubli and Zweimüller, 2013).

In Finland the statutory pension system was modified in 2005 replacing the prior fixed old-age pension limit of 65 with a flexible pension age between 63 and 68. The central goal of the reform was to ensure the sustainability of the pension system and to promote longer working lives (Börsch-Supan, 2005; Uusitalo and Nivalainen, 2013). The new system provides economic incentives for continuing in work at ages 63–67 with a pension accrual rate of 4.5% of annual earnings (1.5% until the age of 52 and 1.9% at age 53–62). The previous rates were 1.5% until the age of 59 and 2.5% at age 60–64. However, some prior analyses have shown that the effect of the increased accrual rate on longer working lives may be partly diluted by other changes made to the pension system, and that retirement at age 63–64 actually increased as an unintended consequence of the reform (Uusitalo and Nivalainen, 2013). Furthermore, already within the old system, retirement before age 65 was available (see the Methods section for more details). Thus,

any reform-related increase in the incidence of retirement at age 63–64 is likely to be partly driven by other factors such as psychological and social changes in retirement norms. Previous literature suggests that individuals tend to retire at perceived standard retirement ages (Gruber and Wise, 2004; van Erp et al., 2014; van Vuuren, 2014). The new flexible pension system in Finland may have widened the normative age of retirement or even reduced it from age 65 towards 63 (Börsch-Supan, 2005).

A comprehensive understanding of the consequences of the new flexible pension system would help to assess the implications of future pension reforms. It remains unclear whether the influence of the 2005 reform varied by different population groups, e.g. whether the increase in retirement at age 63–64 was more common among people with better or poorer health. The two previous studies that have investigated the effect of pension age reforms on subsequent labour market participation among people with different health statuses used singular measures of health based either on self-reported health (Behaghel and Blau, 2012) or the number of sick leave days (Staubli and Zweimüller, 2013). Their findings have been mixed and based on reforms raising the eligibility age for pensions. The role of health may be different in the context of Finland in which a possibility to take earlier retirement was offered through introduction of a flexible pension age. Using nationally representative register data, we examined the association of health with transition to retirement through any route among individuals subject to the old and new pension systems in Finland before and after 2005. Utilizing individual-level records of prescription medication and hospital admissions, we considered various objective measures of health, including purchases of psychotropic medication, hospitalizations due to circulatory diseases, hospitalizations due to musculoskeletal diseases, and the number of any prescription medications. While the last measure reflects a more general health status, the first three are indications of common health conditions that drive people prematurely from the labour market. Musculoskeletal diseases, mental disorders, and circulatory diseases are the three most common diagnostic causes of disability retirement among older workers in Finland (Finnish Centre for Pensions & The Social Insurance Institution of Finland (2015)).

More specifically, we examined

1. Whether different health measures are associated with retirement at age 63–64
2. Whether the risk of retirement was different before and after the pension reform introducing flexible pension age, and
3. Whether the reform-related change in retirement varied by the different health measures (or, to put it differently, whether the association of the different health measures with retirement changed between the period before and after the reform).

## 2. Materials and methods

### 2.1. Study population and pension reform status

We used longitudinal register data from various administrative sources linked by Statistics Finland by means of unique personal identification numbers. The data comprise a nationally representative 11% random sample of the population permanently residing in Finland at the end of any of the years 1987–2007. In addition, the sample has been supplemented with a random oversample of persons who died, so that 80% of all deaths in the study period are included. Because of the different sampling probabilities among the deceased and the living, analytical weights were used in the analyses. The data include longitudinal information on labour market

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