

Socioeconomic differences in cause-specific disability retirement in Finland, 1988-2009

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Abstract

Objective. The aim of this study was to investigate socioeconomic differences in disability retirement due to different diagnostic causes over the period 1988-2009.

Methods. The register data comprised a nationally representative 11% sample of individuals aged 30-64 years and residing in Finland in 1987-2007. Incidence rates were calculated for disability retirement due to different diagnostic causes during the follow-up period 1988-2009.

Results. The incidence of disability retirement decreased in all socioeconomic classes from the early 1990s on. Decreasing absolute socioeconomic differences in disability retirement due to any diagnostic cause and due to musculoskeletal diseases were seen in the period 1988-2009. Musculoskeletal diseases were the largest contributor to the overall socioeconomic differences in disability retirement throughout the whole study period.

Conclusion. The contribution of musculoskeletal diseases to the overall socioeconomic differences has been large during the whole study period.

Introduction

Socioeconomic differences in disability retirement are large¹⁻⁶ with manual workers running a higher risk of retirement than non-manual employees. In particular, large socioeconomic differences in disability retirement due to musculoskeletal diseases, cardiovascular diseases and psychoactive substance use have been found, whereas the differences due to mental disorders have been smaller.⁵

In Finland, the incidence of all-cause disability retirement has decreased during the last decades. In 1990 new disability pensions were awarded to about 13‰ of the working-aged population.⁷ In 2013 the corresponding figure was 7‰.⁸ Musculoskeletal diseases and mental disorders have been the main diagnostic causes for disability retirement, and in 2013 they each covered about one third of all new cases.⁸

A previous study showed that the incidence of all-cause disability retirement has declined in all socioeconomic groups in Finland from 1988 to 2007.⁹ Another study found that musculoskeletal diseases are most important diagnostic category for the overall socioeconomic differences in disability retirement. Their contribution to the excess disability retirement among manual workers was over 50% among men and over 70% among women aged 55-64 years.⁵ However, little is known about the changes in socioeconomic differences in cause-specific disability retirement over time.

The aim of this study was to investigate socioeconomic differences in disability retirement due to different diagnostic causes and the contribution of the different diagnoses to the overall socioeconomic differences over the period 1988-2009.

Data and methods

The data used is a nationally representative 11% random sample of the population residing in Finland between the end of years 1987 and 2007. The data include an 80% oversample of the deceased during the follow-up. We used weights in the analysis to account for the different inclusion probabilities among the deceased and the living. Statistics Finland has linked the data from various administrative registers, including information on socio-demographic factors, mortality and disability retirement due

to different diagnostic causes between the years 1987-2009. We restricted participants to 30-62 –year old men and women during the follow-up time 1988-2009.

Socioeconomic status

Socioeconomic status was categorized according to the classification of Statistics Finland (1989) into four classes: upper non-manual employees, lower non-manual employees, manual workers and self-employed persons. Socioeconomic status was treated as time-varying and we used the most recent information on socioeconomic status available between 1970 and 2005. For those outside the labour force before disability retirement, the previous social class was determined.

Disability retirement

Disability retirement due to any diagnostic cause, musculoskeletal diseases (M00-M99), mental disorders (F00-F99), cardiovascular diseases (I00-I99), diseases of the nervous system (G00-G99) and neoplasms (C00-D48) were examined and classified according to the International Classification of Diseases (ICD-10).

Disability retirement included full and partial disability pensions and individual early retirement pension, which took effect in 1986 and was suspended in 2005. Individual early retirement pension was a special type of disability pension that was granted with less strict medical criteria to those aged 55 and above. This new type of disability pension facilitated the transition to early retirement after a long working career in a period of rapid industrial change and economic growth during the 1980s.¹⁰

Methods

We calculated the age-adjusted all-cause and cause-specific disability retirement incidence rates by socioeconomic status using the whole study population from the years 1988-2009 as the standard population. We also calculated the contribution of different diagnostic causes to the overall socioeconomic differences in disability retirement as excess disability retirement in different socioeconomic groups. Excess disability retirement_{ij} = [number of disability retirement_{ij}] - [number of disability retirement_{ij}/RR_{ij}], where RR_{ij} = age adjusted risk ratio for disability retirement in disease group j and socioeconomic group i. The reference group was upper non-manual employees. The follow-up years were

divided into three study periods: 1988-1995, 1996-2002 and 2003-2009. Analyses were made separately for men and women.

Results

Figure 1 shows the age-adjusted disability retirement rates in 1988-2009. In 1990 the incidence of disability retirement was high: per 1,000 person years, 26.9 men and 30.0 women in the manual class, and 11.5 men and 10.6 women in the upper non-manual class retired due to disability. In 1990-1995, the incidence of disability retirement diminished in all socioeconomic groups. In the mid-1990s the absolute socioeconomic differences were smaller than before. In the second half of the 1990s, the incidence of disability retirement continued to decrease among upper and lower non-manual employees but increased slightly among manual workers. However, in the 2000s the incidence decreased again in all socioeconomic groups. In 2009 the incidence of disability retirement per 1,000 person years was 12.6 for men and 10.4 for women in the manual class, and 3.8 for men and 3.3 for women in the upper non-manual class.

(Figure 1. Socioeconomic differences in disability retirement (DR/1,000 person years) 1988-2009 men and women)

The incidence of disability retirement due to musculoskeletal diseases was high in the beginning of the follow-up, with large socioeconomic differences (figure 2). During the follow-up period the incidence diminished in all socioeconomic groups, but mostly among manual workers. In 1990 the incidence per 1,000 person years was 11.7 among male manual workers and 1.4 among male upper non-manual employees. In 2009 the corresponding figures were 3.6 for male manual workers and 0.6 for male upper non-manual employees. For women, the incidence of disability retirement due to musculoskeletal diseases was relatively similar to that of men, but it was somewhat steeper than for men during the whole study period. Despite decreases in the absolute socioeconomic differences in disability retirement due to musculoskeletal diseases, large relative differences between the classes remained throughout the study period.

The incidence of disability retirement due to mental disorders was substantially lower than due to musculoskeletal diseases. Socioeconomic differences in disability retirement due to mental disorders were modest in the beginning of the follow-up, but they widened somewhat in the late 1990s as a result of a diminishing incidence, especially in the upper socioeconomic class. In 2004, manual workers ran a higher risk of disability retirement due to mental disorders (3.1 per 1,000 person years for men

and 4.4 per 1,000 person years for women) than upper non-manual employees (1.3 per 1,000 person years for men; 2.4 per 1,000 person years for women).

Socioeconomic differences in disability retirement due to cardiovascular diseases were evident during the whole study period, even if a considerable decrease in the incidence in all socioeconomic groups was seen during the follow-up. In 1990 the incidence of disability retirement due to cardiovascular diseases was relatively high (5.0 per 1,000 person years for male manual workers; 3.1 per 1,000 person years for male upper-non manual workers). In 2009 the incidence per 1,000 person years was 1.0 for male manual workers and 0.3 for male upper-non manual workers. For women the incidence was somewhat lower than for men, but a similar decrease in the incidence during the follow-up was seen.

(Figure 2. Socioeconomic differences in disability retirement (DR/1,000 person years) due to musculoskeletal diseases, mental disorders and cardiovascular diseases 1988-2009 men and women)

The proportion (%) of different diseases contributing to the overall socioeconomic differences in disability retirement in the three time periods was calculated using upper non-manual employees as a reference group (table 1 and table 2). The results show that among manual workers and lower non-manual employees, musculoskeletal diseases accounted for the largest part of the excess disability retirement in all periods studied. Among male manual workers, the contribution of musculoskeletal diseases was 62% in 1988-1995 and 42% in 2003-2009. Among female manual workers, the contribution of musculoskeletal diseases was larger in all time periods than for men (62% in 1988-1995; 54% in 2003-2009). The contribution of mental disorders to the overall socioeconomic differences in disability retirement increased during the follow-up period. For men this contribution was negative or very small in 1988-1995 and 1996-2002, and for women it was 7% in 1988-1995 and 17% in 1996-2002. However, in 2003-2009 the contribution of mental disorders to the total excess disability retirement was 17% for male manual workers and 22% for female manual workers. For lower non-manual employees the contribution was even larger, at 28% for men and 23% for women. The contribution of cardiovascular diseases to the overall socioeconomic differences in disability retirement was smaller in 2003-2009 than in 1988-1995 for both men and women. The contribution of the diseases of the nervous system was larger in the period 2003-2009 than in earlier periods. The contribution of neoplasms also showed a small increase over time.

(Table 1. Socioeconomic differences in disability retirement due to different diseases in 1988-1995, 1996-2002, 2003-2009. Incidences of disability retirement (DR/1,000 person years) and diseases contribution (%) to the overall socioeconomic differences in disability retirement, men)

(Table 2. Socioeconomic differences in disability retirement due to different diseases in 1988-1995, 1996-2002, 2003-2009. Incidences of disability retirement (DR/1,000 person years) and diseases contribution (%) to the overall socioeconomic differences in disability retirement, women.)

Discussion

The incidence of disability retirement due to any causes and due to musculoskeletal diseases was high in the early 1990s, but over the next 10 years it diminished rapidly in all socioeconomic groups, in particular among manual workers. After that the incidence of disability retirement showed a slightly decreasing trend, especially in upper socioeconomic classes. Socioeconomic differences in disability retirement due to mental disorders were very small in the beginning of the follow-up, but modest differences were found in the late 1990s and during the 2000s. Socioeconomic differences in disability retirement due to cardiovascular diseases were also found, even if the incidence of disability retirement due to these diseases substantially decreased during the follow-up period. Musculoskeletal diseases had the largest contribution to the overall socioeconomic differences in disability retirement throughout the study period.

The labour market changes over the past decades may partly explain the changing incidence of disability retirement. In Finland, the high number of disability retirement cases diminished during the mass unemployment that characterised the first half of the 1990s, as those who received unemployment benefits were not steered towards disability pension. Unemployment especially involved people from the lower socioeconomic classes. During the second half of the 1990s the incidence of disability retirement showed some increase. The high incidence of disability retirement in the early 1990s can be partly explained by the individual early retirement pension, which was a special form of disability pension granted to older people based on less strict requirements than for normal disability pension. Since 1986 the individual early retirement pension became common, and therefore disability retirement increased, especially among those over 55 years of age. When the individual disability pension took effect, the total number of new disability pensions granted grew by 35%.¹⁰

During the past decades the contents of work, work environments as well as job requirements have changed and many physically strenuous occupations have disappeared.⁷ While the incidence of disability retirement due to musculoskeletal diseases has declined¹¹ and the occupational structures have

changed,⁷ socioeconomic differences in disability retirement due to musculoskeletal diseases have nevertheless remained. Working conditions may have improved in many workplaces, but remain physically strenuous in many occupations. Previously, work-related factors have shown associations with disability retirement due to any cause and due to musculoskeletal diseases.¹²⁻¹⁶ The physical workload and low job control have been important risk factors for disability retirement due to musculoskeletal diseases. Positive changes to working conditions decrease the likelihood of disability retirement. The path to disability retirement may be the result of several factors such as adverse working conditions, ill health or unhealthy behaviors, and tends to vary by socioeconomic status.¹⁴ Disability retirement is seldom caused by one specific disease only. This may indicate that the high incidence of disability retirement due to musculoskeletal diseases is attributable to a complex mix of different kinds of factors.

Despite the decreasing trend in the absolute socioeconomic differences in disability retirement due to musculoskeletal diseases over the study period, large relative differences have persisted. The results are in line with previous studies.^{3,5,19} Socioeconomic differences in disability retirement due to musculoskeletal diseases result in particular from a high physical workload among manual workers. High physical workload, low job control, and chemical and physical exposures have been the strongest factors contributing to socioeconomic differences in disability retirement.^{3-4,20} Poor health and health behaviours also partly account for the socioeconomic differences in disability retirement.²¹

Results concerning socioeconomic differences in disability retirement due to different mental diseases have varied. Samuelsson et al.²³ found that low education predicted a lower risk of disability retirement due to mood, neurotic, stress-related and somatoform disorders. Our previous study⁵ found that manual workers ran a higher risk of disability retirement due to all mental disorders, psychoactive substance use and schizophrenia. Socioeconomic differences in disability retirement due to depression, however, have been inconsistent. 55-64-year-old manual workers have had a lower risk of disability retirement due to depression than upper non-manual employees of the same age. In the age group 30-54, the association was inverse.⁵

Results on socioeconomic differences in disability retirement due to different mental disorders show that the differences are small and they vary by severity and specific mental diagnoses. However, socioeconomic differences in mental health have varied by specific cause of mental disorders during past decades. Severe mental disorders, like schizophrenia and psychoses, are more common among lower social classes and these differences were already seen in early 1980s.¹¹ Mental disorders related to alcohol use are common, manual workers running a high risk of disability. The association between socioeconomic status and symptoms of common mental disorders has been less consistent.²²⁻²⁷ However, populations' mental health has remained or improved during the past 20-30 years, and socioeconomic

differences in mental health have been fairly stable.¹¹ We can assume that socioeconomic differences in disability retirement follow those for mental disorders in general, at least to some extent.

The reasons for our findings of diminishing incidence of disability retirement due to mental disorders among the upper socioeconomic class during the follow-up remain unresolved. On the one hand, working conditions have improved more among upper non-manual employees than among manual workers. On the other hand, there may be socioeconomic differences in the treatment of mental disorders. The path to disability retirement due to specific mental disorders is complex, and socioeconomic differences are mediated through many factors. Future studies about socioeconomic differences in disability retirement due to specific mental disorders and their determinants are needed.

The incidence of disability retirement due to cardiovascular diseases decreased during the follow-up period in all socioeconomic groups. However, the relative socioeconomic differences in disability retirement due to cardiovascular diseases increased slightly. Previous studies have also found that socioeconomic differences in cardiovascular morbidity and mortality have remained large.¹¹ Health behaviours such as diet, smoking, alcohol consumption, physical activity and body mass index contribute to these differences.²⁸⁻³⁰

The contribution of diagnostic causes to the overall socioeconomic differences in disability retirement

Musculoskeletal diseases were the most common cause for disability retirement and showed large socioeconomic differences. Musculoskeletal diseases constituted the largest contribution to the overall socioeconomic differences in disability retirement during the whole study period. The contributions calculated here are relative. This means that if the contribution of one disease increases, that of other diseases has to decrease. The contribution of musculoskeletal diseases to the total excess disability retirement was slightly smaller in periods 2003-2009 and 1996-2002 than in the period 1988-1995. Also the contribution of cardiovascular diseases to the overall socioeconomic differences diminished during the follow-up. In contrast, the contribution of mental disorders increased towards the end of the follow-up. For men, the contribution of the diseases of the nervous system to the overall socioeconomic differences also showed a small increase in 1996-2002 and 2003-2009. The contribution of neoplasms was small in all periods.

Conclusion

Over the period 1988-2009 the incidence of disability retirement declined rapidly in all socioeconomic groups, and for most diagnostic causes. However, large socioeconomic differences in disability retirement due to musculoskeletal diseases still exist and they contribute most to the overall socioeconomic differences in disability retirement. Socioeconomic differences in disability retirement due to mental disorders have widened slightly.

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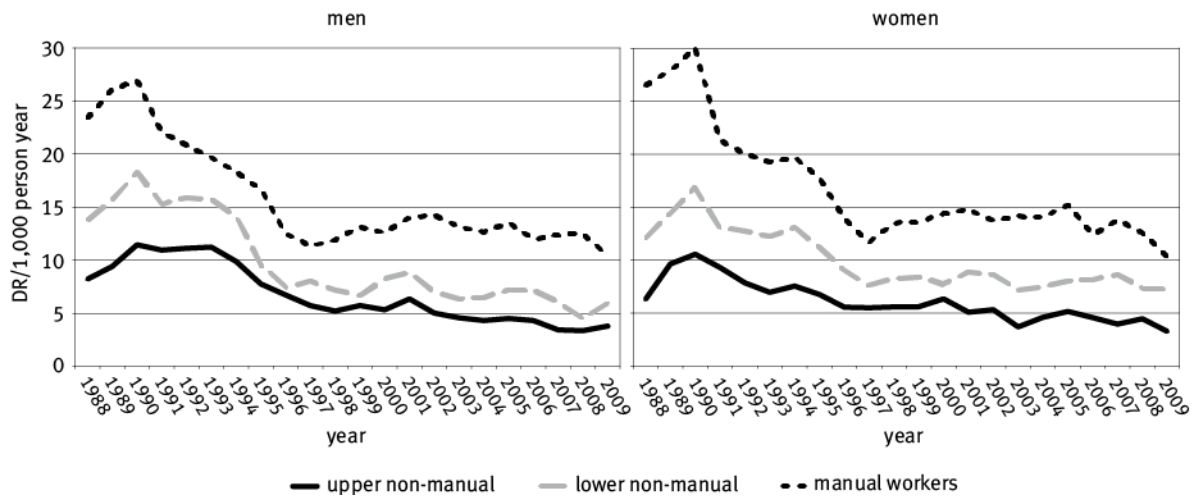


Figure 1. Socioeconomic differences in disability retirement (DR/1,000 person years) 1988-2009 men and women.

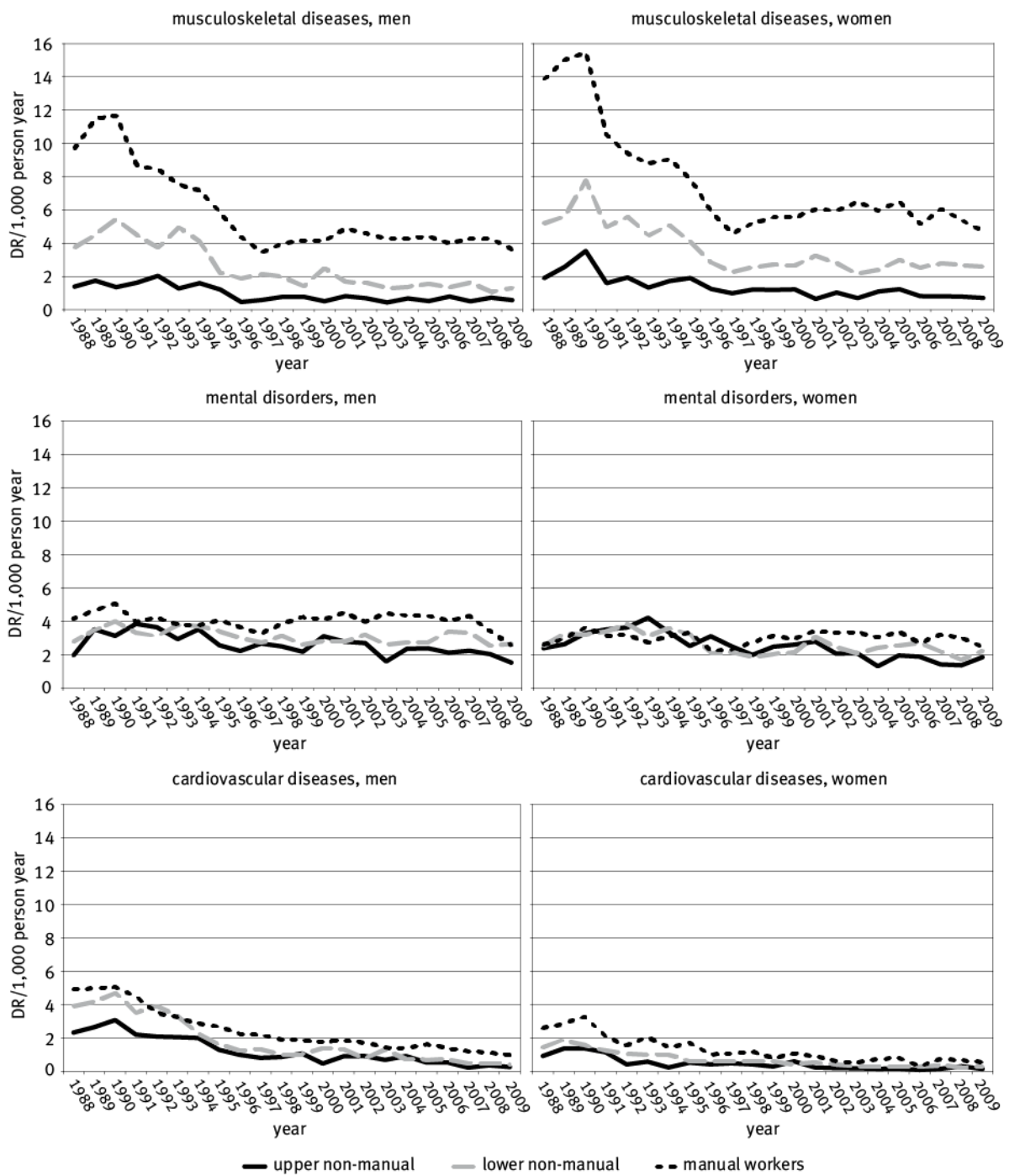


Figure 2. Socioeconomic differences in disability retirement (DR/1,000 person years) due to musculoskeletal diseases, mental disorders and cardiovascular diseases 1988-2009 men and women.

Table 1. Socioeconomic differences in disability retirement due to different diseases in 1988-1995, 1996-2002, 2003-2009. Incidences of disability retirement (DR/1,000 person years) and diseases contribution (%) to the overall socioeconomic differences in disability retirement, men.

		1988-1995			1996-2002			2003-2009		
		upper	lower	manual	upper	lower	manual	upper	lower	manual
		non-manual	non-manual	workers	non-manual	non-manual	workers	non-manual	non-manual	workers
Musculoskeletal diseases	Incidence	1.53	4.15	8.83	0.66	1.88	4.22	0.51	1.18	3.65
	Contribution %		54.65	61.90		63.74	50.02		34.40	42.01
Mental disorders	Incidence	3.21	3.29	3.11	2.51	2.27	2.91	1.42	1.97	2.69
	Contribution %		1.67	-0.85		-12.61	5.61		28.24	17.02
Cardiovascular diseases	Incidence	2.22	3.45	4.01	0.88	1.18	1.96	0.47	0.65	1.18
	Contribution %		25.67	15.15		15.77	15.15		9.36	9.55
Diseases of the nervous system	Incidence	0.58	0.57	0.87	0.39	0.50	0.92	0.32	0.46	0.99
	Contribution %		-0.21	2.46		5.80	7.42		7.34	8.98
Neoplasms	Incidence	0.36	0.40	0.52	0.33	0.42	0.51	0.16	0.29	0.42
	Contribution %		0.83	1.37		4.73	2.52		6.81	3.47
All	Incidence	10.00	14.79	21.80	5.7	7.61	12.82	3.43	5.37	10.91
	Contribution %		100.00	100.00		100.00	100.00		100.00	100.00

Table 2. Socioeconomic differences in disability retirement due to different diseases in 1988-1995, 1996-2002, 2003-2009. Incidences of disability retirement (DR/1,000 person years) and diseases contribution (%) to the overall socioeconomic differences in disability retirement, women.

		1988-1995			1996-2002			2003-2009		
		upper non-manual	lower non-manual	manual workers	upper non-manual	lower non-manual	manual workers	upper non-manual	lower non-manual	manual workers
Musculoskeletal diseases	Incidence	2.04	5.34	11.44	1.07	2.71	5.54	0.76	2.21	5.13
	Contribution %		64.11	62.46		58.65	55.23		49.45	53.63
Mental disorders	Incidence	3.15	3.46	4.27	2.61	2.92	3.96	1.81	2.48	3.62
	Contribution %		6.03	7.40		11.04	16.69		22.83	22.21
Cardiovascular diseases	Incidence	0.82	1.25	2.26	0.40	0.57	0.96	0.17	0.28	0.56
	Contribution %		8.33	9.56		6.04	6.97		3.69	4.84
Diseases of the nervous system	Incidence	0.33	0.46	0.61	0.25	0.47	0.73	0.29	0.48	0.71
	Contribution %		2.56	1.99		7.82	5.95		6.47	5.16
Neoplasms	Incidence	0.39	0.63	0.72	0.49	0.62	0.68	0.34	0.44	0.59
	Contribution %		4.69	2.18		4.61	2.35		3.44	3.07
All	Incidence	8.06	13.21	23.11	5.56	8.36	13.65	3.72	6.65	11.86
	Contribution %		100.00	100.00		100.00	100.00		100.00	100.00