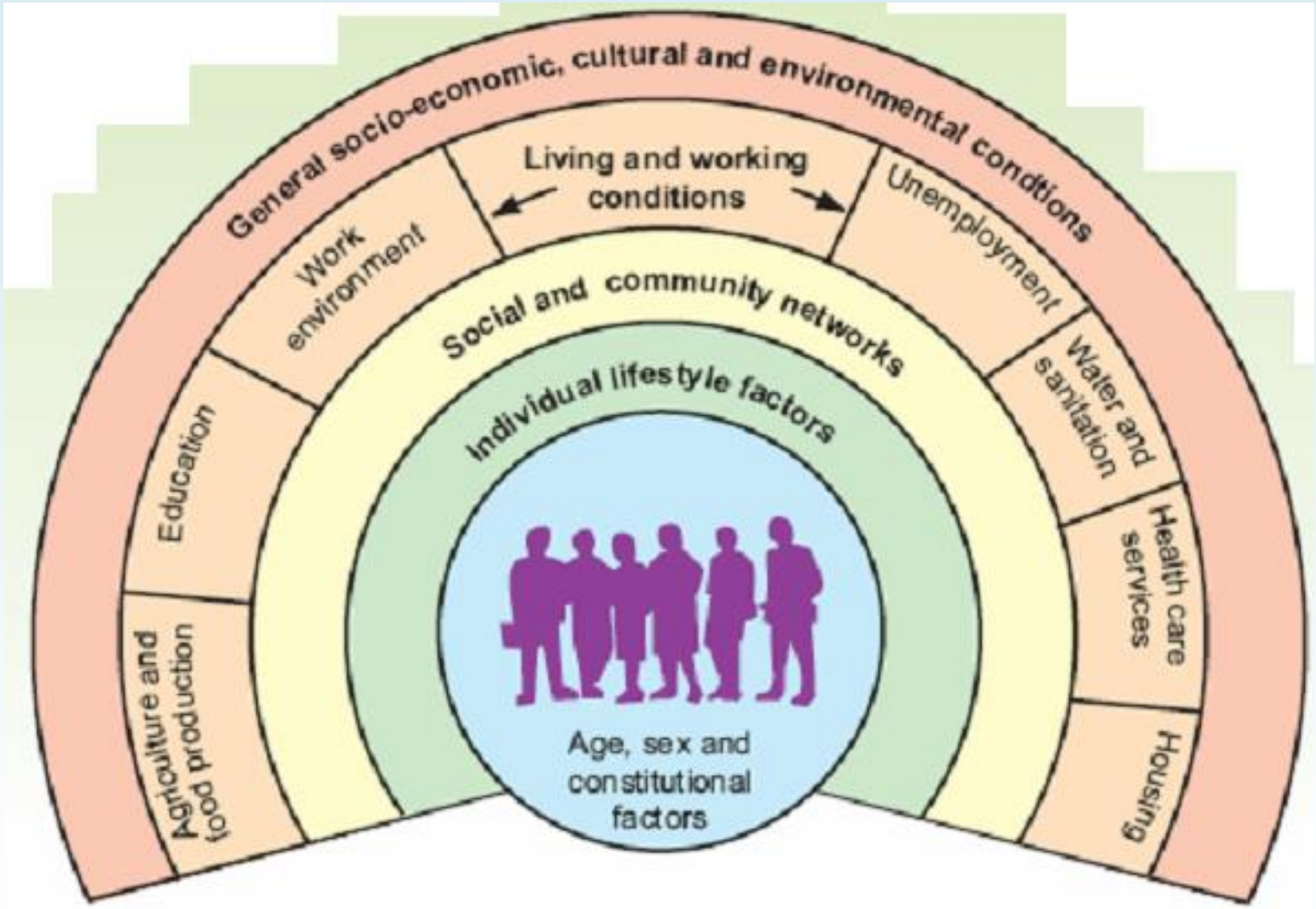
Pracovním prostředí, psychosociální faktory a zdraví

Sociální epidemiologie

Jaro 2023

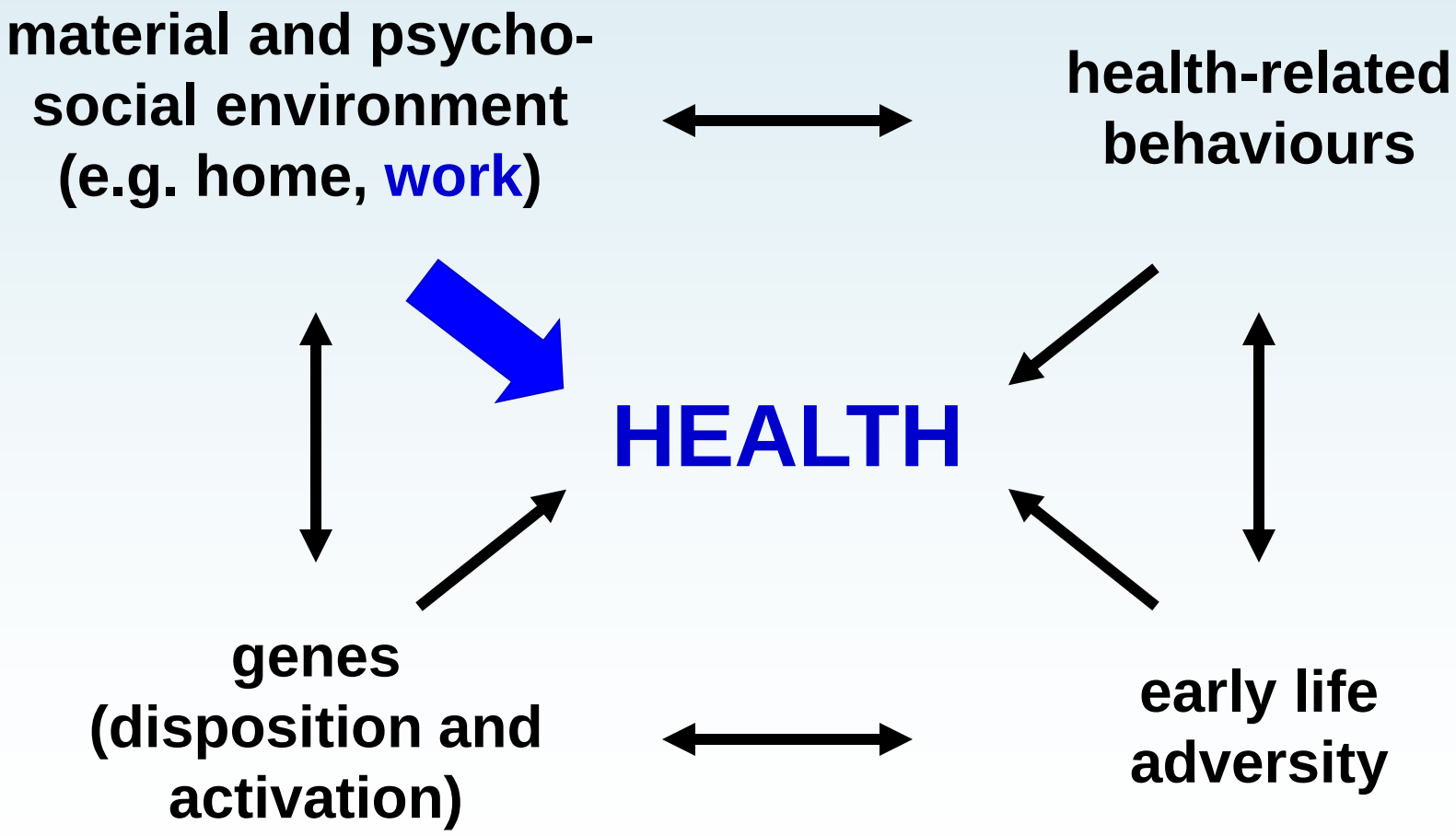
How can society affect our health?



Dahlgren and Whitehead "rainbow"

Source: Dahlgren G and Whitehead M, Health Inequalities, London HMSO 1998

Major determinants of health



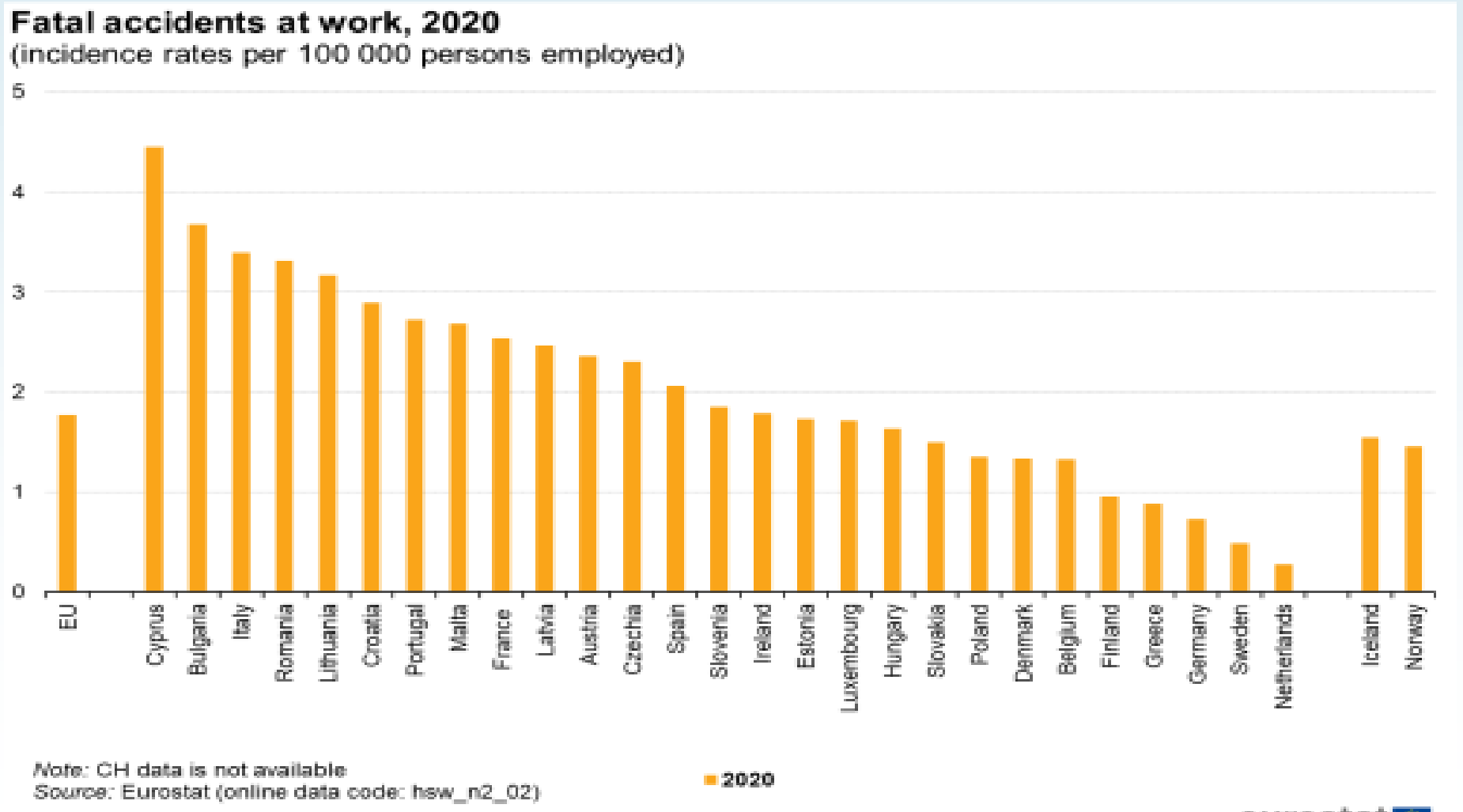
Importance of work for health

- Work is an important determinant of health
- It can influence health positively or negatively
- For most people work is essential for economic, social as well as physical wellbeing

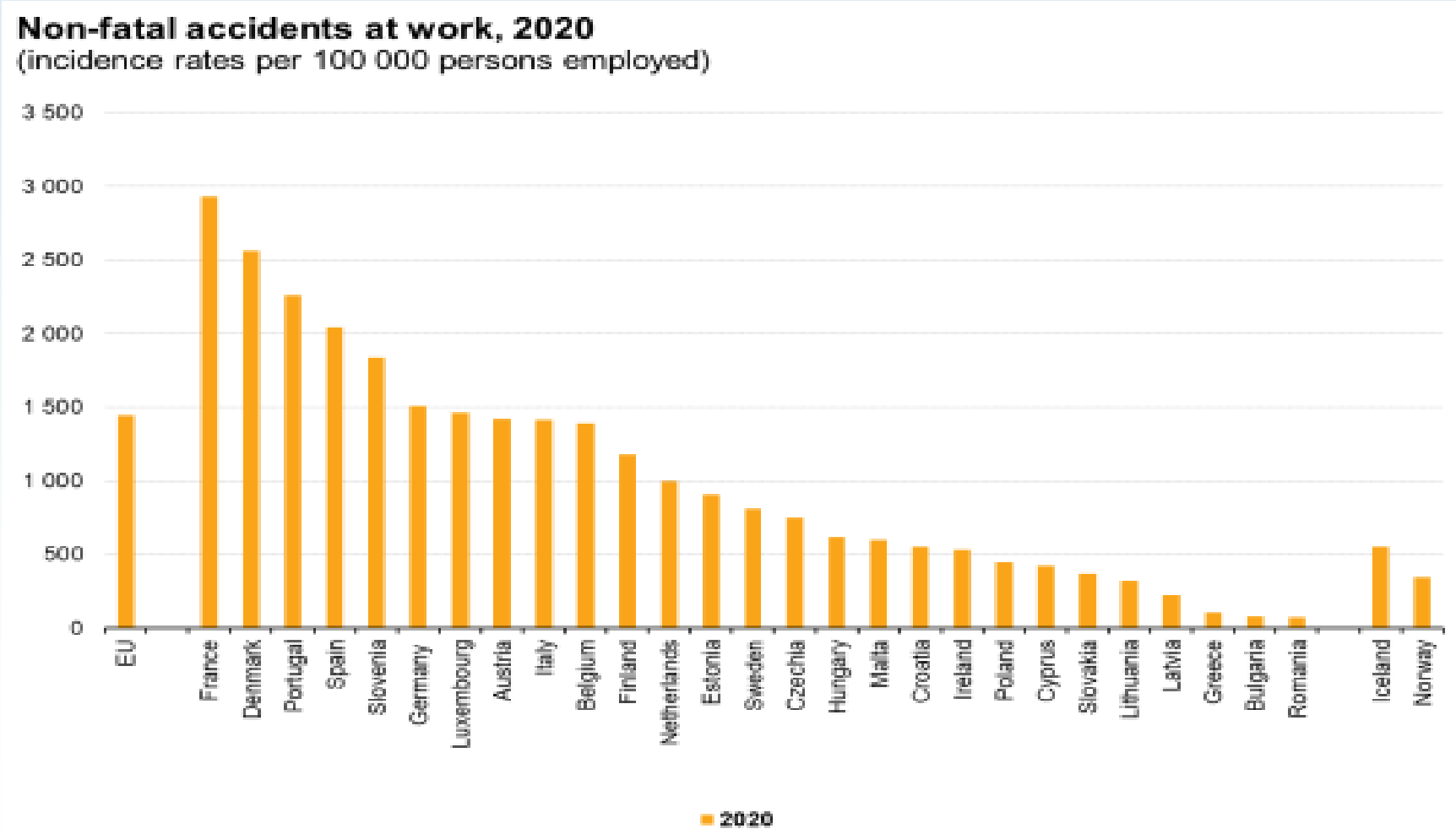
Work and health - the extent of the problem

- EU
  - approx. 10 million of the 150 million workers affected by incidents, accidents or diseases at work every year
  - direct compensation costs are estimated at 20 billion ECU per year
- UK
  - officials statistics: every year about 2,000 lives lost through occupational disease or injury, about 20,000 major industrial injuries (e.g. skull fracture, loss of sight), and about 200,000 injuries resulting in a work disability of 3 days or more.
- Calculations based on the UK Labour Force Survey suggest that in a year at least one million people believed they had ill health caused by work and a further million believed they had ill health made worse by work

EU fatal accidents (total 3355)



EU non-fatal accidents (total 2.7 M)

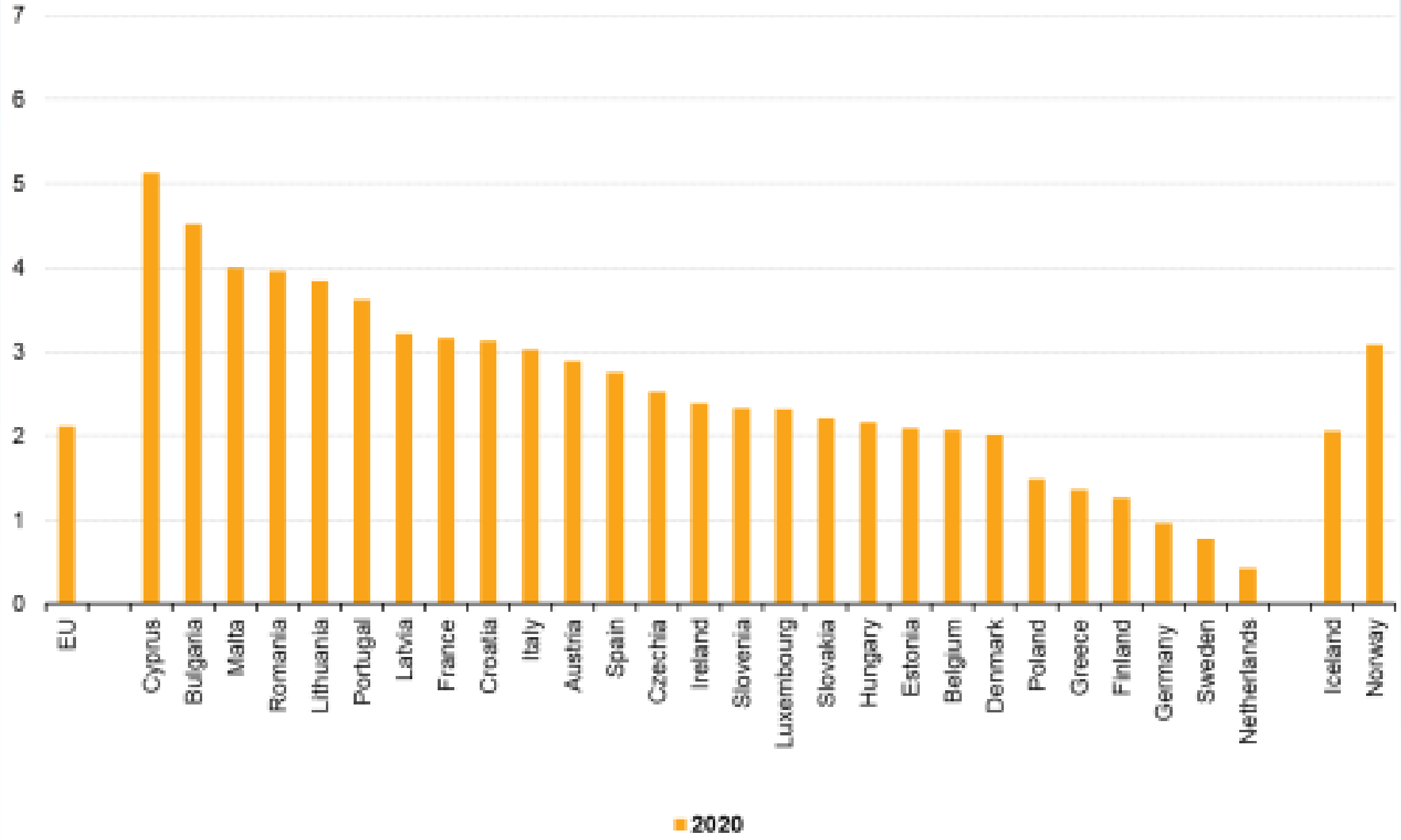


Note: non-fatal (serious) accidents reported in the framework of ESAW are accidents that imply at least four full calendar days of absence from work. CH data is not available

Source: Eurostat (online data code: hsw_n2_01)

eurostat

Fatal accidents at work, 2020
(standardised incidence rates per 100 000 persons employed)

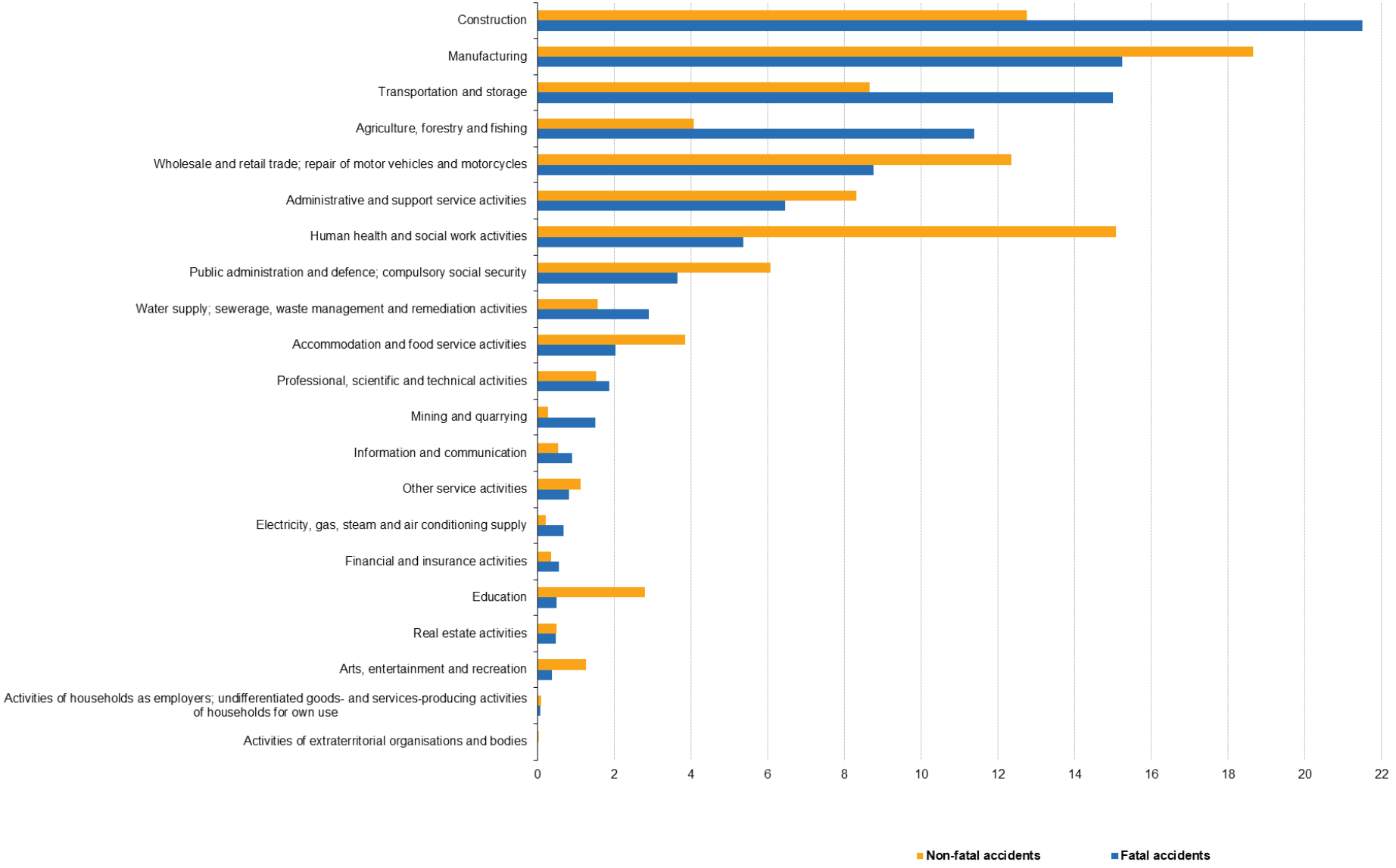


Note: NACE Sections A and C-N. CH data is not available

Source: Eurostat (online data code: hsw_mi01)

eurostat

Fatal and non-fatal accidents at work by NACE section, EU, 2020
(% of fatal and non-fatal accidents)

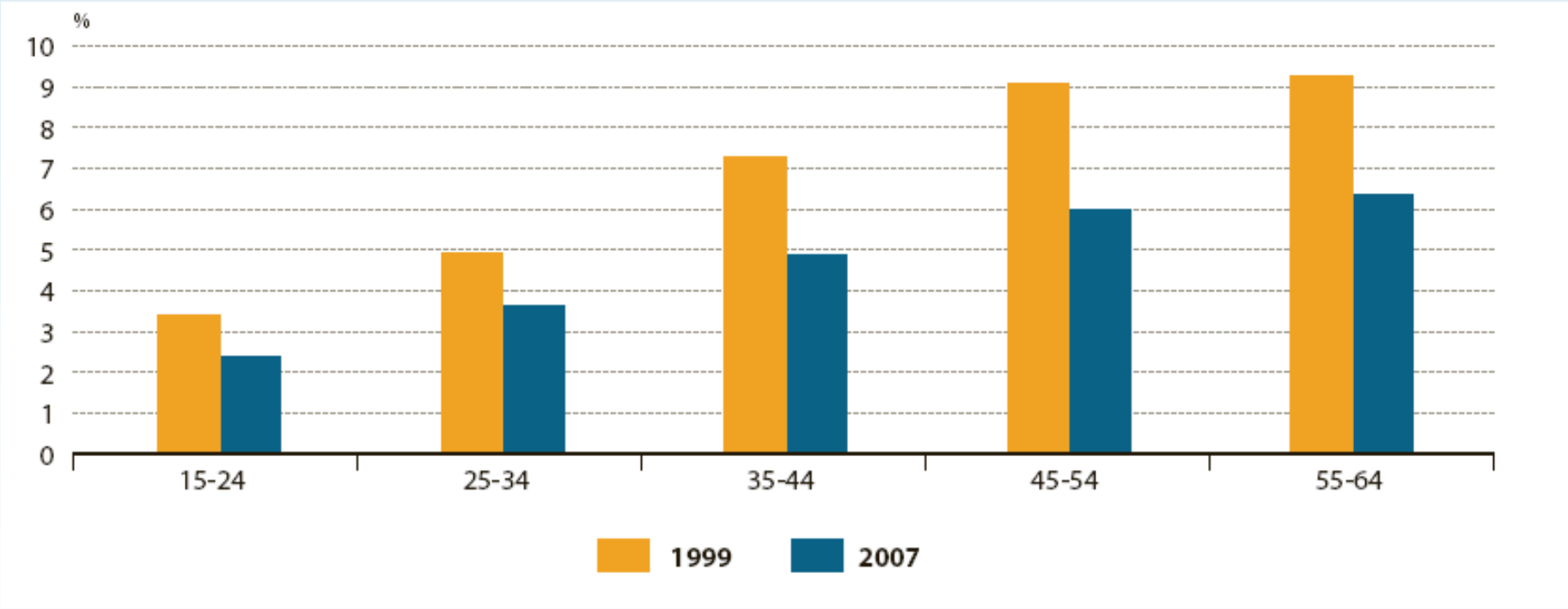


Note: non-fatal (serious) accidents reported in the framework of ESAW are accidents that imply at least four full calendar days of absence from work. Ranked on the values for fatal accidents.

Source: Eurostat (online data codes: hsw_n2_01 and hsw_n2_02)

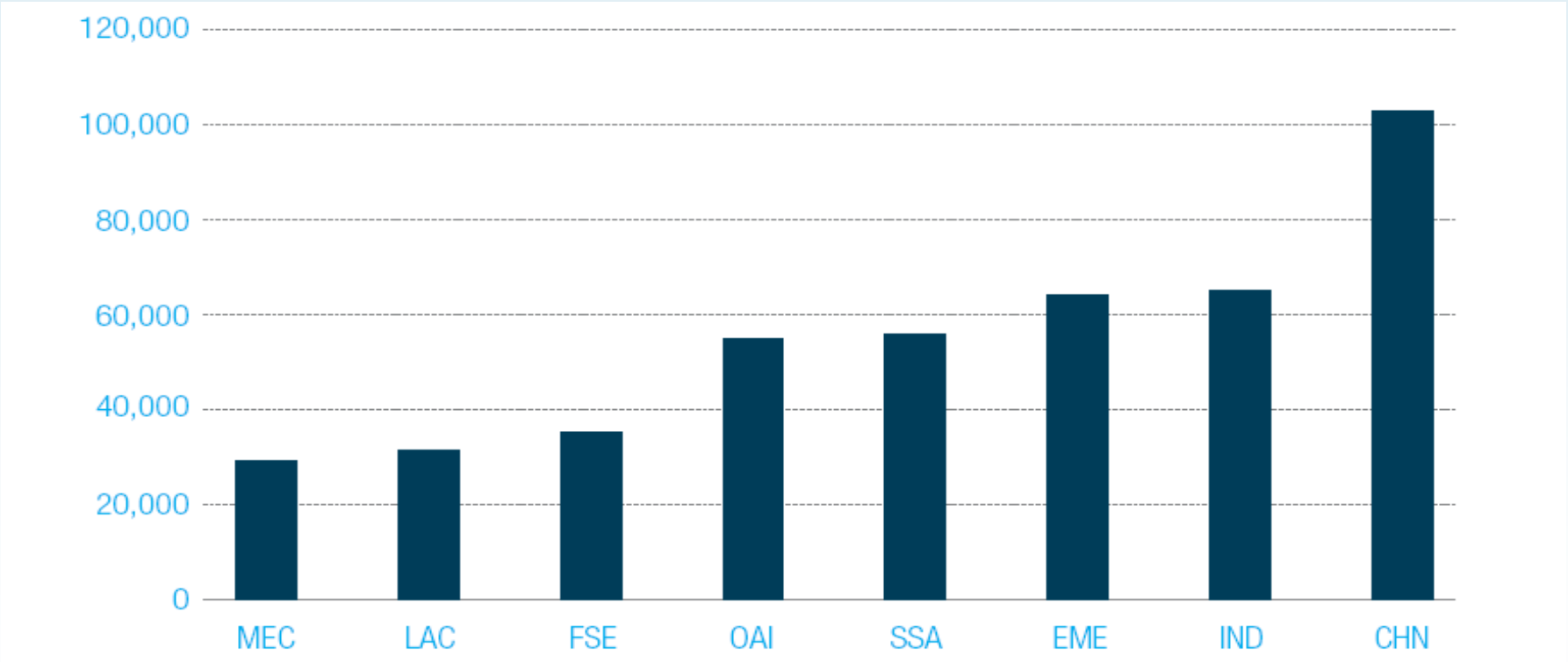
eurostat

Occurrence of work-related health problems in different age groups



Source: Eurostat; Health and safety at work 1999-2007

Adverse conditions exposing individuals to a range of health hazards - Number of deaths from workplace exposure to dangerous substances in different countries and regions



MEC = Middle East Crescent; LAC = Latin America and the Caribbean; FSE = Formerly Socialist Economies; OAI = Other Asia and Islands; SSA = sub-Saharan Africa; EME = Established Market Economies; IND = India; CHN = China.

From ILO 2005, and CSDH Final Report 2008

Importance of work for health

Traditionally…

- Production process may have impact (both physical and environmental) that would affect workers and physical environment surrounding the workplace
- Studies on coal miners, asbestos workers, radiation workers – diseases related to chemical and physical exposures
- The occupational exposures are important but probably not the main cause of ill health related to work

Importance of work for health

- CHD, mental health, other causes of ill health may be influenced by other aspects of work

- Wider social and economic context important

Importance of work for health

Work

- is a source of regular income and related opportunities
- is a source of personal growth and training opportunities
- defines social identity, social status and related rewards
- gives access to social networks beyond primary groups
- influences a person's self efficacy and self esteem

↓

Work has prominent position among social determinants of health

Good Work

Employment and working conditions have powerful effects on health and health equity

When these are good they can provide:-

- **financial security**
- **paid holiday**
- **social protection benefits such as sick pay, maternity leave, pensions**
- **social status**
- **personal development**
- **social relations**
- **self-esteem**
- **protection from physical and psychosocial hazards**

(CSDH Final Report, WHO 2008)

Psychosocial work environment

Environment providing options / barriers to meet basic psychological needs of working people:

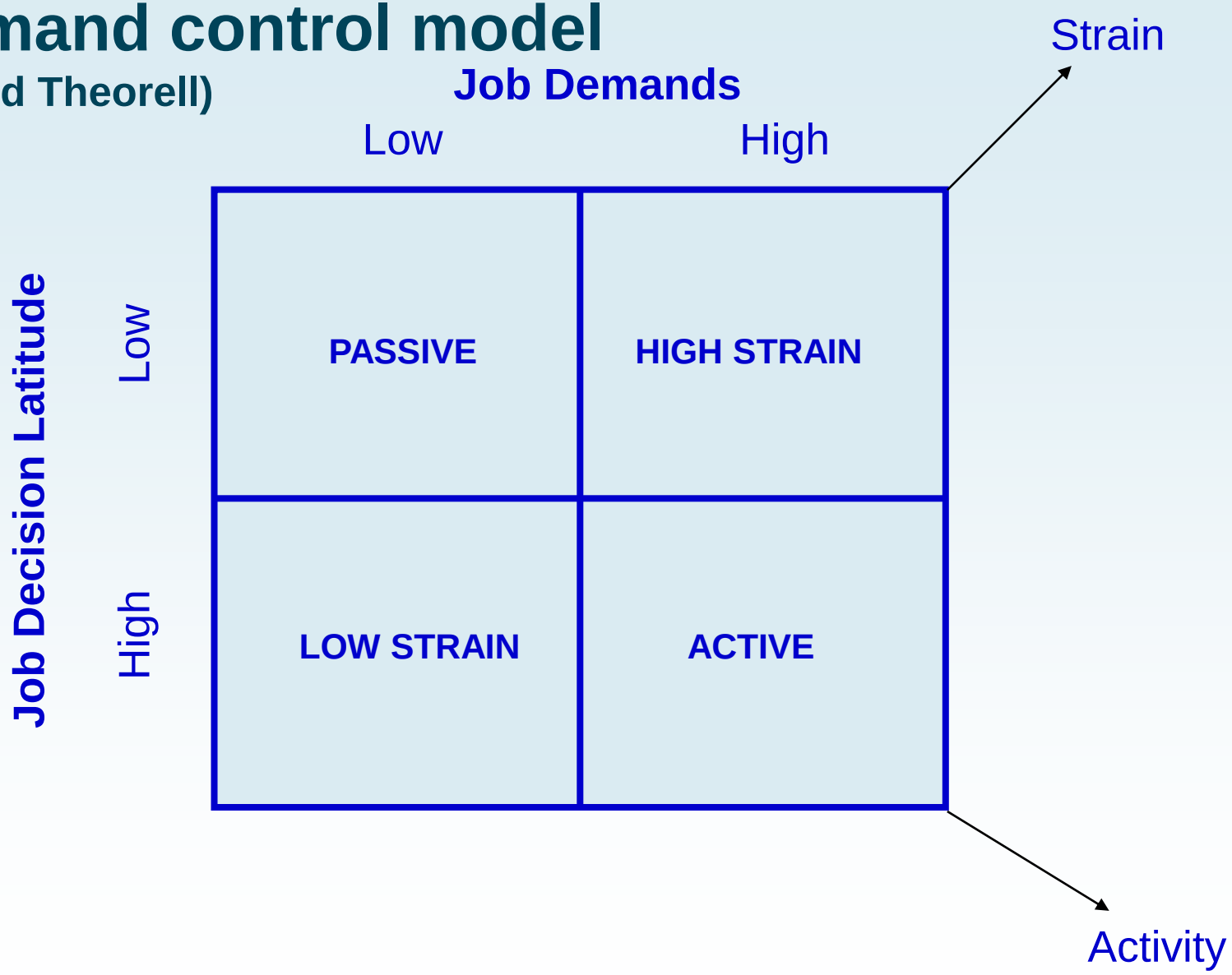
- → sense of belonging
  (membership role; social identity)
- → sense of control
  (task accomplishment; self-efficacy)
- → experience of reward
  (contractual reciprocity; self-esteem)

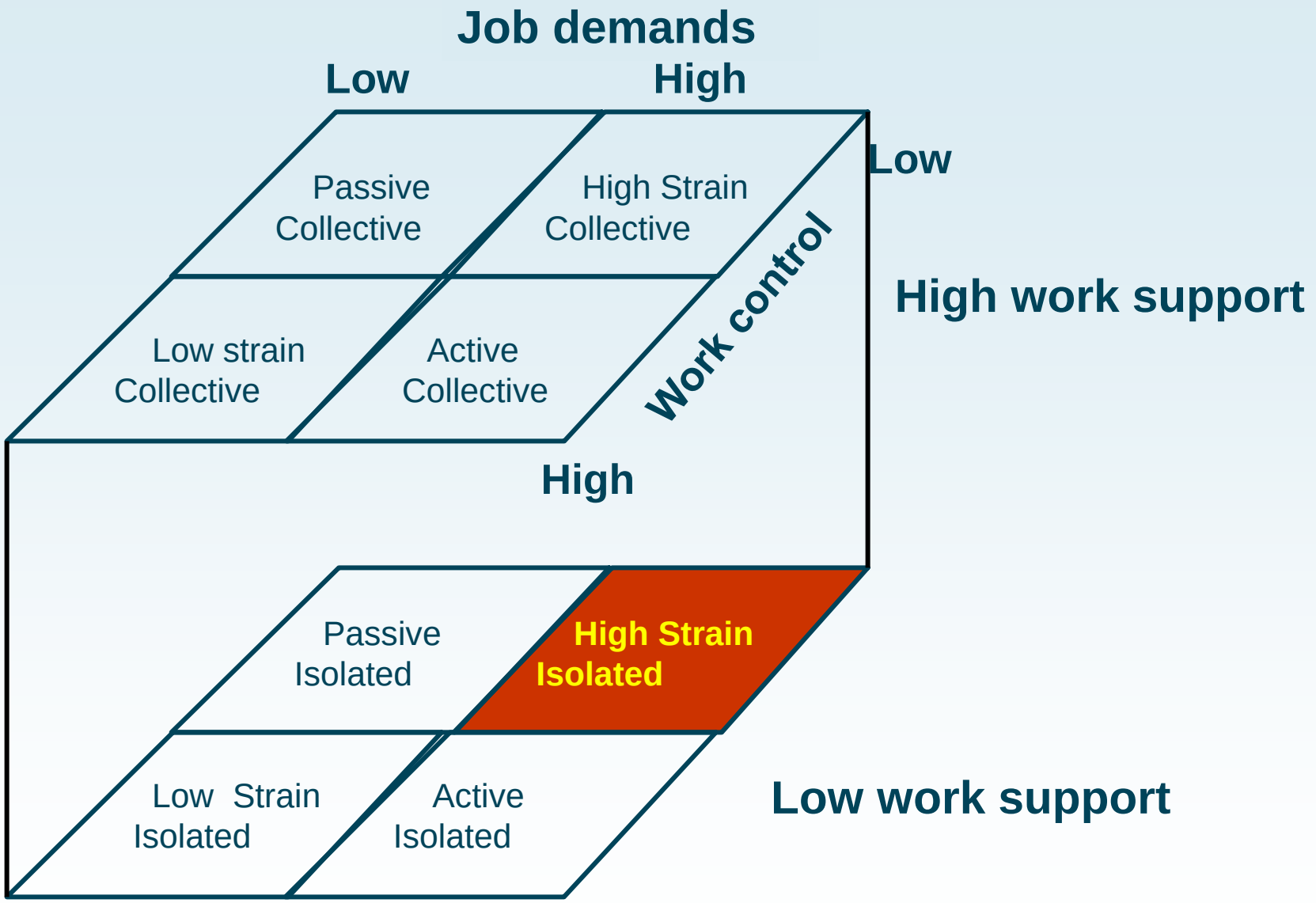
Theoretical models with a focus on these needs:

- → social support at work
- → demand-control
- → effort-reward imbalance

Job demand control model

(Karasek and Theorell)





Johnson and Hall, American Journal of Public Health 1988

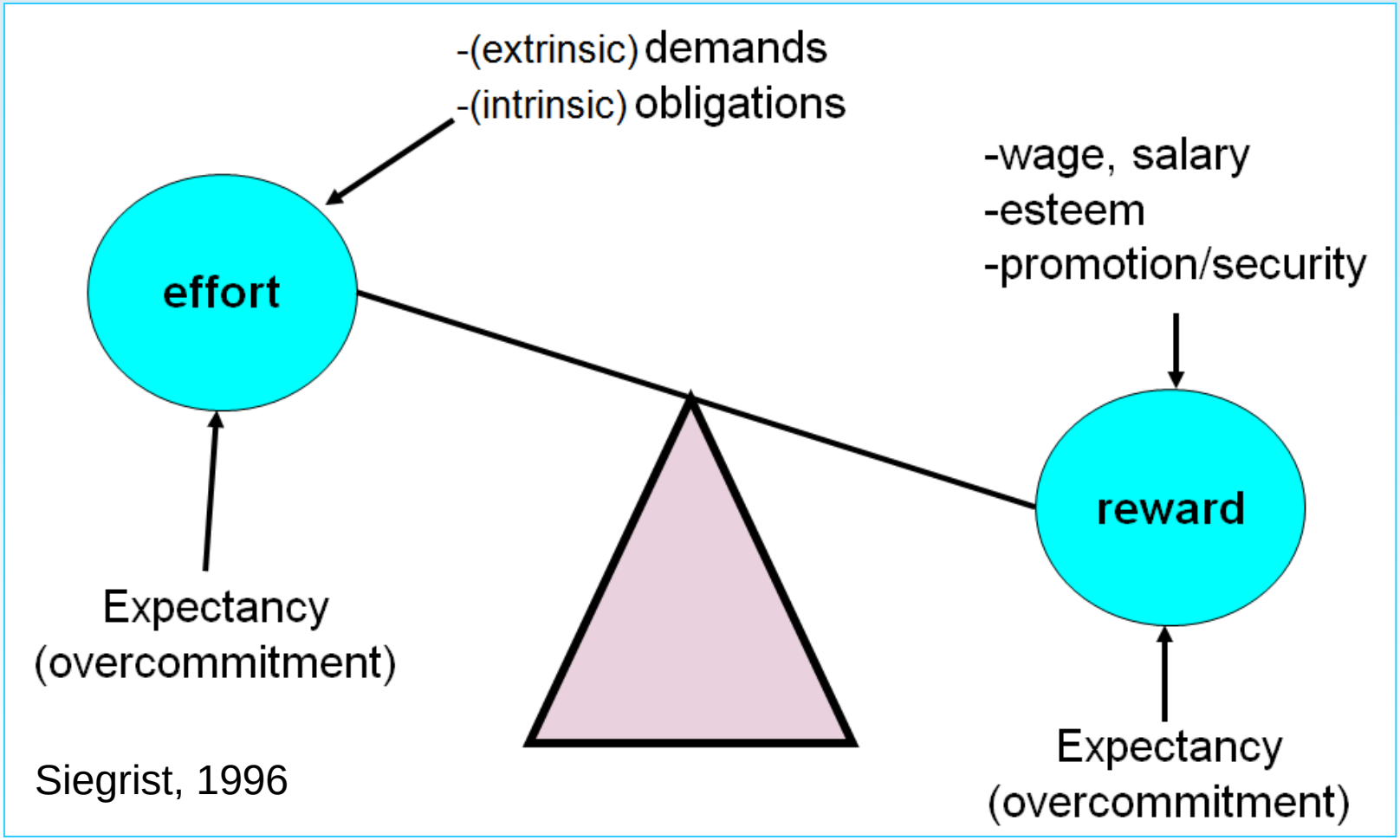
How to measure JD-C-S

- “internal”/personal/subjective – questionnaire
- “external”
  - Supervisor – personal or ecological
  - External researcher,… - personal or ecological
  - National classification of professions - ecological

The model of effort-reward imbalance at work

- Focus on employment contract (salary, esteem, status)
- Rooted in general principle of cooperative exchange: social reciprocity
- Combines aspects of the work environment (‘extrinsic’) and the working person (‘intrinsic’)
- Has policy implications for health promotion through contractual fairness
- Can be applied to other types of role-related cooperative exchange

Effort-reward imbalance at work



- Imbalance is maintained if
  - There is no alternative choice available
  - It is accepted for strategic reasons
  - Presence of personal style of coping (overcommitment)

Psychosocial factors at work have been found to predict a range of health outcomes

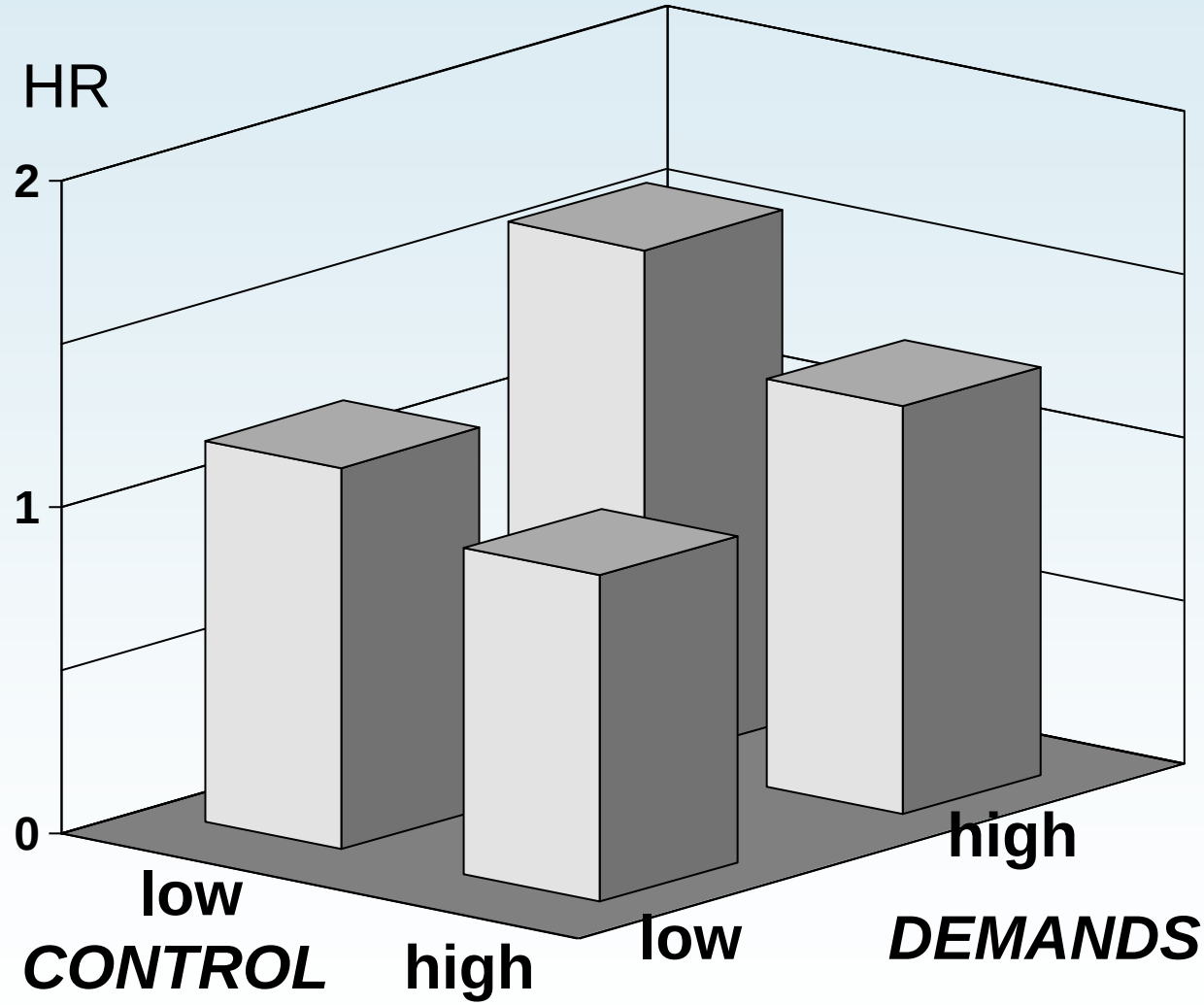
- Both mortality and morbidity
- CHD, CVD, hypertension, MI
- sickness absence
- self-rated health
- neck pain and low back pain
- depression

Job strain in health studies

- Karasek, 1981 – Swedish workforce
  - Prevalence of CHD indicator assoc. with higher demand and lower decision latitude
  - C-C CVD deaths: OR 4.0 (1.1-14.4) when low latitude combined with high demands
- Karasek, 1988 – HES and HANES data
  - PS exposures estimated ecologically
  - Myocardial infarction
  - Top decile of strain: 3.80 (p=0.017) in HES and 4.79 (p=0.022) in HANES

Job strain and verified CHD

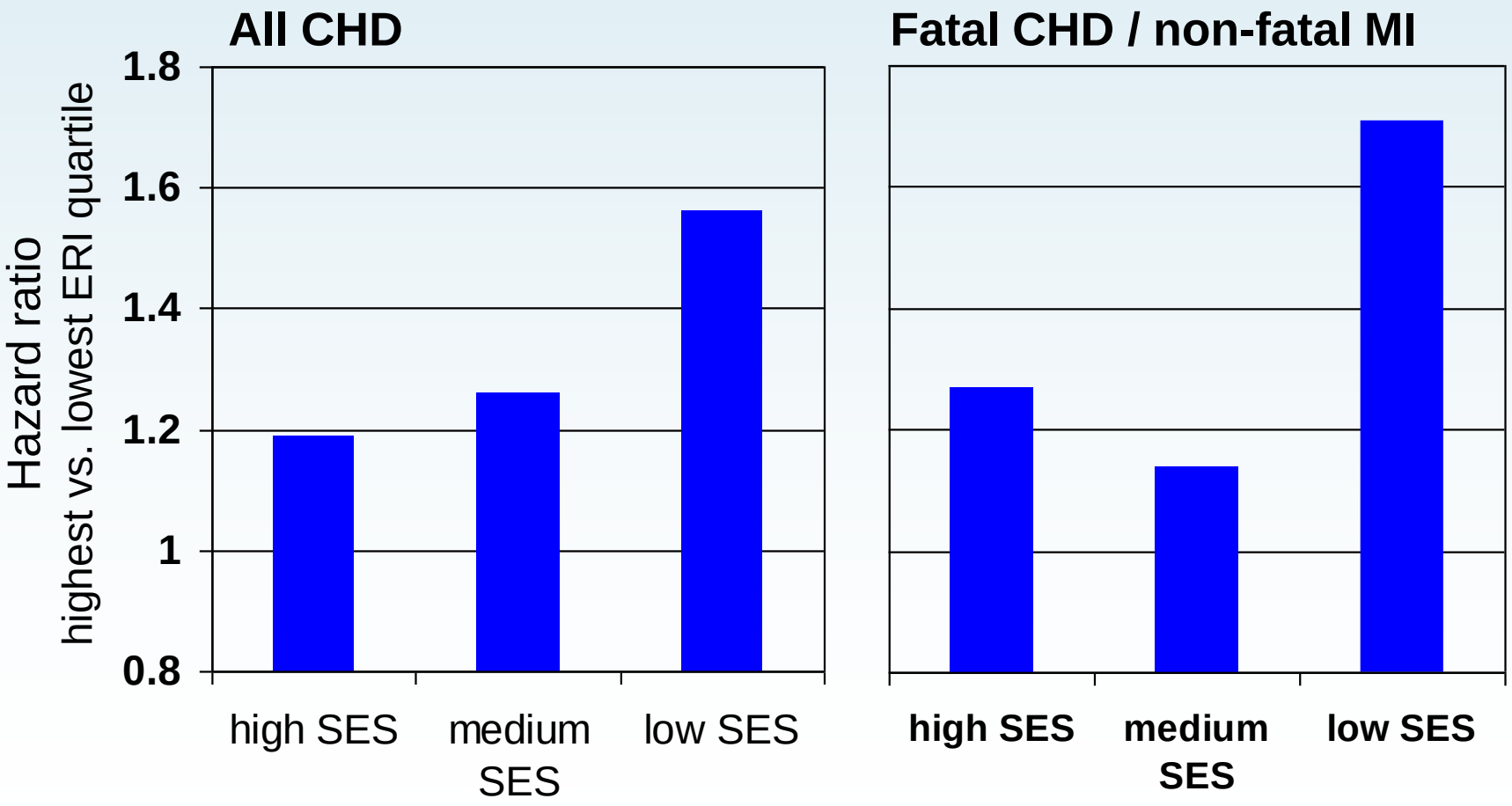
Whitehall II study, men and women, 11 years follow-up



Kuper and Marmot, JECH 2003

Effect modification of the association between the effort-reward ratio and CHD by SES

Whitehall II-Study; 11 year follow-up



Source: H. Kuper et al. (2002), Occ Environ Med, 59: 777-784.

Reviews of evidence

- Hemingway and Marmot, BMJ 1999
  - Evidence based cardiology: Psychosocial factors in the aetiology and prognosis of coronary heart disease: systematic review of prospective cohort studies
    - In healthy populations, prospective cohort studies show a possible aetiological role for psychosocial work characteristics in 6/10 studies
    - In populations of patients with coronary heart disease, prospective studies show a prognostic role for psychosocial work characteristics in 1/2 studies
  - Most of reported studies use JD/C but also hectic work, job satisfaction, job variety,…

Kivimaki et al - Association of job strain with incident coronary heart disease – a collaborative meta-analysis of individual participant data

The Lancet, 2012; 380: 1491–97

IPD-Work Consortium

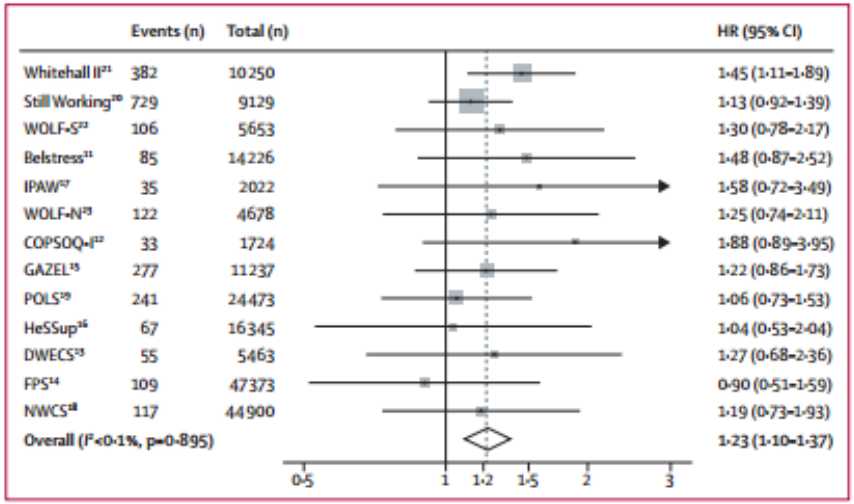
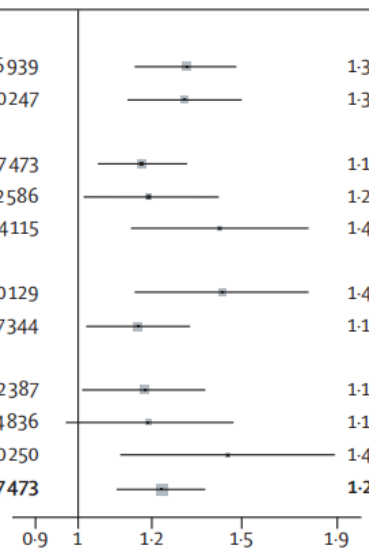


Figure 1: **Random-effects meta-analysis of the association between job strain and incident coronary heart disease**

Estimates are adjusted for age and sex. WOLF-S=Work, Lipids, Fibrinogen-Stockholm. IPAW=Intervention Project on Absence and Well-being. WOLF-N=Work, Lipids, Fibrinogen-Norrland. COPSOQ-I=Copenhagen Psychosocial Questionnaire version I. GAZEL=Electricité De France-Gaz De France. POLS=Permanent Onderzoek Leefsituatie. HeSSup=Health and Social Support. DWECS=Danish Work Environment Cohort Study. FPS=Finnish Public Sector Study. NWCS=Netherlands Working Conditions Survey.

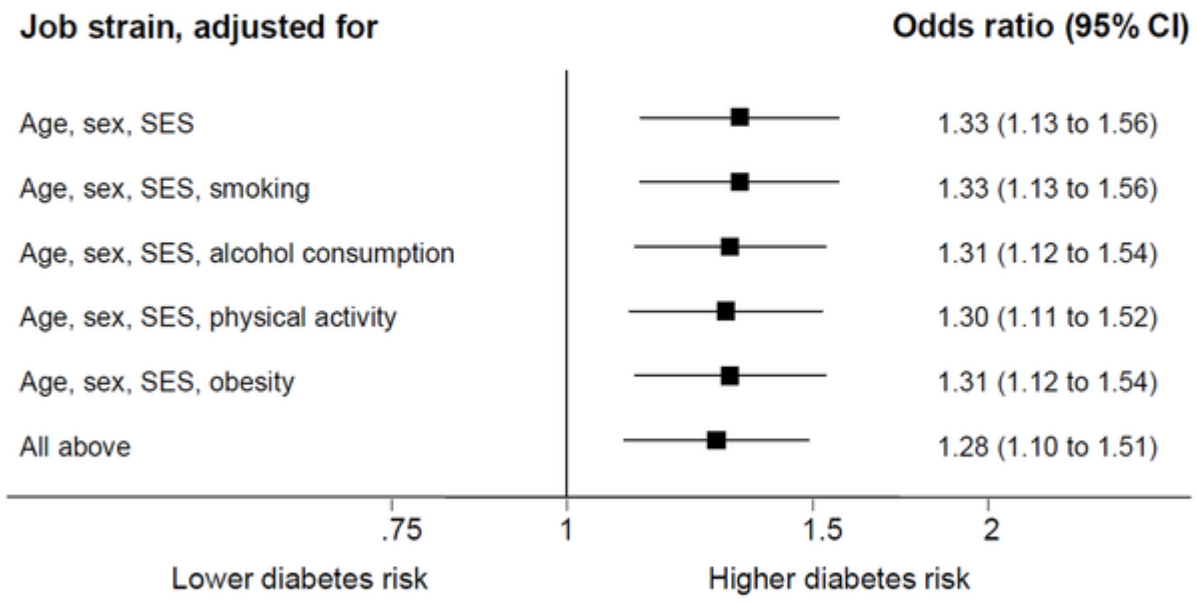
	Events (n)	Total (n)	HR (95% CI)
Follow-up			
First 3 years excluded (13 studies)[11–23]	1824	196 939	1·31 (1·15–1·48)
First 5 years excluded (9 studies)[12, 13, 15–17, 20–23]	1411	80 247	1·30 (1·13–1·50)
Adjustments			
SES (13 studies)[11–23]	2358	197 473	1·17 (1·05–1·31)
SES—health behaviours (7 studies)[11, 14–16, 21–23]	1068	102 586	1·21 (1·03–1·44)
SES—Framingham score (4 studies)[11, 21–23]	684	34 115	1·42 (1·16–1·74)
Publication status			
Published (3 studies)[11, 21, 22]	573	30 129	1·43 (1·15–1·77)
Unpublished (10 studies)[12–20, 23]	1785	167 344	1·16 (1·02–1·32)
Region			
Nordic countries (8 studies)[12–14, 16, 17, 20, 22, 23]	1256	92 387	1·18 (1·01–1·37)
Continental Europe (4 studies)[11, 15, 18, 19]	720	94 836	1·19 (0·97–1·47)
UK (1 study)[21]	382	10 250	1·45 (1·11–1·89)
All (13 studies)	**2358**	**197 473**	**1·23 (1·10–1·37)**



RESEARCH ARTICLE

Job Strain and Cardiovascular Disease Risk Factors: Meta-Analysis of Individual-Participant Dat...

Solja T. Nyberg, Eleonor I. Fransson, Katriina Heikkilä, Lars Alfredsson, Annalisa ...



PLOS

PLOS One, 2013

Summary: Work stress and health

High job strain and/or High ERI

have adverse effects on all stages of the disease process…

- Disease risk factors, such as smoking and obesity
- Preclinical disease, such carotid IMT
- Disease, such as diabetes and CHD
- Premature death

- Also measures of ill-health, such as sickness absence, mental health and well-being

Other work-related factors

- Focus of presentation so far on work-related PS factors
- Nothing said about the role of unemployment or job insecurity
- Unemployment or job insecurity affected much more by broader economy

Unemployment

Unemployment figures

In 2006 there were about 195 million unemployed in the world (6.3%)

In many non-industrialized countries the rate is approx. 30%, in developed countries 4-12%

Distribution of unemployment

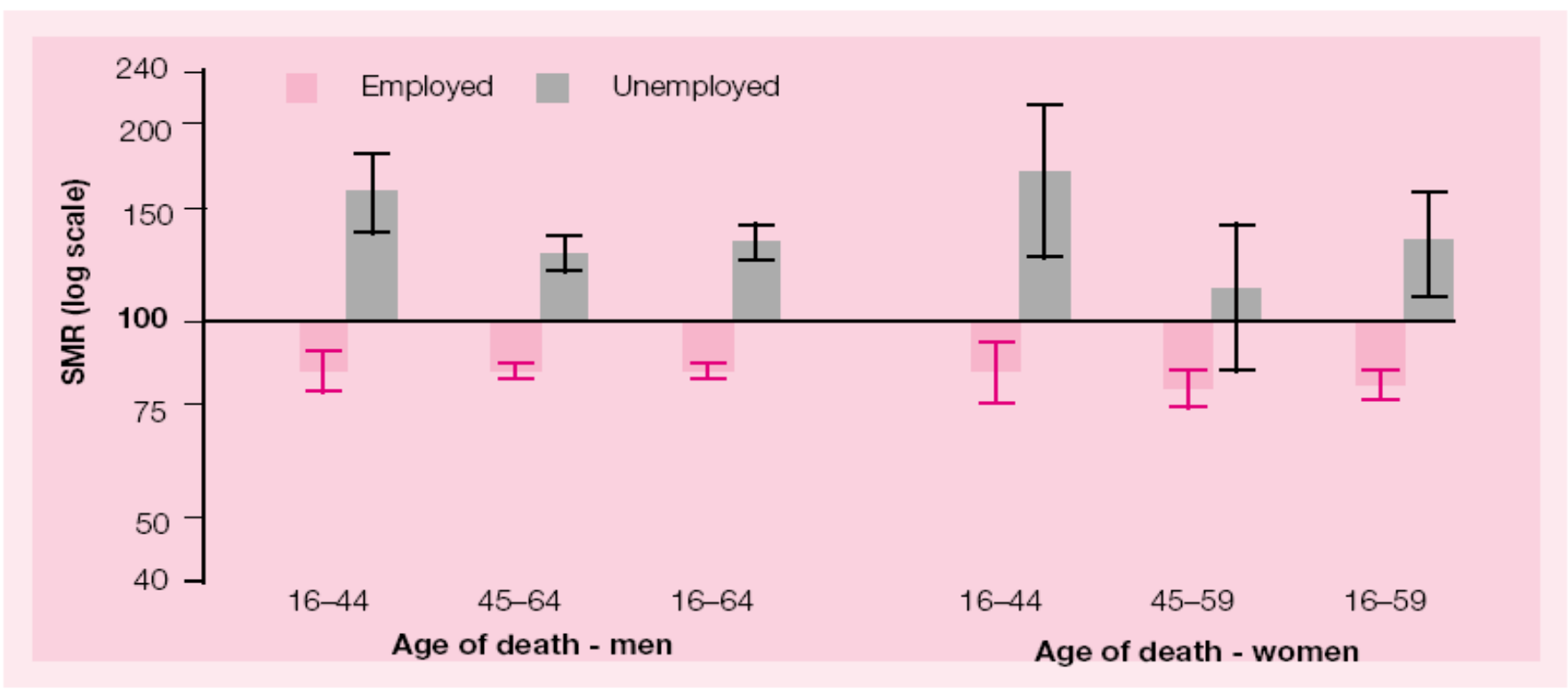
Women more likely to be unemployed than men (6.6 vs. 6.1%)

Over 85 million (44%) of the unemployed are youth aged 15 to 24, although they are only 25% of the working age population

Unemployment is more concentrated among all underprivileged groups, such as ethnic minorities, immigrants and the least skilled and educated. For example, in 2003, a person in the developed economies with only primary education was 3x as likely to be unemployed as a person with tertiary education

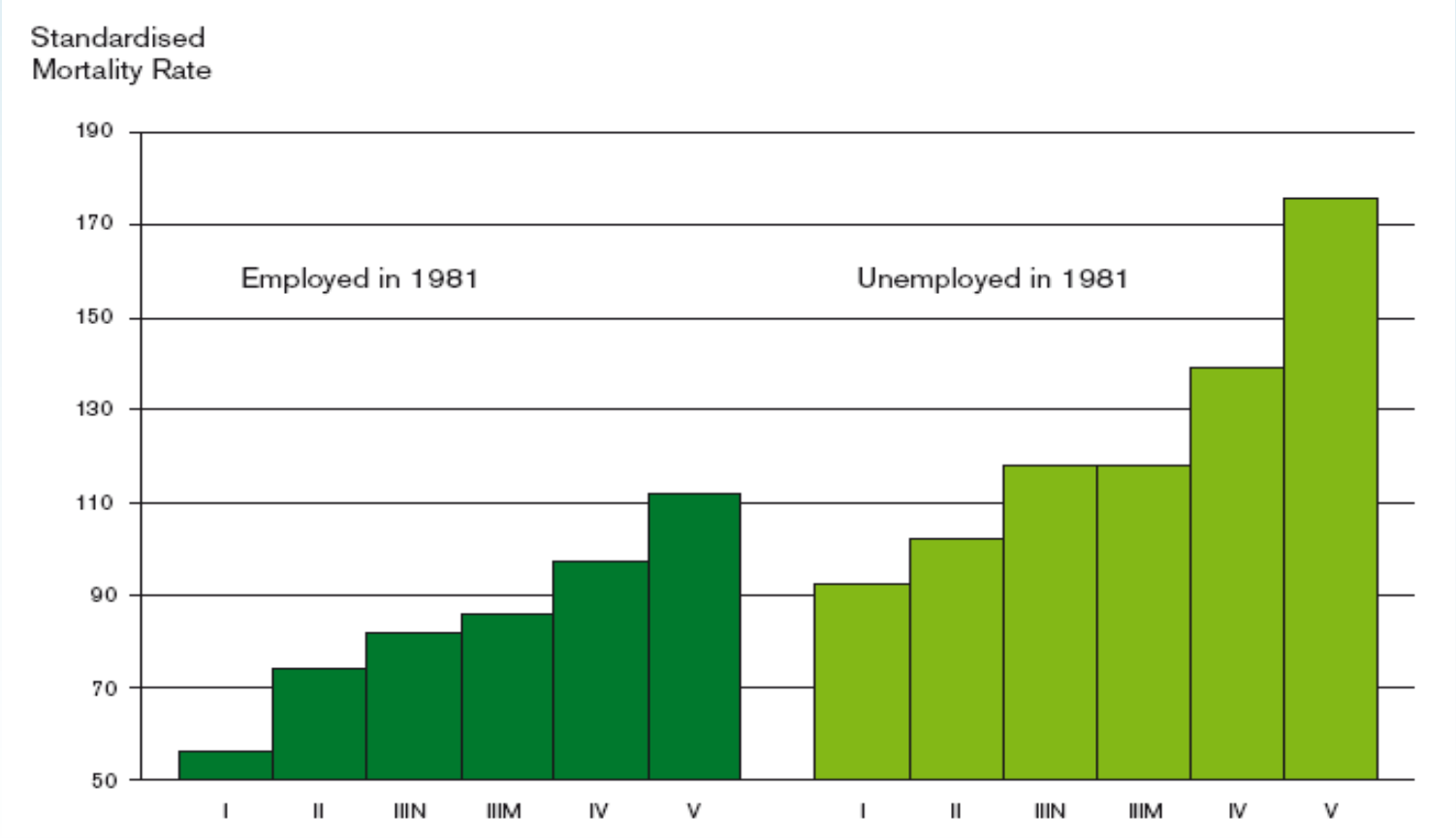
(ILO 2006 & 2007)

SMRs 1981-1992 by employment status at the 1981 Census, men and women by age at death



Bethune A. in Drever and Whitehead (eds) *Health Inequality (1997)*

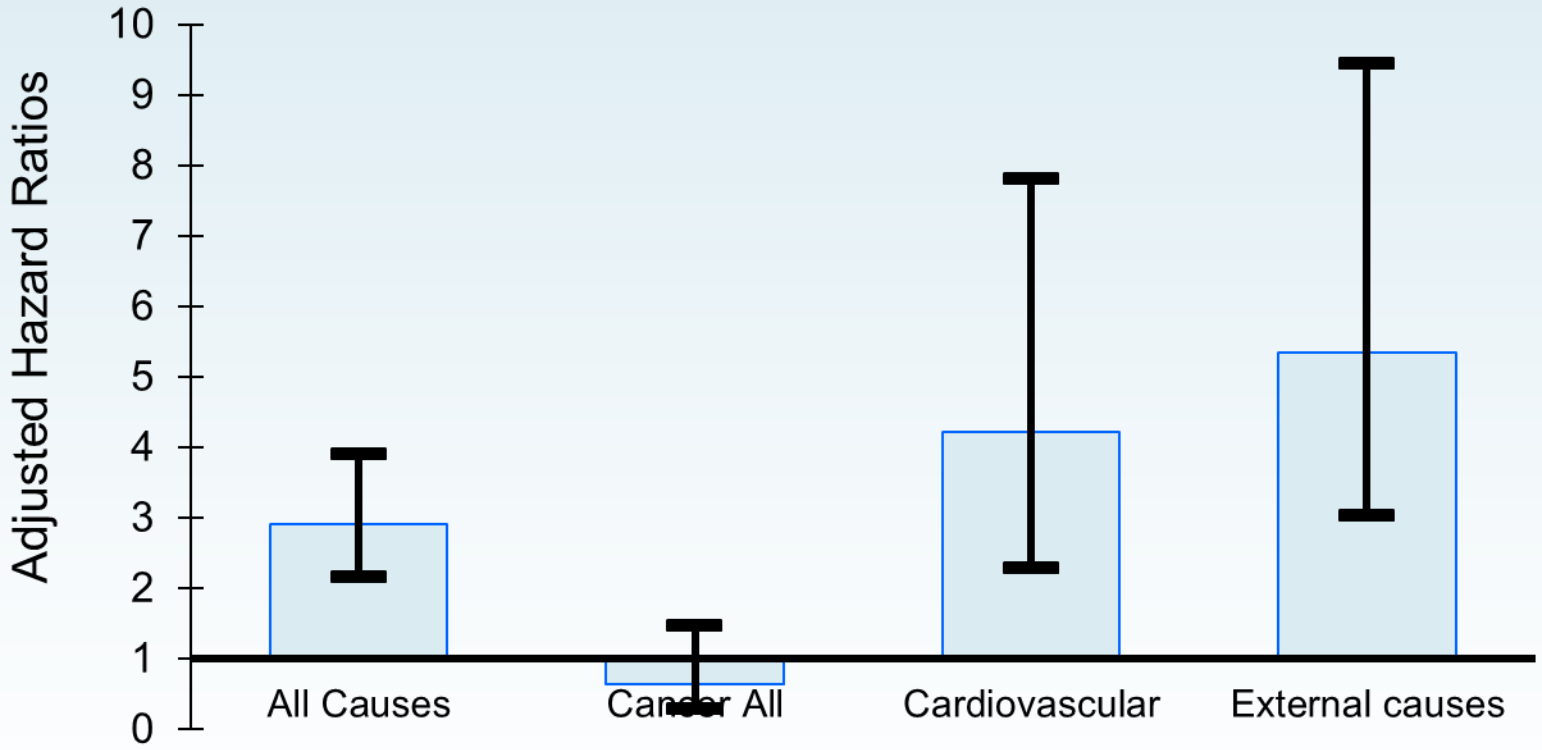
Mortality of men in England and Wales in 1981–92, by social class and employment status at the 1981 Census



Bethune 1997

Mortality 1990-2001 in women: 10-town study, Finland

Unemployed women vs women in permanent employment



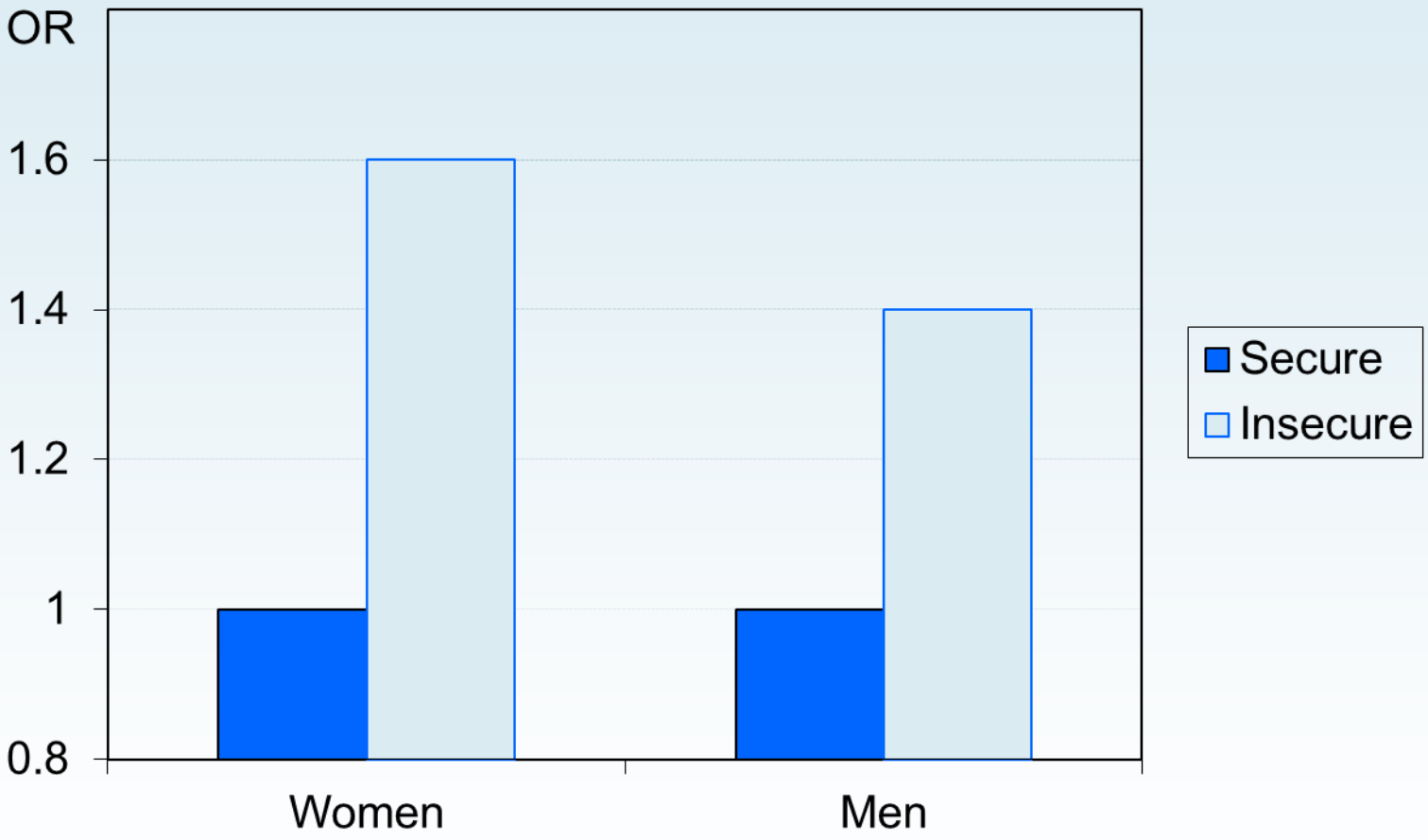
Kivimaki et al 2003;158:663-668

Unemployment and health

- Short- and long-term effects on health
- Duration of unemployment affects health

- Ways how unemployment may affect health:
  - Unempl → Financial problems → Worse living standards → Lower self-esteem
  - Unempl → distress, depression (of unemployed, partners, children)
  - Unempl → health behaviours

Job insecurity and risk of ischaemia

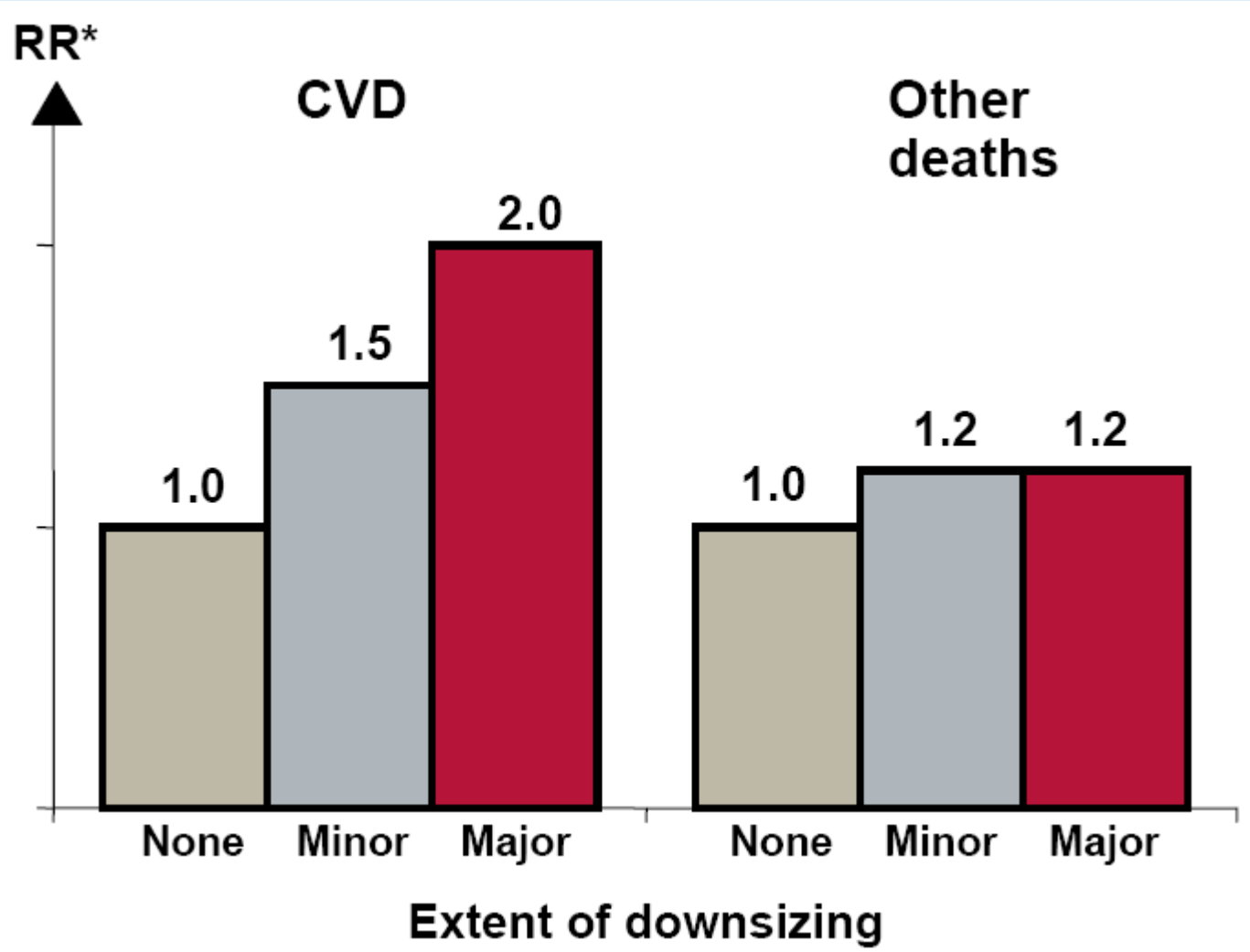


adjusted for age, grade and ischaemia before jobs were threatened

Ferrie et al. AJPH 1998

Organisational downsizing and mortality

7.5 years follow-up of 22,430 public employees



Vahtera et al; BMJ 2004; 328:555-558

Unemployment and mortality—a longitudinal prospective study on selection and causation in 49321 Swedish middle-aged men

Lundin et al; J Epidemiol Community Health 2010

	All-cause mortality (n = 222)	Violent death (n = 66)	Suicide (n = 45)	Violent death other than suicide (n = 21)	Non-violent death (n = 156)	CVD (n = 61)
Follow-up 1995–8	**HR (95% CI)**	**HR (95 CI)**	**HR (95% CI)**	**HR (95% CI)**	**HR (95% CI)**	**HR (95% CI)**
Crude	**2.39** (1.76 to 3.26)	**3.56** (2.12 to 5.97)	**3.1** (1.63 to 5.9)	**4.69** (1.94 to 11.31)	**1.97** (1.33 to 2.90)	**1.68** (0.87 to 3.22)
Adjusted*	**1.57** (1.13 to 2.18)	**2.16** (1.24 to 3.78)	**1.76** (0.89 to 3.50)	**3.46** (1.33 to 9.00)	**1.34** (0.88 to 2.01)	**1.10** (0.56 to 2.18)
% reduction of HR	***60***	***55***	***65***	***33***	***64***	***85***
Follow-up 1999 to 2003	**(n = 449)**	**(n = 64)**	**(n = 40)**	**(n = 24)**	**(n = 385)**	**(n = 163)**
Crude	**1.69** (1.33 to 2.15)	**1.42** (0.72 to 2.79)	**1.36** (0.57 to 3.23)	**1.54** (0.53 to 4.50)	**1.74** (1.34 to 2.25)	**1.73** (1.17 to 2.58)
Adjusted*	**1.17** (0.91 to 1.50)	**1.00** (0.5 to 2.03)	**1.02** (0.42 to 2.53)	**0.98** (0.32 to 2.99)	**1.19** (0.91 to 1.56)	**1.07** (0.71 to 1.62)
% reduction of HR	***76***	***99***	***94***	**100**	***72***	***90***

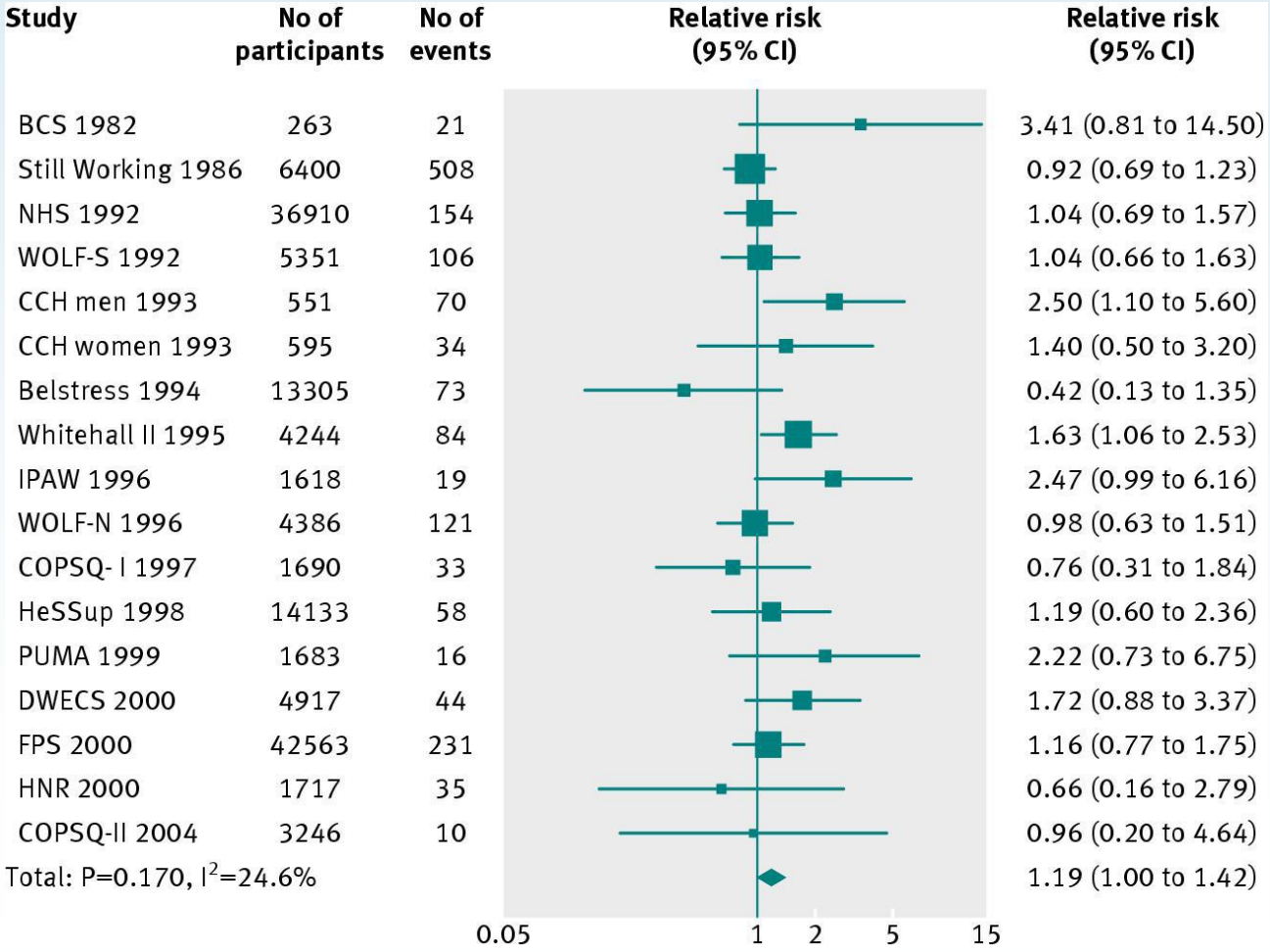
Crude and fully adjusted hazard ratios (HR) with 95% CIs.
*Crowded housing 1960, parental class 1960 Risk use of alcohol 1969, smoking 1969, psychiatric diagnosis 1969, emotional control 1969 and contact with police 1969, psychiatric diagnosis 1973–91, education 1990, socioeconomic position 1990, income 1990–1 and insured sickness absence 1990–1.
Values in bold and italic represent the attenuation of the hazard ratio.

"The results suggest that a substantial part of the increased relative risk of mortality associated with unemployment may be attributable to confounding by individual risk factors."

Virtanen et al: Perceived job insecurity as a risk factor for incident CHD: systematic review and meta-analysis

BMJ 2013; 347: f4746

17 studies



Job loss and lower healthcare utilisation due to COVID-19 among older adults across 27 European countries

Gabriela Ksinan Jiskrova, Martin Bobák, Hynek Pikhart, Albert J Ksinan

	Lost job due to COVID-19 n=10 958	
	OR	95% CI
Age (per 10 years)		
In men	1.02	0.88 to 1.18
In women	1.44	1.26 to 1.65
Sex (at centred age)		
Men	1 (ref)	
Women	1.27	1.14 to 1.41
Partner in household		
No	1 (ref)	
Yes	0.98	0.86 to 1.12
Education		
Tertiary	1 (ref)	
Secondary	1.60	1.40 to 1.82
Primary	1.89	1.59 to 2.26

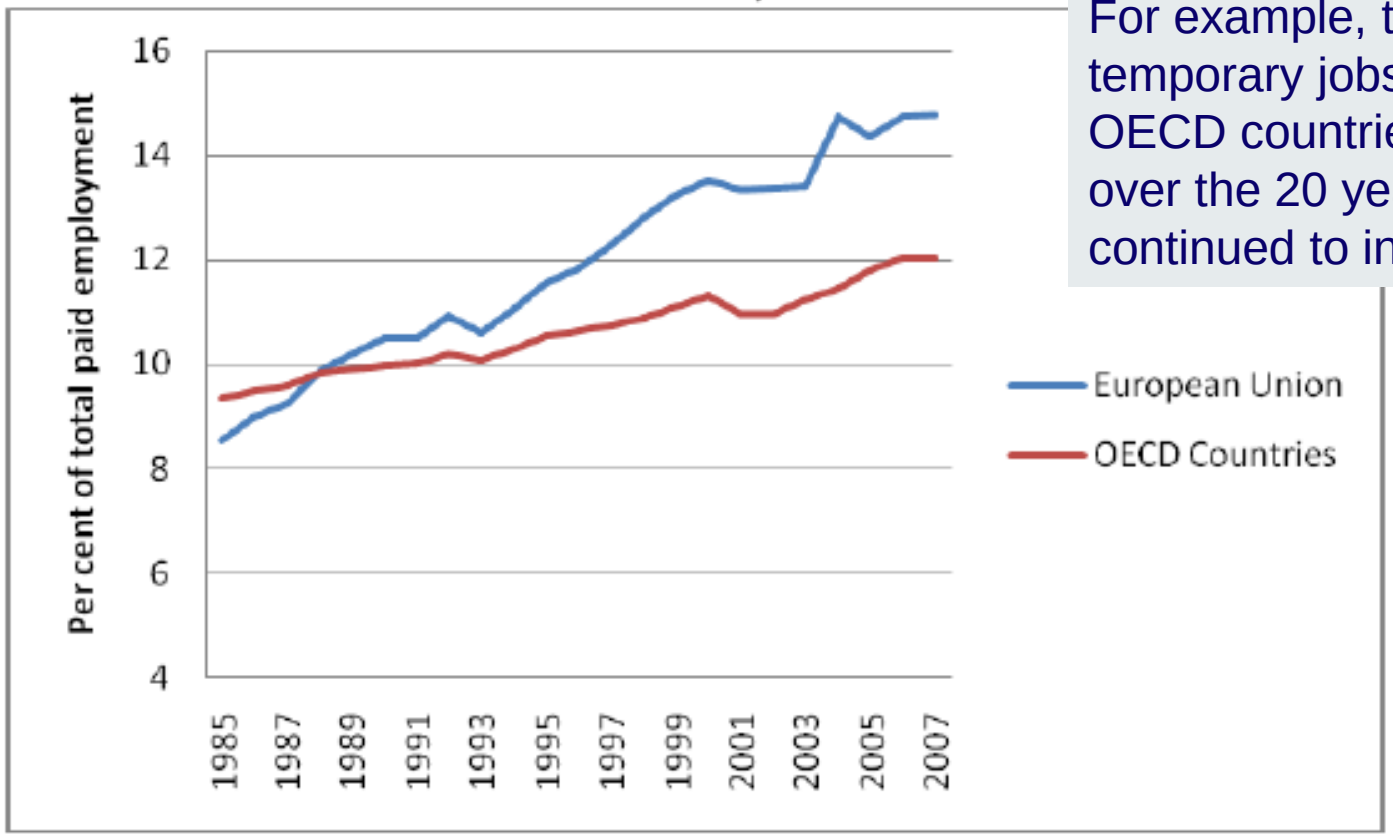
Economy in current period of globalization:

Major impact on work and employment

- Increased job instability and unemployment
  (mergers, downsizing, outsourcing)
- Segmentation of labour market
  (disparities in quality of work and income)
- Increased competition
  (reduced social support and solidarity)
- De-standardization of work contracts
  (flexible work, fixed-term contracts, homework etc.)

Increase in temporary employment

Figure 1 Growing prevalence of temporary work in OECD countries, 1987--2007.



For example, the proportion of temporary jobs in European and OECD countries steadily increased over the 20 years to 2007 and has continued to increase since.

Source: OECD.

Policies and regulations to combat precarious employment ILO 2011

Summary

- There is large evidence supporting important role of work in health
- This presentation has focused mostly on risk associated with some PS factors (and work stress in particular) but there is much larger evidence for the role of work-related factors on health
- Psychosocial and social factors and health is a dynamic area of research, with a need for new large studies and possibly new study designs

Policy implications – (more) interventions needed

Potential actions may be taken in several levels

- Personal level:
  Coping as strengthening of the individual‘s competence of problem solving

- Group level:
  Cooperation and handling of conflicts, collective assertion, leadership training

- Organizational level:
  Changes at the level of work organization (organizational and personnel development) including training/qualification

DRIVERS FOR HEALTH EQUITY (FP-7 FUNDED PROJECT

- http://health-gradient.eu/home/publications/english/

- Montano D, Hoven H & Siegrist J (2013). A meta-analysis of health effects of randomized controlled worksite interventions: Does social stratification matter? In: *Scand J Work Environ Health*. DOI: 10.5271/sjweh.3412.
- Montano D, Hoven H & Siegrist J (2014). Effects of organisational-level interventions at work on employees' health: a systematic review. In: *BMC Public Health* 14, S. 135. DOI: 10.1186/1471-2458-14-135.

THANK YOU!