

Work, retirement, and Healthy Life Expectancy

Hugo Westerlund, Ph.D., Professor of Epidemiology

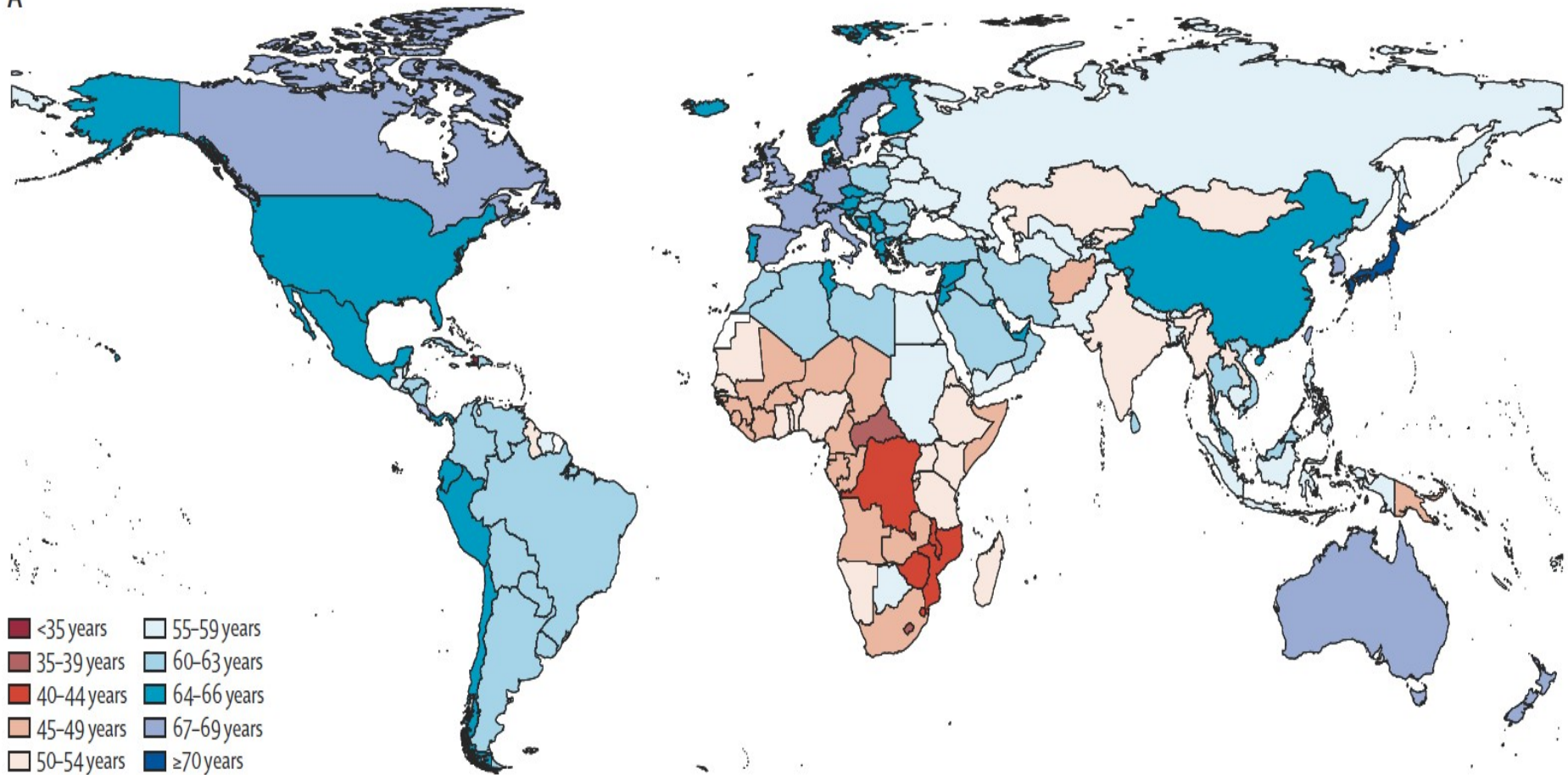
- Director and Head of the **Stress Research Institute, Stockholm University**
- Stockholm Stress Center, a FAS centre of excellence
- Department of Psychology, Stockholm University (Division of Work and Organizational Psychology)
- Department of Clinical Neuroscience, Karolinska Institutet (Division of Insurance Medicine)
- Department of Epidemiology & Public Health, University College London (UCL)

Background

- Increased life expectancy
- Large cohorts reaching old age
- Increased number of retirees
- More people live with chronic disease
 - suffering
 - costly treatment
- Possibly more people in dependency
- Not only add years to life, but also life to years
 - compression or expansion of morbidity?

Healthy Life Expectancy at Birth MEN

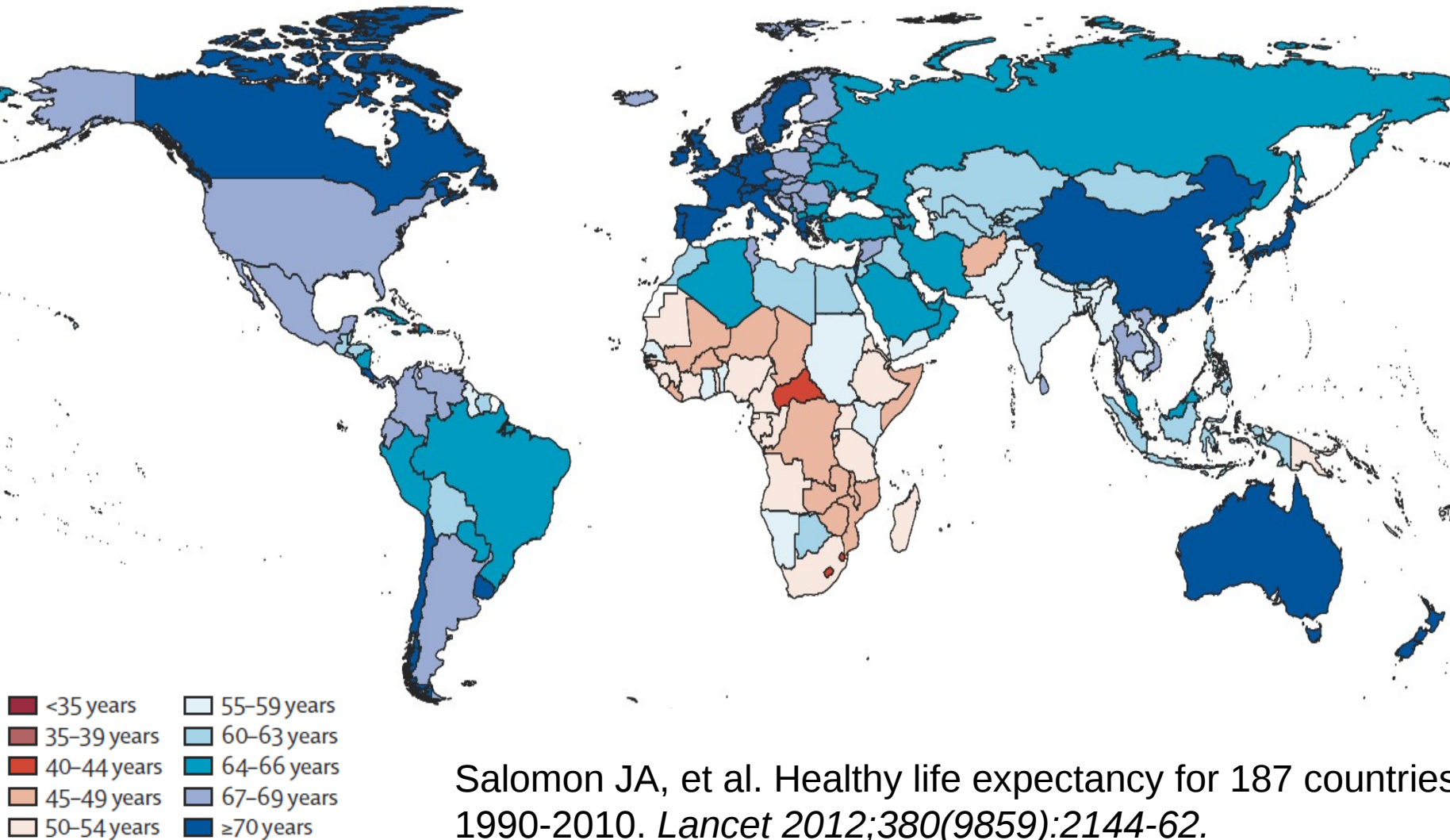
A



Salomon JA, et al. Healthy life expectancy for 187 countries, 1990-2010. *Lancet* 2012;380(9859):2144-62.

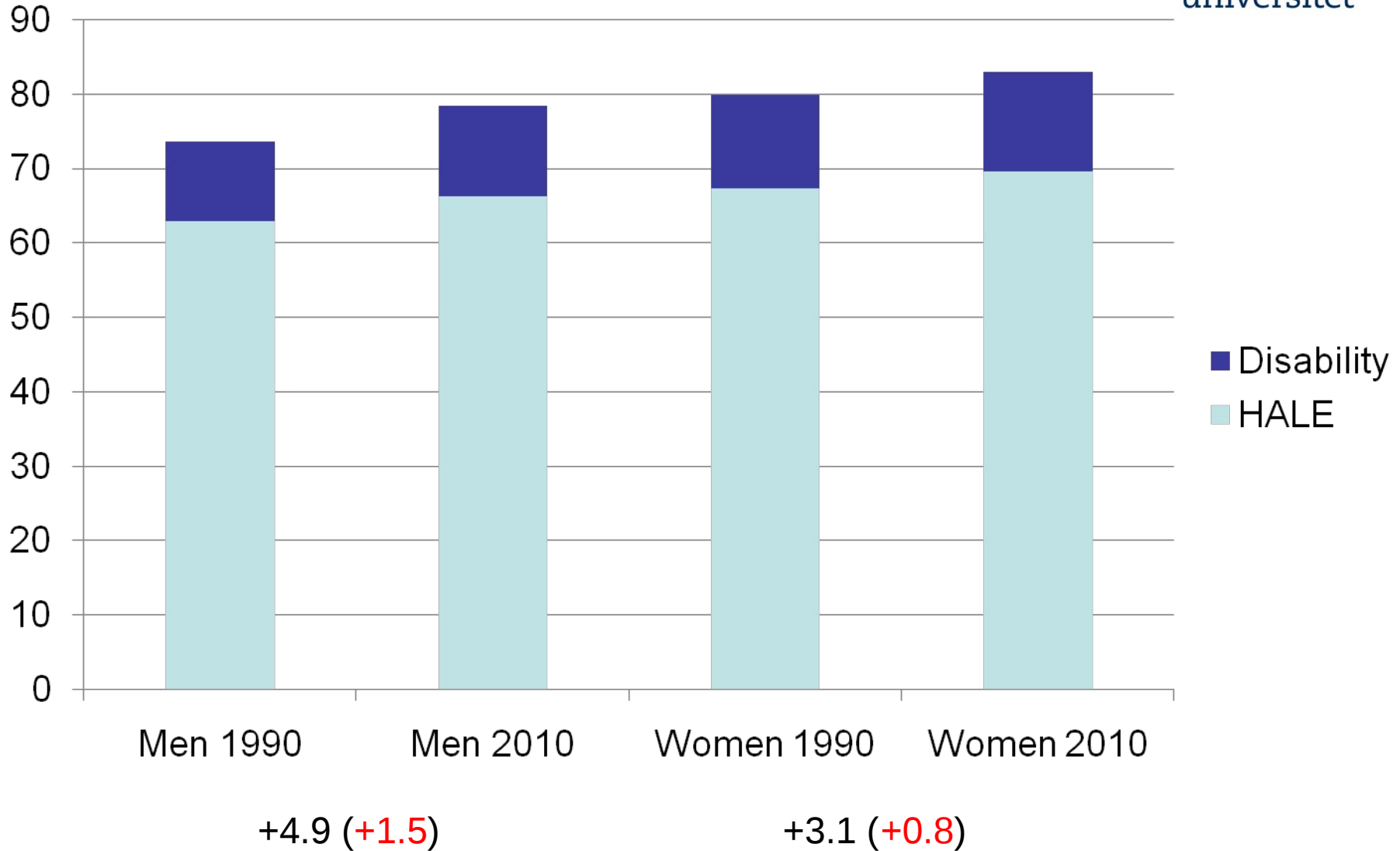
Healthy Life Expectancy at Birth WOMEN

B



Salomon JA, et al. Healthy life expectancy for 187 countries, 1990-2010. *Lancet* 2012;380(9859):2144-62.

HALE and overall Life Expectancy in Norway





Stockholms
universitet

	Male healthy life expectancy		Female healthy life expectancy	
	1990	2010	1990	2010
0 years	54.8 (53.2–56.3)	59.0 (57.3–60.6)	58.7 (56.9–60.3)	63.2 (61.4–65.0)
1 years	58.1 (56.3–59.5)	60.7 (58.9–62.3)	61.4 (59.6–63.1)	64.6 (62.7–66.3)
5 years	55.5 (53.8–57.0)	57.7 (55.9–59.3)	58.8 (57.0–60.5)	61.6 (59.7–63.3)
10 years	51.1 (49.5–52.6)	53.2 (51.5–54.8)	54.4 (52.6–56.1)	57.0 (55.2–58.7)
15 years	46.7 (45.2–48.1)	48.7 (47.1–50.2)	50.0 (48.3–51.6)	52.5 (50.8–54.2)
20 years	42.5 (41.0–43.8)	44.4 (42.8–45.8)	45.8 (44.1–47.3)	48.2 (46.6–49.8)
25 years	38.4 (36.9–39.6)	40.2 (38.8–41.6)	41.6 (40.1–43.1)	44.1 (42.5–45.6)
30 years	34.3 (33.0–35.5)	36.2 (34.8–37.6)	37.6 (36.1–38.9)	40.0 (38.5–41.4)
35 years	30.3 (29.1–31.5)	32.3 (30.9–33.5)	33.6 (32.2–34.8)	35.9 (34.5–37.3)
40 years	26.5 (25.3–27.5)	28.4 (27.1–29.6)	29.6 (28.4–30.8)	32.0 (30.6–33.2)
45 years	22.7 (21.6–23.7)	24.6 (23.4–25.7)	25.8 (24.6–26.9)	28.0 (26.8–29.2)
50 years	19.2 (18.2–20.1)	21.0 (19.9–22.0)	22.1 (21.0–23.1)	24.2 (23.1–25.2)
55 years	15.9 (15.1–16.7)	17.6 (16.6–18.5)	18.6 (17.6–19.5)	20.5 (19.5–21.5)
60 years	13.0 (12.2–13.7)	14.4 (13.6–15.2)	15.3 (14.5–16.1)	17.0 (16.1–17.9)
65 years	10.3 (9.7–10.9)	11.6 (10.8–12.3)	12.3 (11.6–13.0)	13.8 (13.0–14.5)
70 years	8.0 (7.4–8.5)	9.0 (8.4–9.6)	9.6 (9.0–10.2)	10.9 (10.2–11.5)
75 years	6.0 (5.6–6.5)	6.9 (6.4–7.4)	7.3 (6.8–7.8)	8.3 (7.8–8.9)
80 years	4.4 (4.1–4.8)	5.1 (4.7–5.5)	5.3 (4.9–5.7)	6.1 (5.7–6.5)

Data are point estimates (95% uncertainty intervals; years).

Table 1: Global healthy life expectancy by age, in 1990, and 2010

Salomon JA, et al. Healthy life expectancy for 187 countries, 1990-2010. *Lancet* 2012;380(9859):2144-62.

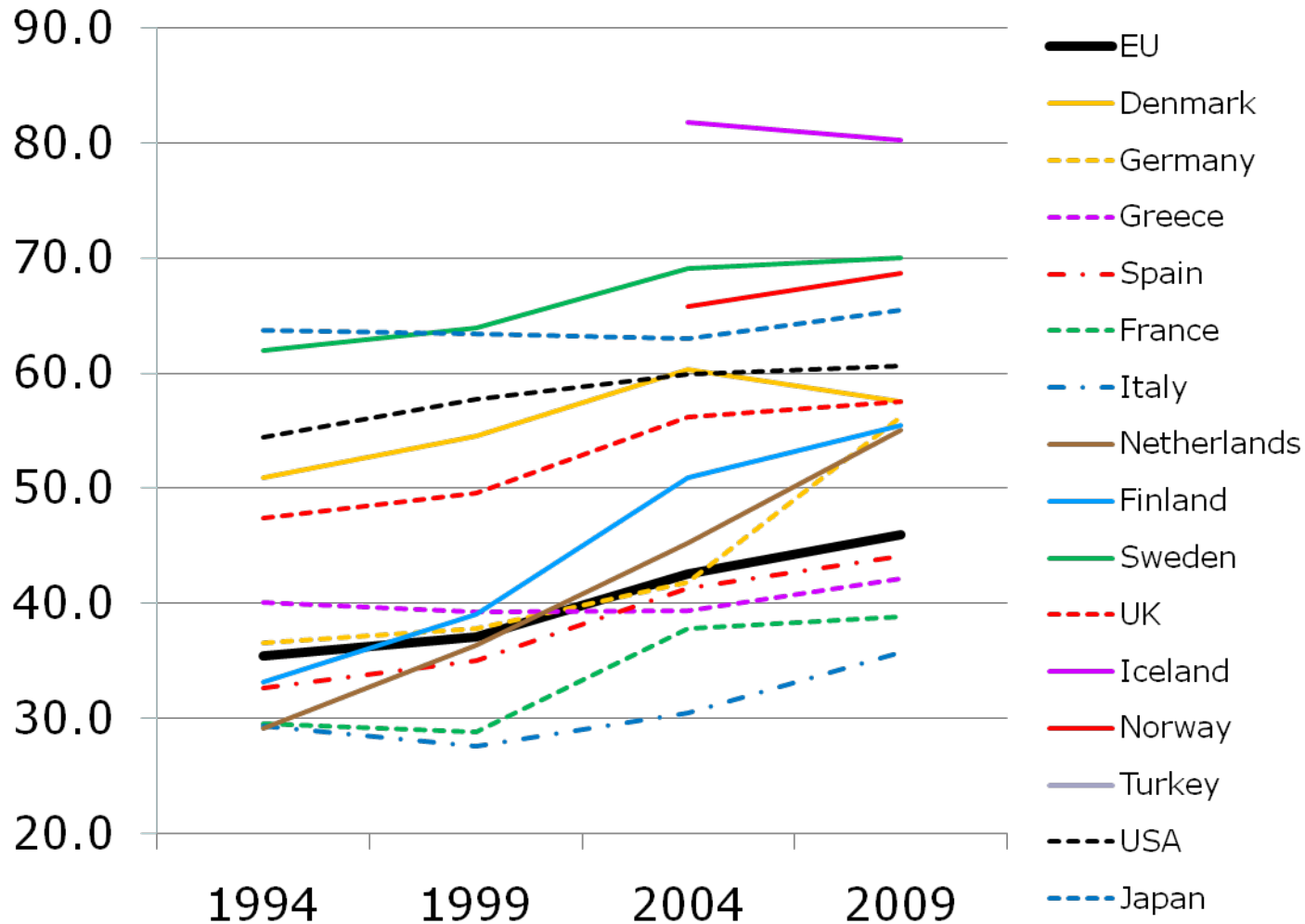
	Male healthy life expectancy		Female healthy life expectancy	
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Per cent in work 55-64 years of age



Source: Eurostat

2011-05-29

Is retirement beneficial or harmful?

- There is a limit to how long people can work
- Retirement could harm the individual's health through
 - poverty
 - use it or lose it
 - poor health behaviours
 - life loses its meaning
 - work is healthy, so retirement must surely be bad for you?
- Retirement can also be beneficial through
 - liberation from stress and dangerous work
 - rest and recuperation
 - time for meaningful and healthy activities

Earlier research

- Mixed results
 - disability pension associated with poor health
 - involuntary retirement negative according to some studies
 - old age pension – contradictory results
 - faster cognitive decline after retirement
- Large methodological problems
 - difficult separate the effect of retirement from the effect of ageing
 - the older, the more likely a person is to have health problems
 - major selection effects
 - many forced to retire when health fails
 - the most healthy with the best jobs often continue (choose) to work

Westerlund H, Kivimäki M, Singh-Manoux A, Melchior M, Ferrie JE, Pentti J, Jokela M, Leineweber C, Goldberg M, Zins M, & Vahtera J

Self-rated health before and after retirement in France (GAZEL): a cohort study

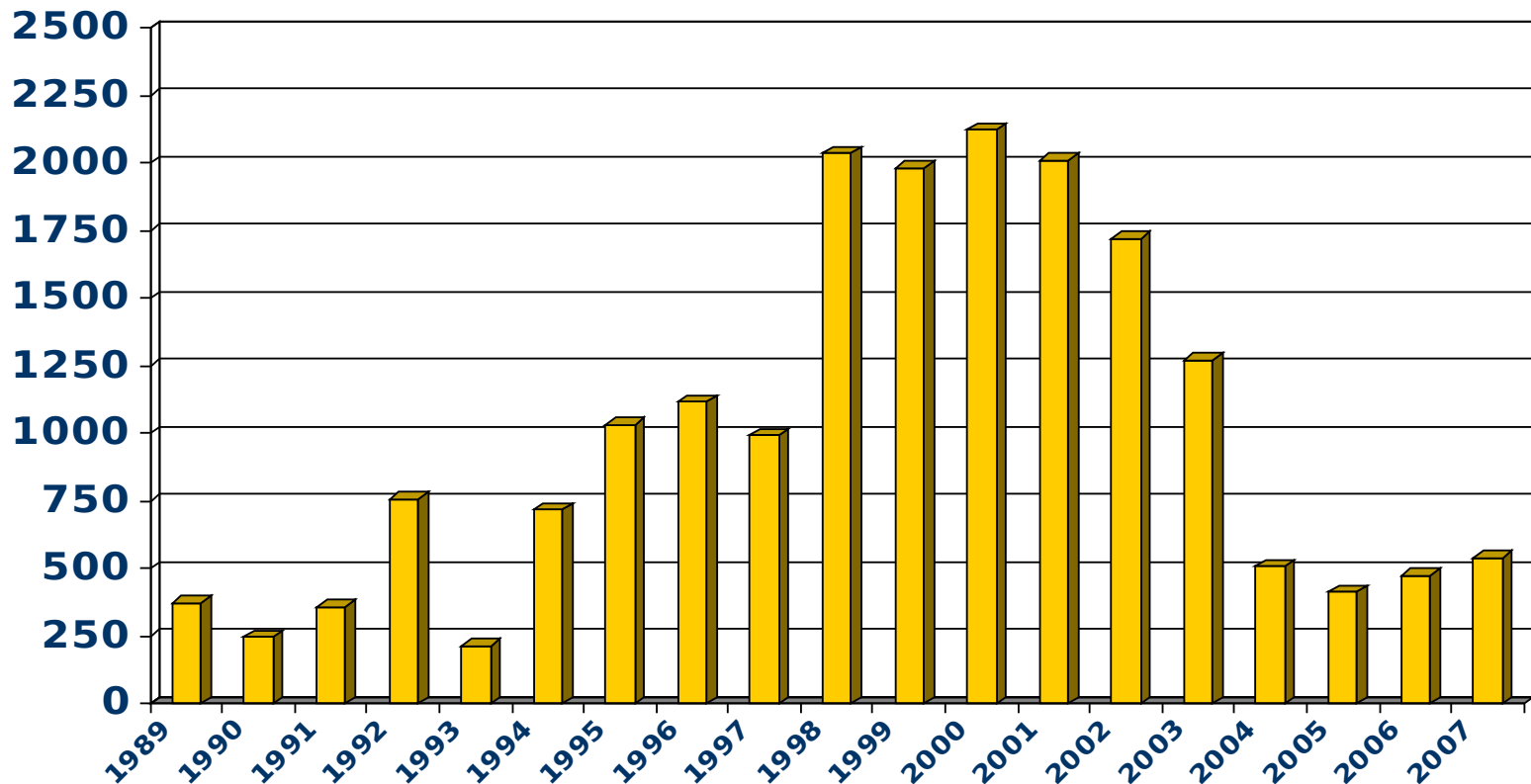
***The Lancet*, 2009;374(9705):1889-96.**

DOI:10.1016/S0140-6736(09)61570-1

Method

- Study based on the GAZEL cohort
 - yearly questionnaires to 20,625 volunteers since 1989
 - based on the French gas and electricity company
 - 14,714 persons in the analytic sample
- Yearly measurements from a 15-year time window centred on retirement
 - from year -7 through +7
- Self-rated health
 - 8-point Likert scale, dichotomised according to the literature
 - 174,765 person-measurement observations
- Repeated measurements logistic regression with generalised estimating equations (GEE)
 - takes account of intra-individual correlations (ARIMA)
 - not sensitive to missing (MAR) data

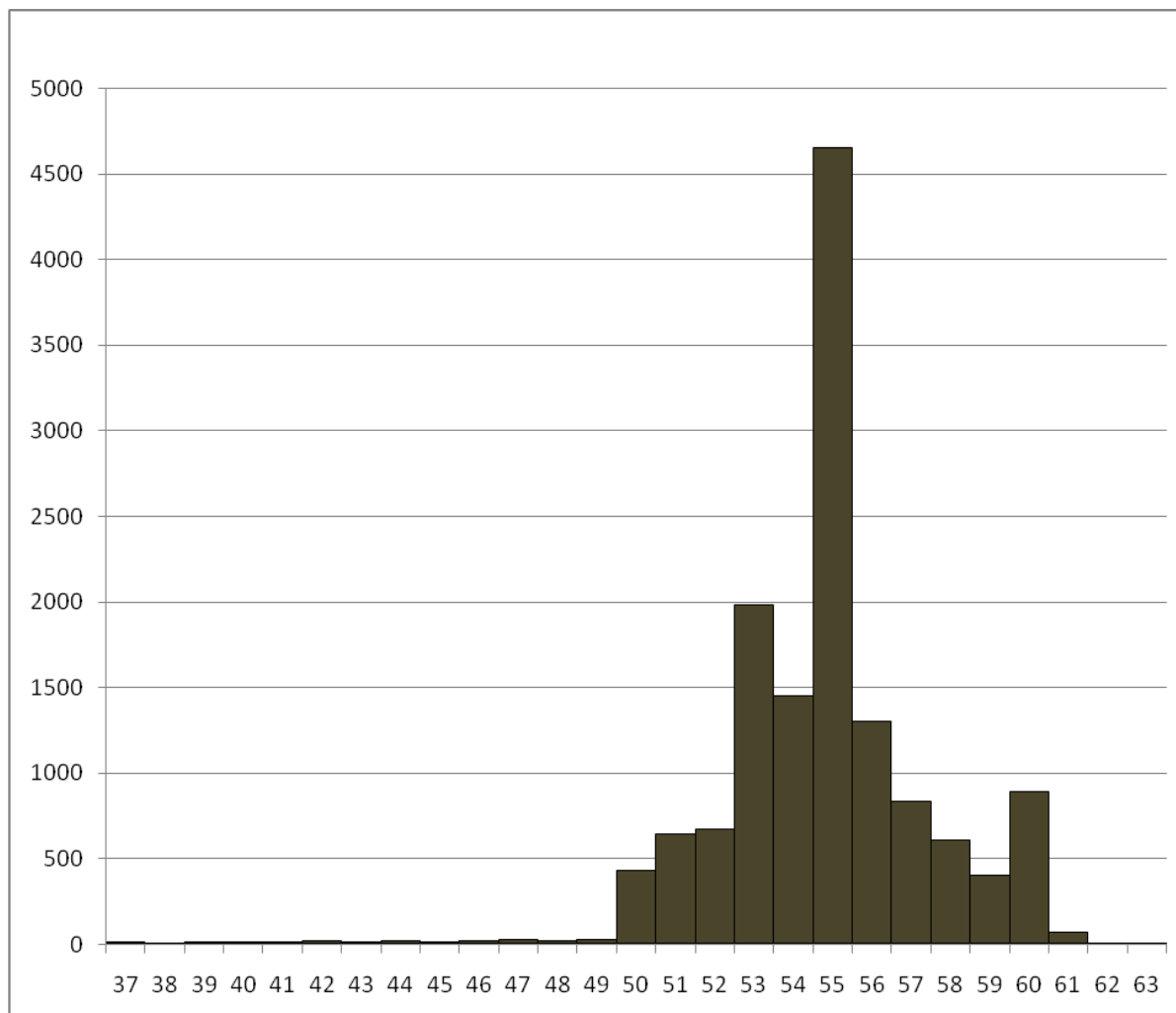
Number of employees retiring in the Gazel cohort by year of retirement



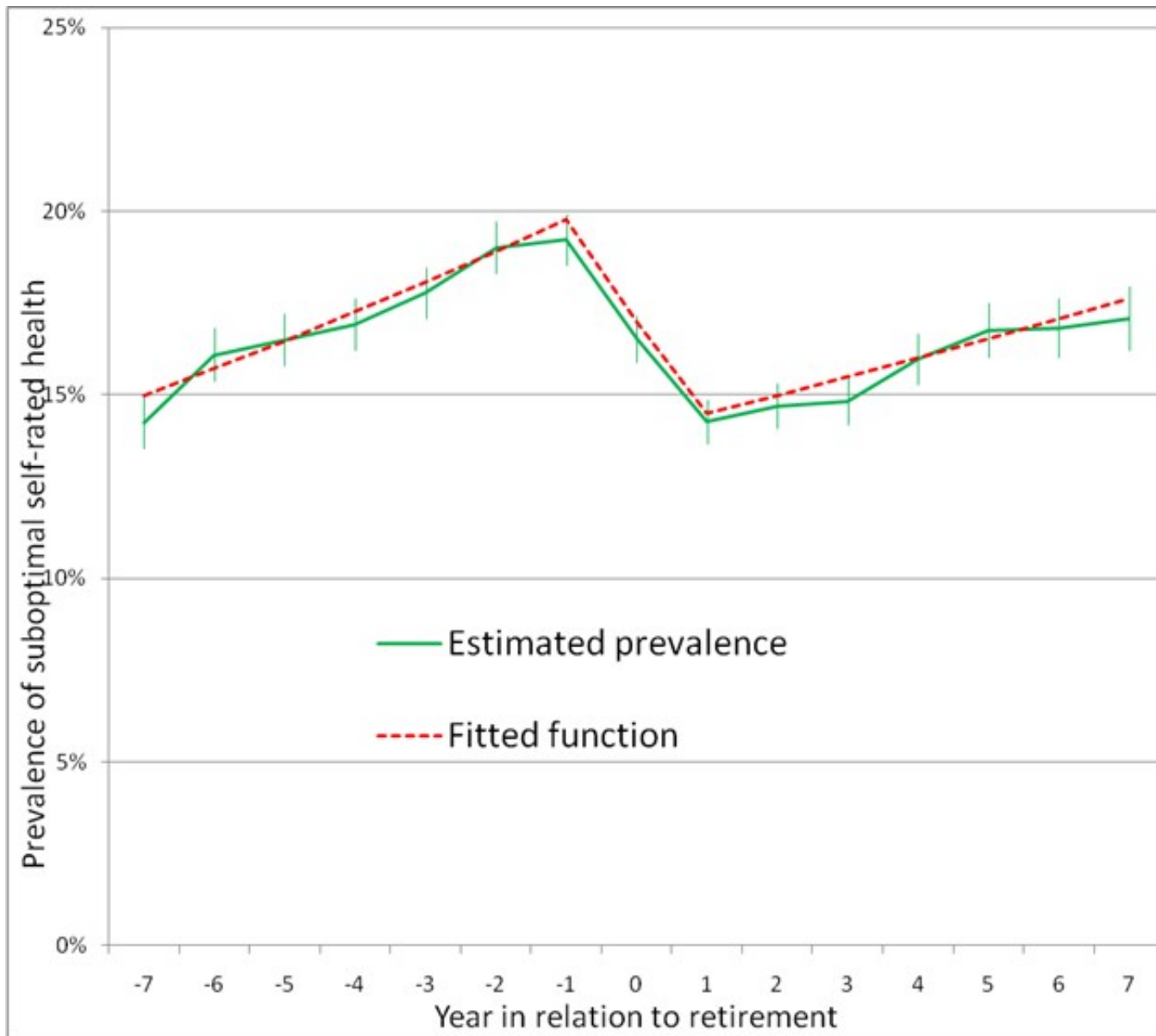
18,884 (92%) retired by 2007.

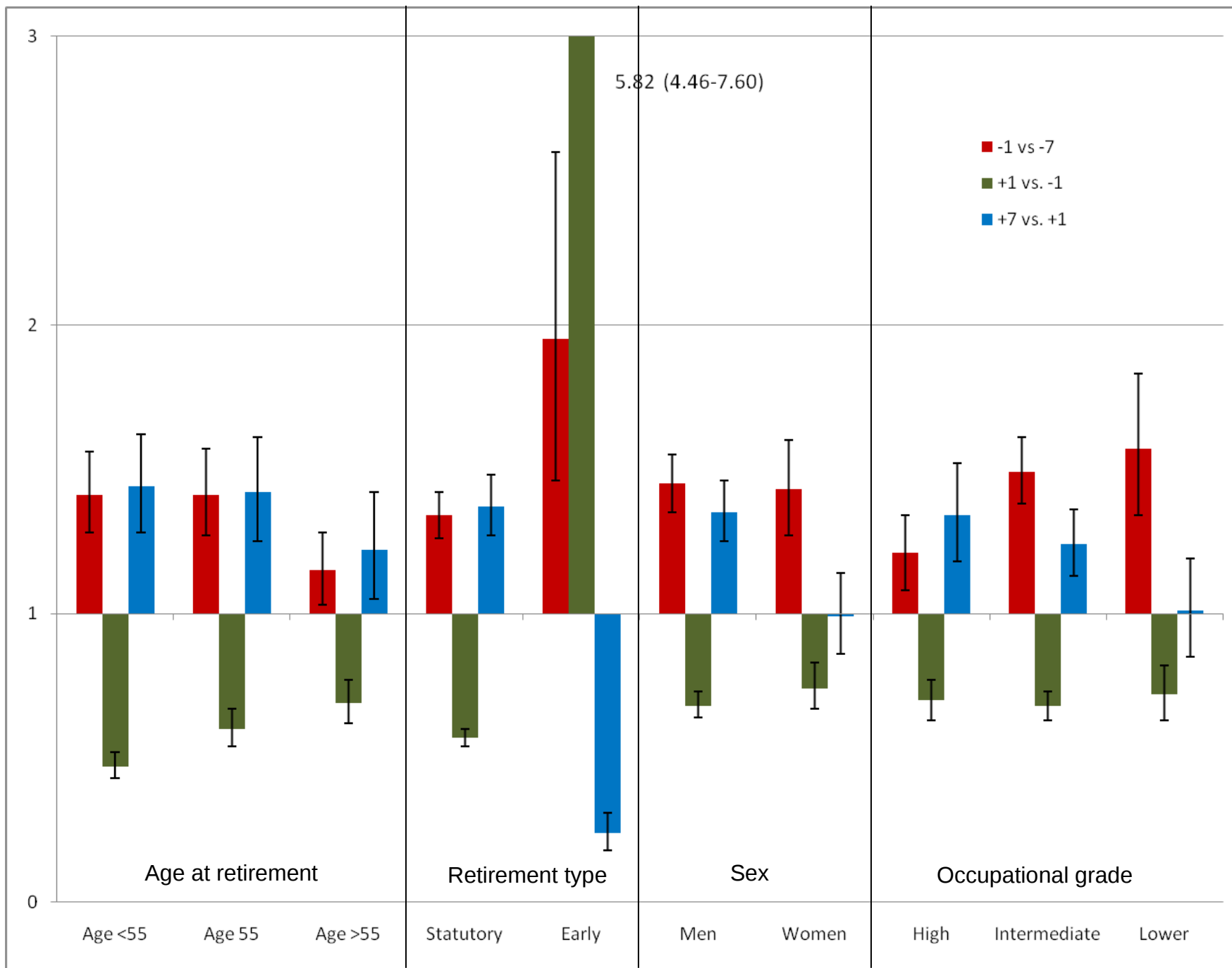
Of them, all 14,104 participants with ≥ 1 returned questionnaire before and after retirement, and who had not retired on health grounds (n=610), were selected for the study.

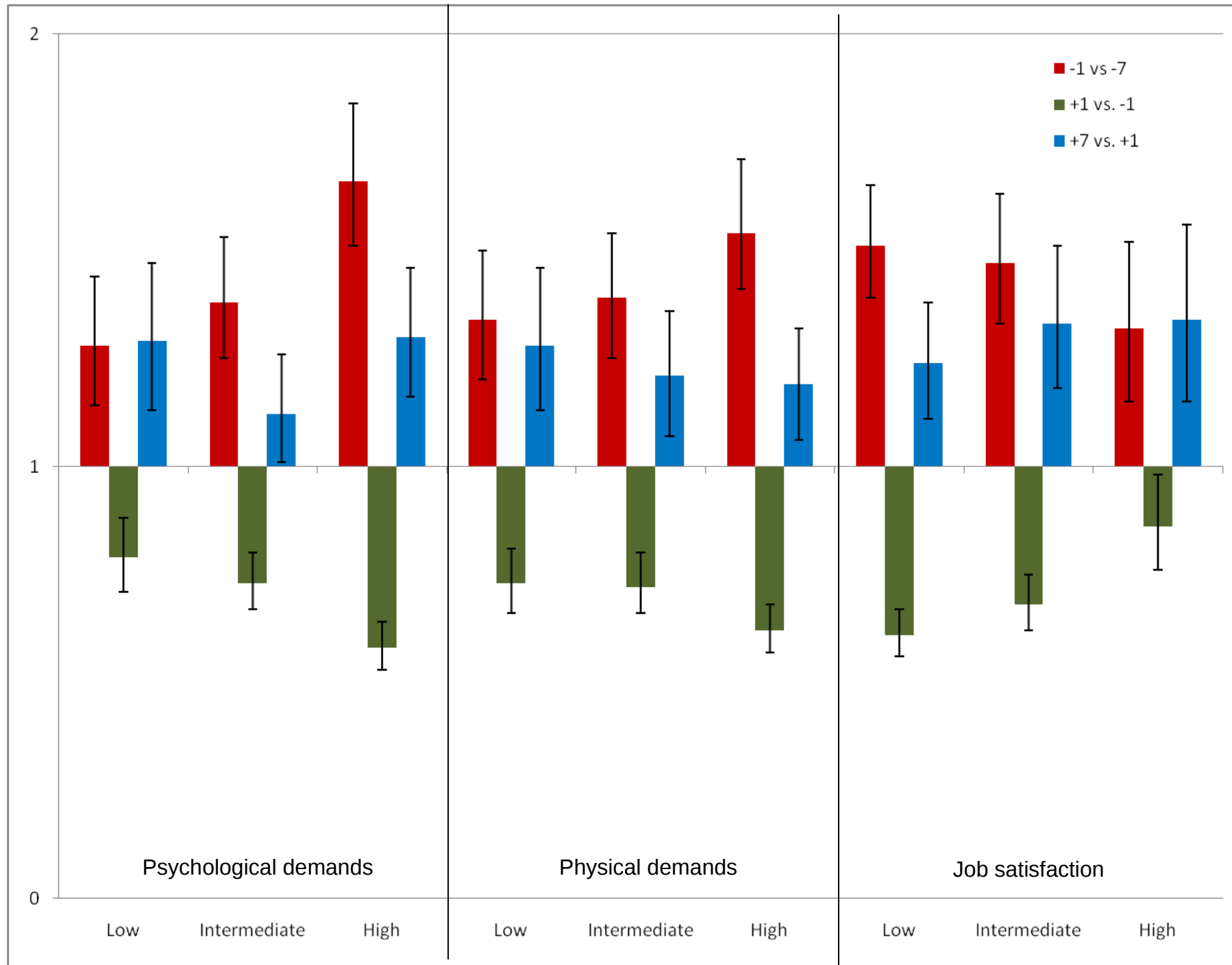
Retirement age among those who did not retire for health reasons

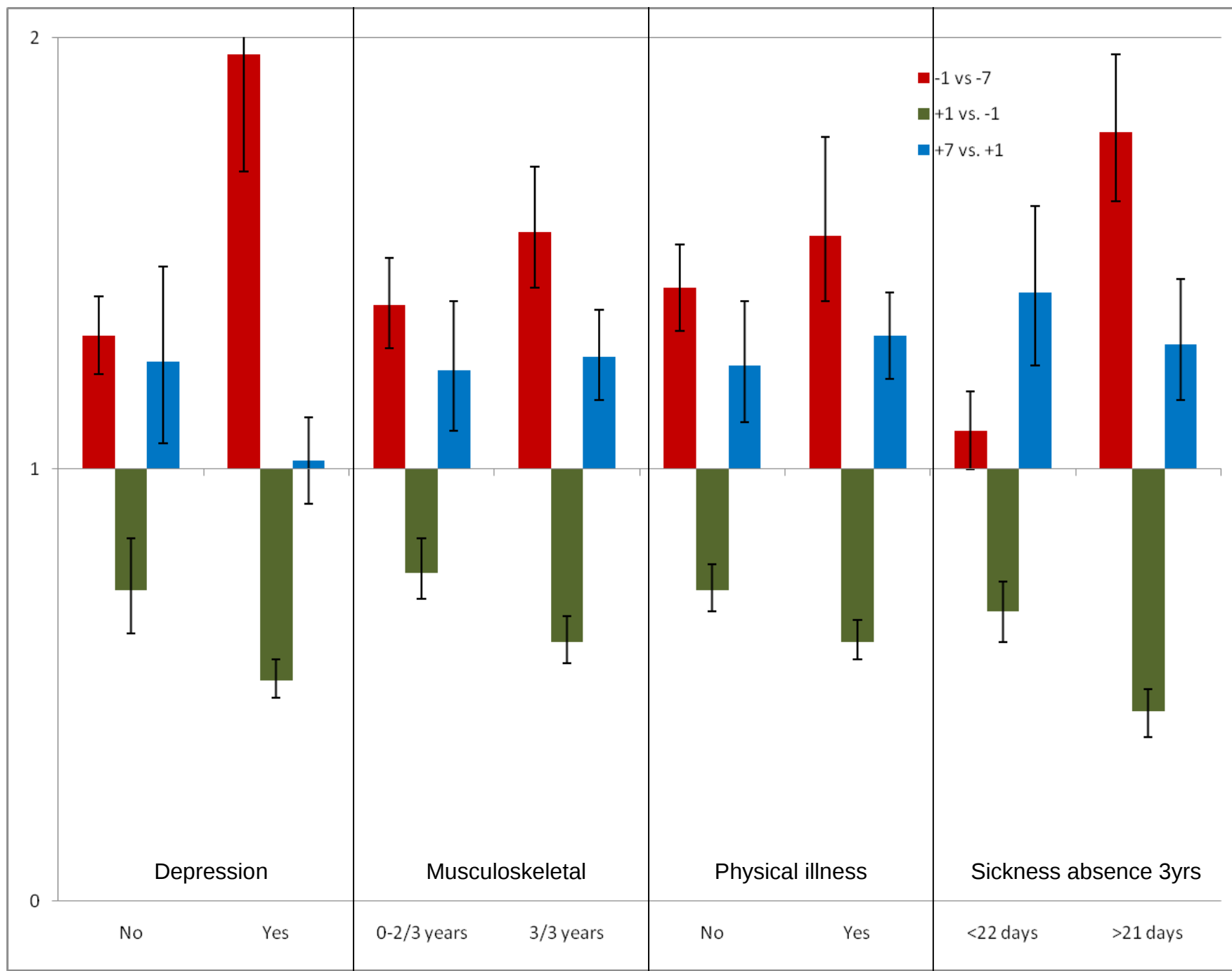


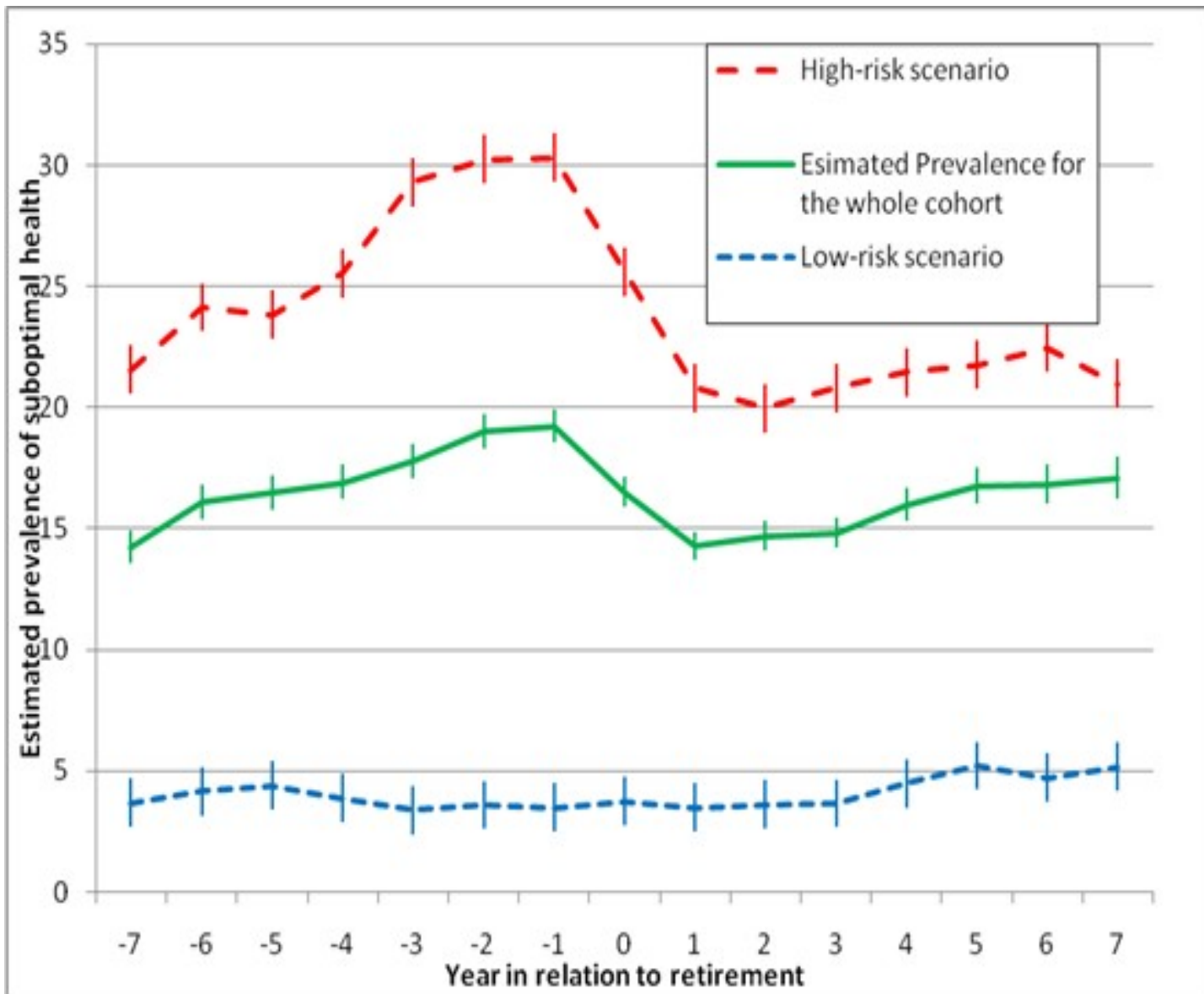
Of those who did not retire due to illness, 10,216 (72%) retired between 53 and 57 years of age, and 13,846 (98%) between the ages of 50 and 60 – at 64 all had retired











Why is retirement a relief?

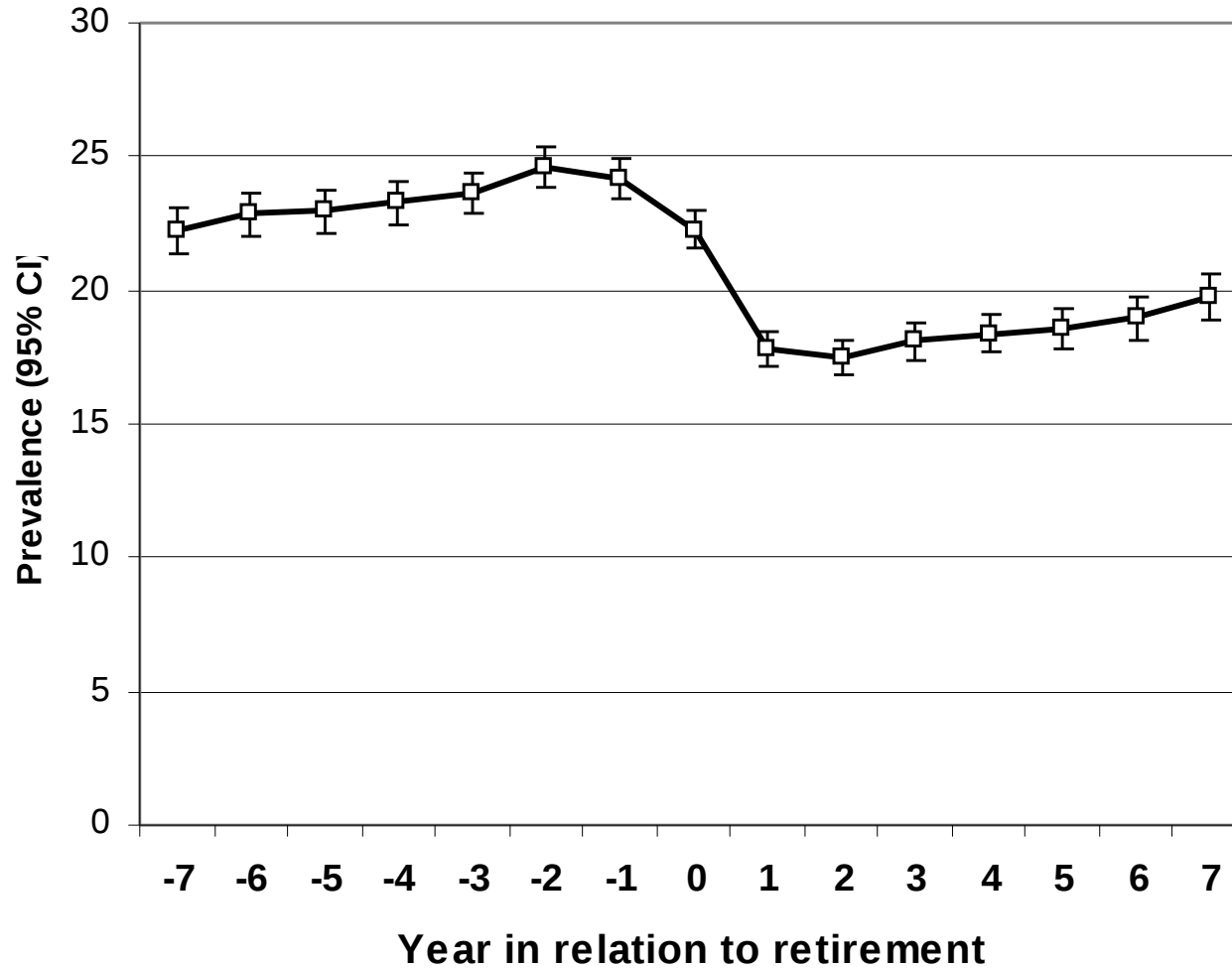
- Is work physically and mentally taxing?
 - normal ageing limits certain capacities
 - the prevalence of chronic illnesses increases with age
 - modern working life often demands peak performance
 - age discrimination an added stressor
- Do people *experience* their health as poor when they feel they cannot perform optimally at work?
- Is retirement beneficial *per se*?
 - more time for health promoting activities
 - more time to enjoy life
- Do retirees have more opportunities for rest and recuperation?

Vahtera J, Westerlund H, Hall M, Sjösten N, Kivimäki M,
Salo P, Ferrie JE, Jokela M, Pentti J, Singh-Manoux A,
Goldberg M, & Zins M

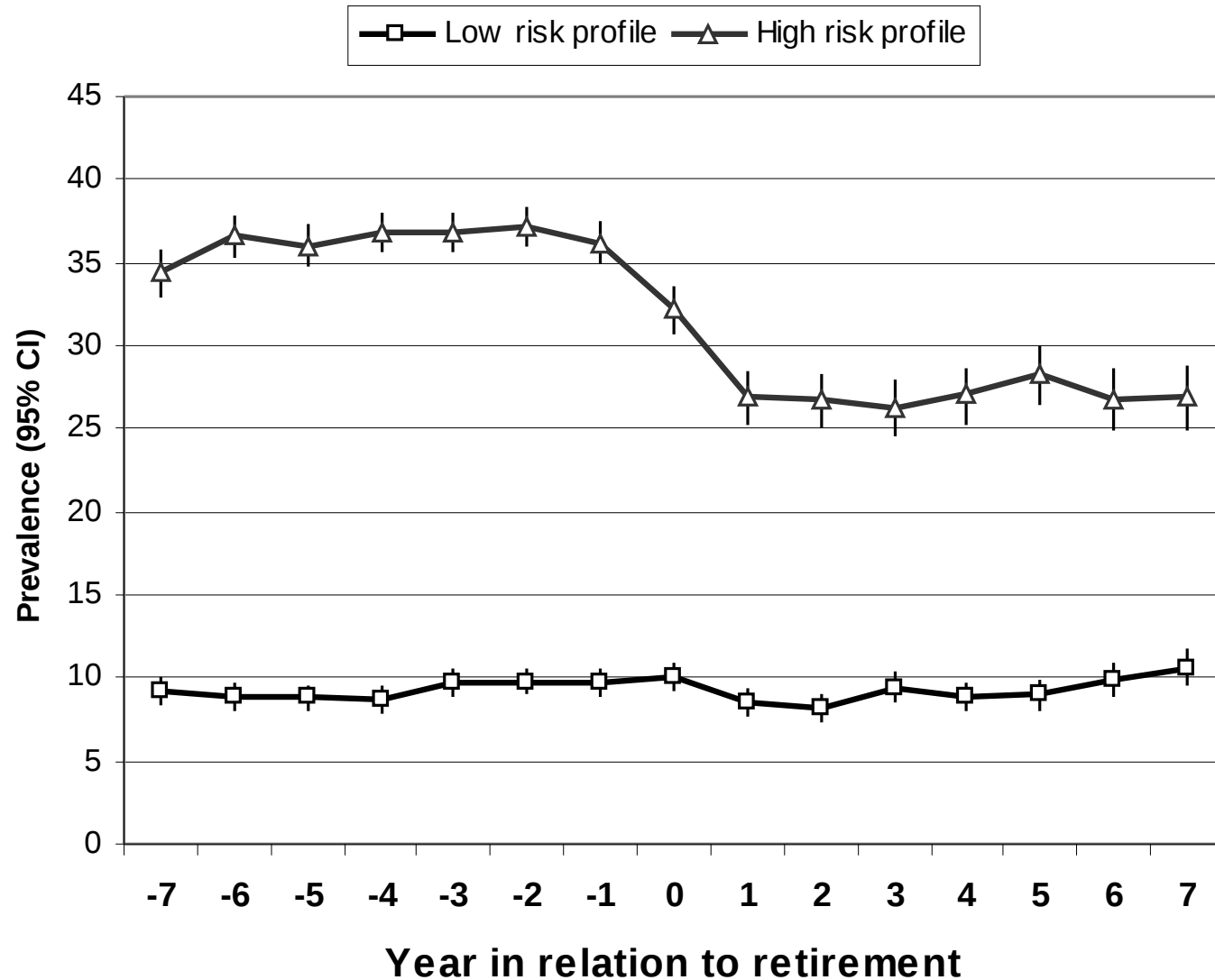
**Effect of retirement on
sleep disturbances:
the GAZEL prospective cohort study**

Sleep, 2009;**32**(11):1459-1466.

Changes in sleep after retirement



Changes in sleep after retirement by risk profile



Why do older workers sleep poorly?

- Sleep deteriorates with age
 - but it gets better when they retire
 - could constitute a vulnerability
- Worries about the next working day
- Worries about not being able to sleep
 - much less of a problem for retirees, presumably
- Stronger experience of fatigue after a poor night's sleep
- Too wound up to fall asleep
- Poor sleep because of underlying illness
 - depression
 - pain
 - ???

Westerlund H, Vahtera J, Ferrie JE, Singh-Manoux A, Pentti J,
Melchior M, Leineweber C, Jokela M, Siegrist J, Goldberg M,
Zins M, & Kivimäki M

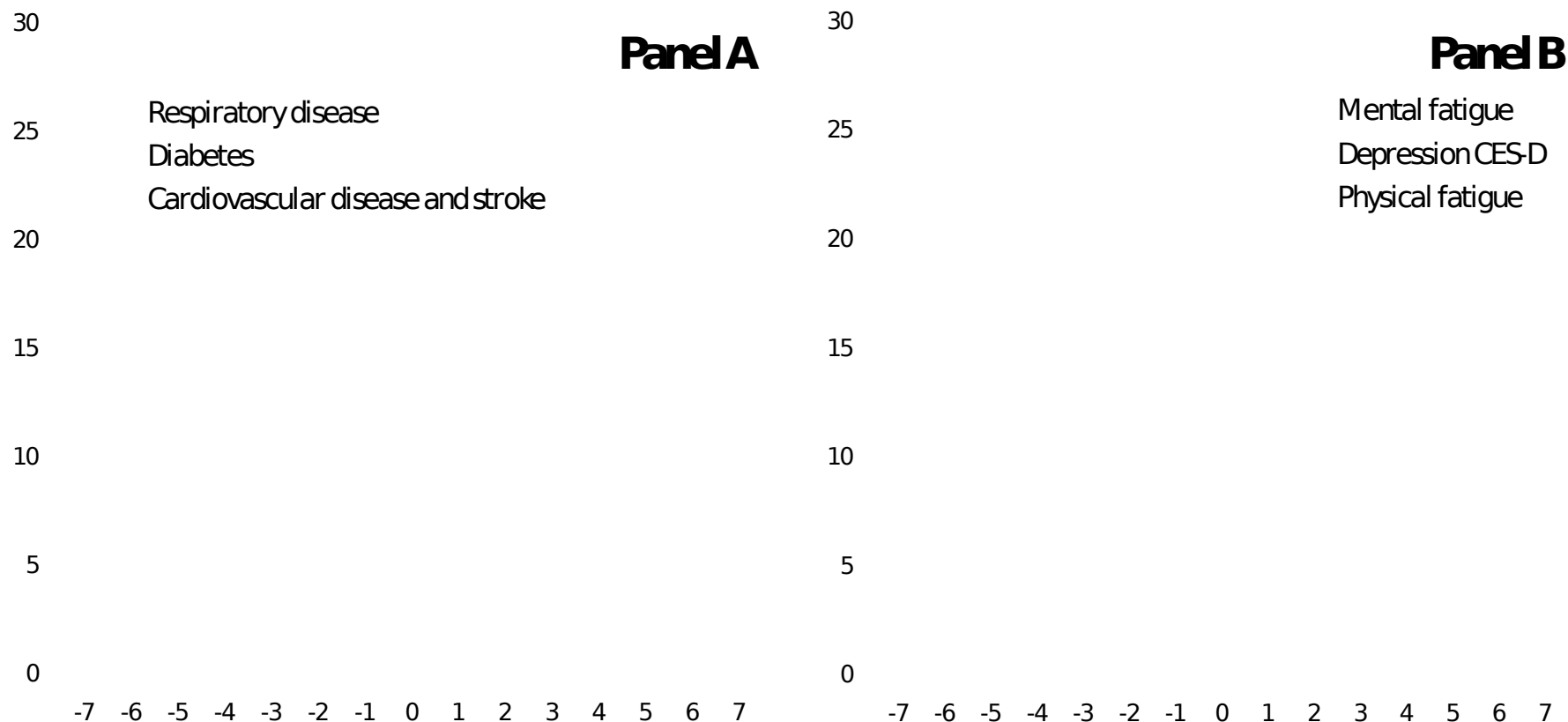
Effect of retirement on major chronic conditions and fatigue:

The French GAZEL occupational cohort study

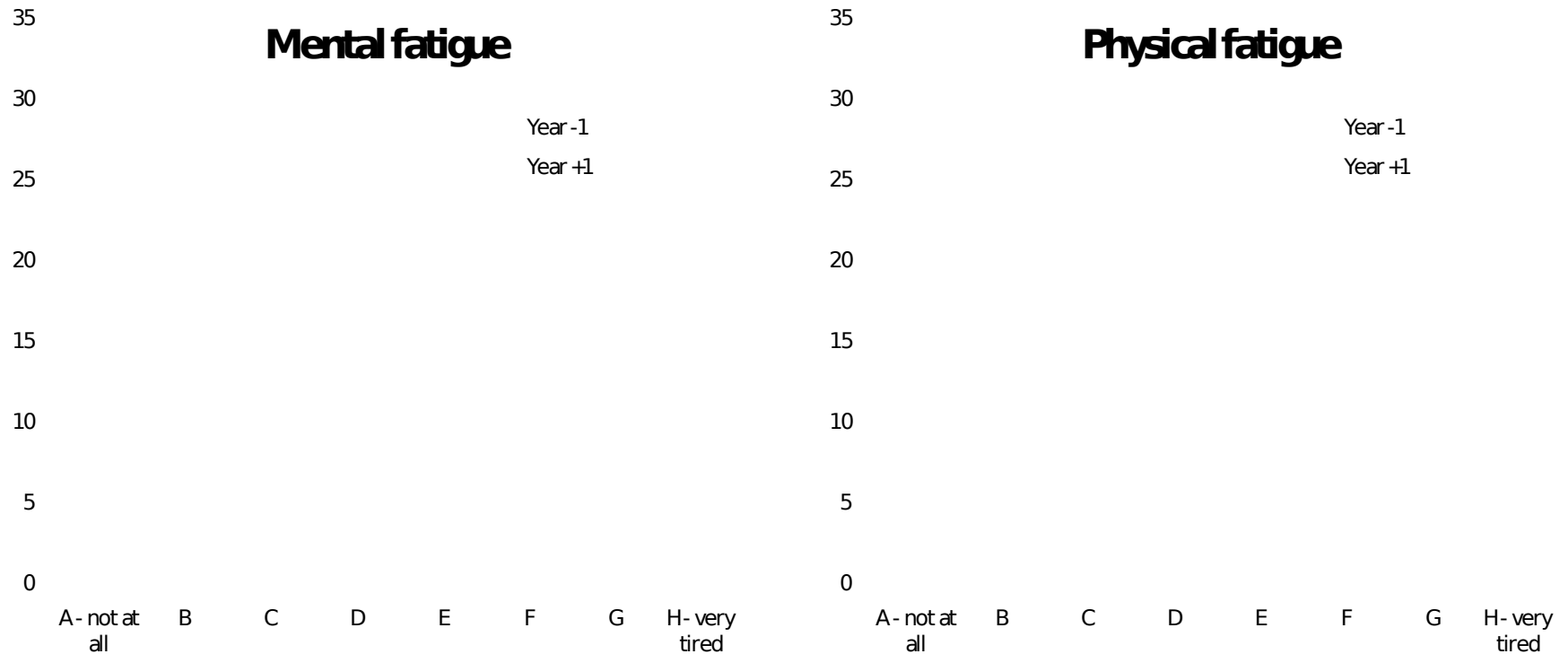
BMJ, 2010;341:c6149.

Measures

- Chronic diseases
 - angina, myocardial infarction, and stroke
 - chronic bronchitis and asthma
 - diabetes
- Mental and physical fatigue
 - 8-point Likert scales, dichotomised upper 20% vs. the rest
 - around 169,000 person-measurement observations
- Depressive symptoms according to CES-D
 - well-established 20-item scale
 - validated French cut-point
 - measured 1996, 1999, 2002, and 2005 yielding 37,870 PMO

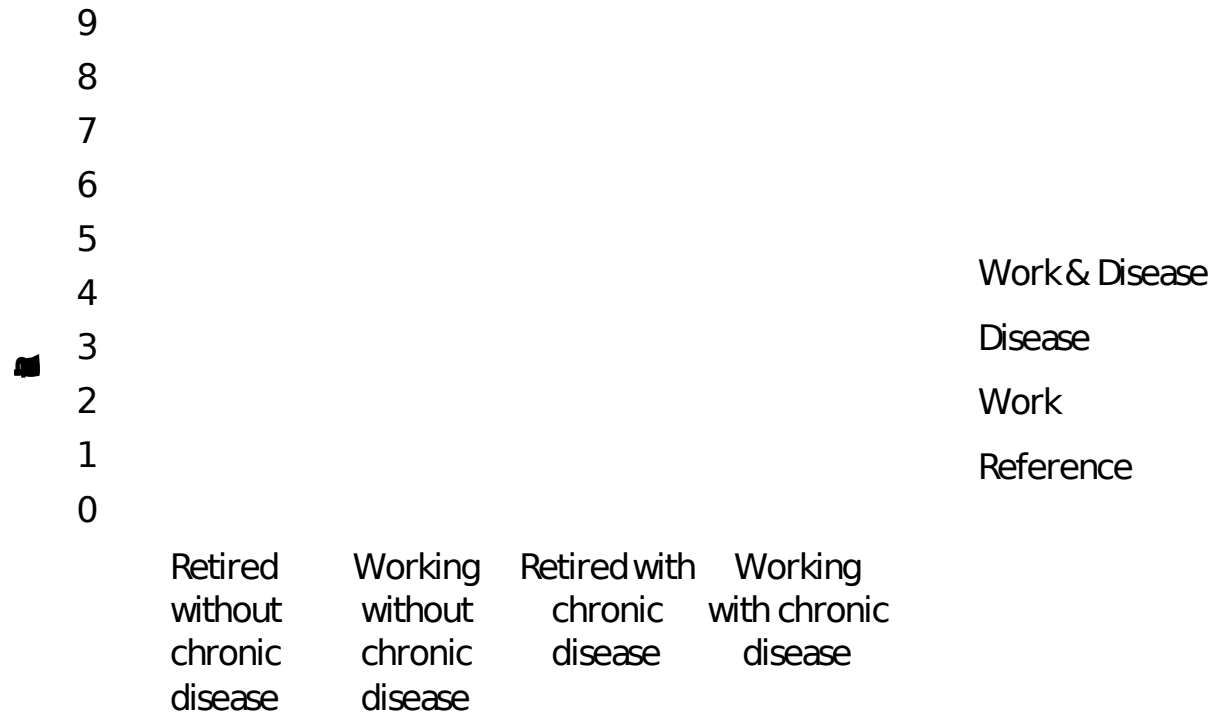


Source: Westerlund et al. **BMJ**,
2010;341:c6149.



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2010;341:c6149.

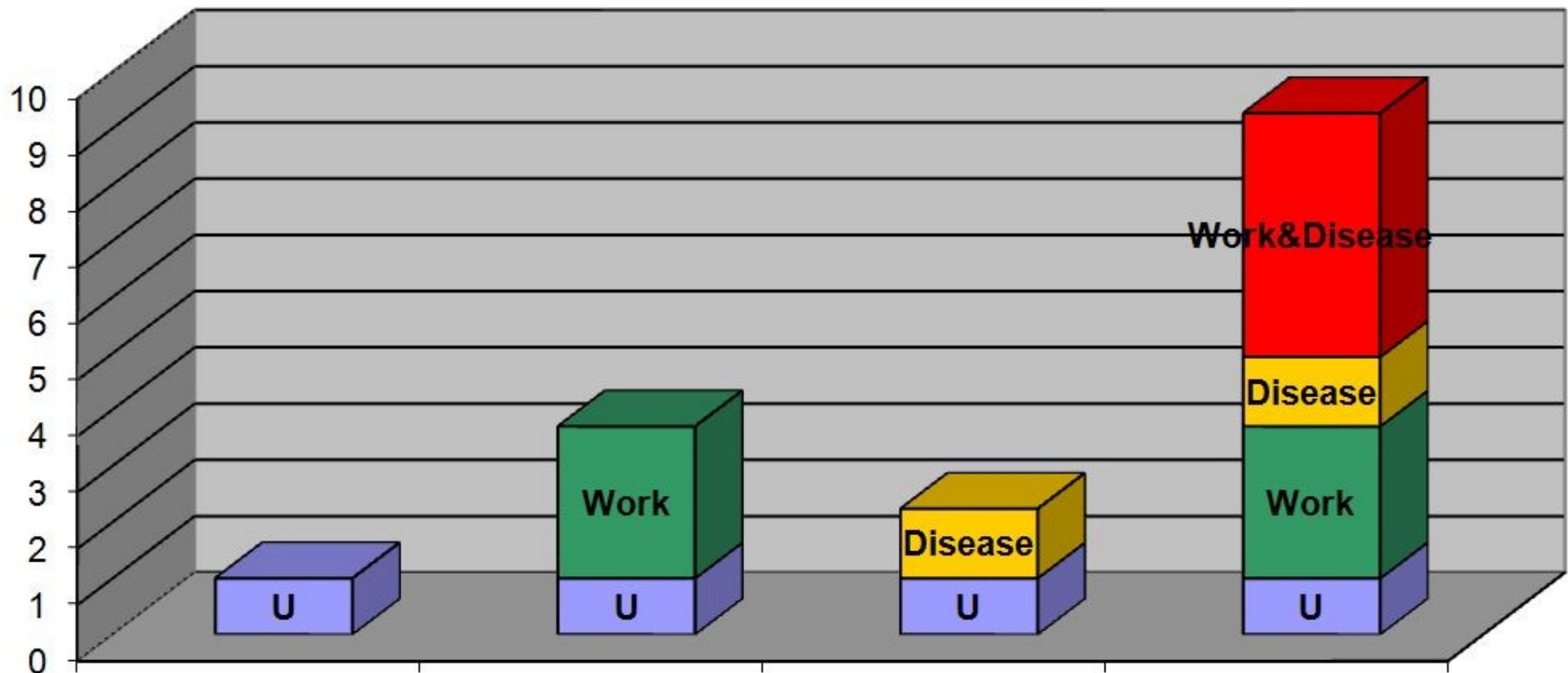
The role of work and chronic disease in fatigue



Health condition	Synergy index (95% CI)	
	Mental fatigue	Physical Fatigue
Respiratory disease	1.21 (1.05 to 1.40)	1.34 (1.13 to 1.58)
Diabetes	1.17 (0.92 to 1.47)	1.25 (0.95 to 1.64)
Coronary heart disease or stroke	1.85 (1.44 to 2.38)	2.10 (1.58 to 2.80)
Any chronic disease ¹	1.30 (1.16 to 1.47)	1.43 (1.24 to 1.65)

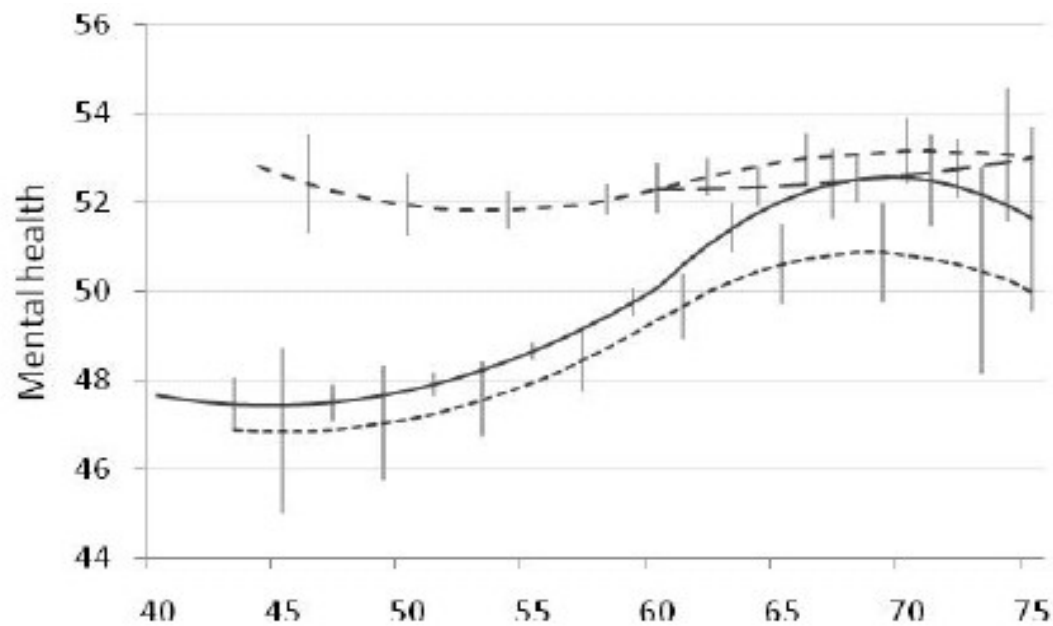
Synergy between work and Coronary Heart Disease in the association with Physical Fatigue

*Relative risk with contributions from different exposure categories marked
U is the common reference category*

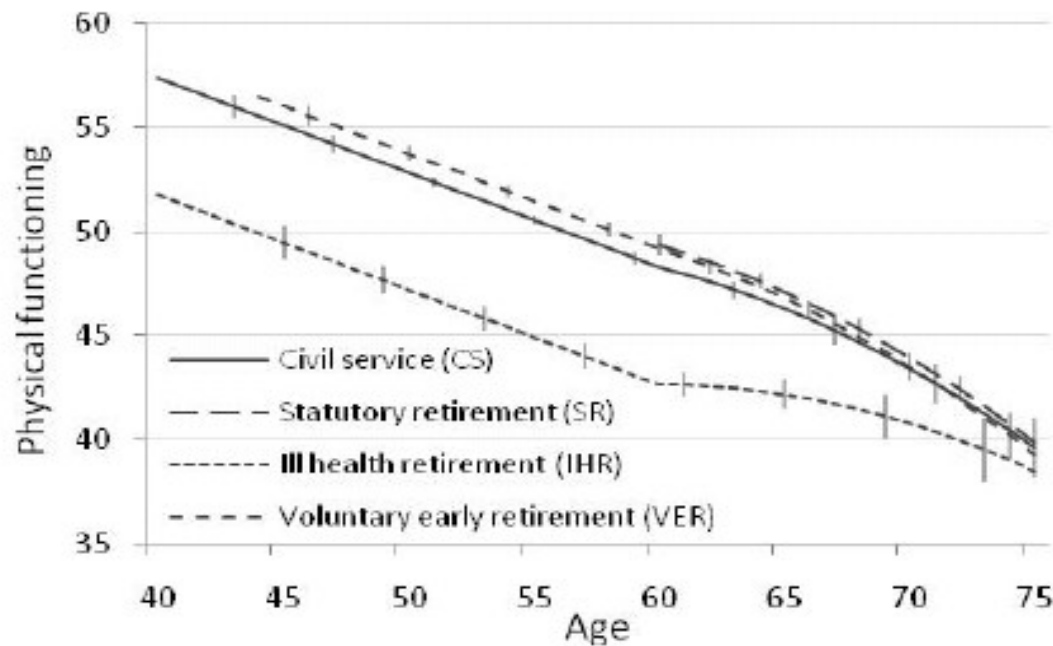


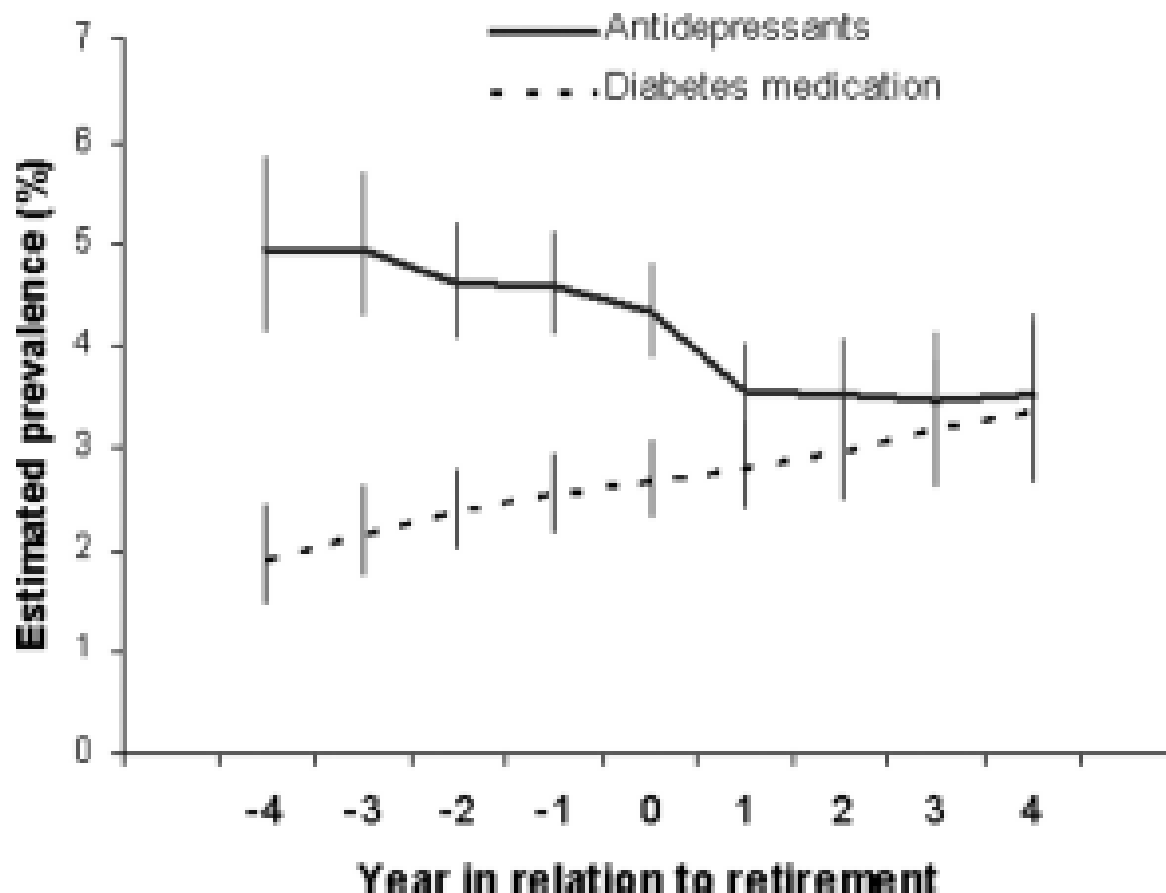


Can the results be generalised?



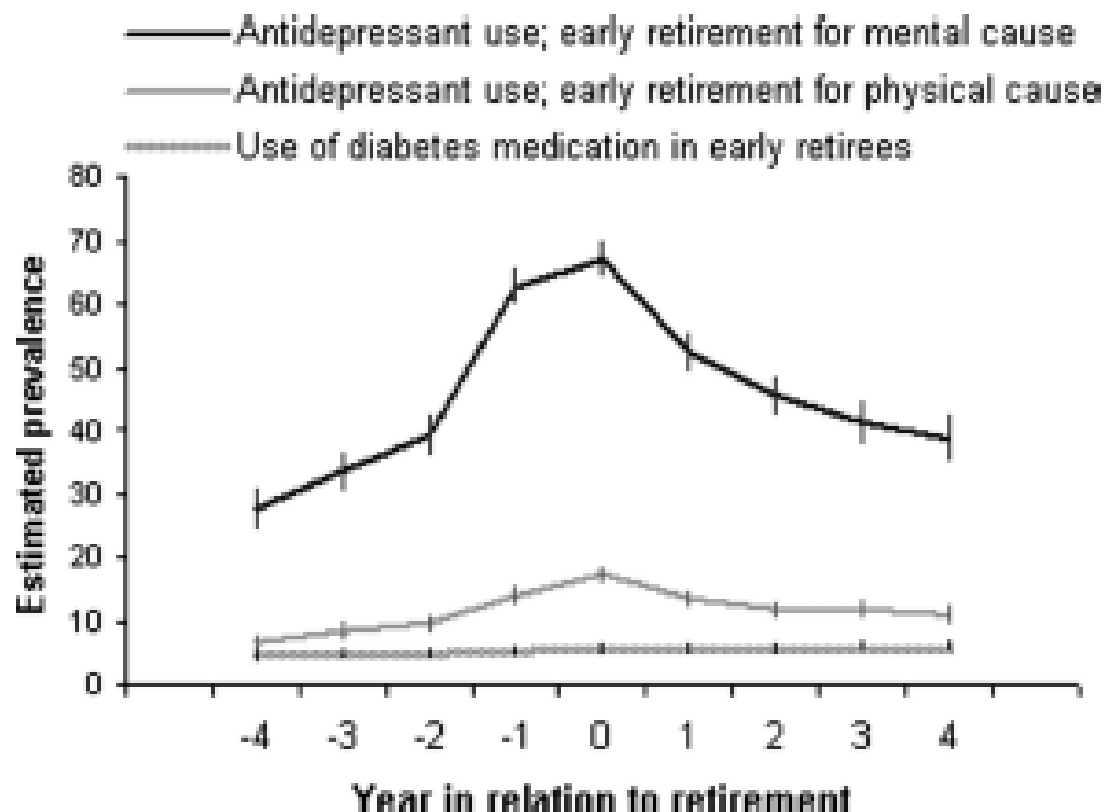
Whitehall II data





Finnish Public
Sector Study data

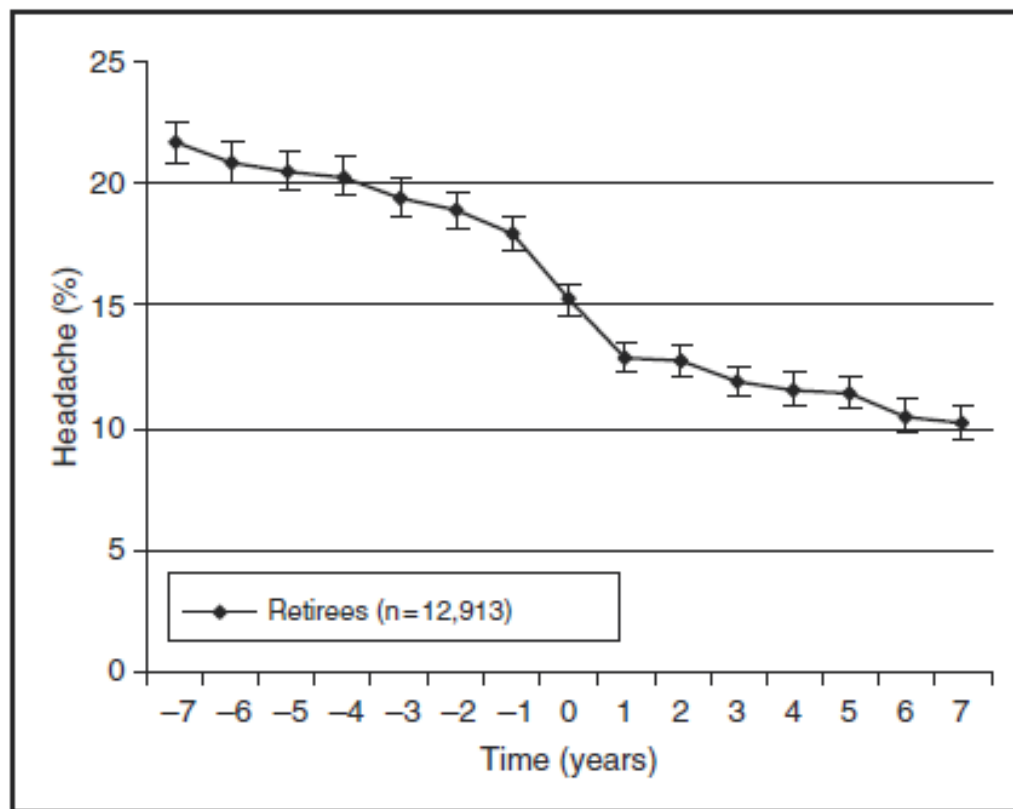
FIGURE 1. Prevalence of antidepressant and diabetes medication use adjusted for calendar year and retirement age, in relation to year of retirement at statutory age (error bars indicate 95% confidence intervals). Note that the figure is corrected for the increasing secular trend in prescriptions during the study period.



Finnish Public
Sector Study data

FIGURE 2. Prevalence of antidepressant use in relation to year of early retirement due to mental causes and physical causes separately and prevalence of use of drugs for diabetes in both these cohorts combined, adjusted for retirement age and calendar year. Error bars indicate 95% confidence intervals. Note that the figure is corrected for the increasing secular trend in prescriptions during the study period. (Note that the scale for y-axis is different than that in Fig. 1.)

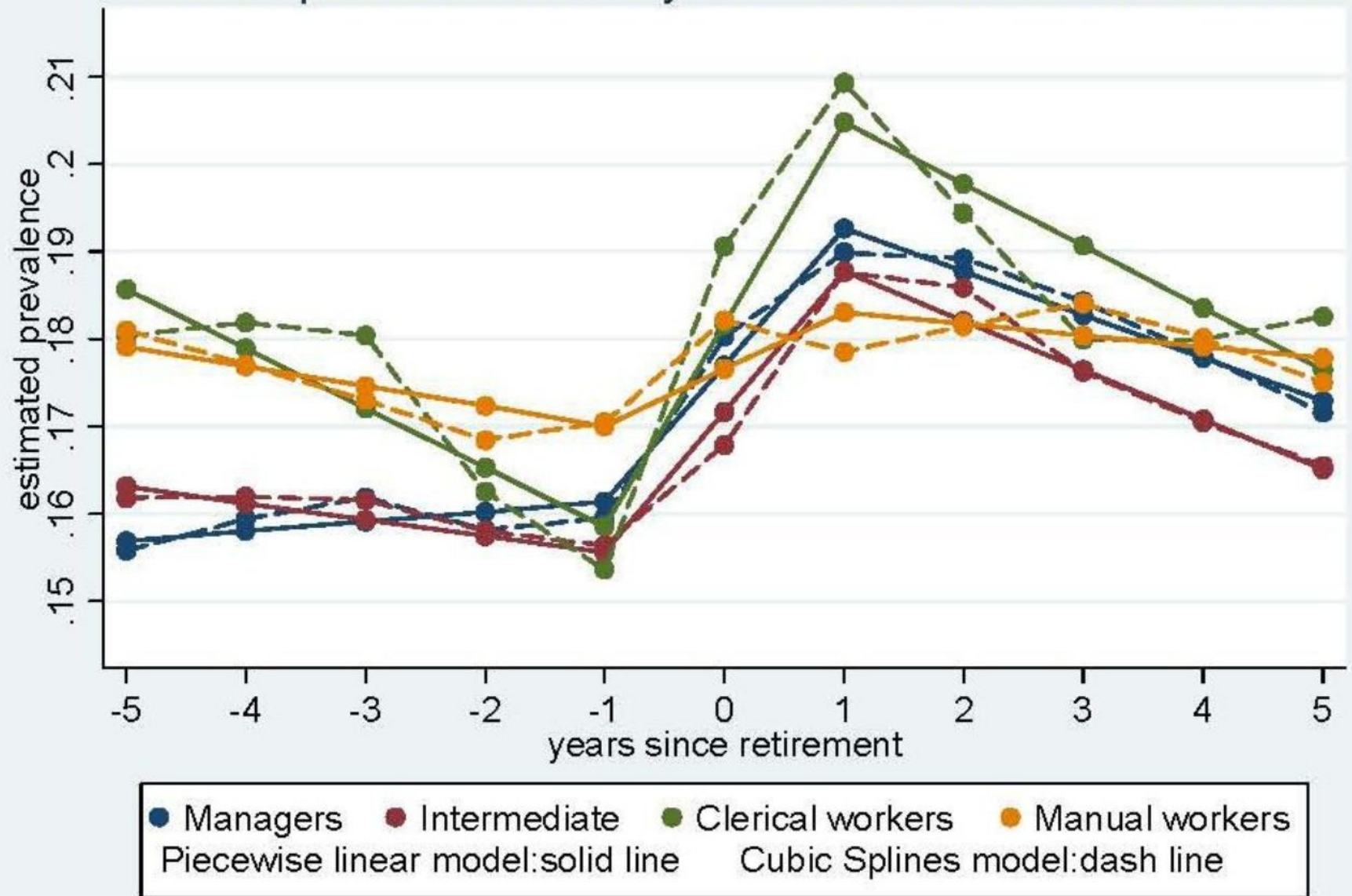
Headache prevalence



GAZEL data

Figure 1. Prevalence of headache in relation to retirement among all statutory retirees ($n = 12,913$), adjusted for time of data collection (1993–1999 or 2000–2007).

Estimated prevalence of heavy drinkers for birth cohort 1939-1943



Zins M, Guéguen A, Kivimaki M, Singh-Manoux A, Leclerc A, Vahtera J, Westerlund H, Ferrie JE, & Goldberg M. Effect of Retirement on Alcohol Consumption: Longitudinal Evidence from the French Gazel Cohort Study. *PLOS One*, 2011;6(10):e26531.

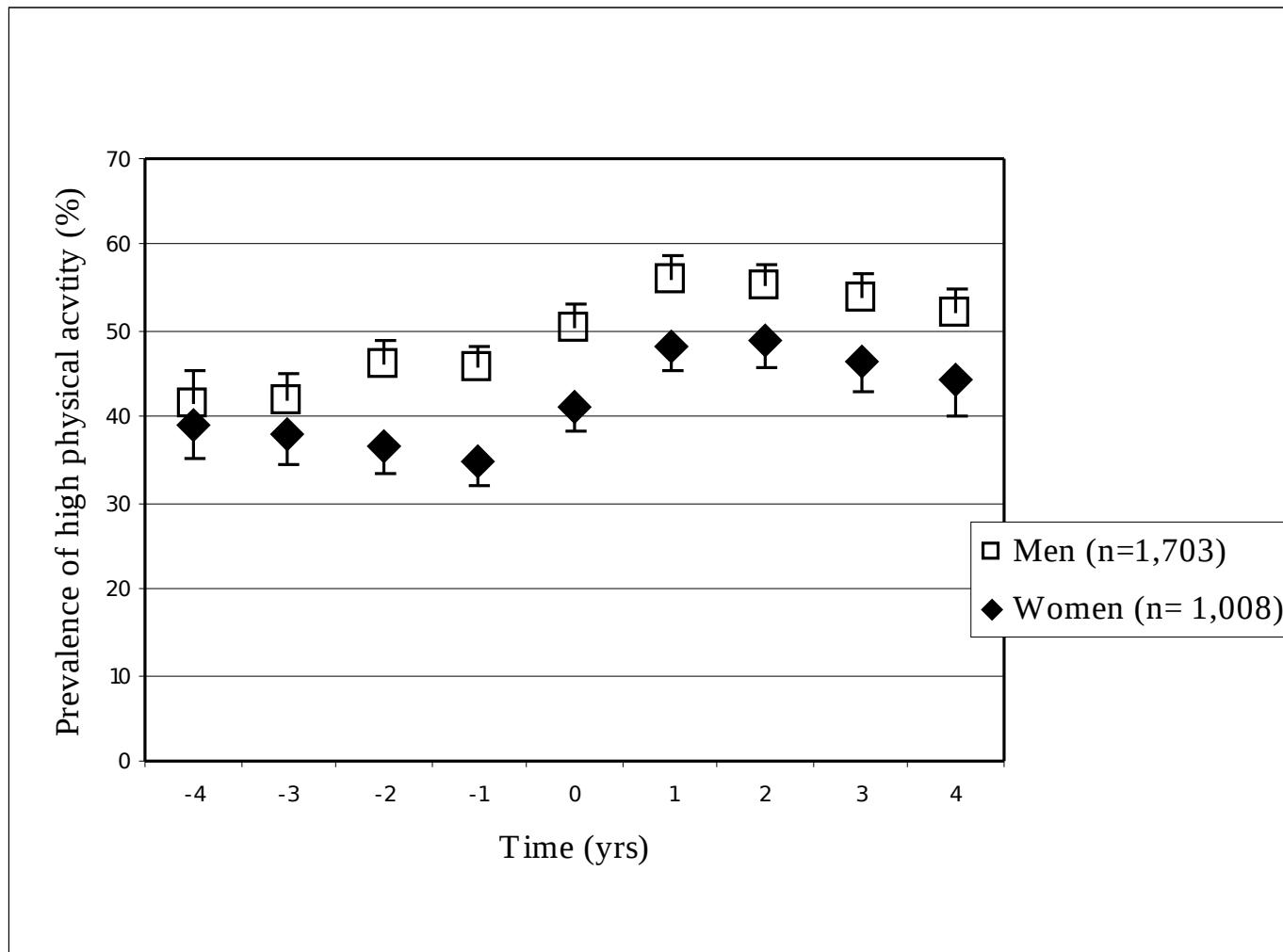
Prevalence of heavy drinking - women

SES	5 years before % (95%CI)	1 year before % (95%CI)	1 year after % (95%CI)	5 years after % (95%CI)
Managers	17.3 (10.2 to 24.4)	16.7 (9.6 to 23.7)	24.4 (16.6 to 32.2)	24.4 (16.0 to 32.8)
Intermediate	12.0 (10.4 to 13.7)	11.6 (9.9 to 13.2)	15.8 (14.0 to 17.7)	13.5 (11.6 to 15.3)
Clerical workers	10.4 (8.5 to 12.4)	10.5 (8.5 to 12.5)	13.8 (11.6 to 15.9)	12.6 (10.4 to 14.8)
Difference between SES categories (p values)	0.09	0.2	0.03	0.05

Prevalence of heavy drinking - men

SES	5 years before % (95% CI)	1 year before % (95% CI)	1 year after % (95% CI)	5 years after % (95% CI)
Managers	14.8 (13.1 to 16.5)	15.2 (13.6 to 16.9)	18.4 (16.6 to 20.2)	16.4 (14.6-18.2)
Intermediate	15.1 (14.1 to 16.0)	14.3 (13.4 to 15.1)	17.5 (16.6 to 18.4)	15.3 (14.3-16.2)
Clerical workers	17.6 (14.4 to 20.8)	14.9 (12.0 to 17.8)	19.5 (16.3 to 22.7)	16.7 (13.5 to 19.9)
Manual workers	16.7 (15.0 to 18.4)	15.7 (14.2 to 17.3)	17.1 (15.4 to 18.7)	16.5 (14.9 to 18.2)
Difference between SES categories (p values)	0.15	0.4	0.6	0.5

Physical Activity around retirement in GAZEL



Sjösten N, Kivimäki M, Singh-Manoux A, Ferrie JE, Goldberg M, Zins M, Pentti J, **Westerlund H**, & Vahtera J. Change in physical activity and weight in relation to retirement: The French GAZEL cohort study. *BMJ Open*, 2012;**2**:e000522.

Experiences of retiring in Sweden 2008-2010: My health has improved since I stopped working



Experiences of retiring in Sweden 2008-2010:
I feel more relaxed since I stopped working



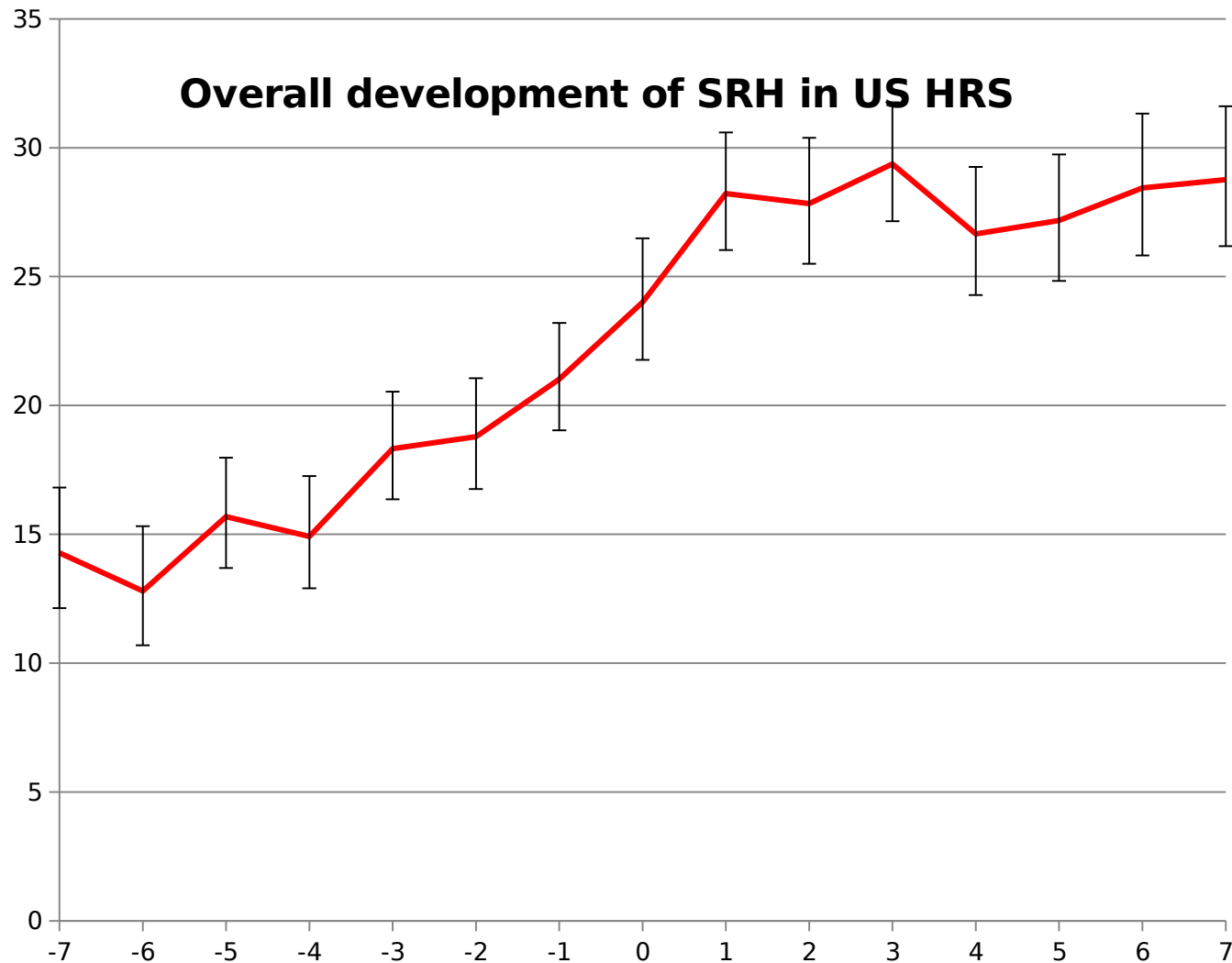
Experiences of retiring in Sweden 2008-2010:
I was stressed by not working



Experiences of retiring in Sweden 2008-2010:
I feel that I have lost my role in life



Self-rated health in relation to retirement in the US



Impact of chronic disease before and after retirement

Disease	Deteriora- tion	No change	Improve- ment	p-value
Hypertension	33	168	59	0.003
Diabetes	15	28	10	0.602
Asthma	7	20	20	0.006
Rheumatic disease	6	11	26	<0.001
Psychiatric disorder	1	9	8	0.021

Implications

- Widespread fatigue before retirement may
 - explain early labour market exit and decreased productivity in older workers
 - create strong opposition to raising of retirement age
 - decreased QUALY
 - the ultimate goal of society is to make good lives possible
- Most workers are healthy beyond 65 years of age
- There is a need for job redesign and flexibility
 - reduce demands which exceed the individual's capacity
 - utilise the particular strengths of older workers
- Future research needed to investigate
 - generalisability to other countries & settings
 - the specific causes of fatigue
 - the long-term effects of extending working lives
- Better data needed in more countries!

Ongoing and new research

- SLOSH
 - Swedish Longitudinal Occupational Survey of Health
- Retirement - determinants, experiences, and health consequences
 - FAS project, finances Dr. Martin Hyde
- Determinants of healthy ageing in work and retirement: A cross-national longitudinal study based on the IDEAR network
 - Era Age 2 JCRA, FAS in Sweden
 - Integrated Datasets across Europe for Ageing Research network: Sweden (SU+KI), Denmark, Finland, France & UK
- Healthy and Productive Work in Later Life: Longitudinal studies of the determinants of a sustainable working life for the ageing population
 - FAS programme grant



THANKS FOR YOUR ATTENTION!

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