

# Sick leave before and after the age of 65 years among those in paid work in Sweden in 2000 or 2005: a register-based cohort study

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## Abstract

**Objective:** With pressure for older people to remain in work, research is needed on how people aged over 65 years fare in the labour market. However, few studies have focused on sick leave among older workers, especially those over the standard retirement age. This study investigated changes in sick-leave patterns among people aged over 65 years still in work.

**Methods:** All individuals in Sweden who turned 65 years old in 2000 or 2005 were followed from 1995 to 2010. The mean number of sick-leave days per year was measured for those who remained in paid work past the age of 65 years.

**Results:** Those over 65 years still working had fewer sick-leave days before the age of 65 years than those who retired. They also had fewer sick-leave days after 65 years than before. There were fewer socioeconomic differences after 65 years than before, but these differences were greater for workers over 65 years in the 2005 cohort.

**Conclusions:** Although there were more people over 65 years in paid work in 2005, sick-leave days and socioeconomic differences in sick leave were lower in this age group. Sick-leave days and socioeconomic differences in sick leave were greater in the 2005 cohort.

## Keywords

Sickness absence, cohort study, longitudinal, ageing, sick leave, older workers

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## Background

As demographic pressures mount because of population ageing, a worsening old-age dependency ratio and health improvements even in older people, governments around the world are discussing raising the retirement age.<sup>1</sup> As ill health occurs more often with age, it is likely that extending the working life will influence sick-leave patterns. So far, there has been little research on sick leave at older ages and hardly any on sick leave after the current standard retirement age.

The statutory age of eligibility for an old-age pension in Sweden has traditionally been 65 years, but it can be taken earlier. Since 2001, people have been able to remain in permanent employment until the age of 67 years.

All individuals in Sweden with income from work or (up to the age of 65 years) from unemployment benefits who, owing to disease or injury, have reduced work capacity can receive sick-leave benefits from the public sickness insurance system. Sick-leave benefits can be granted for all or some (25%, 50% or 75%) of the ordinary working hours. Individuals aged between 65 and 69 years can receive sick-leave benefits for up to 180 days during those years, after which the National Social Insurance Agency can restrict further claims if the reduced work capacity is assessed as permanent. From the age of 70 years, individuals may not claim sick-leave benefits for more than 180 days. Those with a permanent reduction in work capacity are expected to live on their public retirement pensions rather than on sick-leave benefits. The maximum sick-leave benefit level from the public sickness insurance system in the study period was about 80% of the lost income, up to a maximum of 7.5 times the national *price basic amount* (a set amount that changes with inflation each year and is used as the basis for indexation). In 1995,

the price basic amount was about €3896 and in 2010 it was about €4626<sup>1</sup>.

This study investigated patterns of sick leave before and after the age of 65 years among those who remained in paid employment.

There is little research on sick leave among older workers, and what research there is has focused overwhelmingly on people younger than 64 years. Previous research has shown that sick-leave rates increase with age.<sup>2</sup> Sick leave is multifactorial and associated not just with morbidity, but also with physical and psychosocial working conditions, family life, the social security system, attitudes towards work and sickness, and other medical, social, and psychological factors.<sup>3,4</sup> In addition, sick leave is socioeconomically graded<sup>5,6</sup> and is associated with education, physical and psychosocial working conditions, marital status, family life, job tenure and job satisfaction, all of which may contribute to socioeconomic inequalities in sick leave.<sup>2,6-8</sup>

Although many countries are discussing and implementing increases in labour market participation and extensions of working lives, the effects of these changes are unknown. Increasing labour market participation among older workers is expected to reduce demand on health and social care services, contribute to the economy in terms of paid work and taxes and create more jobs, including for younger people.<sup>9</sup> However, the increased labour market participation of older people will probably involve sick-leave costs. One way of investigating this is to study previous sick-leave rates among people working past statutory old-age pension age. In Sweden, the rates of labour market participation have increased dramatically over the last decades; therefore, studying sick-leave rates over this period can indicate how further labour market participation increases might affect sick-leave rates.

Farrants et al.<sup>10</sup> found that although rates of labour market participation increased above the age of 65 years between 1995 and 2010, rates of sick leave decreased in Sweden. The present study extends those analyses by studying individuals who have newly turned 65 years and by studying two cohorts from a longitudinal perspective.

Studies have found that the duration of sick-leave spells increase with age.<sup>5,11</sup> Whereas older workers tend to have longer sick-leave spells, younger workers usually have shorter sick-leave spells that are more often for minor complaints.<sup>12,13</sup> A population-based study in Sweden among the working-age population (20–64 years of age)<sup>14</sup> found that the importance of age for return to work after a long-term sick-leave spell decreased between 1998 and 2005, whereas the importance of education increased.

Many of the factors that determine whether people retire early or postpone retirement after the standard retirement age overlap with factors that determine sick leave, which is a challenge when researching sick leave at older ages. Selection out of the labour market of individuals with more severe health problems via disability pension or early old-age retirement may make age differences in sick leave appear smaller than they actually are.<sup>2,15</sup> Those without chronic conditions or disability are more likely to continue in paid work beyond retirement age.<sup>16,17</sup> Those who are self-employed and publicly employed, or have more education, are less likely to retire before or at the standard retirement age.<sup>18</sup> Physical and psychosocial working environments also affect the decision to stay in work past the retirement age or leave the labour market at or before the standard retirement age.<sup>17,19</sup> Moreover, economic considerations are important in the decision to retire; people in more precarious financial situations less often retire early and more often continue past

retirement age.<sup>17,20</sup> Age and sick-leave duration are two of the strongest predictors of withdrawal from the labour market via disability pension.<sup>6</sup>

*Sick-leave benefits:* During the years studied, sick leave in Sweden was compensated by the employer during the first 2 weeks of a sick-leave spell, excluding the first day, which was a qualifying day without compensation. Sick-leave spells lasting for 15 days or longer were compensated through the National Social Insurance Agency. Self-employed individuals were compensated by the National Social Insurance Agency for the entire sick-leave spell, excluding qualifying days. Self-employed individuals could choose a number of qualifying days from 1 to 90, but after the age of 55 years they could not reduce their number of qualifying days. In this study, only information on sick leave compensated by the National Social Insurance Agency is included.

## Aim

The aim of this study was to describe changes in sick-leave patterns among individuals who continued to work after the age of 65 years in terms of the following four aspects:

1. How do patterns of sick leave before the age of 65 years compare between those who continued to work and those who retired at 65 years?
2. Do those who continued to work after 65 years of age change their sick-leave patterns compared with before the age of 65 years?
3. Do the sociodemographic and socioeconomic differences in sick leave change after the age of 65 years compared with before?
4. Do the sick-leave rates by diagnostic group change after the age of 65 years compared with before?

## Methods

The study used register data from Statistics Sweden (for sociodemographics) and the National Social Insurance Agency (for sick leave) to obtain annual longitudinal information about all individuals living in Sweden during 2000 and 2005 who turned 65 years during those 2 years. Information for these individuals was obtained from Statistics Sweden's LISA database and multigeneration register and thus included almost all individuals in older age groups.

We selected two cohorts: those who turned 65 years in 2000 or in 2005 and continued to work or were eligible for sick-leave benefits the following year (2001 and 2006). We included retrospective data from 1995 and prospective data up through 2010. The 2000 cohort was thus followed for 5 years before turning 65 years and 10 years after, and the 2005 cohort was followed for 10 years before turning 65 years and 5 years after. We measured the mean number of sick-leave days per year in each of the study groups. The year in which the cohort turned 65 years (i.e. reached the standard retirement age) was designated "year 0" (either 2000 or 2005).

The study was approved by the Regional Ethical Review Board of Stockholm, Sweden.

### *Variables used in the study*

The following variables were used.

*In paid work after 65 years.* Work income was used as the main selection variable to define the target population of individuals who could potentially receive sick-leave benefits. A minimum annual work income of 24% of the price basic amount was required to be eligible for public sick-leave benefits. The minimum income requirement in the selection was adjusted to 75% of the minimum annual work income for sick-leave benefits, as sick-leave benefits in most cases cover

75% of the lost income. Without this adjustment, individuals with low income who had longer periods of sick leave might have been excluded. Individuals who met this requirement are here termed "working after 65 years" and individuals who did not are termed "not working after 65 years".

*Sociodemographic variables.* We also investigated sick-leave diagnoses before and after the age of 65 years. Unfortunately, as the National Social Insurance Agency did not record sick-leave diagnoses until 2005, this information could not be obtained for the whole study period. Instead, the rates of sick leave associated with each diagnosis were calculated and presented for the years 2005 and 2010 for those aged 60–64, 66–69, and  $\geq 71$  years.

The following variables were used in the study:

*Education* was coded as primary, secondary or tertiary (university/college).

*Family situation* was coded as single (including widowed and divorced) or married (including cohabiting).

*Type of employment* was coded as employed or self-employed.

*Employment sector* was coded as public sector (state administration, regional authority or municipal administration) and private sector.

*Type of living area* was coded as countryside, medium-sized cities or metropolitan areas.

*Country of birth* was coded as Sweden, other Nordic countries or other countries.

*Diagnosis* was coded as tumours, mental diagnoses, diagnoses of the circulatory system, diagnoses of the pulmonary system, diagnoses of the musculoskeletal system, accidents and poisonings, other diagnoses or diagnosis missing.

**Outcome measures.** In Figure 1, the outcome variable is mean number of net sick-leave days with benefits from the National Social Insurance Agency per year for the period 1995–2010, with standard error calculations. For the calculation of net days, part-time sick-leave days were combined (e.g. 2 sick-leave days of 50% were combined to 1 net day). Only days from sick-leave spells >14 days were included in the calculations. We used the *xtgraph* method in Stata version 12 (StataCorp LP, College Station, TX, USA) for the calculations.

In Figure 2 the rates of sick leave associated with specific diagnoses among those on sick leave >14 days are presented for 2005 and 2010.

## Results

Table 1 shows the number and rates of individuals in paid work after the age of 65 years in the 2000 and the 2005 cohorts. Most individuals in both cohorts were not working after 65 years; however, the number/rate of individuals in work after 65 years was greater in the 2005 cohort (26% compared with 17% in the 2000 cohort). Table 2 shows demographic information for those who remained in work in each cohort.

Figure 1 shows the mean number of sick-leave days/year from 1995 to 2010 among those who continued to work and those who did not in the 2000 and 2005 cohorts, with the year they turned 65 years (i.e. 2000 and 2005) marked as year 0. It shows that sick leave was lower among those who continued in paid work than among those who did not. However, even those who continued working had more sick-leave days before the age of 65 years than after, with a peak of a mean 11 days before the age of 65 years and of 2 days after 65 years in the 2000 cohort, and a peak of 20 days per year before the age of 65 years and 4 days after 65 years in the 2005 cohort (Figure 1a).

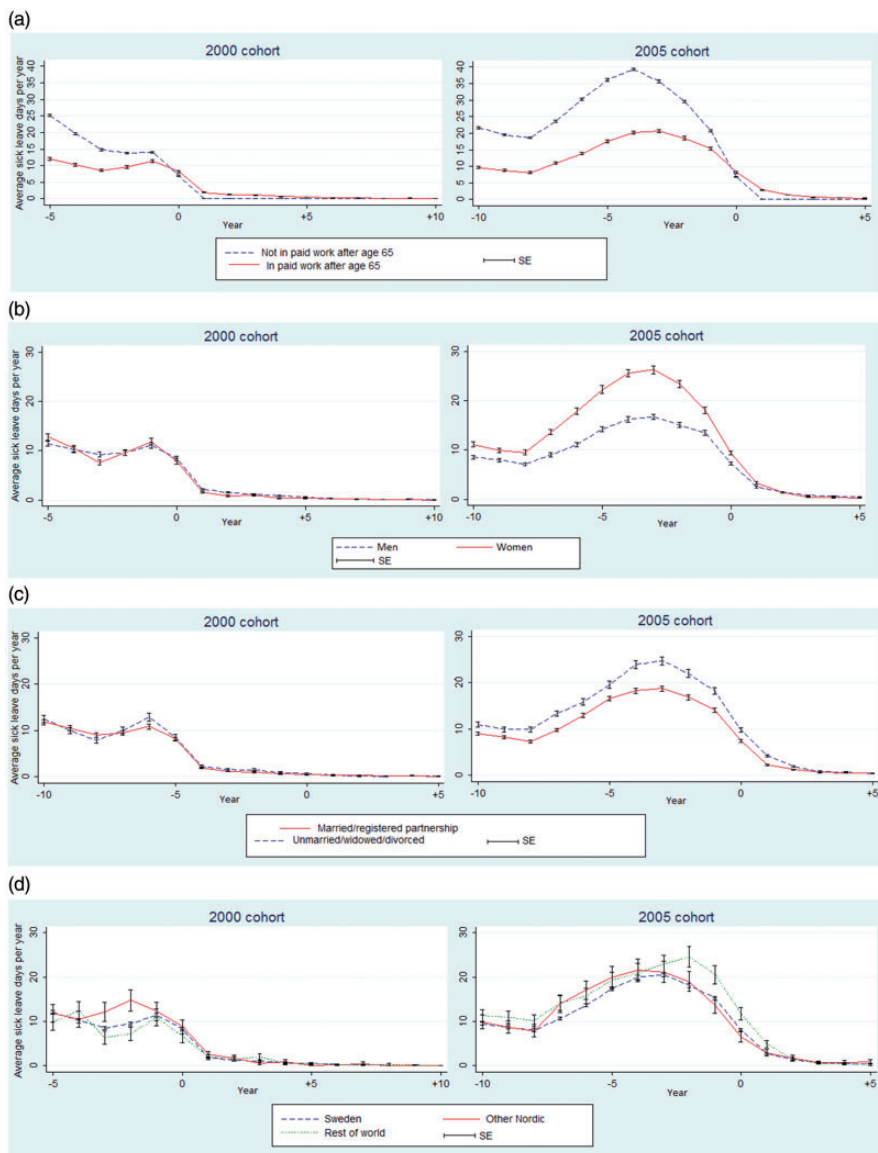
Thus, there were more sick-leave days per individual per year in the 2005 than in the 2000 cohort among those who continued in paid work, both before and after the age of 65 years.

We also wanted to elucidate possible differences after the age of 65 years compared with before among those who stayed in work. In the 2000 cohort, among those who remained in paid work, there were no differences between women and men in mean number of sick-leave days/year both before and after the age of 65 years. In the 2005 cohort, women had a higher mean number of sick-leave days than men before the age of 65 years (with a peak of 26 days for women compared with 16 days for men), but not after (Figure 1b).

Single individuals had more sick-leave days than married individuals before the age of 65 years in both the 2000 and 2005 cohorts, although the error bars were overlapping at all but one time point in the 2000 cohort, and even then the difference was small. This difference remained after the age of 65 years in the 2005 cohort (Figure 1c).

In the 2000 cohort, those born in the Nordic countries (excluding Sweden) had a higher mean number of sick-leave days than those born in Sweden or the rest of the world, although the wide confidence interval means the error bars were overlapping at all but a few time points. There were no differences by place of birth after the age of 65 years in this cohort. In the 2005 cohort, those born outside the Nordic countries had a higher mean number of sick-leave days, with significant differences 3 years before and 1 year after the standard retirement age (Figure 1d).

Individuals from rural areas had a higher mean number of sick-leave days than individuals from medium-sized towns or metropolitan areas before the age of 65 years in both cohorts, but this difference was insignificant after the age of 65 years in the 2000 cohort. In the 2005 cohort, those from



**Figure I.** Mean number of sick-leave days per year in the two cohorts (SE = standard error). (a) Mean number of sick-leave days per year before and after the age of 65 years among those who remained in paid work and those who did not in the 2000 and 2005 cohorts (SE = standard error). (b) Mean number of sick-leave days per year before and after the age of 65 years among women and men who remained in paid work in the 2000 and 2005 cohorts (SE = standard error). (c) Mean number of sick-leave days per year before and after the age of 65 years among married and single individuals who remained in paid work in the 2000 and 2005 cohorts (SE = standard error). (d) Mean number of sick-leave days per year before and after the age of 65 years by country of birth among those who remained in paid work in the 2000 and 2005 cohorts (SE = standard error). (e) Mean number of sick-leave days per year before and after the age of 65 years by living area among those who remained in paid work in the 2000 and 2005 cohorts (SE = standard error). (f) Mean number of sick-leave days per year before and after the age of 65 years by education among those who remained in paid work in the 2000 and 2005 cohorts (SE = standard error). (g) Mean number of sick-leave days per year before and after the age of 65 years in employees and self-employed individuals among those who remained in paid work in the 2000 and 2005 cohorts (SE = standard error). (h) Mean number of sick-leave days per year before and after the age of 65 years by employment sector among those who remained in paid work in the 2000 and 2005 cohorts (SE = standard error)



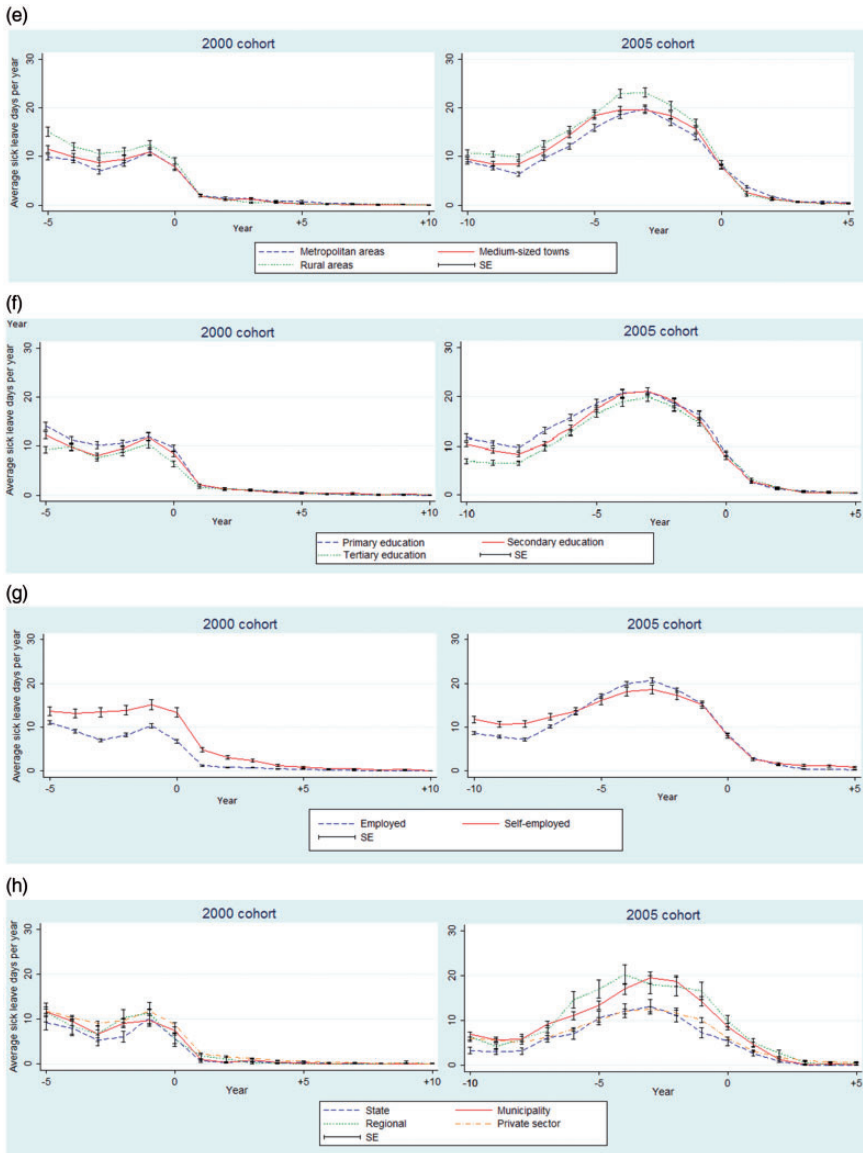


Figure 1. Continued

metropolitan areas had a higher mean number of sick-leave days compared with those from medium-sized cities or rural areas (this difference was small but significant) (Figure 1e).

Those with only primary education had a higher mean number of sick-leave days than those with secondary education, who

in turn had a higher number of sick-leave days than those with tertiary education. This difference disappeared in both cohorts after the age of 65 years (Figure 1f).

The self-employed had a higher mean number of sick-leave days than employees in the 2000 cohort both before and after the age of 65 years, but in the 2005 cohort

employees had more sick-leave days than self-employed individuals in the 5 years before the age of 65 years. This difference attenuated somewhat in the years immediately prior to the age of 65 years, and by 2 years after the age of 65 years, the self-employed had a higher mean level (Figure 1g).

Those employed in the private sector had a higher mean number of sick-leave days in the 2000 cohort, but the error bars were very close, both before and after the age of 65 years, even though some small differences remained after the age of 65 years. In the 2005 cohort, those employed in municipal and regional authorities had a higher mean number of sick-leave days than those employed by the state or the private sector, and these differences remained 2 years after the age of 65 years, although they were somewhat attenuated (Figure 1h).

Figure 2 shows the rates of sick leave associated with specific diagnostic groups for those aged 60–64 (Figure 2a), 66–70 (Figure 2b) and  $\geq 71$  years (Figure 2c) in 2005 and 2010. It shows that the rates of people on sick leave with a mental diagnosis (International Statistical Classification of Diseases and Related Health Problems (ICD)-10 codes F01–F99) at ages 66–70 years decreased from 13.5% in 2005 and 12.2% in 2010 before the age of 65 years to 4.6% in 2005 and 4.8% in 2010, and there were hardly any individuals on sick leave owing to a mental diagnosis after 71 years. Musculoskeletal sick-leave diagnoses (ICD-10 codes M00–M99) were by far the most common, both before and after the age of 65 years. In individuals aged 66–70 and  $\geq 71$  years, the rates of those on musculoskeletal sick leave increased slightly between 2005 and 2010, but this was not the case among those aged 60–64 years. Sick-leave spells owing to accidents and poisonings (ICD-10 codes S00–S99, T00–T99), were progressively more common in each age category, and increased between 2005 and 2010 in all three age categories.

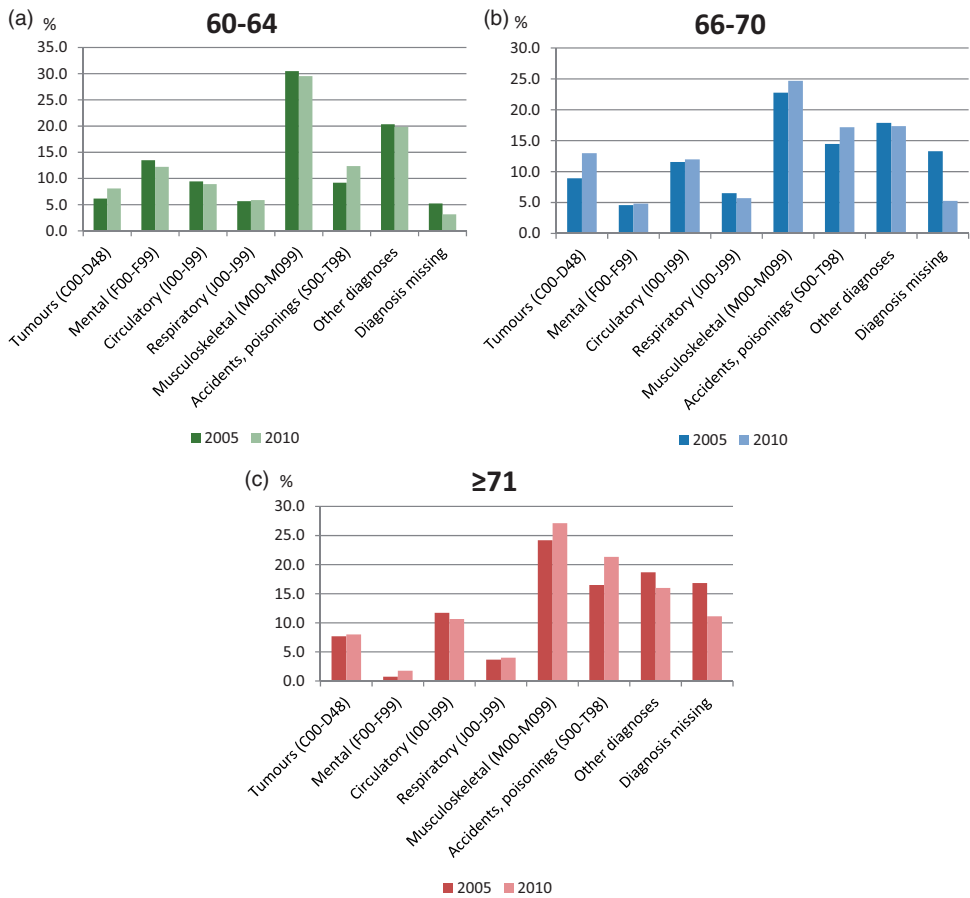
## Discussion

This explorative study found that individuals who remained in paid work after the age of 65 years had lower levels of sick leave after 65 years than they did before. In all analyses except that comparing the self-employed with employees, the differences between socioeconomic groups were larger in the 2005 cohort than they were in the 2000 cohort. Those who stayed in paid work after the age of 65 years had a lower mean number of sick-leave days before 65 years than those who did not.

There has been a clear increase in labour market participation above the age of 65 years, as shown in this study, and figures from Statistics Sweden show that rates of paid work also increased among those aged 55–64 years between 2000 and 2005.<sup>21</sup> The mean number of sick-leave days both before and after the age of 65 years was higher in the 2005 cohort than in the 2000 cohort, both for those who remained in paid work at 65 years and those who did not. This may be a result of an increase in actual rates of morbidity, or it may be a result of higher labour market participation at the ages of 55–64 years and above 65 years in the 2005 cohort, suggesting that the health selection effects of being in paid work reduced between the two cohorts. In another study of sick leave in individuals over 65 years, Farrants et al.<sup>10</sup> found contrasting results: that sick leave in those over 65 years decreased between 2000 and 2005. This may be a result of the cohort selection method: the present study examined those who turned 65 years in 2000 and 2005, whereas Farrants et al. studied all those aged 65 years or over in 2000 and 2005. However, further research is needed. Both studies only included sick-leave spells  $>14$  days: it is possible that the patterns are different for shorter spells.

We found that, for both cohorts, those who left the labour market at the age of





**Figure 2.** Sick-leave rates by diagnostic group (International Statistical Classification of Diseases and Related Health Problems-10 codes) in the 2005 and 2010 cohorts: ages 60–64, 66–70 and ≥71 years. (a) Sick-leave rates by diagnostic group among those in paid work ≥60 years in 2005 and 2010: ages 60–64 years. (b) Sick-leave rates by diagnostic group among those in paid work ≥65 years in 2005 and 2010: ages 66–70 years. (c) Sick-leave rates by diagnostic group among those in paid work ≥71 years in 2005 and 2010: ages ≥71 years

65 years had a higher mean number of sick-leave days per year than those who stayed in paid work after the age of 65 years. This indicates health selection effects of remaining in paid work after the age of 65 years, even when participation after 65 years increases, as it did in this study. More research is warranted on this, as well as on the differences in the mean number of sick-leave days between the

cohorts in the years before turning 65 years old.

Some of the factors underlying sick leave and retirement are the same; poor health and poor physical or psychosocial working conditions predict both sick leave and retirement.<sup>6,17,20,22,23</sup> It is possible that workers above the standard retirement age chose to retire rather than take sick leave when falling ill, and that there was thus

**Table 1.** Numbers and rates (%) of individuals in paid work and not in paid work after the age of 65 years among the total population of Sweden in 2000 and 2005

	N	In paid work after age 65 years n (%)	Not in paid work after age 65 years n (%)
2000 cohort	76,999	13,061 (16.96)	63,938 (83.04)
2005 cohort	88,037	22,608 (25.68)	65,429 (74.32)

**Table 2.** Sociodemographics of those working past 65 years of age in the 2000 and 2005 cohorts

	2000 cohort	2005 cohort
Not in paid work after age 65 years	63,938	65,429
In paid work after age 65 years	13,061	22,608
Sex		
Women	5230	9439
Men	7831	13,169
Marital status		
Married/registered partnership	9115	15,104
Single	3946	7504
Country of birth		
Sweden	11,790	20,589
Other Nordic countries	613	909
Rest of world	1210	1210
Living area		
Metropolitan	4906	8227
Medium-sized town	4318	7860
Small town/rural	3837	6521
Education		
Elementary school	4473	6504
Secondary school	4531	8705
Higher qualifications	4002	7327
Employment status		
Employed	9891	17,481
Self-employed	2564	4540
Employment sector		
State	806	1160
Regional authority	2051	1009
Municipal authority	902	2913
Private	9095	8008

a steady attrition of people in paid work each year owing to morbidity. Our analysis cannot determine whether this is the case, but Farrants et al.<sup>10</sup> showed that employment rates of individuals above the age of

70 years increased by less between 1995 and 2010 than working rates of those aged 66–70 years in the same period. This indicates that there is an attrition of people in paid work between the ages of 65 and

70 years. However, more analyses are needed to determine to what extent this attrition is because of morbidity or other factors. Adjustment latitude (i.e. the extent to which individuals can adapt their working environment or tasks to suit their needs) is associated with both sick leave<sup>24</sup> and retirement.<sup>25</sup> However, despite the fact that self-employed individuals generally have a high adjustment latitude, we found that they had a greater mean number of sick-leave days per year than employed individuals in the 2000 cohort (but not in the 2005 cohort). The associations between employment type, adjustment latitude, and sick leave in the older population is an important area for future research.

Research indicates that disability prevalence has decreased for older people in Sweden<sup>26</sup> and Sweden has one of the longest disability-free life expectancies in Europe.<sup>27</sup> However, there are greater socioeconomic differences in health expectancy than life expectancy in Sweden.<sup>28,29</sup> We found few socioeconomic differences in sick leave after the age of 65 years in our study, although they were present before the age of 65 years. This indicates that the health selection effect of working after the age of 65 years is equally strong in all groups. If the healthiest individuals in all socioeconomic groups continue in paid work, and those with poorer health in all socioeconomic groups retire, the socioeconomic differences are attenuated. There were greater sociodemographic differences in sick leave after the age of 65 years in the 2005 cohort than in the 2000 cohort, even though the differences were small in the 2005 cohort. This indicates that, as working after 65 years becomes more common, the health selection effects might become less severe, and the socioeconomic patterns of sick leave after the age of 65 years might begin to resemble the patterns found before that age. For instance, previous research has shown that the municipal

and regional sectors (which contain a number of service-oriented occupations with stressful working environments) have higher sick leave than the private and state sectors.<sup>30</sup> Although this was not apparent in our results for the 2000 cohort, we did observe this for the 2005 cohort.

The rates of sick leave with a mental diagnosis were over twice as high in those aged 60–64 years than in those over 65 years, indicating that individuals with a mental disorder tend to retire rather than remain in paid work. This difference was less obvious for sick leave for tumours, circulatory diagnoses, pulmonary diagnoses, or accidents and poisonings. This last diagnosis category may result in short-term work incapacity, whereas the other categories often represent chronic conditions. This could indicate that workplaces are better equipped to deal with chronic physical conditions than with mental conditions. Studies show that the stigma of mental disorders reduces employers' motivation to employ<sup>31</sup> and possibly keep mentally ill employees in work.<sup>32</sup> Research indicates that mental disorders tend to have higher degrees of functional disability than somatic disorders, leading to high rates of disability pension and early retirement<sup>33</sup> and that individuals with mental disorders are granted disability pensions at a younger age than those with somatic conditions.<sup>32</sup>

### *Methodological considerations*

As this is one of the first studies in the area, it is mainly descriptive and exploratory. The main strengths of this study are as follows: the inclusion of the entire population of Sweden that turned 65 years in 2000 and 2005 via micro data linked at an individual level from nationwide registers of good quality, the large study group and the longitudinal design, which included data for the same individuals both before and after the standard retirement age, for not only

one but two different cohorts from two different periods. The limitations are that the study is quite descriptive and does not take into account covariance and interrelationships of the different factors studied here in relation to sick leave. In addition, the two cohorts were followed up for different amounts of time both pre- and post-age 65 years, making comparisons between the cohorts difficult. Another strength is that we were able to transform part-time (gross) sick-leave days into net days, which made the findings more comparable with those from other countries in which part-time sick leave is not an option. That only all sick-leave spells >14 days, and thus paid for by the National Social Insurance Agency, were included can be considered both a strength and a limitation. The strength is that all publicly paid sick-leave benefits were included and that all were assessed both by a physician (a medical certificate is needed from the 8<sup>th</sup> day of a sick-leave spell) and by a social insurance officer. The validity of sick-leave diagnoses could be questioned; however, this issue has seldom been studied. The one published study on this question found that such diagnoses had high validity when compared with diagnoses in the patient's medical files.<sup>34</sup>

This basic study raises many research questions, such as how health selection influences sick leave at older ages, whether this changes when labour market participation at older ages increases further and to what extent health selection operates differently for mental and somatic disorders. Future studies should extend the analyses of associations between paid work, morbidity and sick leave, and should use multivariate analyses to explore the interrelations between the factors studied here.

## Conclusions

The number of individuals over 65 years in paid work was greater in 2005 than in 2000.

Those over 65 years who remained in paid work had less sick leave after 65 years than before. They also had less sick leave before turning 65 years old than those not in paid work.

Sociodemographic differences in sick-leave benefits were greater before than after standard retirement age; however, this difference was smaller as the numbers in paid work increased, indicating a lower health selection.

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## Declaration of conflicting interests

The authors declare that there is no conflict of interest.

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## Note

1. Using the December 2010 conversion rate between SEK and EUR for both figures.

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