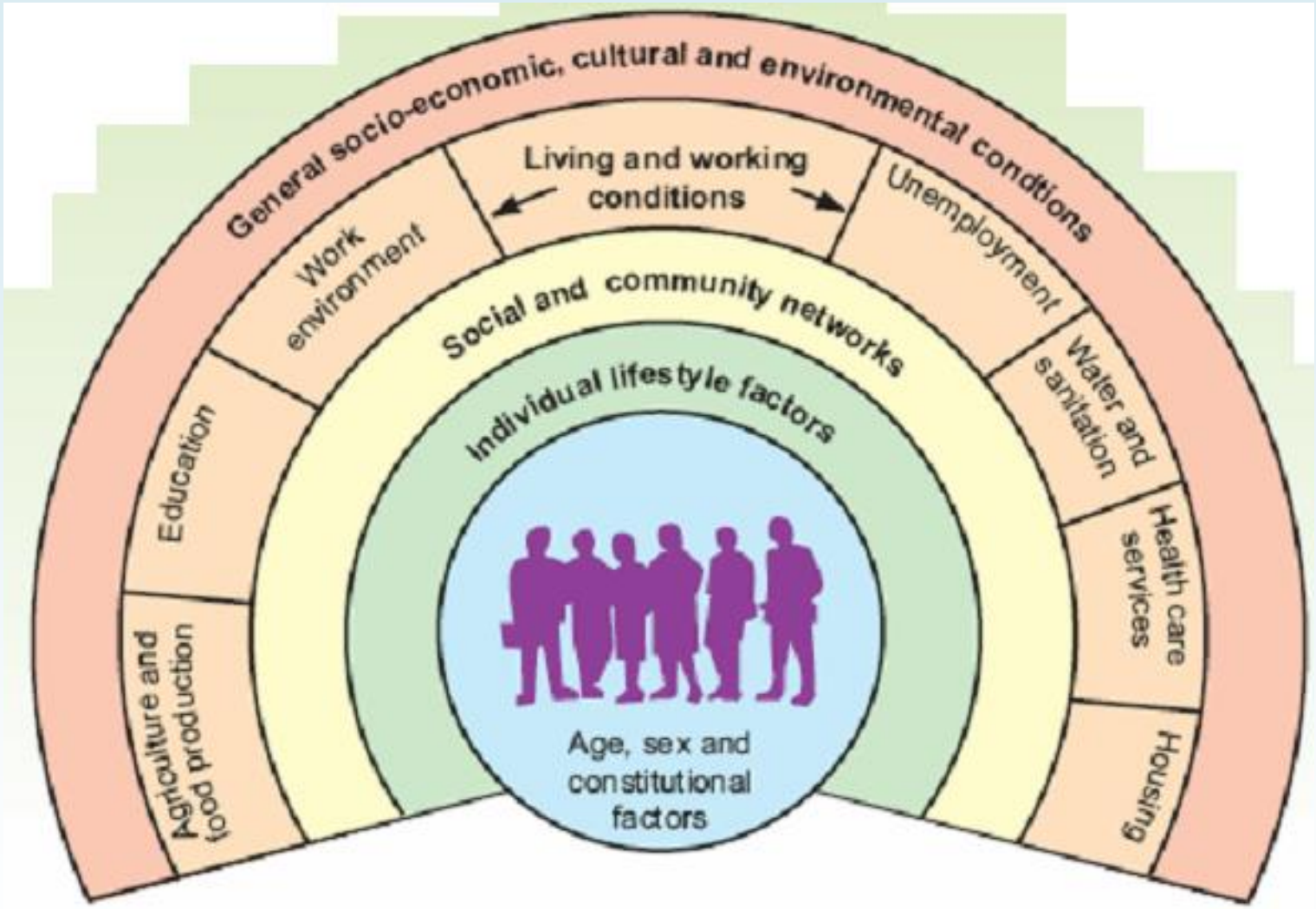
Psychosocial factors at work and health

Hynek Pikhart

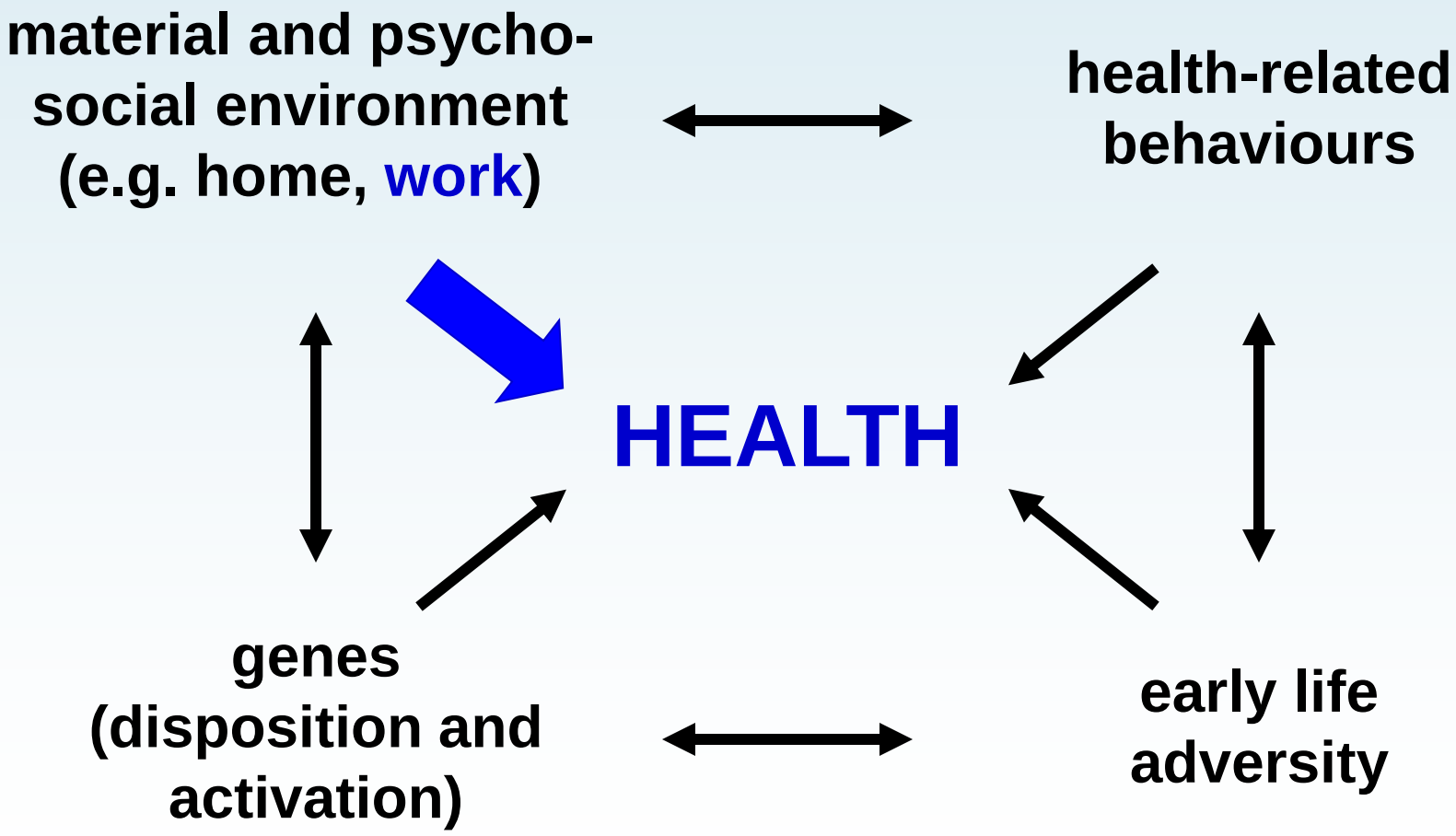
How can society affect our health?



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

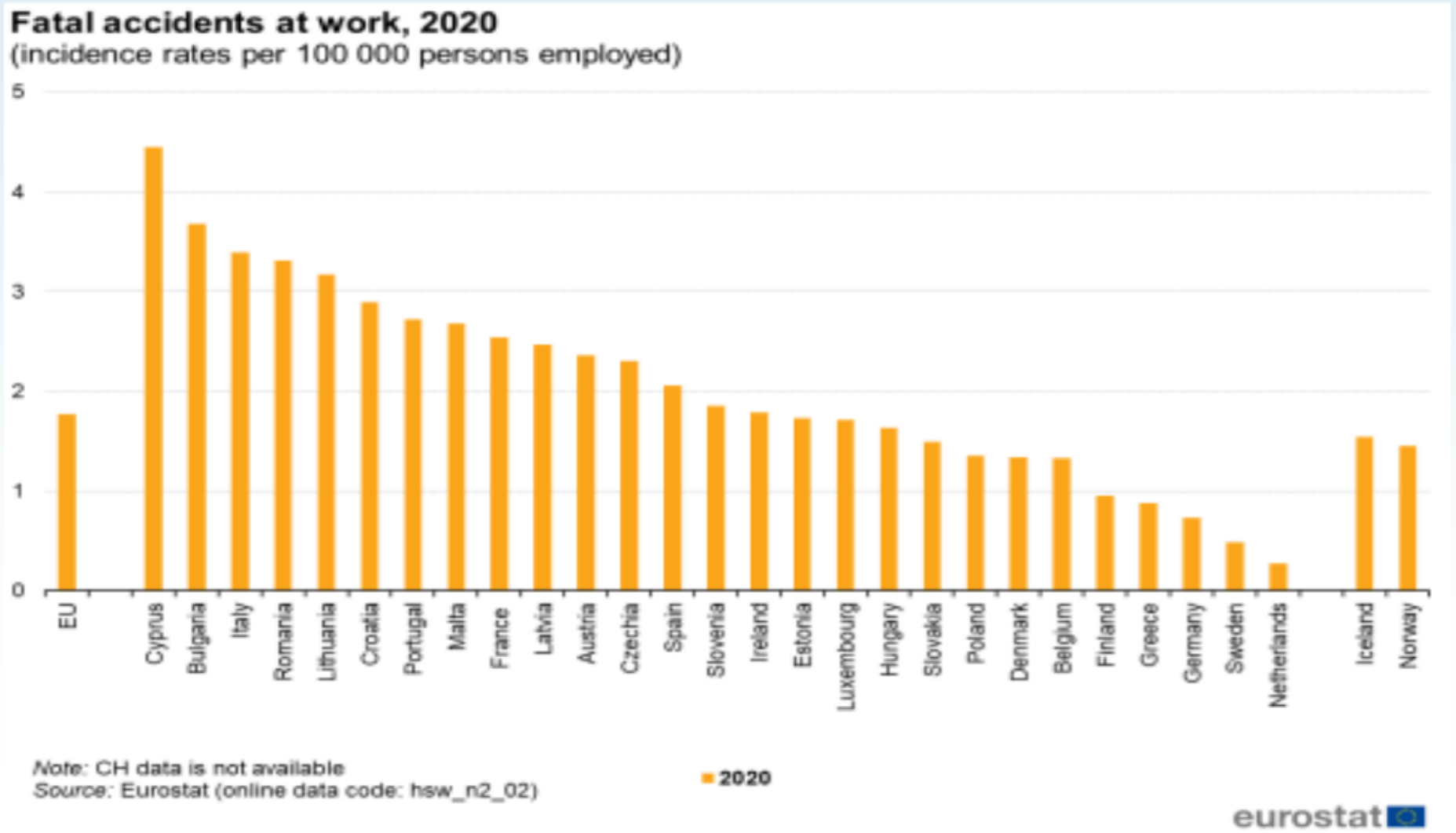
- EU
  - approx. 10 million of the 150 million workers affected by incidents, accidents or diseases at work every year
  - direct compensation costs are estimated at 20 billion ECU per year
- UK
  - officials statistics: every year about 2,000 lives lost through occupational disease or injury, about 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

Number of non-fatal and fatal accidents at work, 2012 (source: Eurostat)

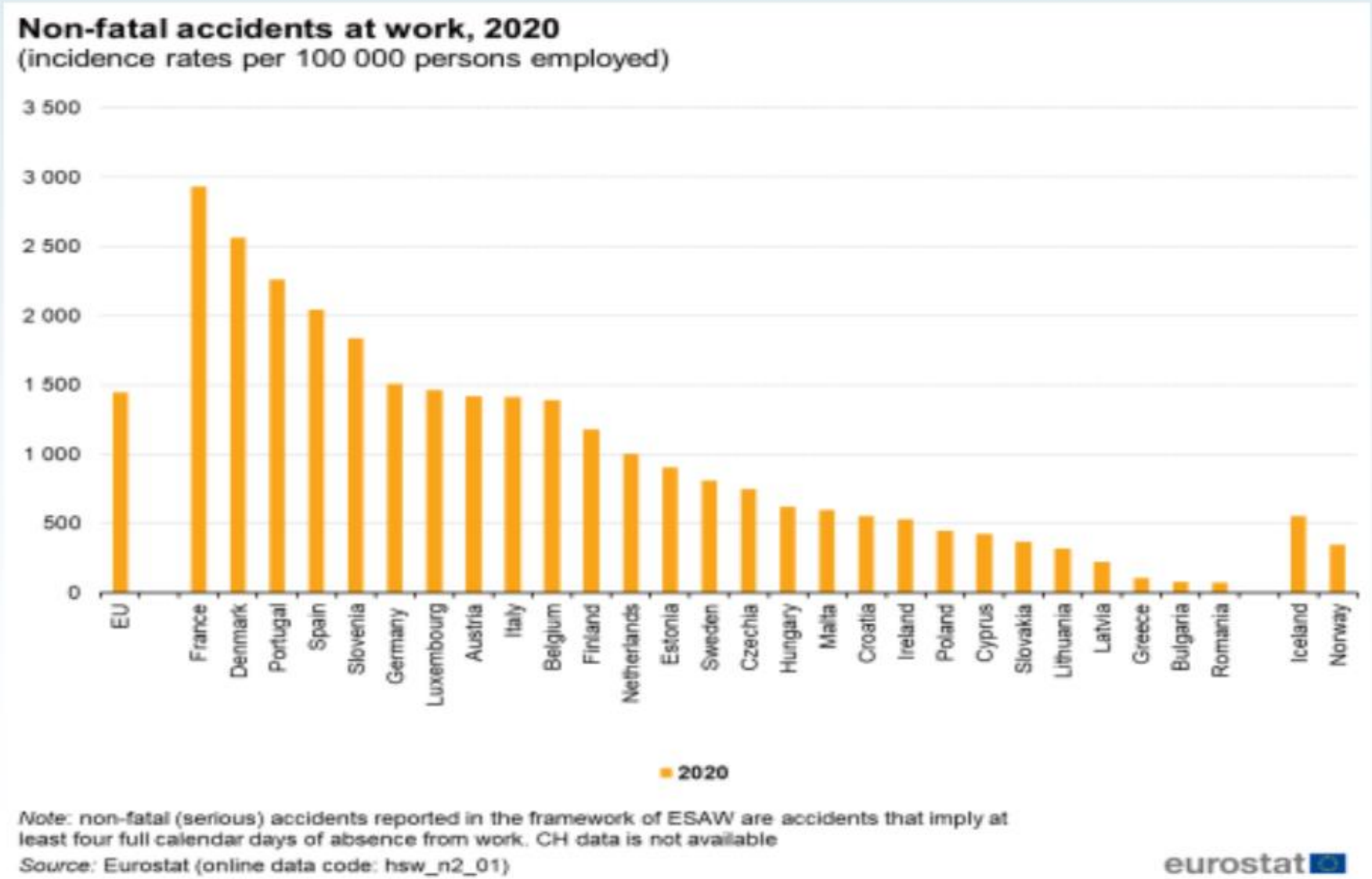
	Accidents at work involving at least four calendar days of absence from work			Fatal accidents at work		
	Total	Male	Female	Total	Male	Female
EU-28	*2 487 794*	*1 953 554*	*533 984*	3 515	3 362	153
Belgium	49 546	40 451	9 093	46	46	0
Bulgaria	1 768	1 353	415	90	82	8
Czech Republic	36 013	26 820	9 193	104	102	2
Denmark	34 245	26 825	7 292	43	42	1
Germany	709 940	578 076	131 794	473	452	21
Estonia	4 993	3 065	1 928	11	10	1
Ireland	9 794	6 828	2 921	42	42	0
Greece	11 926	9 446	2 480	37	34	3
Spain	281 045	212 968	68 077	273	266	7
France	461 376	353 980	107 396	524	494	30
Croatia	8 844	6 766	2 078	50	50	0
Italy	274 040	219 282	54 758	469	450	19
Cyprus	1 511	1 127	384	7	7	0
Latvia	1 213	875	338	33	30	3
Lithuania	2 303	1 698	605	55	54	1
Luxembourg	6 299	5 378	921	13	13	0
Hungary	16 717	11 879	4 838	60	58	2
Malta	2 190	1 978	212	7	7	0
Netherlands	116 029	89 307	26 722	31	31	0
Austria	56 299	46 731	9 568	137	128	9
Poland	67 472	50 290	17 182	303	284	19
Portugal	109 511	82 685	26 826	162	157	5
Romania	2 889	2 308	581	257	245	12
Slovenia	11 505	9 318	2 187	21	21	0
Slovakia	7 469	5 405	2 064	49	49	0
Finland	34 821	28 042	6 779	32	30	2
Sweden	24 864	18 674	6 189	37	34	3
United Kingdom	143 171	111 998	31 162	149	144	5
Norway (²)	14 855	12 335	2 520	34	32	2
Switzerland	72 106	60 352	11 754	60	57	3

(¹) NACE Rev. 2 Section A and Sections C to N. Non-fatal accidents reported in the framework of ESAW are accidents that imply at least four full calendar days of absence from work (serious accidents).
(²) 2011.
Source: Eurostat (online data code: hsw_mi01)

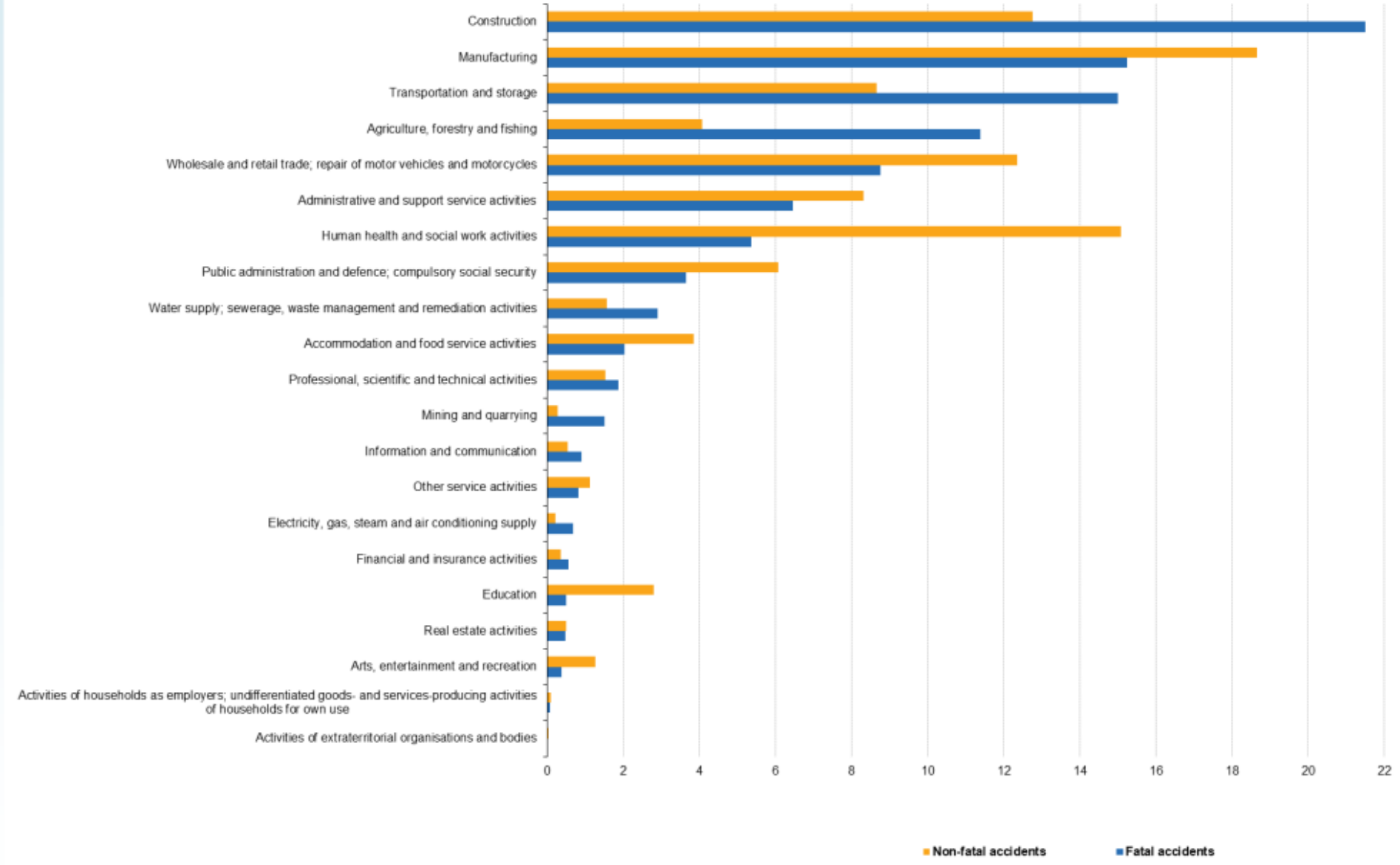
EU fatal accidents (total 3355)



EU non-fatal accidents (total 2.7 M)



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

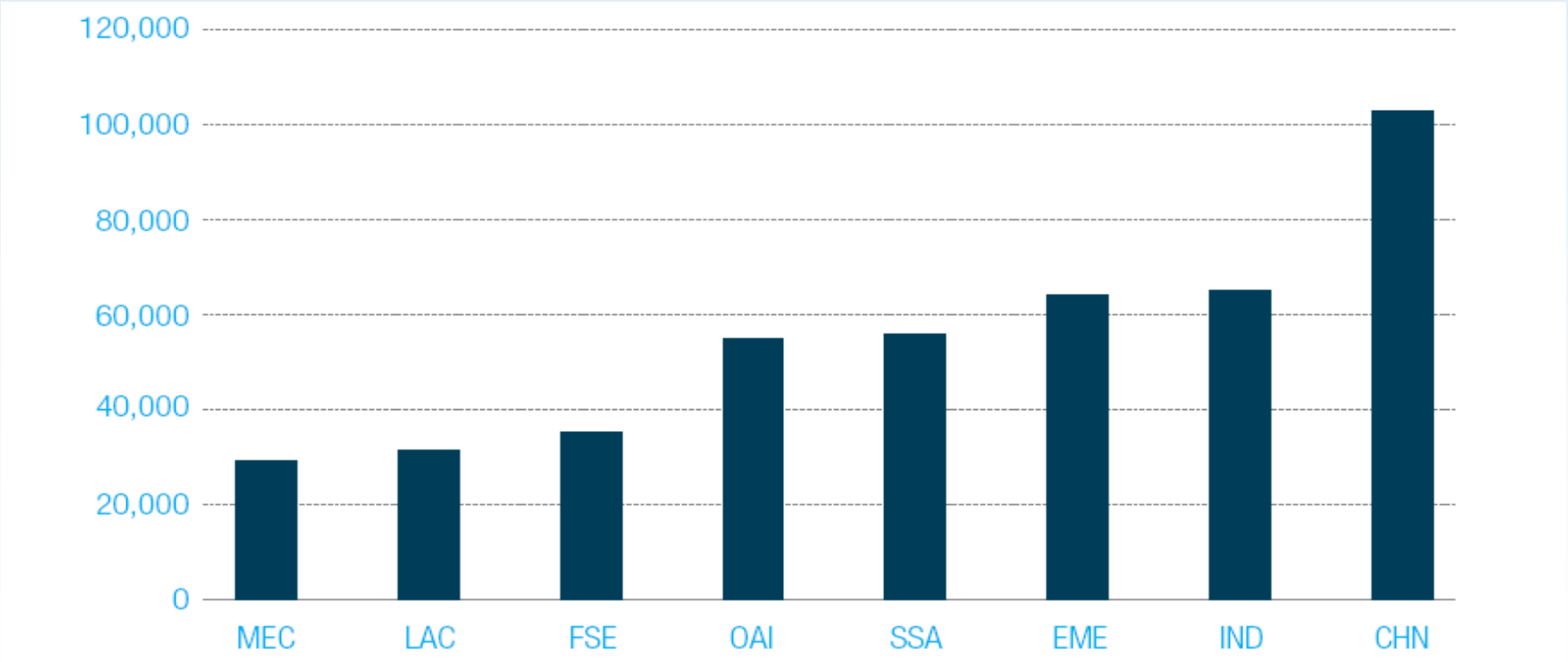


Note: non-fatal (serious) accidents reported in the framework of ESAW are accidents that imply at least four full calendar days of absence from work. Ranked on the values for fatal accidents.

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

eurostat

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

Work, employment and health – huge topic with competing perspectives

- Influences at different levels
  1. Micro-level — job tasks/psychosocial work environment
  2. Meso-level — employer/organisation
  3. Macro-level — legislation, labour market policy
- Differences over the life course
- Socio-economic/cultural differences
- Different types of work exposure
  1. Physical job demands, musculoskeletal disorders.
  2. Psychosocial work characteristics

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

MODELS

- Two models: Job Demand/Control/Support & Effort/Reward Imbalance
  - Description
  - Overview of studies using these models
  - Comparison of models

Demand-control model

Two key concepts:

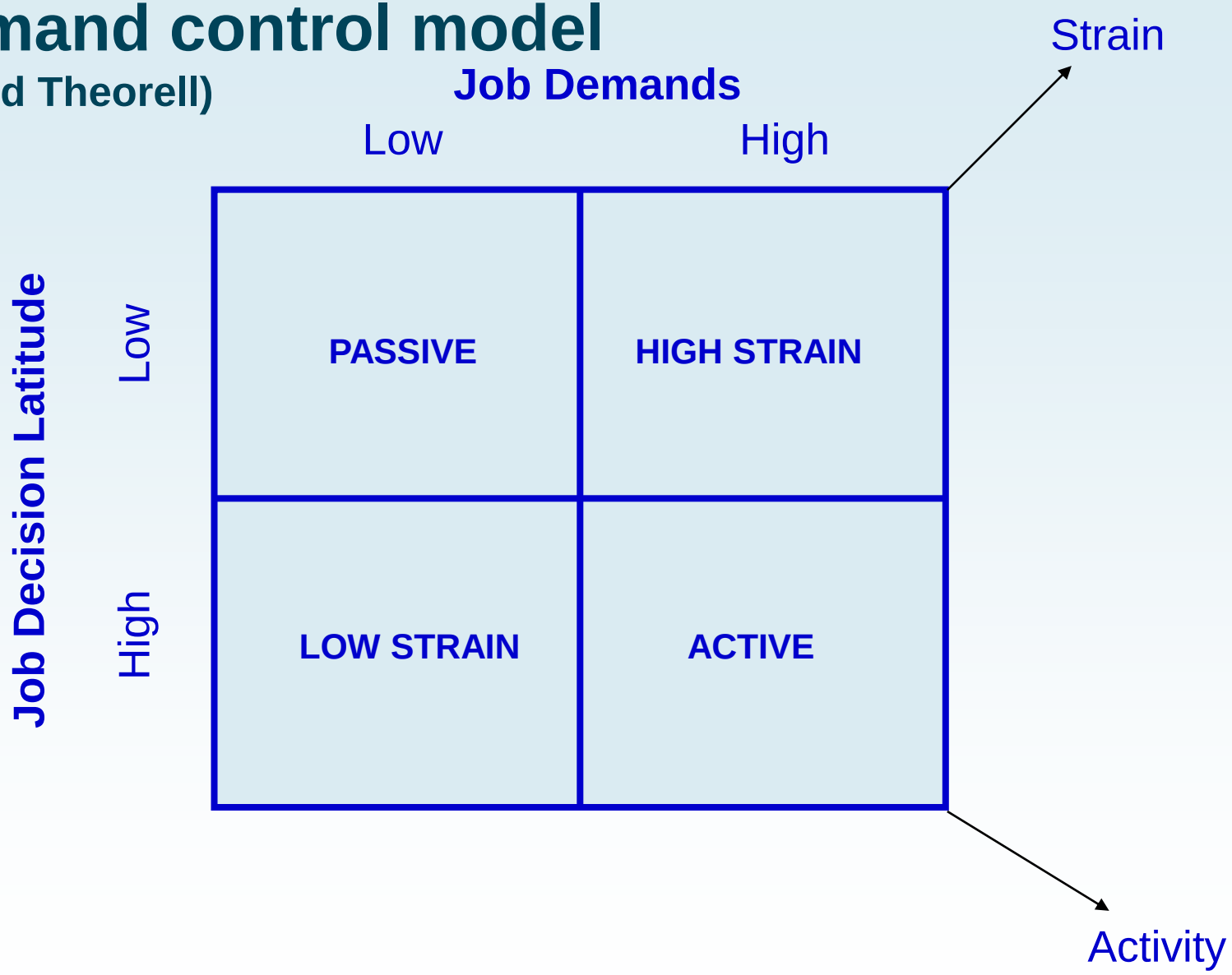
Job demands

Job decision latitude

Karasek's model states that job strain arises from the interaction of high demands with low control.

Job demand control model

(Karasek and Theorell)



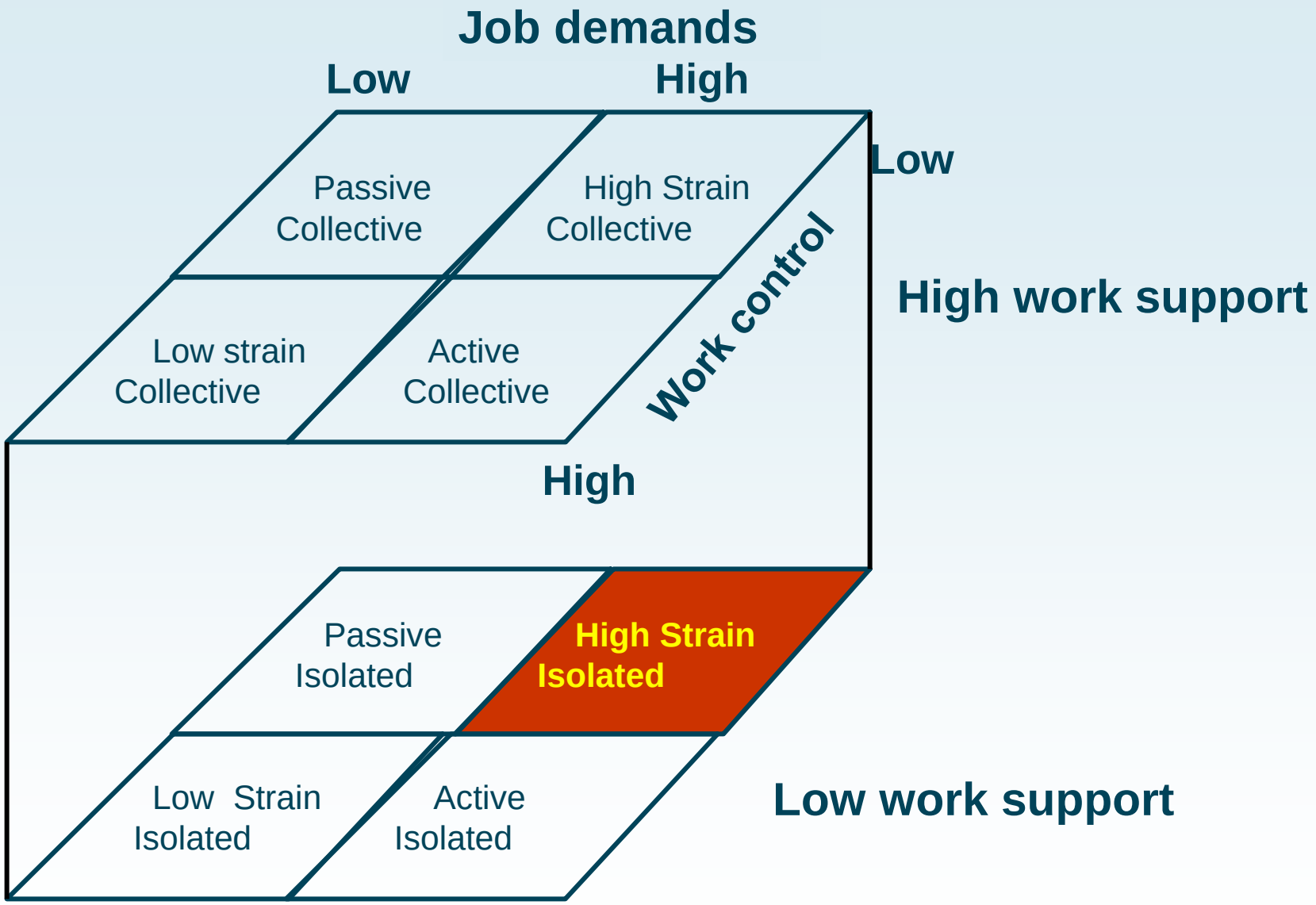
Extension to the model

Job Strain, Work Place Social Support, and Cardiovascular Disease: A Cross-Sectional Study of a Random Sample of the Swedish Working Population

JEFFREY V. JOHNSON, PHD, AND ELLEN M. HALL, MA

Abstract: This cross-sectional study investigates the relationship between the psychosocial work environment and cardiovascular disease (CVD) prevalence in a randomly selected, representative sample of 13,779 Swedish male and female workers. It was found that self-reported psychological job demands, work control, and co-worker social support combined greater then multiplicatively in demand, high control, and high social support reference group. PRs of approximately 2.00 were observed in this group after consecutively controlling for the effects of age together with 11 other potential confounding factors. The magnitude of the age-adjusted PRs was greatest for blue collar males. Due to the cross-sectional nature of the study design, causal inferences cannot be made. The

- Social support is defined as "interpersonal coping resources where one person helps another to enhance and improve their well-being" (Joudrey and Wallace 2009; p. 202).
- Suggests that the most harmful jobs are those that combine high strain with social isolation.
    - E.g. call centres, office cubicles, low levels of social interaction between co-workers, lack of support from managers and supervisors.



Johnson and Hall, American Journal of Public Health 1988

Am J Public Health. 1996 Mar;86(3):324-31.

Long-term psychosocial work environment and cardiovascular mortality among Swedish men.

Johnson JV[1], Stewart W, Hall EM, Fredlund P, Theorell T.

Author information

Abstract

OBJECTIVES: This study examined the effect of cumulative exposure to work organization--psychological demands, work control, and social support on prospectively measured cardiovascular disease mortality risk.

METHODS: The source population was a national sample of 12517 subjects selected from the Swedish male population by Statistics Sweden in annual surveys between 1977 and 1981. Over a 14-year follow-up period, 521 deaths from cardiovascular disease were identified. A nested case-control design was used. Work environment exposure scores were assigned to cases and

"... people experiencing low social support in conjunction with high psychosocial demands and low control (iso-strain) experience the highest relative risk for cardiovascular disease compared to the people experiencing other combinations of demand-control and social support".

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

- Health outcomes depend upon the degree to which workers are rewarded for their efforts.
- Where a high degree of effort does not meet a high degree of reward, emotional tensions arise and illness risk increases.

Effort

The individual's response to the demands made on them.

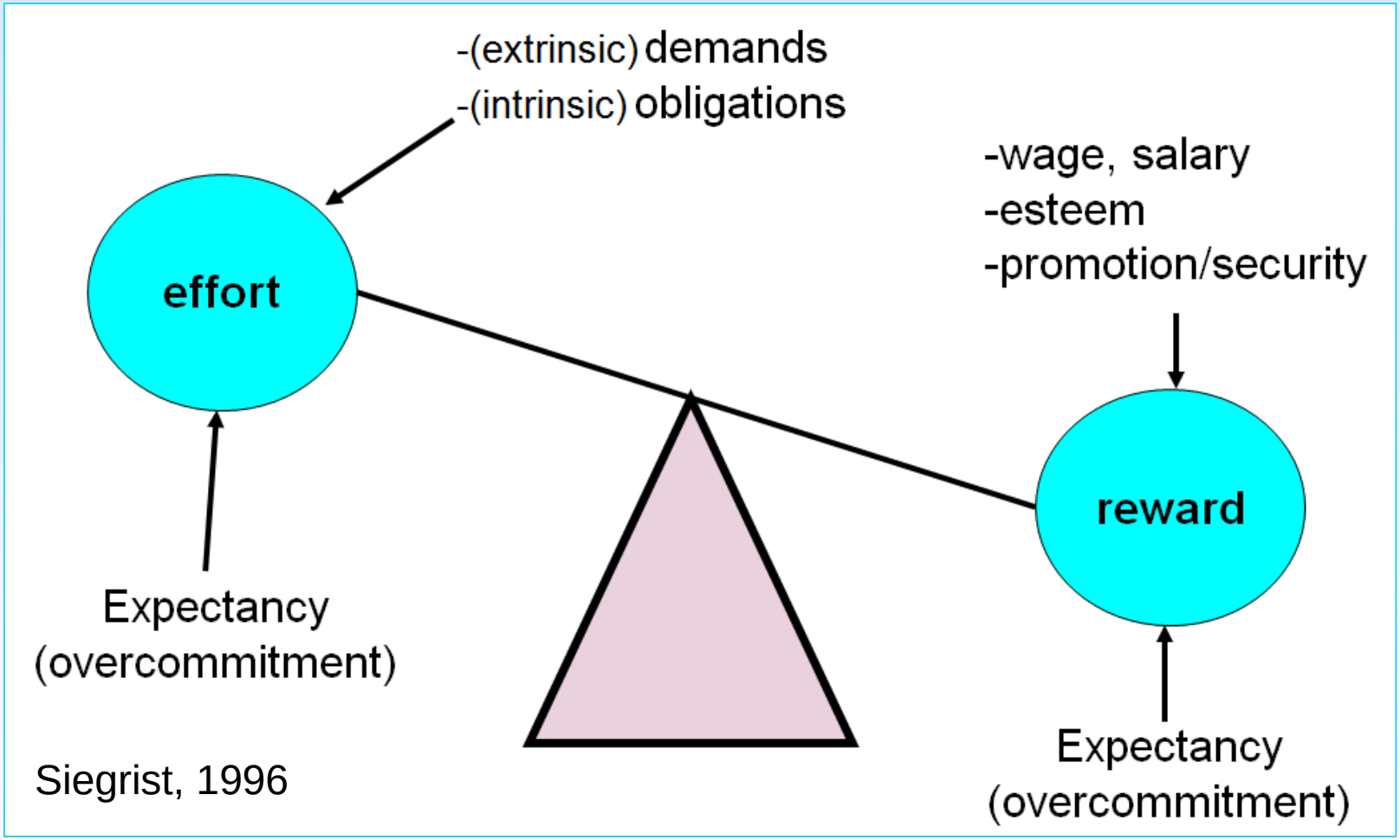
Extrinsic the individual's effort to cope with external demands.

Intrinsic the individual's own drive to fulfil his or her own goals.

Reward

Rewards received (in the form of salary, security or opportunities for progression).

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

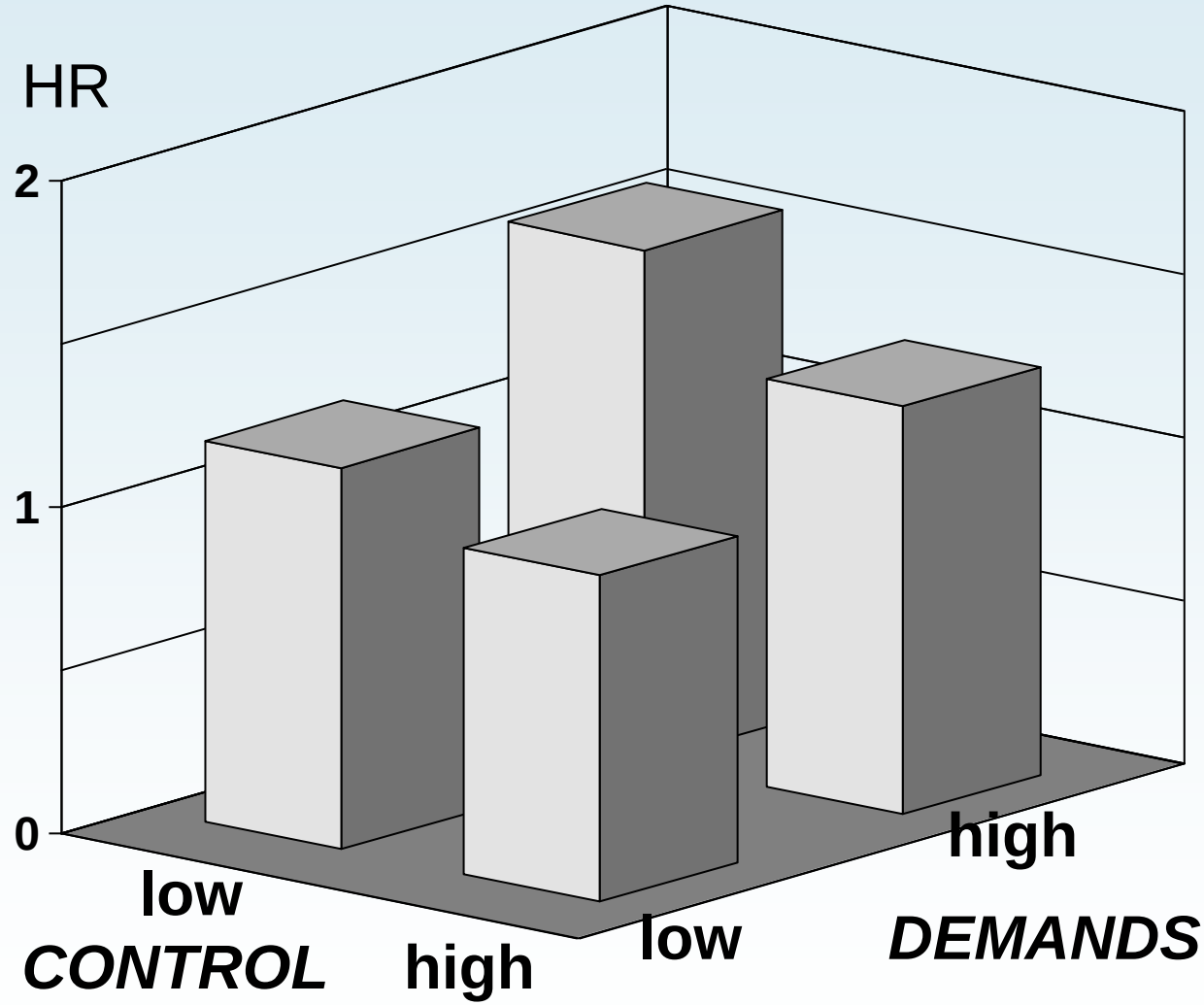
- Both mortality and morbidity
- CHD, CVD, hypertension, MI
- sickness absence
- self-rated health
- neck pain and low back pain
- depression

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

Bosma (1998)

Table: Odds ratios of new CHD Reports, by Effort-Reward Imbalance

	Men		
	Angina Pectoris OR (95% CI)	Diagnosed Ischemia OR (95% CI)	Any Coronary Heart Disease Outcome OR (95% CI)
Effort-reward imbalance			
Low efforts and high rewards	1.00	1.00	1.00
High efforts or low rewards	2.13 (0.97, 4.70)	2.13 (0.75, 6.03)	2.12 (1.05, 4.27)
High efforts and low rewards	2.59 (1.17, 5.73)	3.63 (1.30, 10.2)	2.98 (1.48, 5.99)
Number (events)	3751 (129)	3910 (97)	3724 (178)

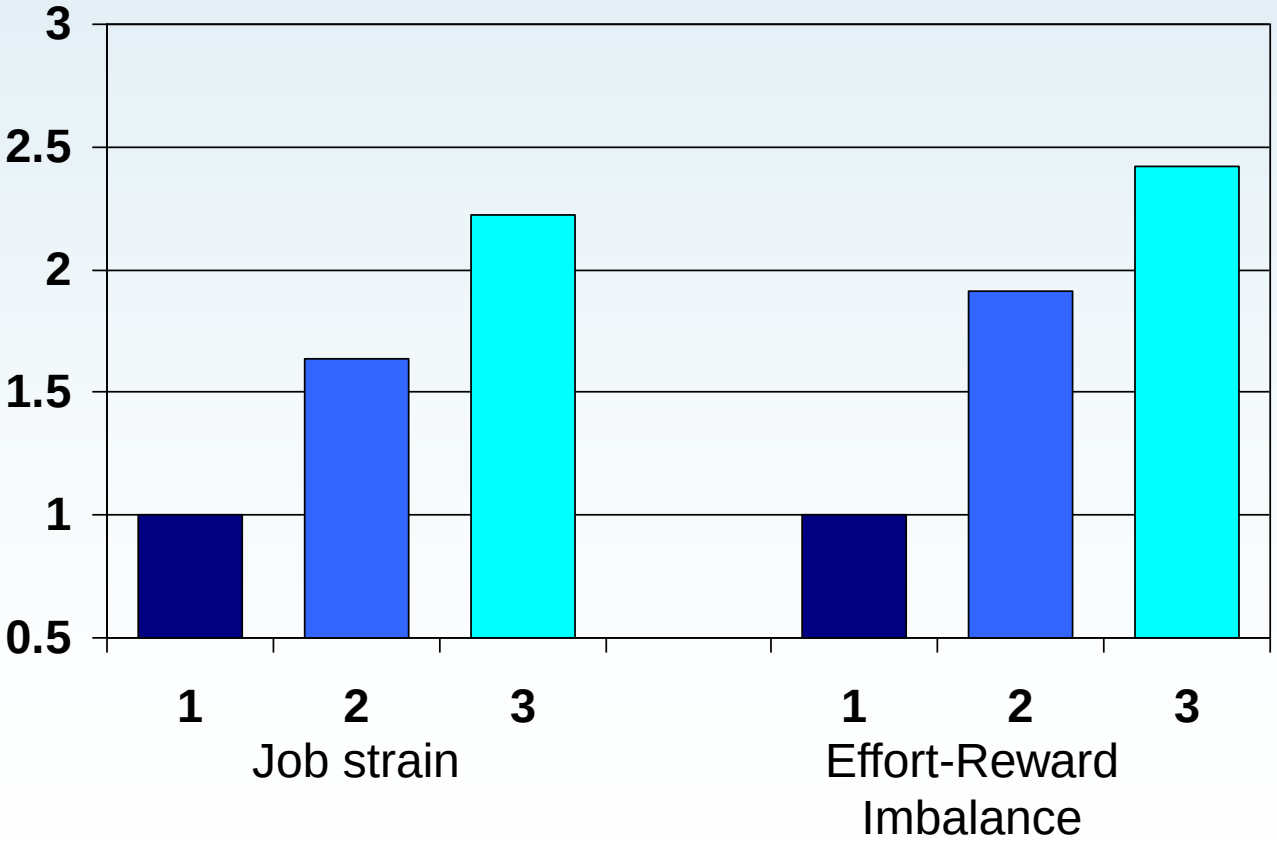
- Whitehall II study (6895 men and 3413 women aged 35-55)

"The imbalance between personal efforts (competitiveness, work-related over commitment, and hostility) and rewards (poor promotion prospects and a blocked career) were associated with a 2.15-fold higher risk of new coronary heart disease."

Are two models describing same psychosocial environment?

CVD mortality by levels of work stress

Staff of a company in the metal industry in Finland (N=812; mean follow-up 25.6 years)



Tertiles
1 = low;
2 = intermediate;
3 = high

adj. for age, sex, occupational group, smoking, physical activity, SBP, total chol, BMI

Kivimäki et al. (2002), BMJ, 325: 857

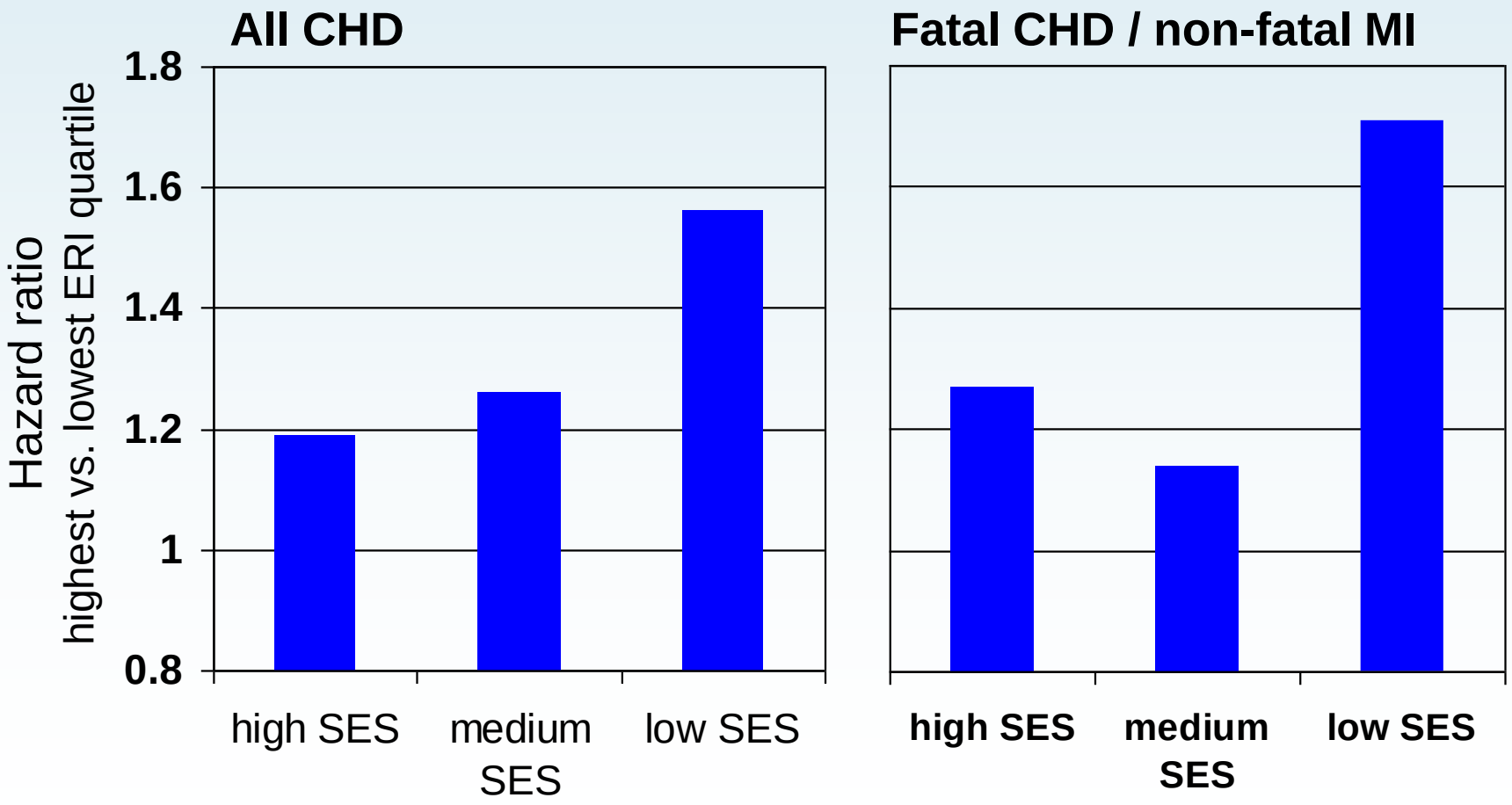
JOB CONTROL, EFFORT-REWARD IMBALANCE AND CHD INCIDENCE – WHITEHALL STUDY

See practical session, part A

SES x PS interactions

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

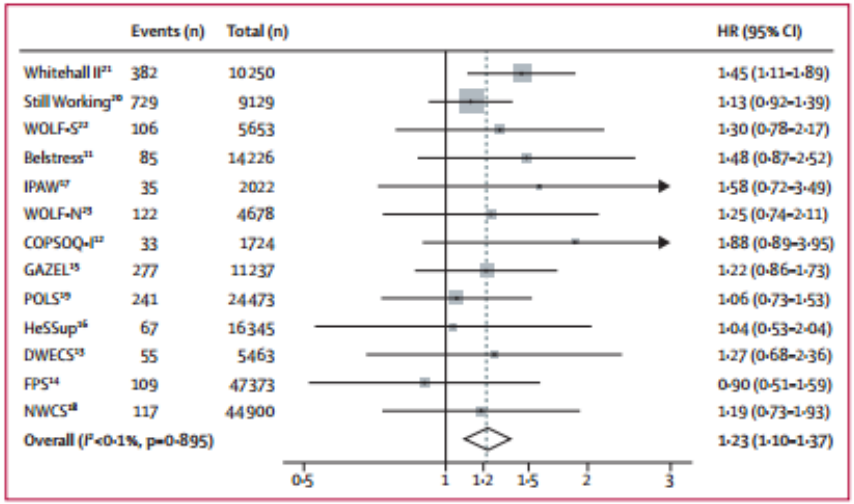
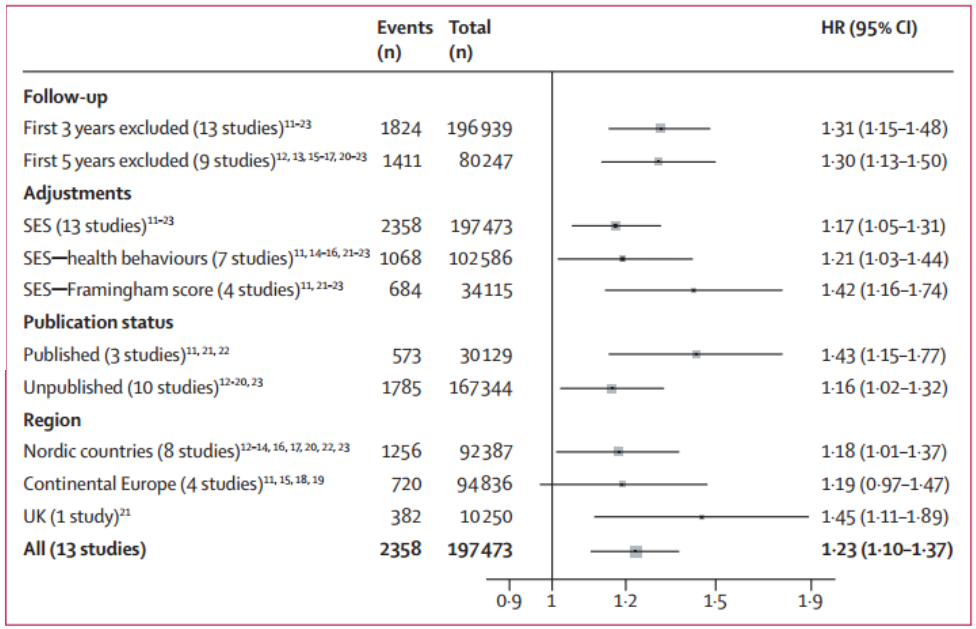


Figure 1: Random-effects meta-analysis of the association between job strain and incident coronary heart disease

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.



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

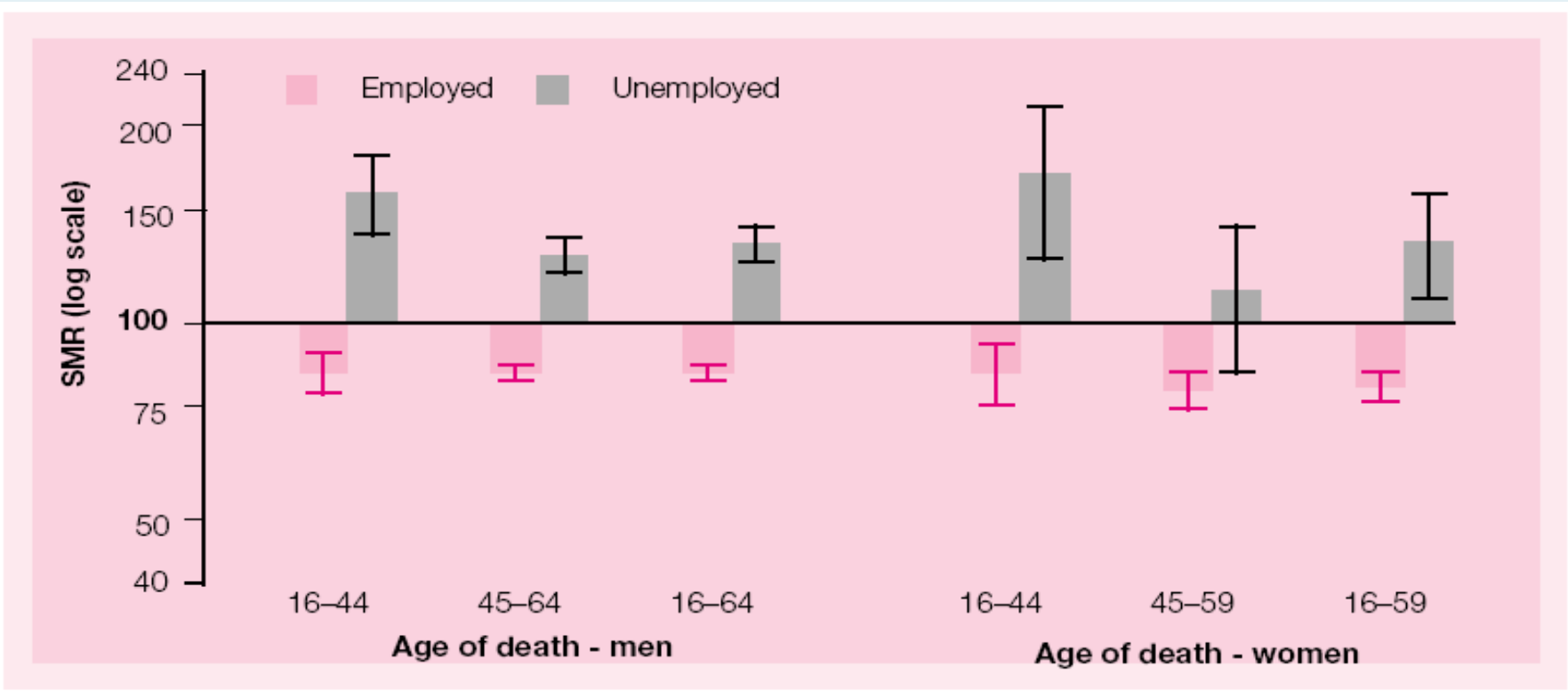
Women more likely to be unemployed than men (6.6 vs. 6.1%)

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

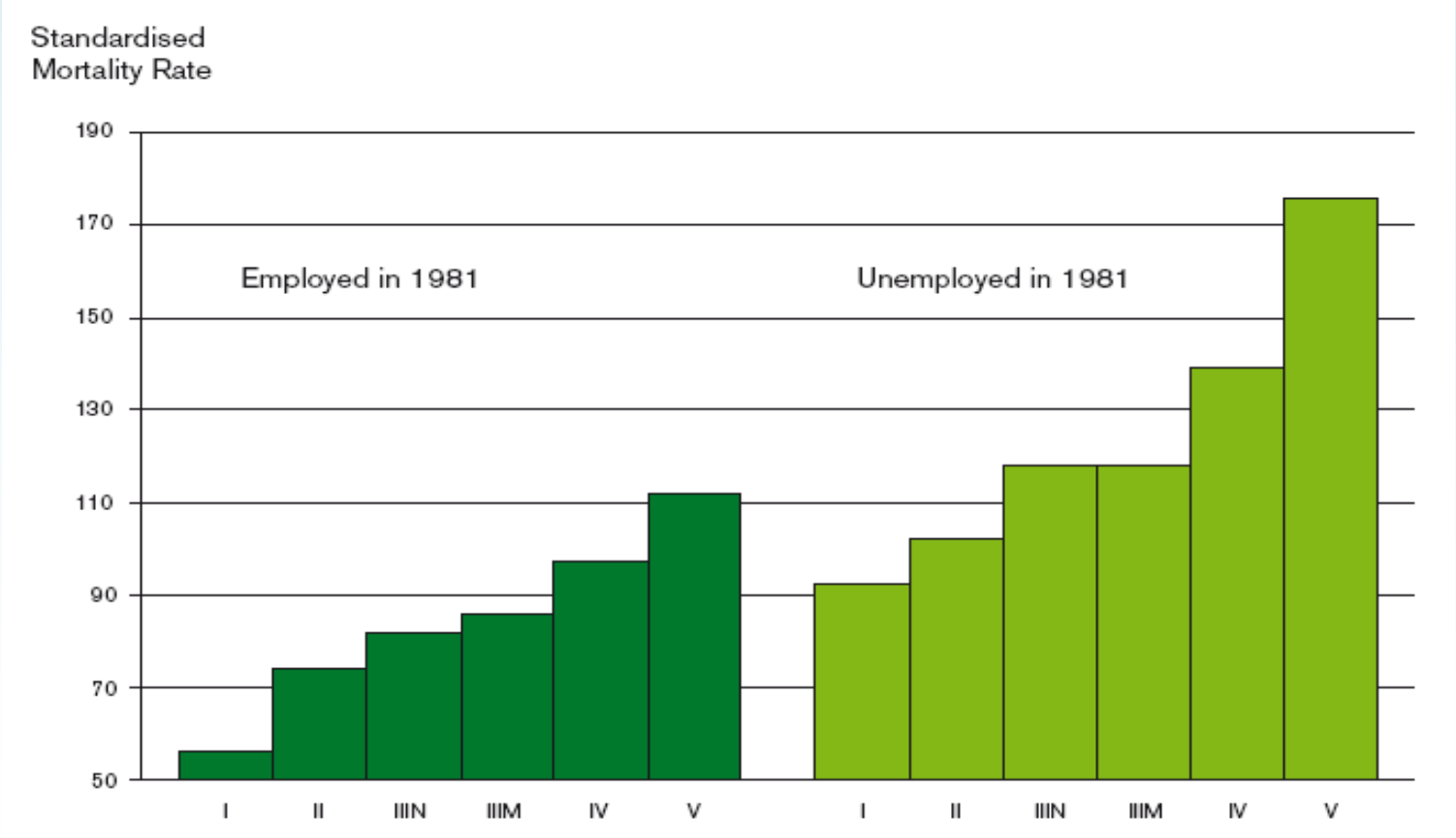
(ILO 2006 & 2007)

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)*

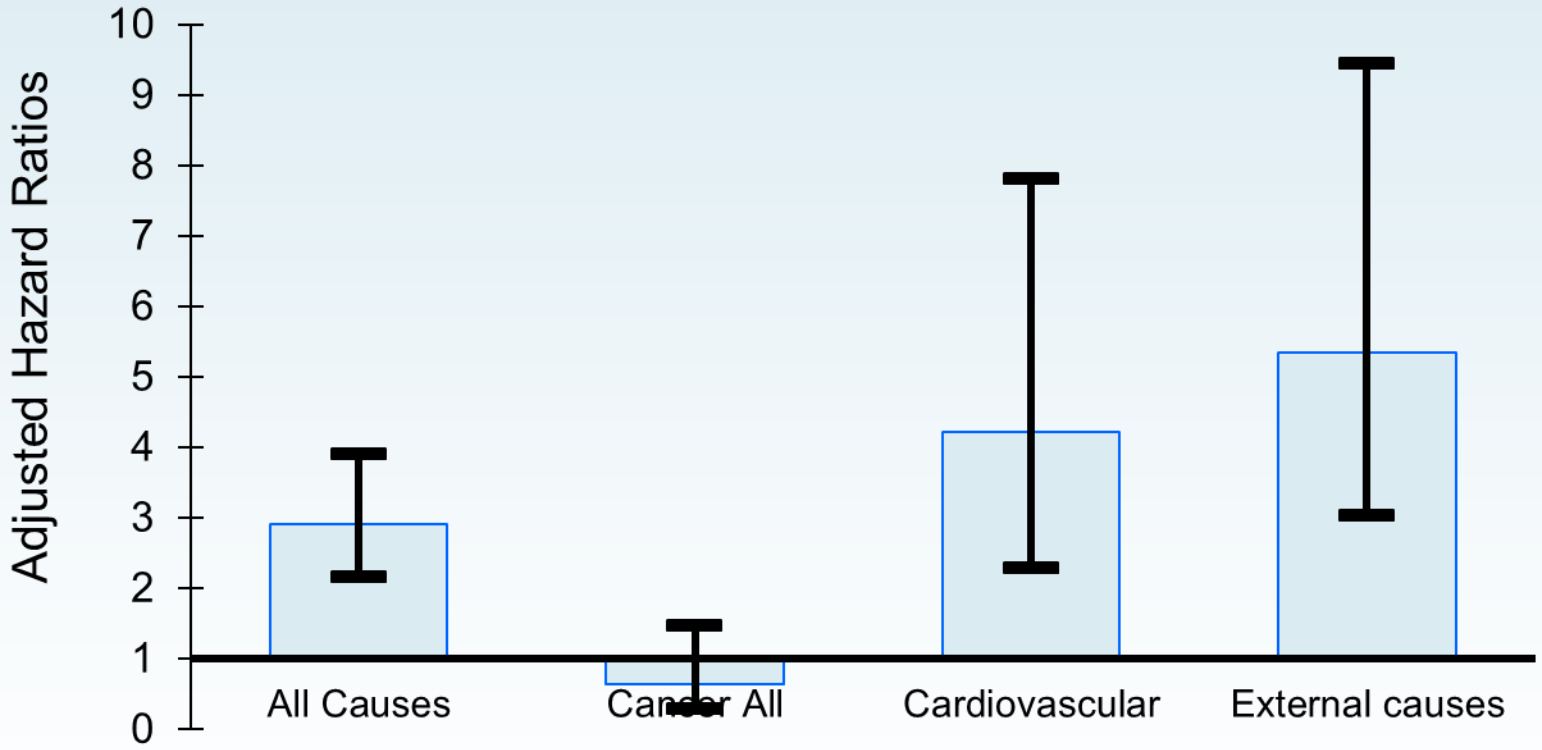
Mortality of men in England and Wales in 1981–92, by social class and employment status at the 1981 Census



Bethune 1997

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

Unemployed women vs women in permanent employment



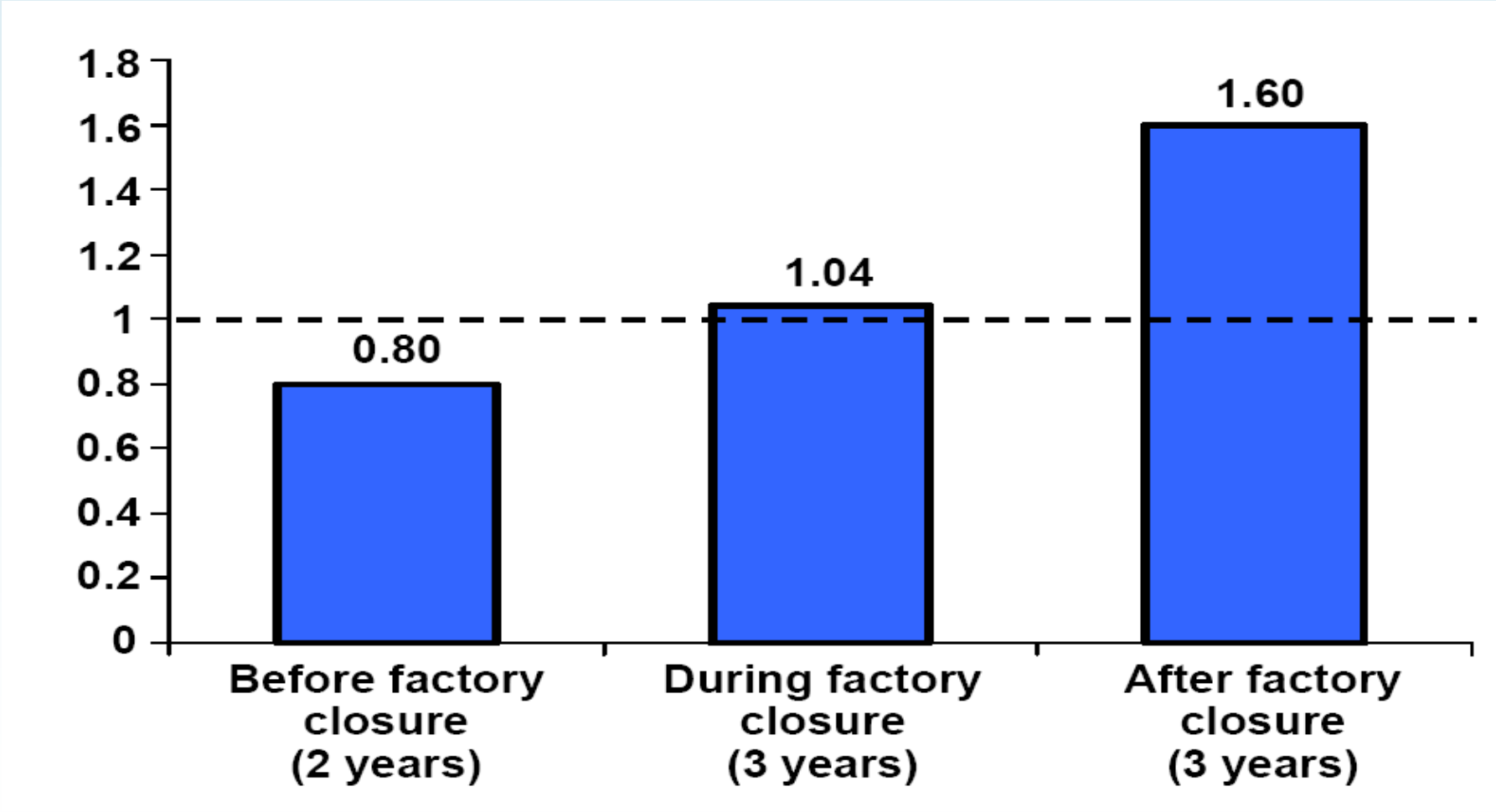
Kivimaki et al 2003;158:663-668

Unemployment and health

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

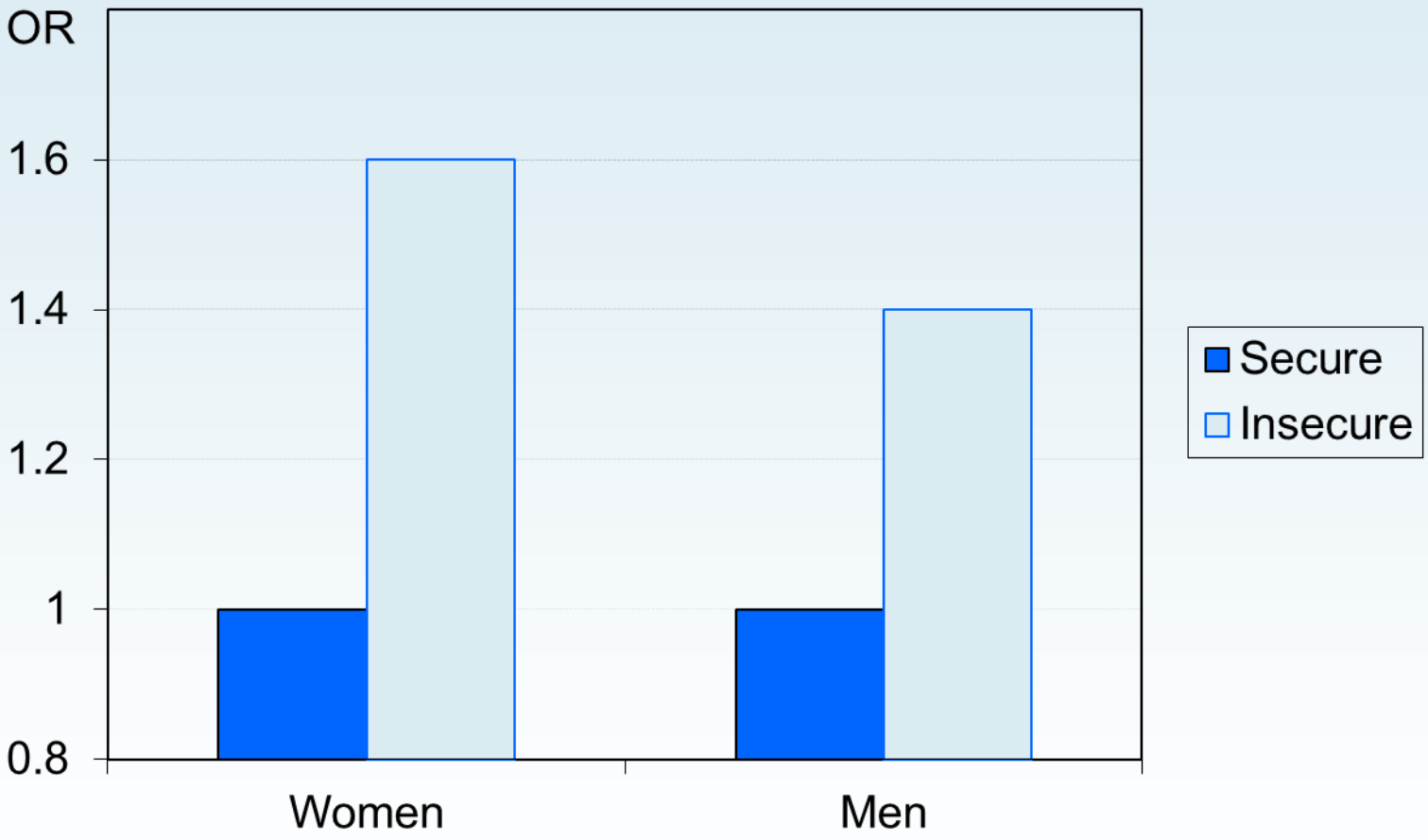
- Ways how unemployment may affect health:
  - Unempl → Financial problems → Worse living standards → Lower self-esteem
  - Unempl → distress, depression (of unemployed, partners, children)
  - Unempl → health behaviours

CVD hospital admissions in a group of unemployed men compared with a control group



Iversen et al. BMJ 1989; 299: 1073-6

Job insecurity and risk of ischaemia

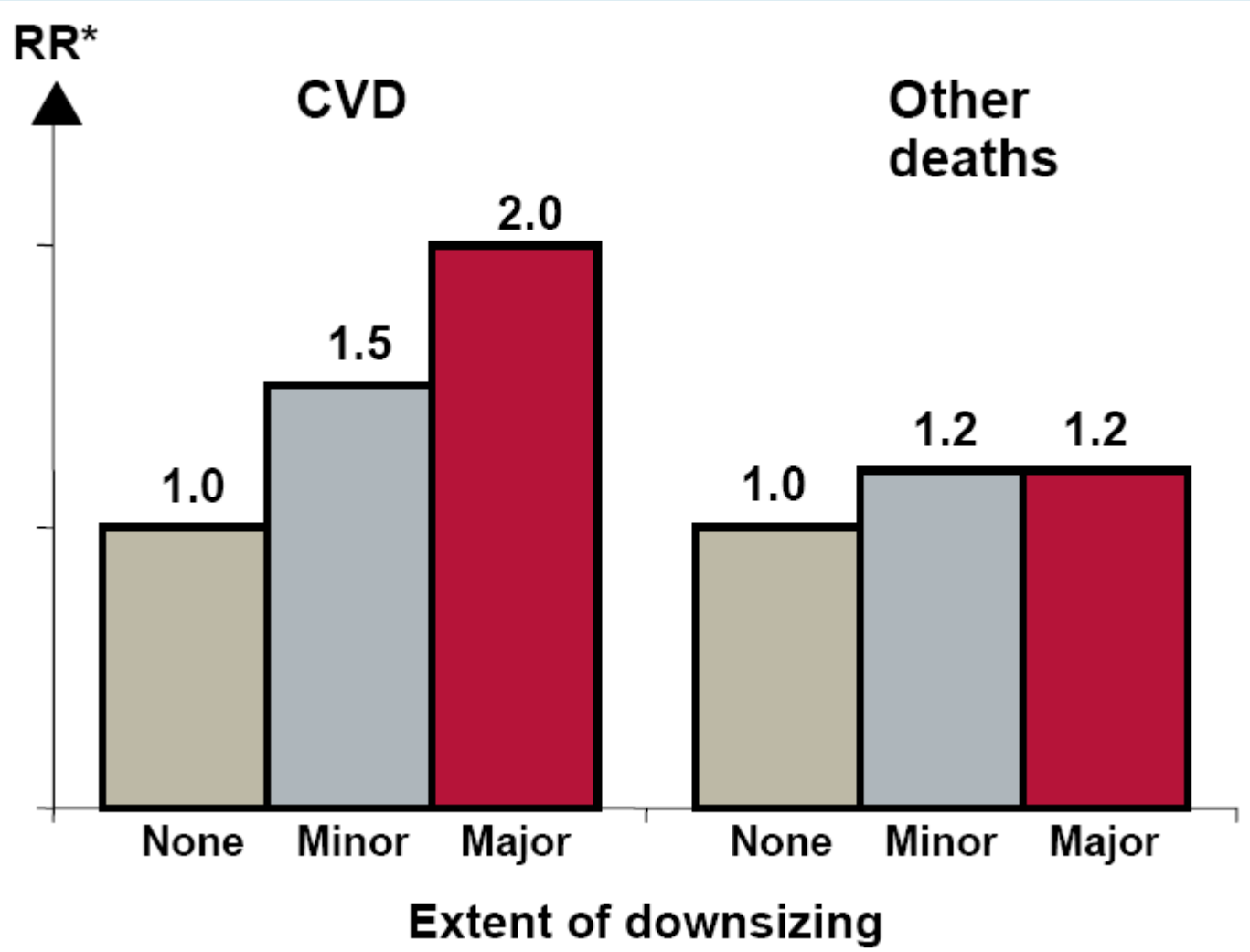


adjusted for age, grade and ischaemia before jobs were threatened

Ferrie et al. AJPH 1998

Organisational downsizing and mortality

7.5 years follow-up of 22,430 public employees



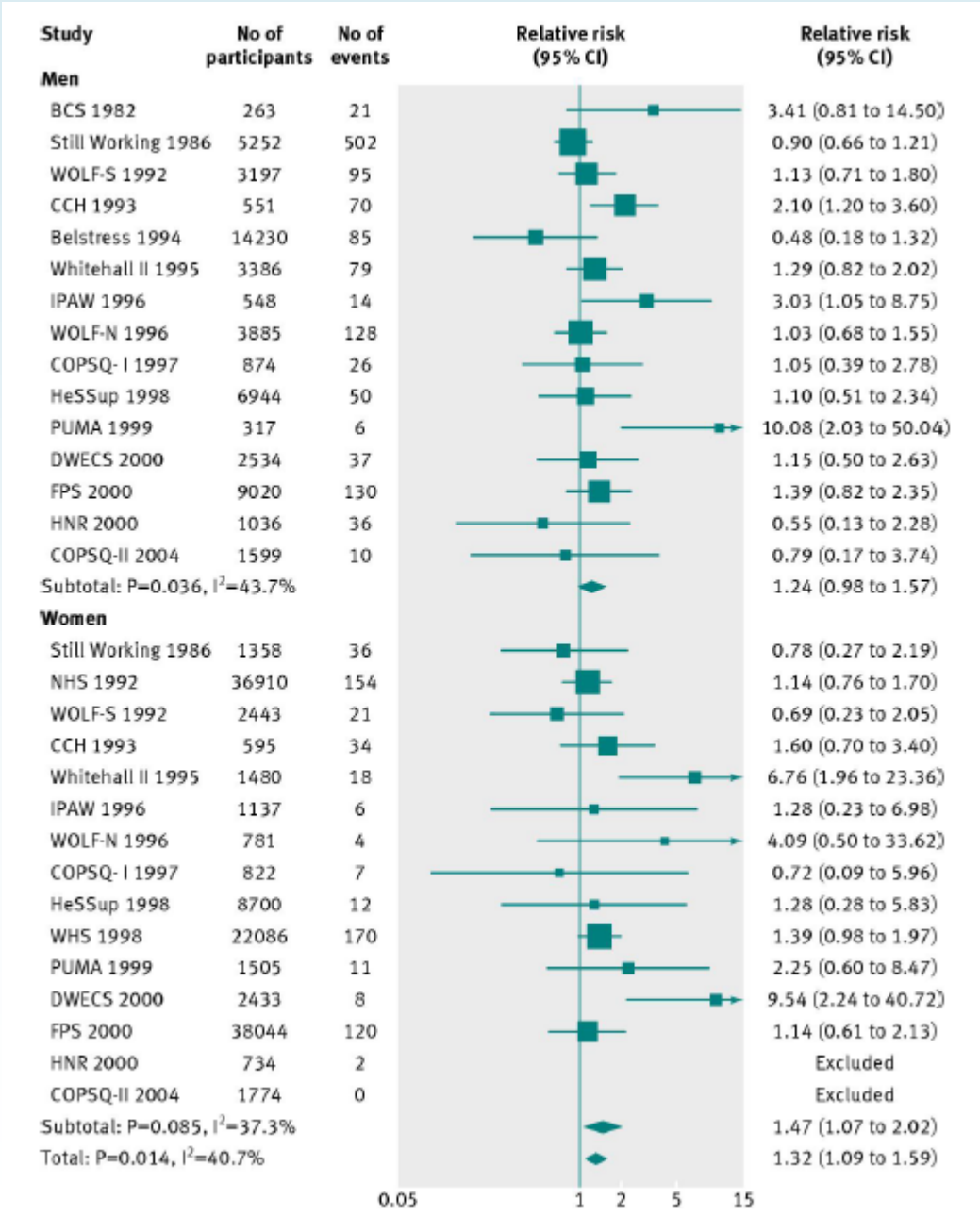
Vahtera et al; BMJ 2004; 328:555-558

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

BMJ 2013; 347: f4746

17 studies

Age adjusted findings



Macro-, Meso- and Micro-level influences

Work stress, depression and policy context

Dragano et al. (2011)

Method Data from three longitudinal ageing studies (SHARE, HRS, ELSA) including 5650 men and women in 13 countries.

Results Risk of depressive symptoms at follow-up is higher among those experiencing effort-reward imbalance (OR: 1.55 95% CI 1.27-1.89) and low control (OR: 1.46 95% CI 1.19-1.79) at work. Interaction terms indicate a modifying effect of protective policy indicators on the strength of associations of effort-reward imbalance with depressive symptoms.

Conclusions Work stress is associated with elevated risk of prospective depressive symptoms among older employees from 13 European countries. Protective labour and social policies modify the strength of these associations.

Work stress, depression and policy context

Dragano et al. (2011)

In countries with 'non-protective' policies, the effect of work stress on depressive symptoms was stronger, compared to countries with protective social policies.

Policy measures used:

1. The overall level of ALMP expenditures (% GDP);
2. Investments in rehabilitation services (% GDP);
3. Proportion of workers (55+) participating in continued learning;
4. Income maintenance/support for unemployed persons (% GDP);
5. Union density (percentage of workers belonging to any trade union);
6. Income inequality (Gini coefficient)

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.)

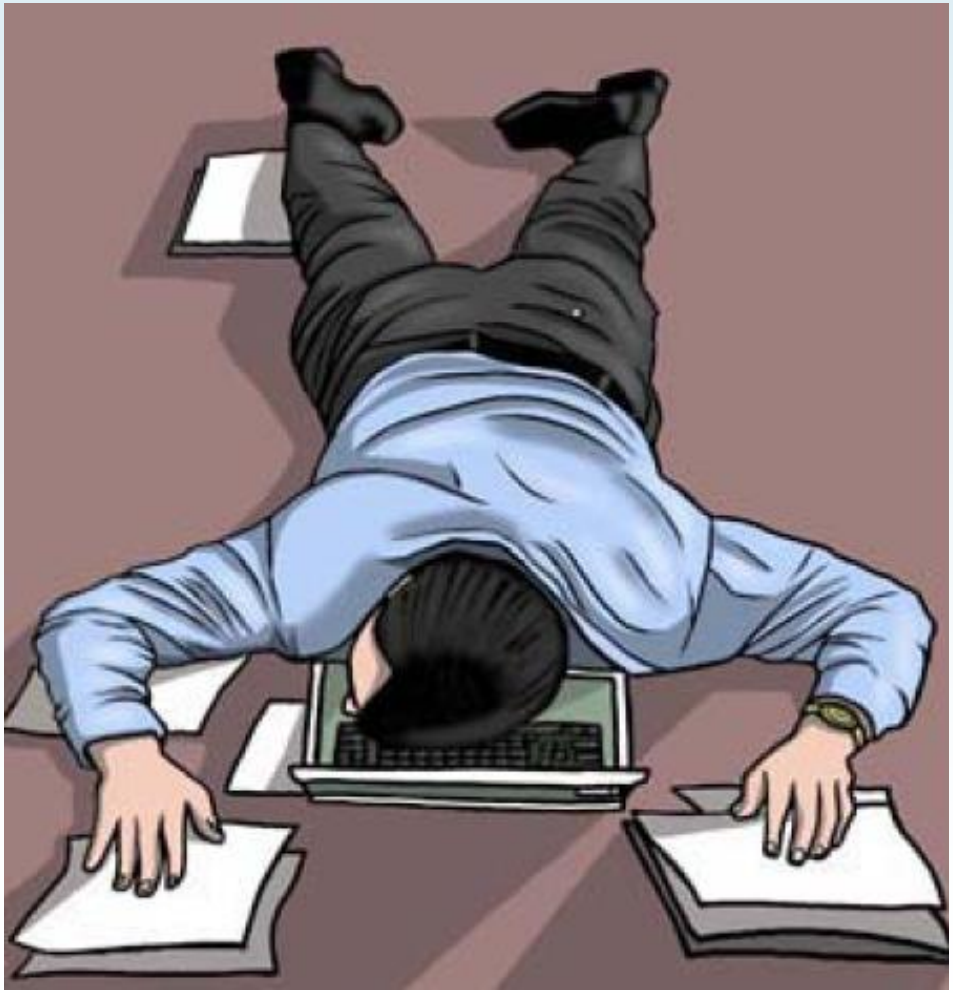
Summary

- 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

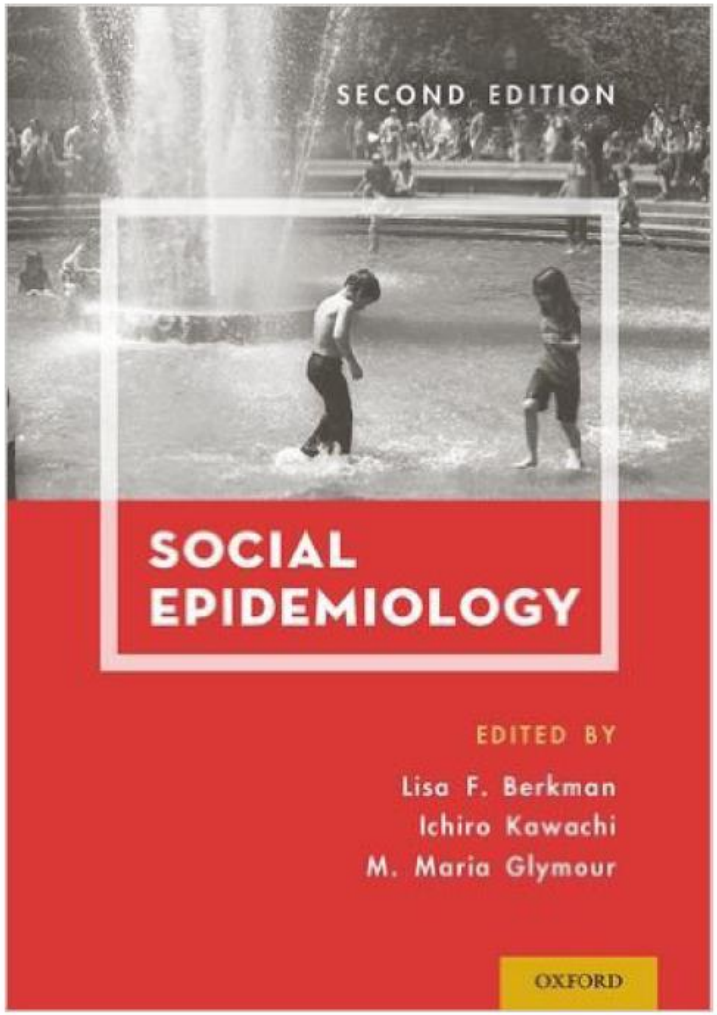
Job strain and CHD in European collaborative analysis (Kivimaki et al 2012)

- Exercise part C

THANK YOU!



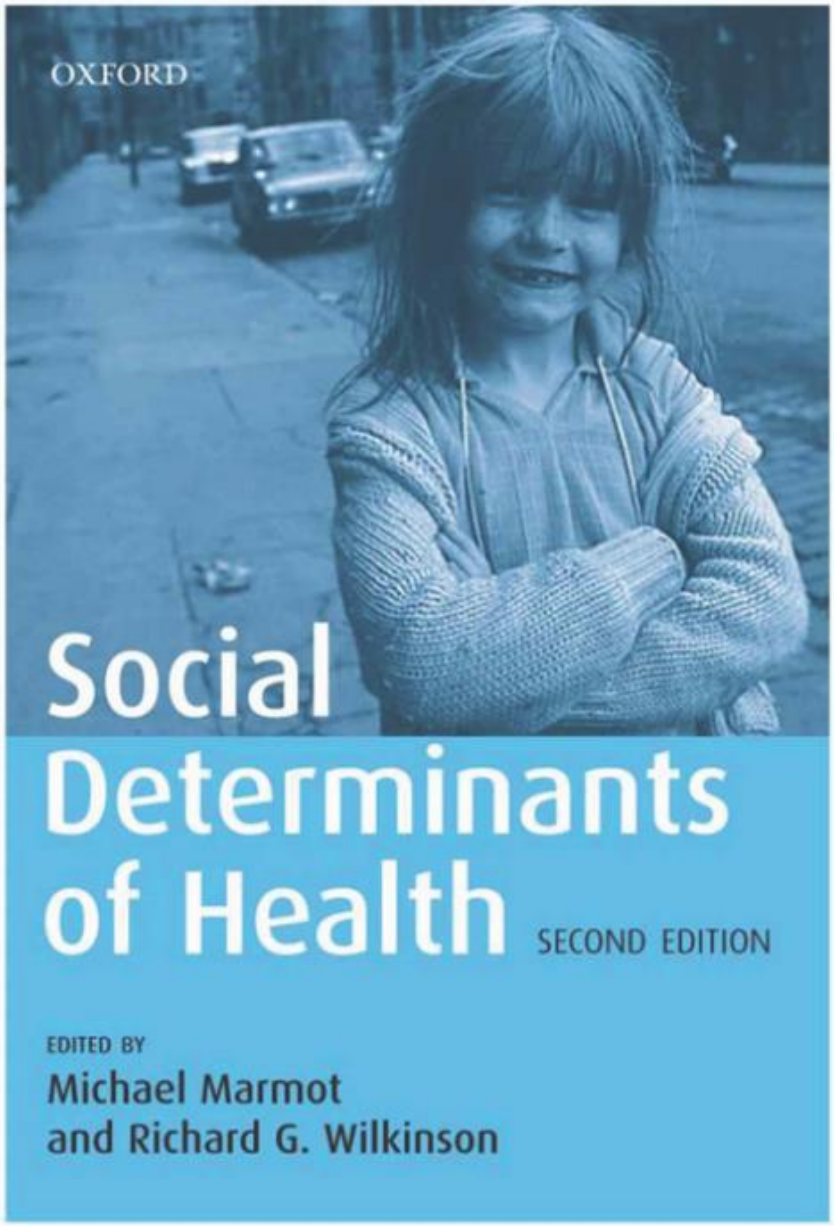
Further resources



Social Epidemiology
2nd Edition.
Berkman et al. (2014)

Chapter 5: *Working Conditions and Health* (Berkman et al.)

Chapter 6: *Labor Markets, Employment Policies, and Health* (Avendano and Berkman)



Social Determinants of Health
Marmot and Wilkinson (2012)

Chapter 6: *Health and the psychosocial environment at work* (Marmot et al.)