Global Epidemics: The Contribution of Work

Peter Schnall, MD, MPH
Paul Landsbergis, PhD, MPH
Marnie Dobson, PhD
Ellen Rosskam, PhD, MPH

Woodrow Wilson International Center for Scholars
Global Health Initiative
Washington, DC
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Globalization, Work and Health

Globalization impacts people's health in 3 inter-dependent ways:

1) Creates wealth for some, raises standard of living for some thereby improving health for those with rising living standards
2) Increases social inequality, creates disparities in resources between communities & groups, between developing & developed countries
3) Impacts community & work environments
   a) promotes toxic physical environments
   b) contributes to unhealthy work environments (chemical toxins, unsafe working conditions, psychosocial work stress)

Globalization and work

- Globalization contributes to the changing nature of work in industrial and industrializing societies.

- **Result**: globally the changing nature of work contributes to poorer health for many working people.

Research evidence

- We will examine data from industrialized countries relating working conditions to health outcomes.
- More data are available from western countries than developing nations (U.S. data on work & health less available than European data).
- Data are inadequate in all countries on the health impact of recent changes in work organization (downsizing, mergers, outsourcing, off-shoring, informal labor sectors).

Global epidemics are not natural

- **CVD, stroke, obesity, diabetes are global epidemics…but not natural results of aging.**
- Rather these are products of industrialization, urbanization & chronic stress
- Medical model explanations inadequate to *explain or contain* these epidemics
- These epidemics not caused by genes or individual behaviors - they involve social causes (e.g. social class differences, economic inequalities, unhealthy working & living conditions).

How does work contribute to epidemics?

- Unhealthy work organization/working conditions include: employment insecurity; precarious employment, long work hours, dangerous environments, noxious psychosocial working environments. All contribute to chronic stress at work.

- Exposure to chronic stress at work (& other environments) has cumulative impact & can lead to physical and mental illness.

- Ubiquitous appearance of stress shows it is a social process with social causes (e.g, stressors in the work environment).

- Focusing on individual responsibility for “stress” removes focus from systemic causes, creating challenges in finding/presenting a “common language” about the causes of stress across stakeholders (e.g. businesses, labor unions and academics).

A Good Society

Society has basic responsibilities to its citizens. A “good society” must ensure:

- good working conditions (healthy work)
- certain basic standards of living
- collective representation
- controls on income inequality
- social and racial justice
- good schools, housing and supports for children and families
- a healthy physical environment.

Presentations

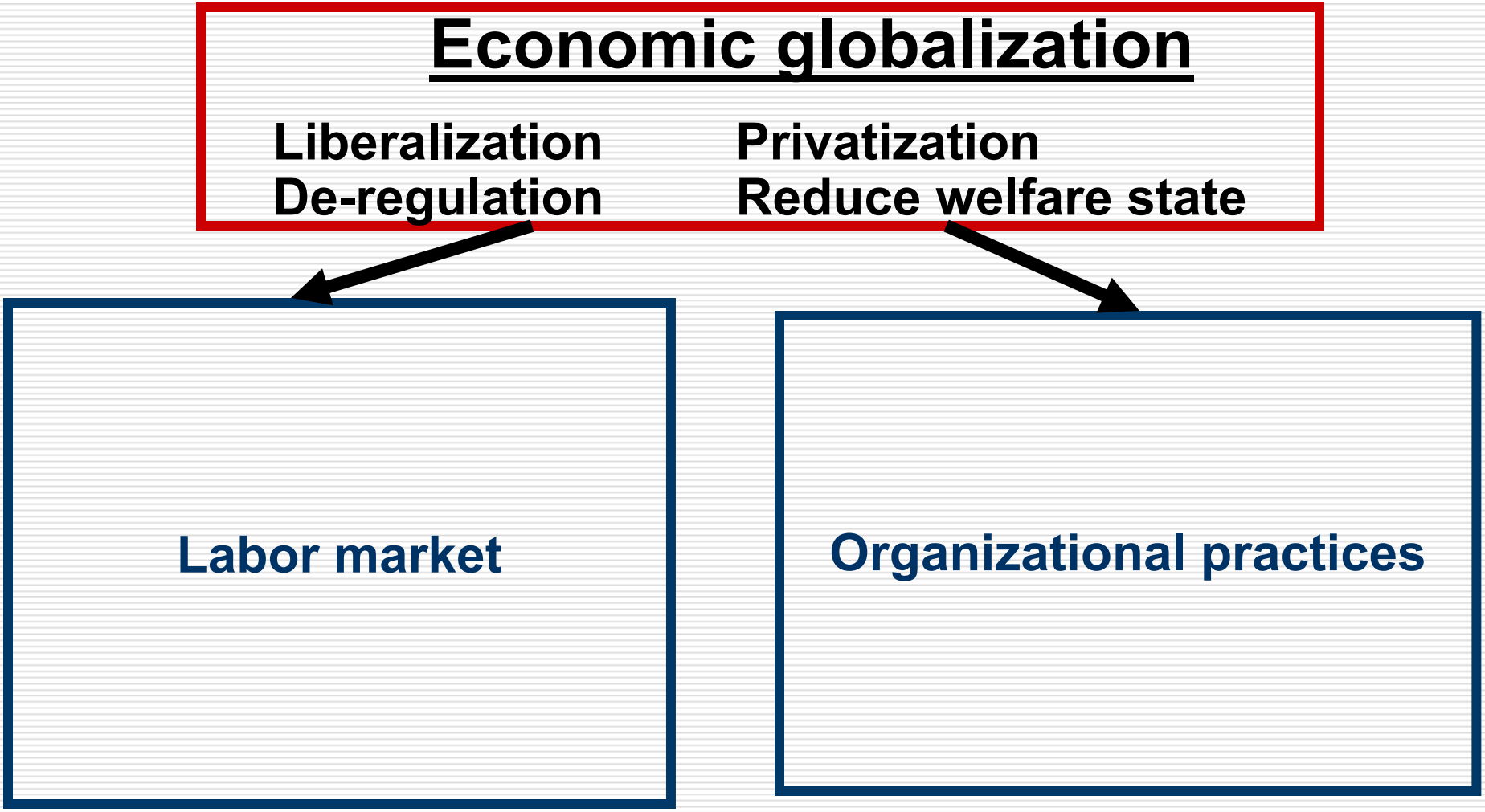
- Paul Landsbergis: what we mean by globalization and its effects on work.
- Peter Schnall: the global epidemics of CVD & hypertension; research evidence for how globalization impacts on health through 1) increasing social disparities in CVD, and 2) unhealthy work or psychosocial stressors
- Marnie Dobson: research evidence for the impact of work on burnout & depression (mental health concerns), which affects the productivity & costs of doing business
- Ellen Rosskam: what “cures” we suggest need to be part of social policies that will contribute to the prevention of these global epidemics at the levels of the workplace, national governments, and internationally.

The global economy and the changing nature of work

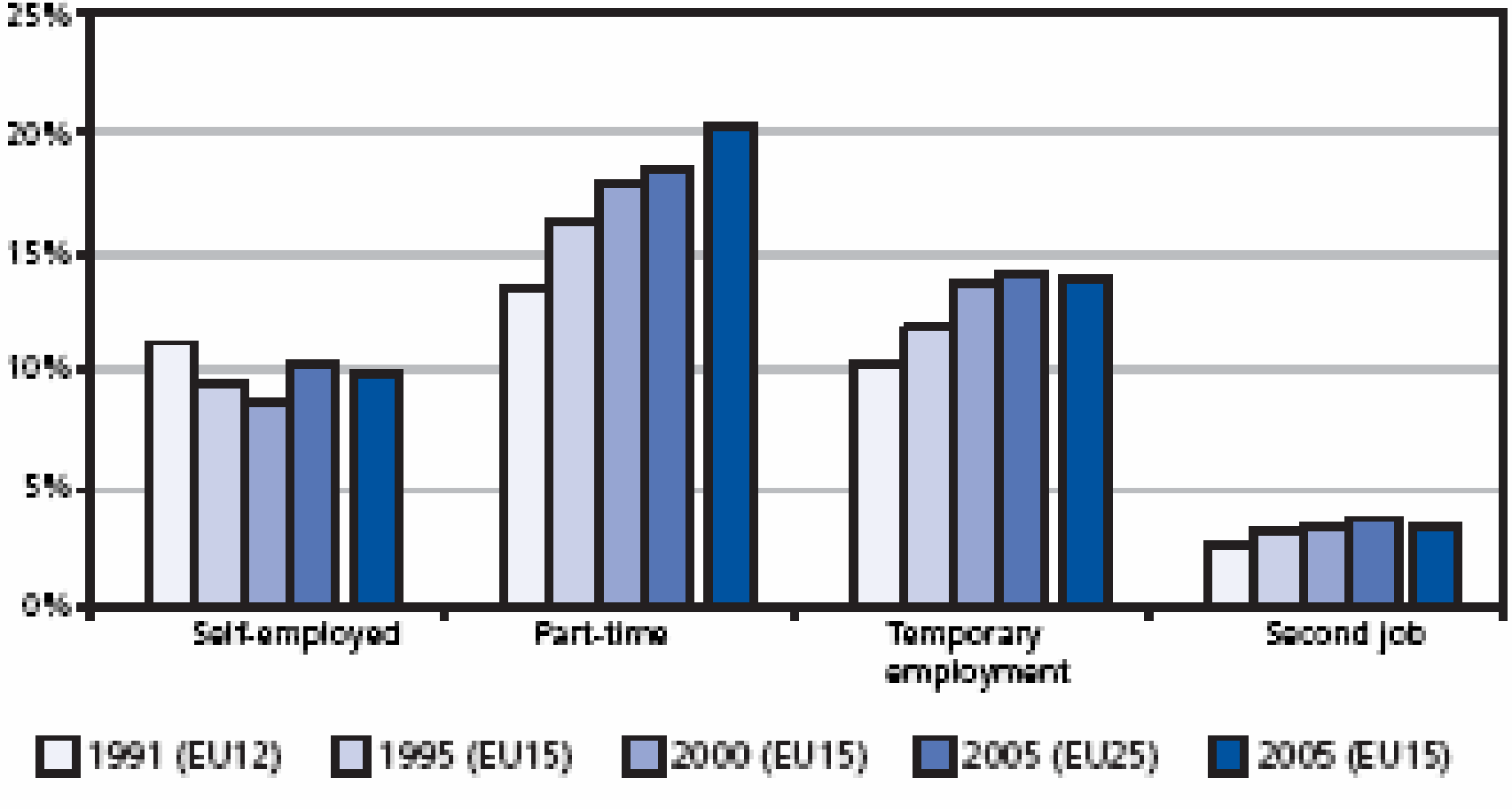
The global economy: neo-liberal policies

- **Liberalization**
  - Reduce trade barriers, eliminate subsidies
- **Privatization**
  - Sale of state-owned industries
  - Services: health, education, welfare: from govt → private sector
- **De-regulation**
  - Reduce state control/barriers to mobility of capital, goods, services
  - Reduce state control over labor market (social protections):
    - Minimum wage, overtime, job safety & health, job security
- **Reduce social welfare transfer payments to population**
  - Social security, pensions, health insurance, unemployment insurance, progressive taxation

Benach J, Muntaner C, Santana V (coords). Employment, work, and health inequalities: A worldwide perspective. Geneva: World Health Organization (forthcoming).
Johnson, JV. The Growing Imbalance. In Schnall P et al (eds) Unhealthy Work. Amityville, NY: Baywood (forthcoming)

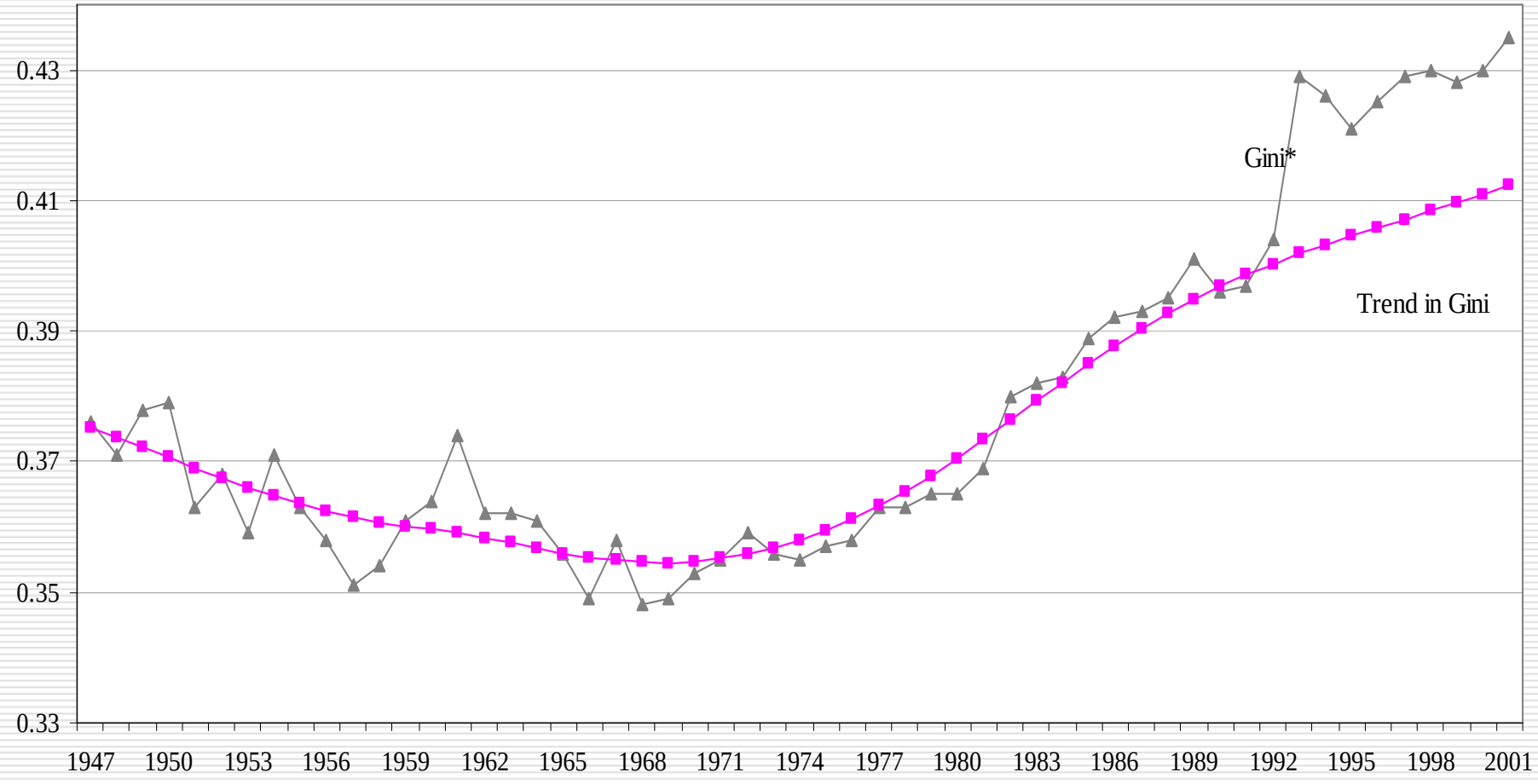

Economic globalization
Liberalization
De-regulation
Privatization
Reduce welfare state
Labor market
Organizational practices

Increase in precarious/contingent work



Fifteen years of working conditions in the EU: Charting the trends. European Foundation, Dublin, Ireland, 2006.

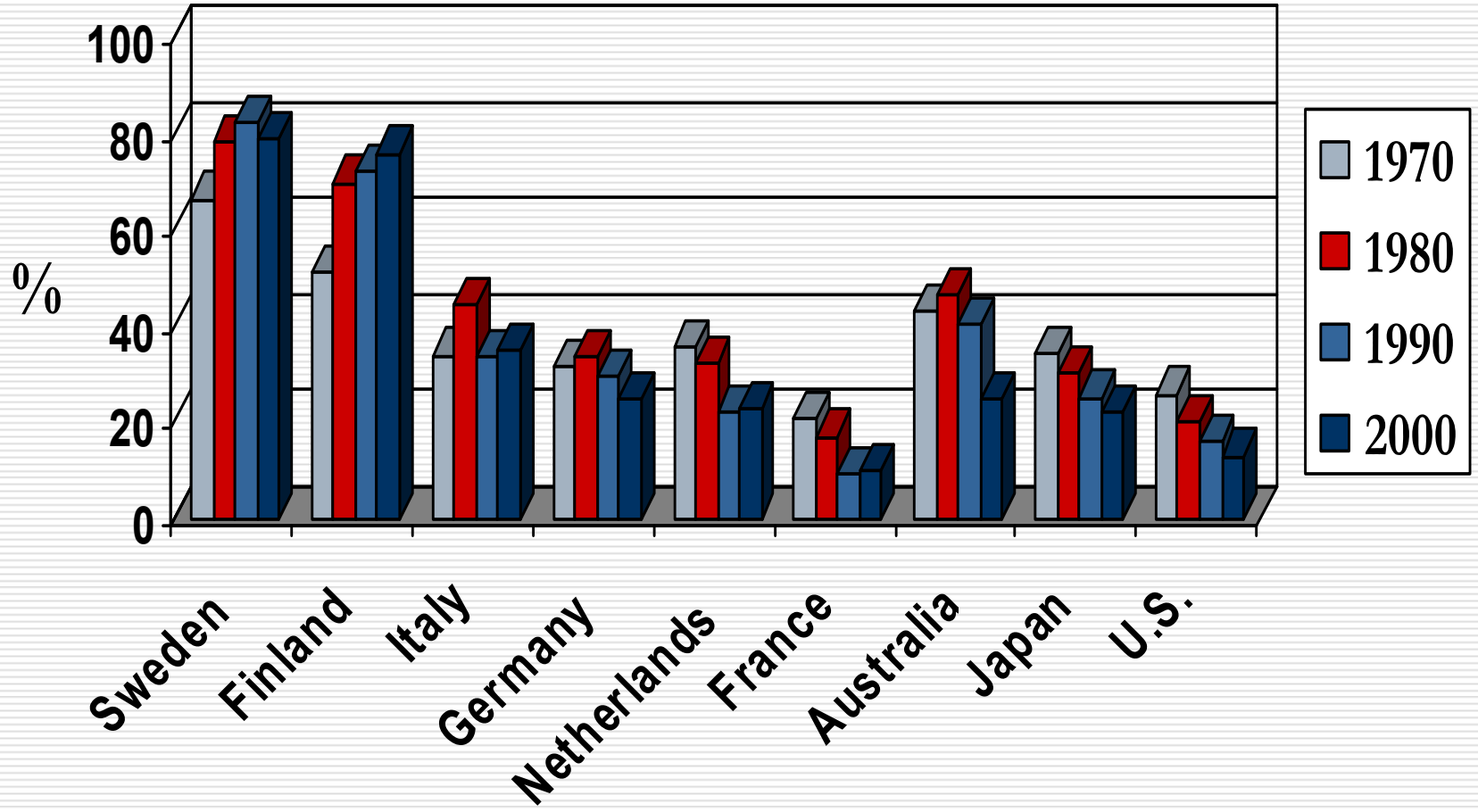
Increase in family income inequality, 1947-2000, U.S.
(Gini coefficient)



*After 1993 the coefficients reflect a change in survey methodology leading to greater inequality.

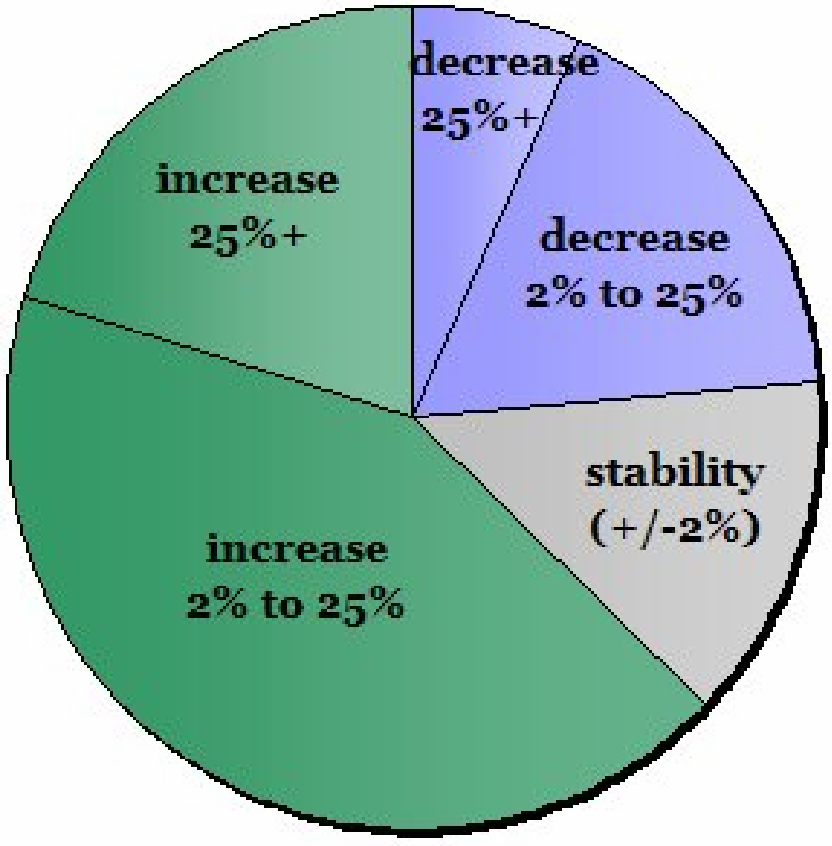
Source: U.S. Bureau of the Census.

Decline in trade union membership (as % of workforce)



Kwon HY, Pontusson J. *Globalization, union decline and the politics of social spending growth in OECD countries 1962-2000.* Yale University, November 2006.

Increase in national union federation membership worldwide, 2000-2007



United States:

Union membership up 311,000 in 2007, biggest rise since 1983.

(1/26/08, NY Times)

Peter Hall-Jones. Painting unionism by numbers. www.newunionism.net. 22 October 2007 (based on data from 174 national labor federations in 106 countries)

Privatization/reduction of government services

- **Health care**
  - Workforce reduction/flexibility, worse working conditions
  - Worse quality of care
  - Public health & disease prevention: lower priorities
- **"Caring economy": educ, health, social services**
  - Women are majority of this work force
  - Reduction in paid workforce → Women absorb unmet burden of society by unpaid "invisible labor"

Rosskam E (ed.) Winners or losers? Liberalizing public services. International Labour Office, 2006.
Moutsatsos E. Economic globalization and its effects on labor. Johnson JV. The Growing Imbalance. In Schnall P et al (eds) Unhealthy Work. Amityville, NY: Baywood (forthcoming).

Economic globalization

Liberalization
De-regulation

Privatization
Reduce welfare state

Labor market:

Precarious work
(social/economic insecurity)
Income inequality
Weaker unions
Weaker public sector
Less social protection
Geographical flexibility

Organizational practices:

New organizational practices: Flexibility

- Numerical flexibility
  - External: Staff reductions thru downsizing, short-term contracts, P/T work (precarious employment)
  - Internal: Irregular hrs, mandatory overtime, 24/7 operations
- Structural flexibility
  - Teamwork, flatter hierarchies, teleworking
- Functional or task flexibility
  - Greater involvement/multiskilling for some
  - Job assignment/rotation based on employers' needs
  - Lean production (Japanese production management)
    - Intensification of labor

Kompier MAJ. *Scandinavian Journal of Work, Environment and Health* 2006;32(6, special issue):421-430.;
Holman D, Wall TD, Clegg C, Sparrow P, Howard A. *The Essentials of the New Workplace*. London: Wiley, 2005.
Johnson JV. The Growing Imbalance. In Schnall P et al (eds) Unhealthy Work. Amityville, NY: Baywood (forthcoming).

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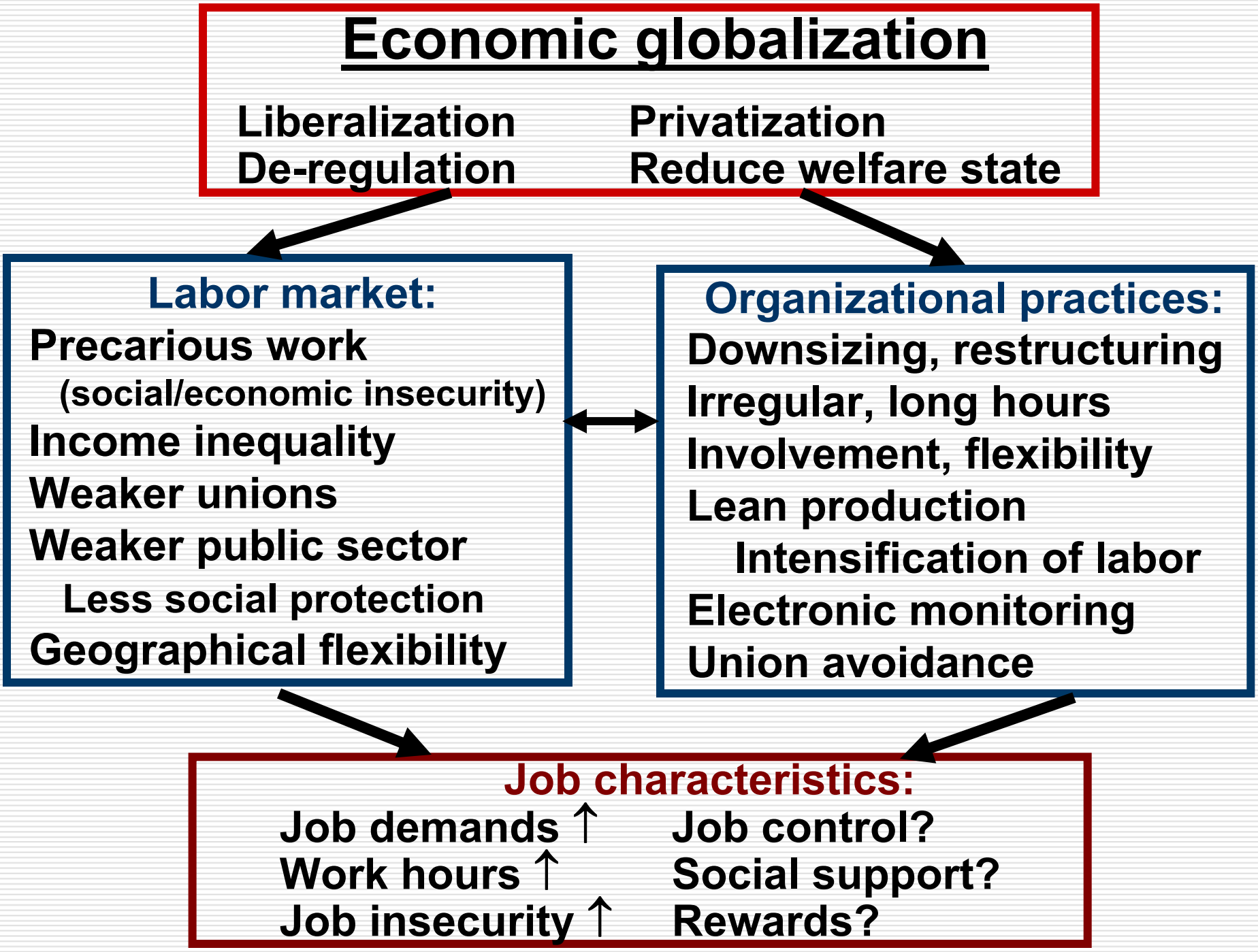
Organizational practices:

Downsizing, restructuring
Irregular, long hours
Involvement, flexibility
Lean production
Intensification of labor
Electronic monitoring
Union avoidance

Precarious employment aids work intensification

- Temporary workers “desperate to achieve targets that would secure future work or permanent employment”
  - Undermine resistance of permanent workers to work intensification
- Apparent task control vanishes when overriding economic pressures force workers to work harder and longer

Quinlan M, Mayhew C, Bohle P. International Journal of Health Services 2001;31(2):335–414.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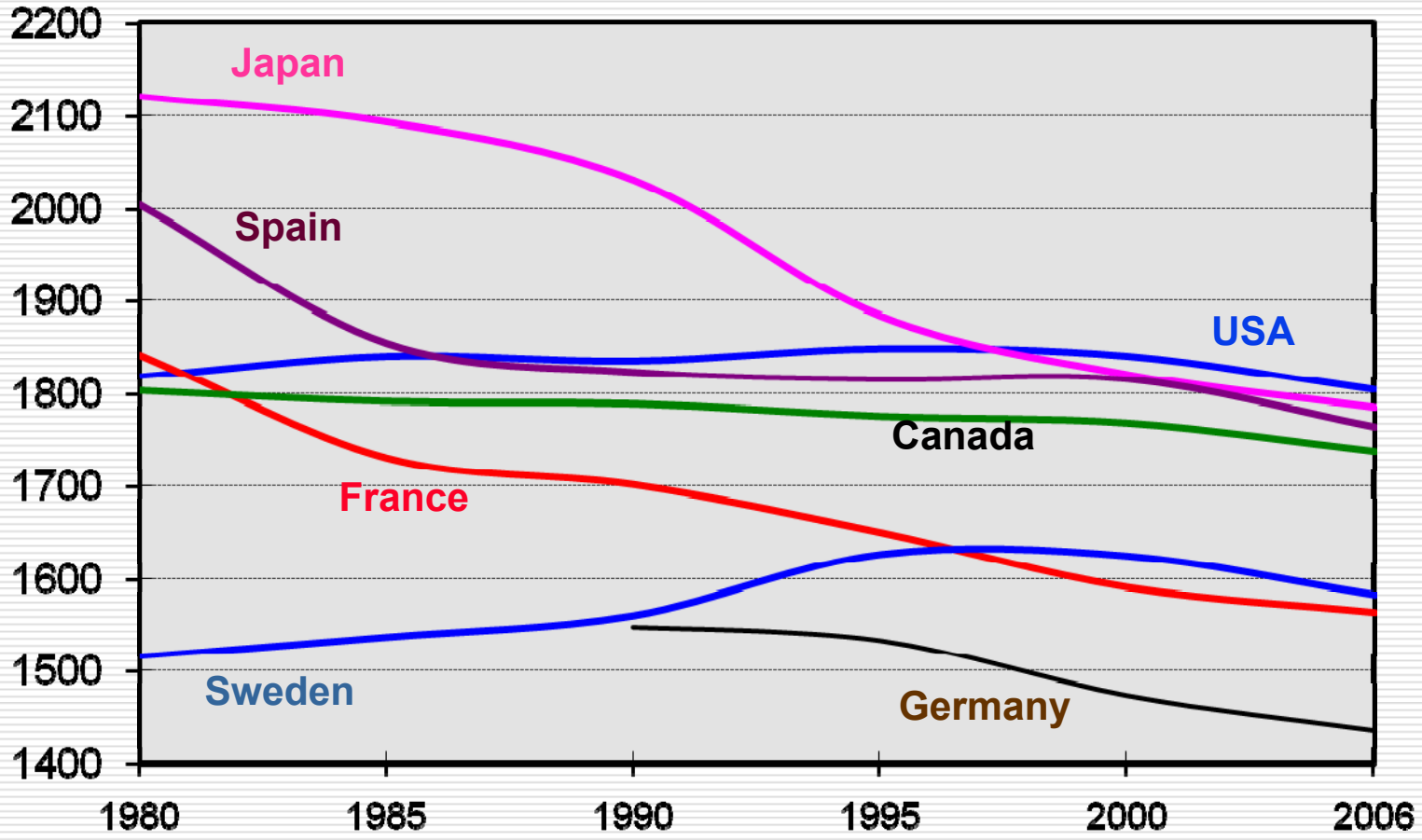
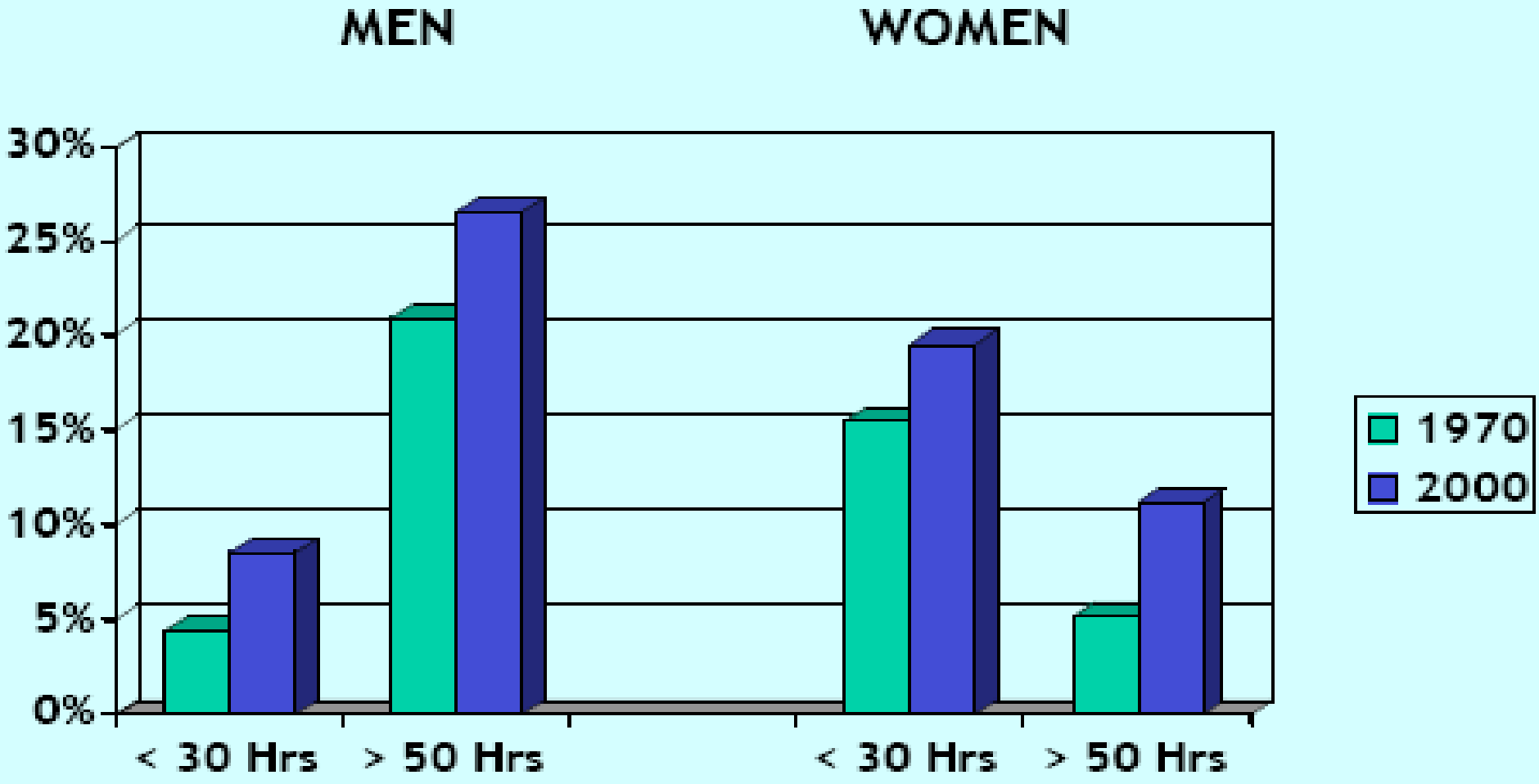
Job characteristics:
Job demands ↑
Work hours ↑
Job insecurity ↑
Job control?
Social support?
Rewards?

HOURS WORKED PER YEAR



Key Indicators of the Labour Market (KILM). Geneva, International Labour Office, 2007.

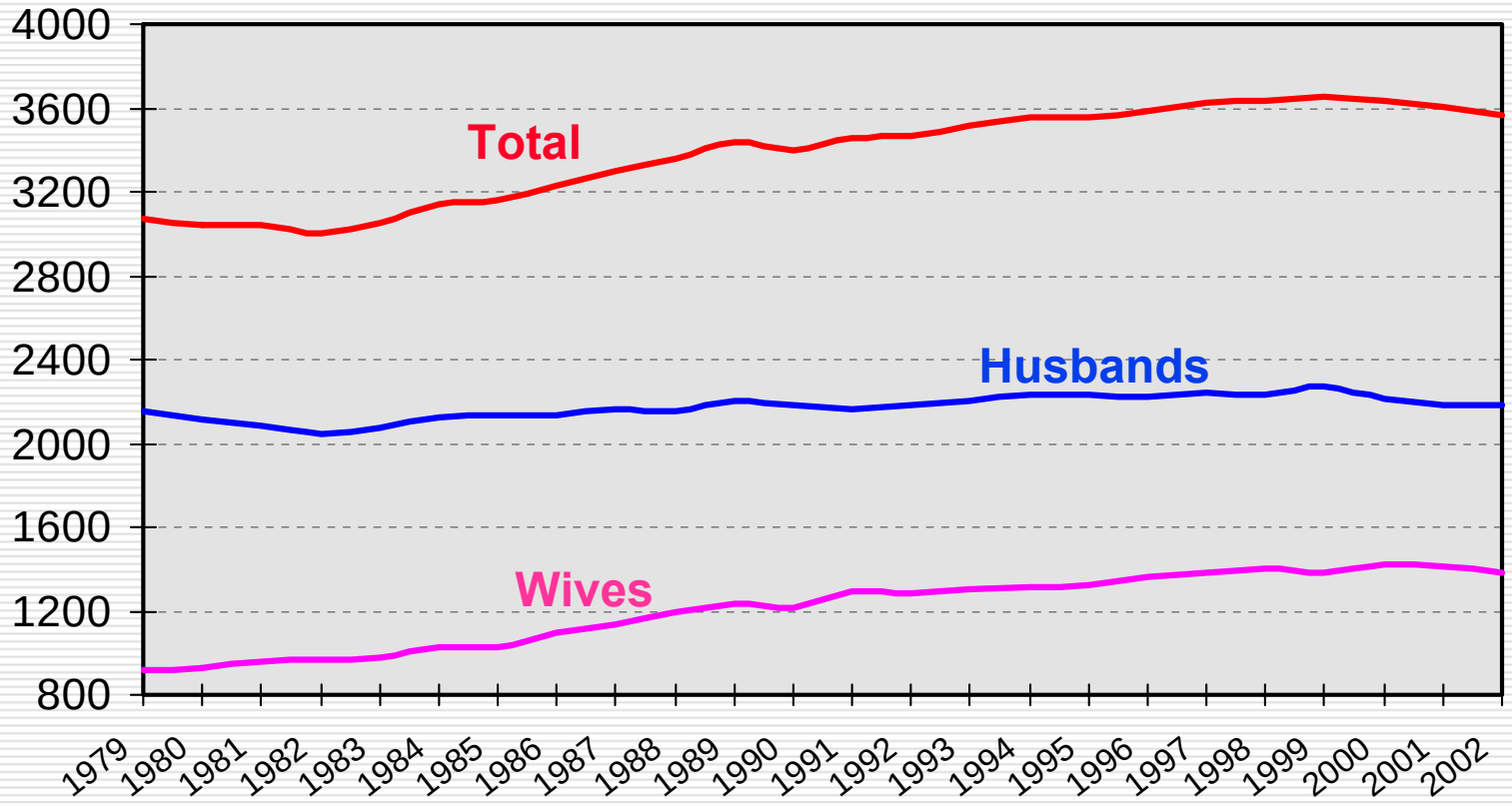
Beyond "The Average Worker": Trends in Long and Short Workweeks
1970 and 1990, by Gender



Jacobs JA, Gerson K. The Time Divide. Harvard University Press, 2004.

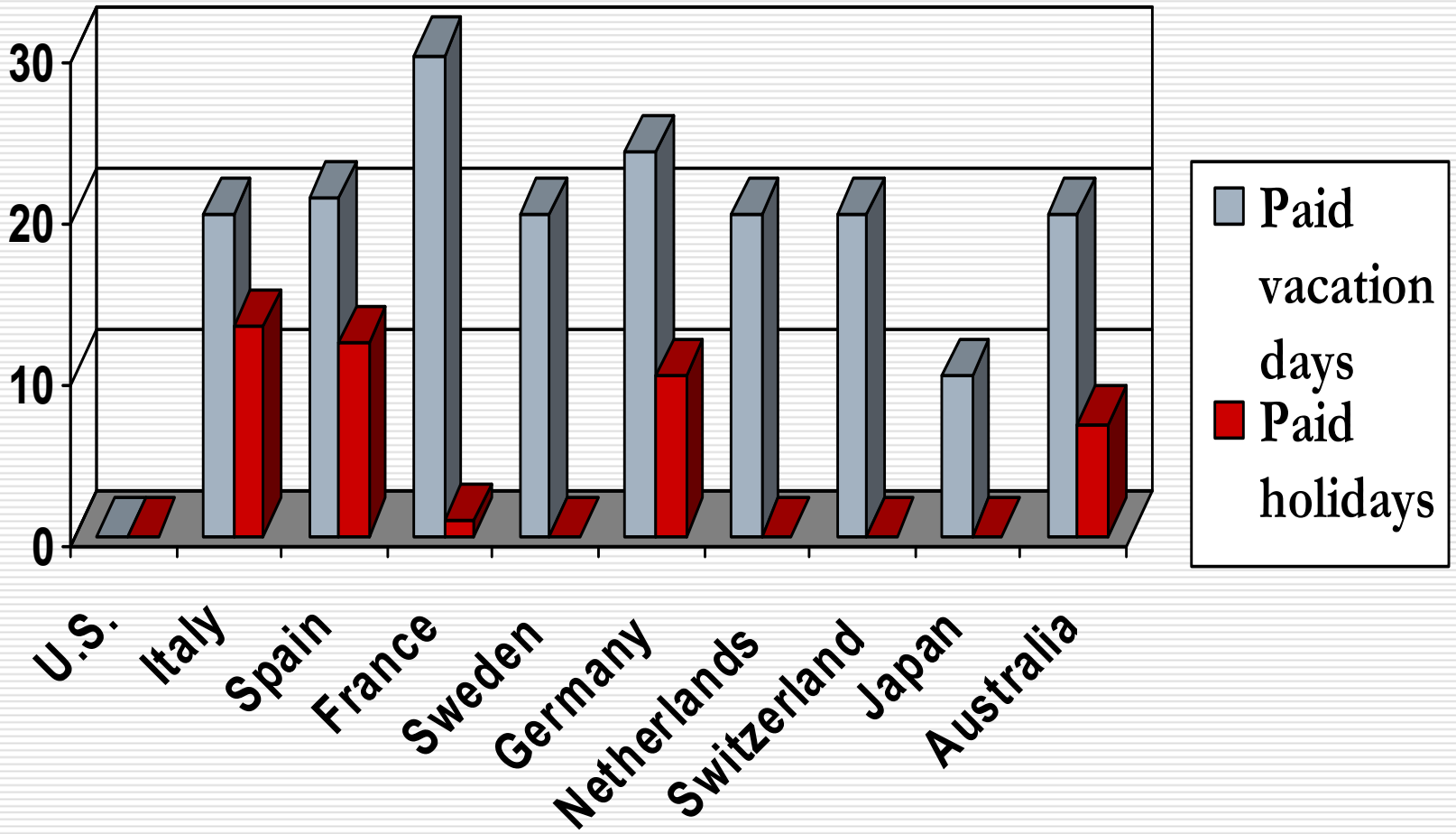
Increase in family hours worked/year, U.S.

(middle-income husbands + wives with children, age 25-54)



The State of Working America 2004-05, Figure 1T, Economic Policy Institute, Washington, DC

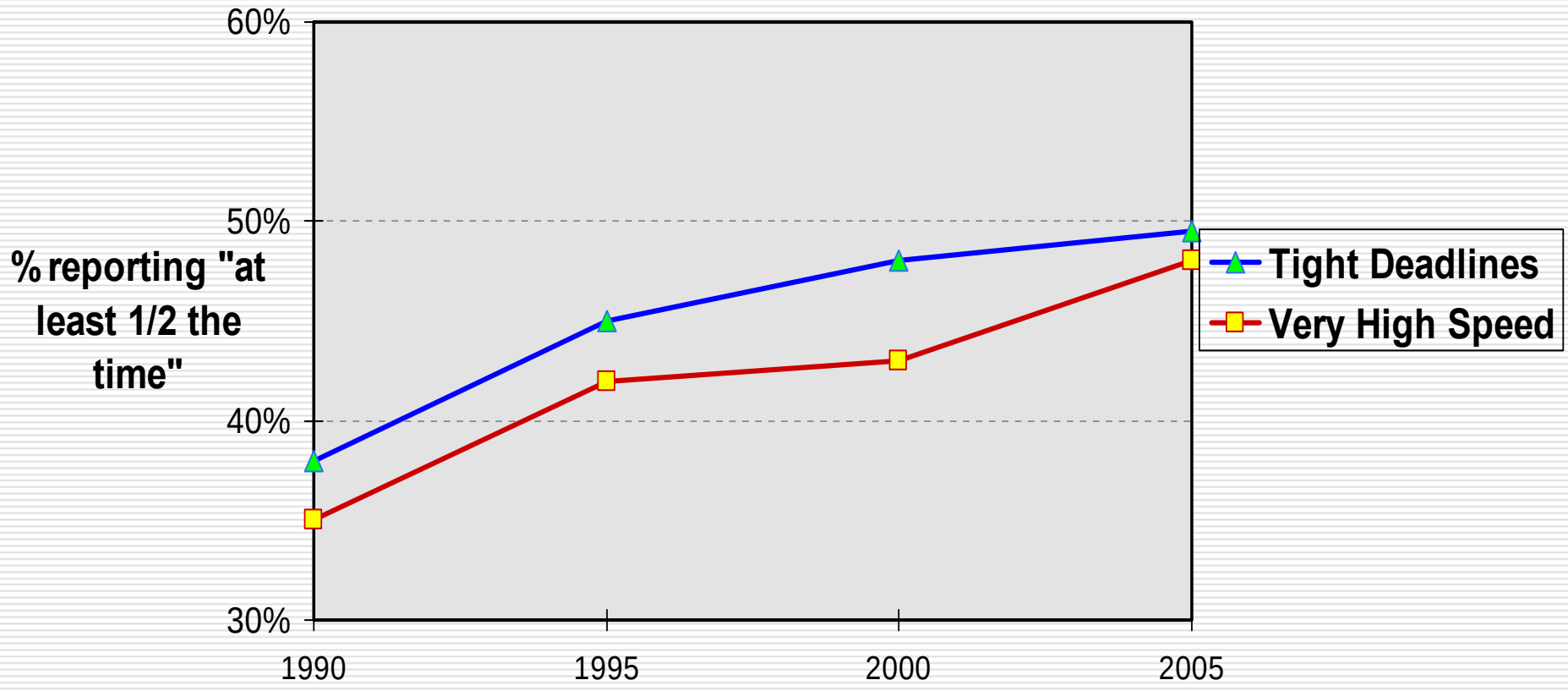
Legal minimum paid vacation days and holidays



Ray R, Schmitt J. *No-vacation nation.* Center for Economic and Policy Research. Washington, DC, 2007

Increase in work intensity, job demands

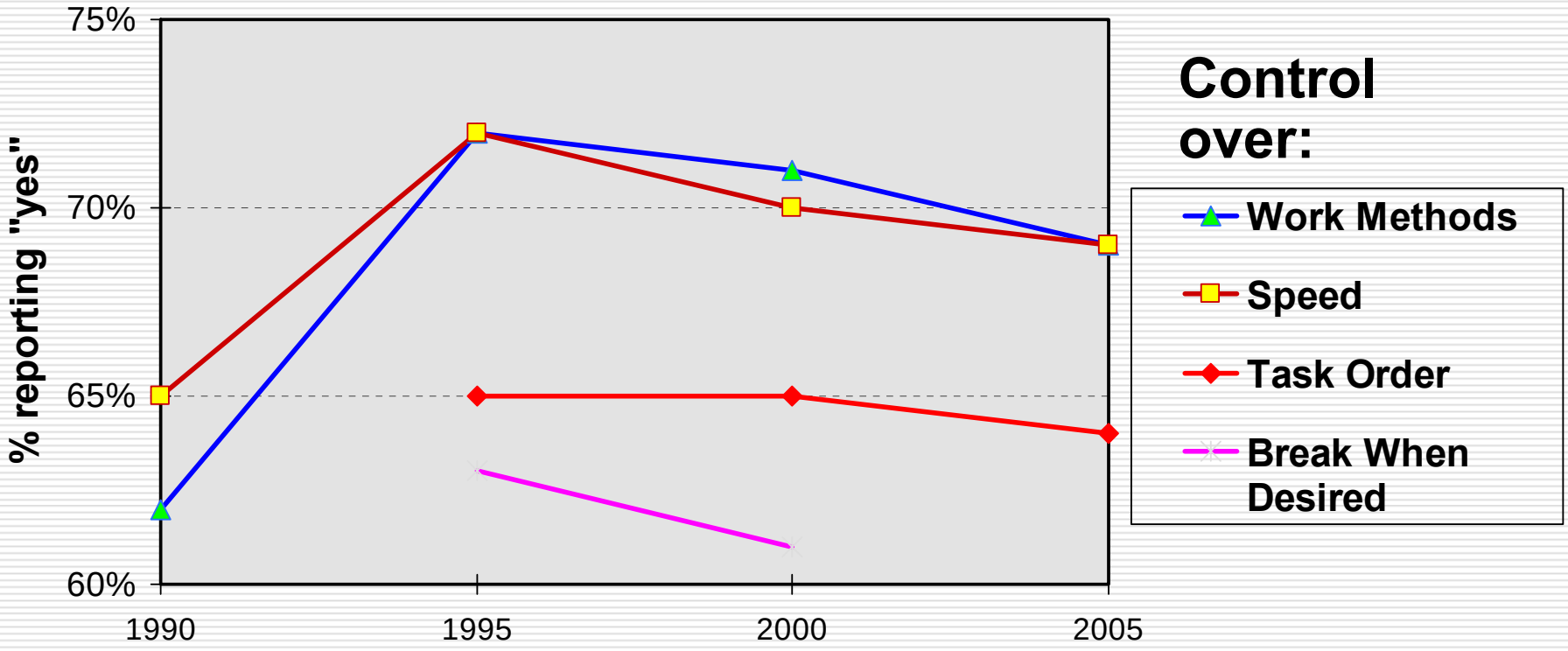
European Union surveys, 1990-2005



Fifteen years of working conditions in the EU: Charting the trends. European Foundation, Dublin, Ireland, 2006

Decrease in job control (autonomy)

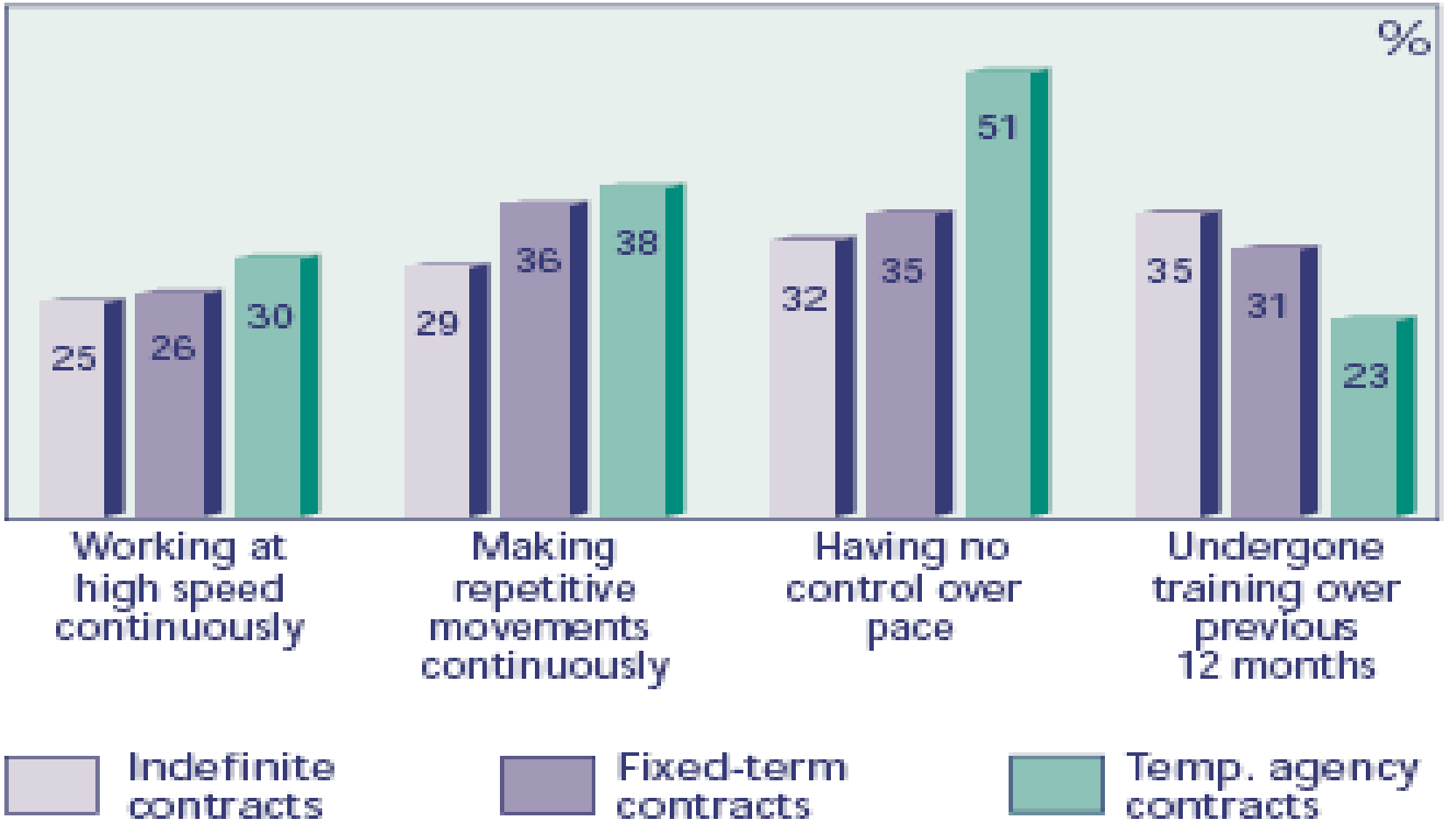
European Union surveys, 1990-2005



Pascal Paoli, Damien Merllié. Third European Survey on Working Conditions. European Foundation for the Improvement of Living and Working Conditions, Dublin, Ireland, 2001.
Fifteen years of working conditions in the EU: Charting the trends. European Foundation, Dublin, Ireland, 2006.

Precarious work means more job stress

European Union surveys (2000)



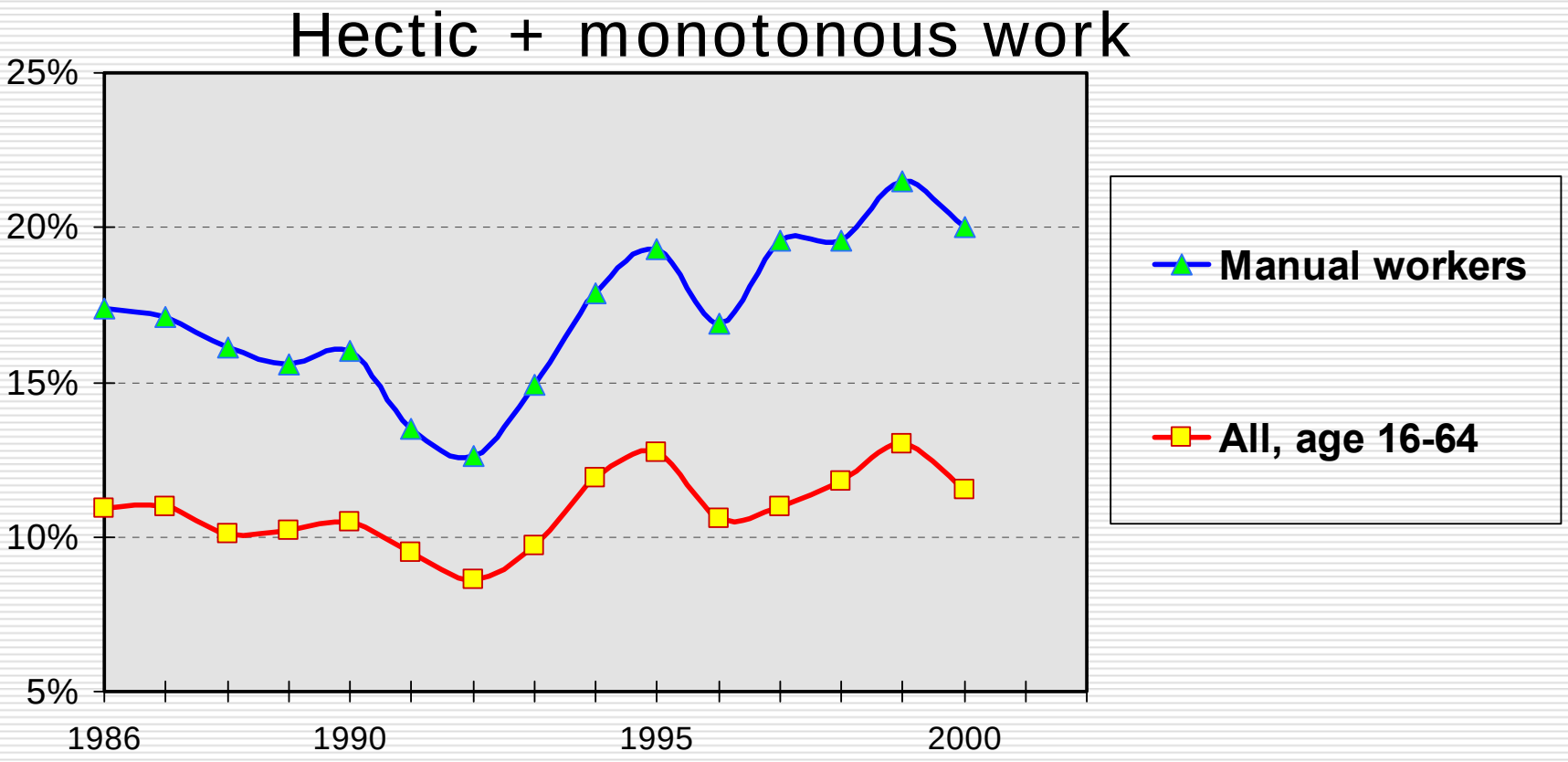
Paoli P, Merllié D. Third European Survey on Working Conditions. European Foundation for the Improvement of Living and Working Conditions, Dublin, Ireland, 2001.

Electronic monitoring means more job stress

- Less worker control over how job is done & work schedules
- Work is simplified to make it quantifiable
- Emphasis on quantity & speed over quality
- Climate of fear, threat of reprimand, deadline pressure, fear of increasing production standards

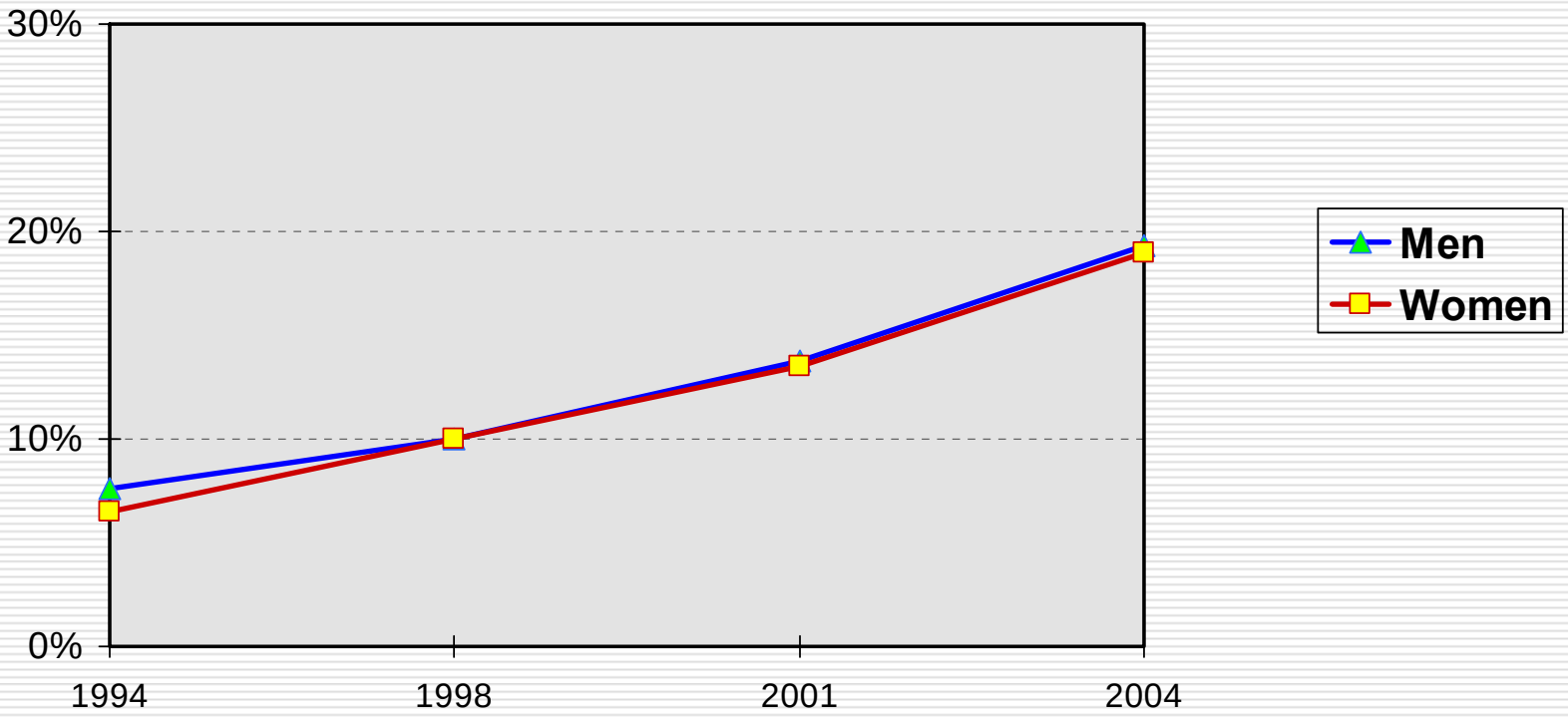
Office of Technology Assessment, U.S. Congress. The Electronic Supervisor: New Technology, New Tensions. Washington, DC., 1987; Smith MJ, Amick BC. Electronic monitoring at the workplace. In Sauter SL, Hurrell, JJ, Jr, Cooper CL (Eds.) Job control and worker health (pp. 275-289). New York: Wiley, 1989.

Is work getting more stressful for workers in lower social class positions?



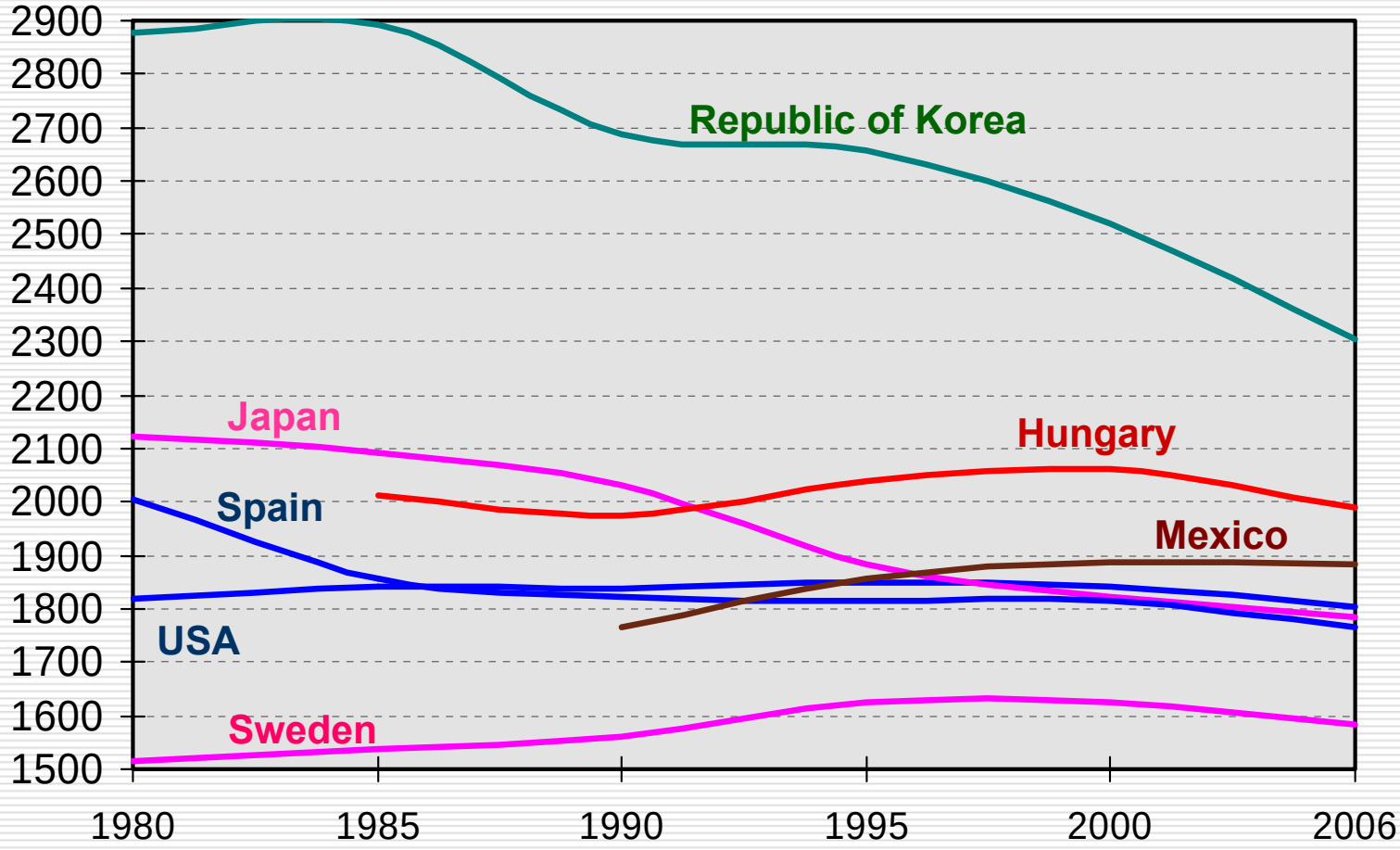
Increase in perceived high work stress

Taiwan national surveys, 1994-2004



Cheng Y. Job stress and burnout problems in Taiwan -- data from national surveys. Taipei, Taiwan, October 4, 2007.

HOURS WORKED PER YEAR



Key Indicators of the Labour Market (KILM). Geneva, International Labour Office, 2007.

Income inequality changes in 73 countries, 1960s to 1990s

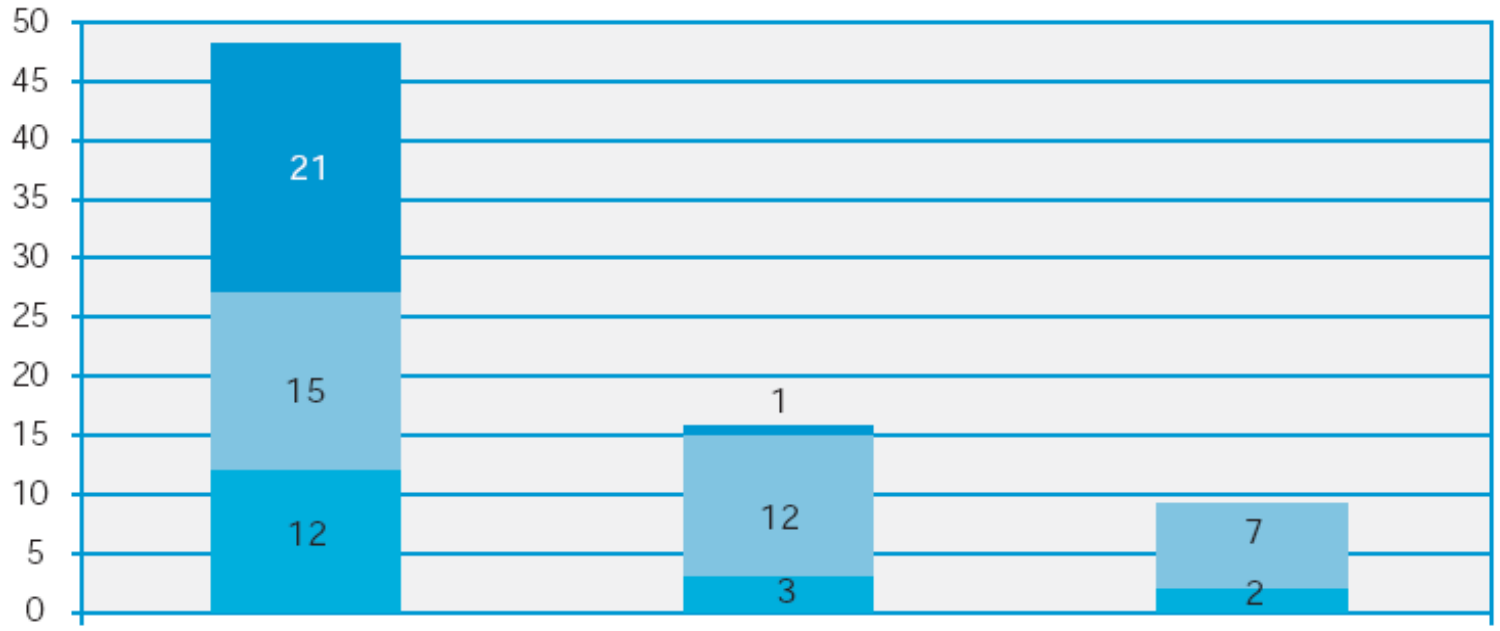


Figure 18

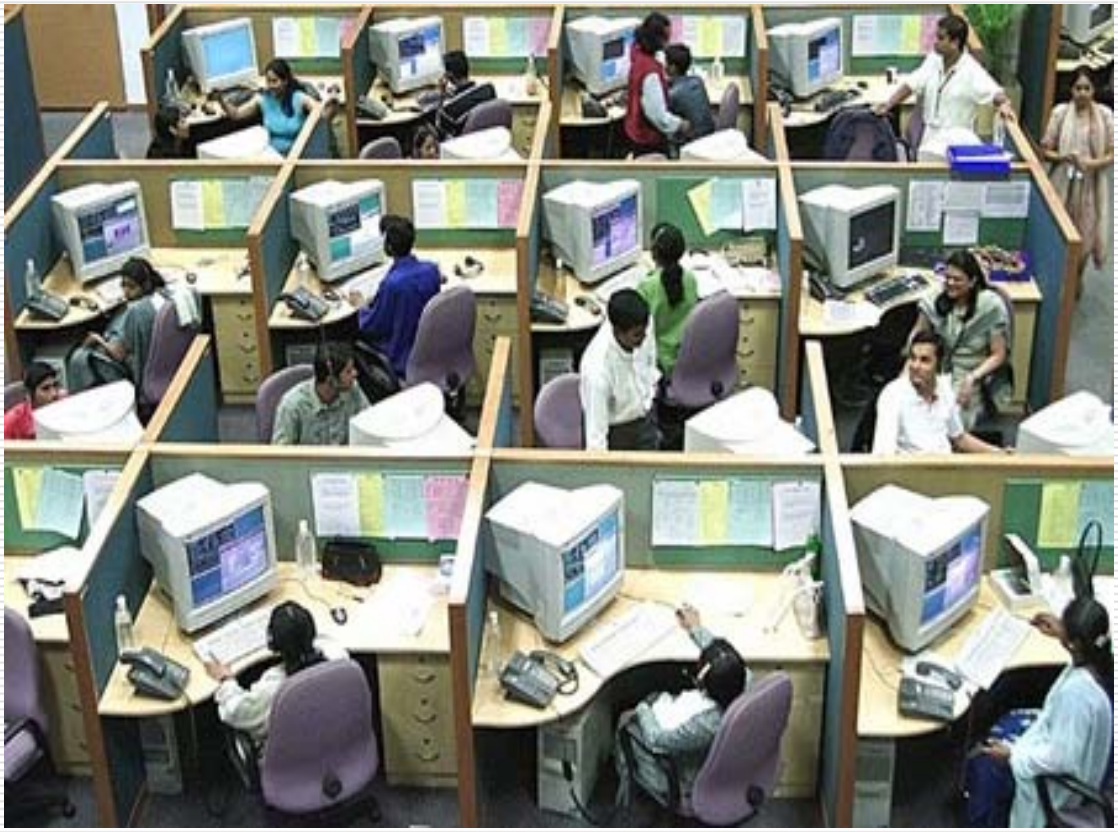
Source: Giovanni Andrea Cornia and Sampsa Kiiski, "Trends in Income Distribution in the Post-World, War II Period: Evidence and Interpretation", WIDER Discussion Paper No. 89, UNU/WIDER, Helsinki, 2001.

Developing countries

- "Race to the bottom" in working conditions to attract overseas capital
  - corporate friendly low regulatory export zones, despite effects on local economy, rural dislocation, social/environmental sustainability
- Cuts in public sector budgets, social protections
- Formal economy: downsizing, job insecurity
- Growth in (unregulated) informal economy (poorer health)
- 218 M child laborers (126 M in hazardous work)
- 28 M forced or bonded laborers; 5.7 M children

Benach J, Muntaner C, Santana V (coords). Employment, work, and health inequalities: A worldwide perspective. Geneva: World Health Organization (forthcoming); The Global Occupational Health Network, World Health Organization, July 2007.

A cry for help at India's call centers



Those working nights answering calls from the U.S. and Europe face:

- **musculoskeletal disorders**
- **sleep disorders**
- **heart disease**
- **depression**
- **family discord**

Rajesh Mahapatra, The Associated Press, January 1, 2008
Jennifer Anderson, February 25, 2008, http://www.ergoweb.com/news/detail.cfm?id=2198

In Chinese factories, lost fingers and low pay

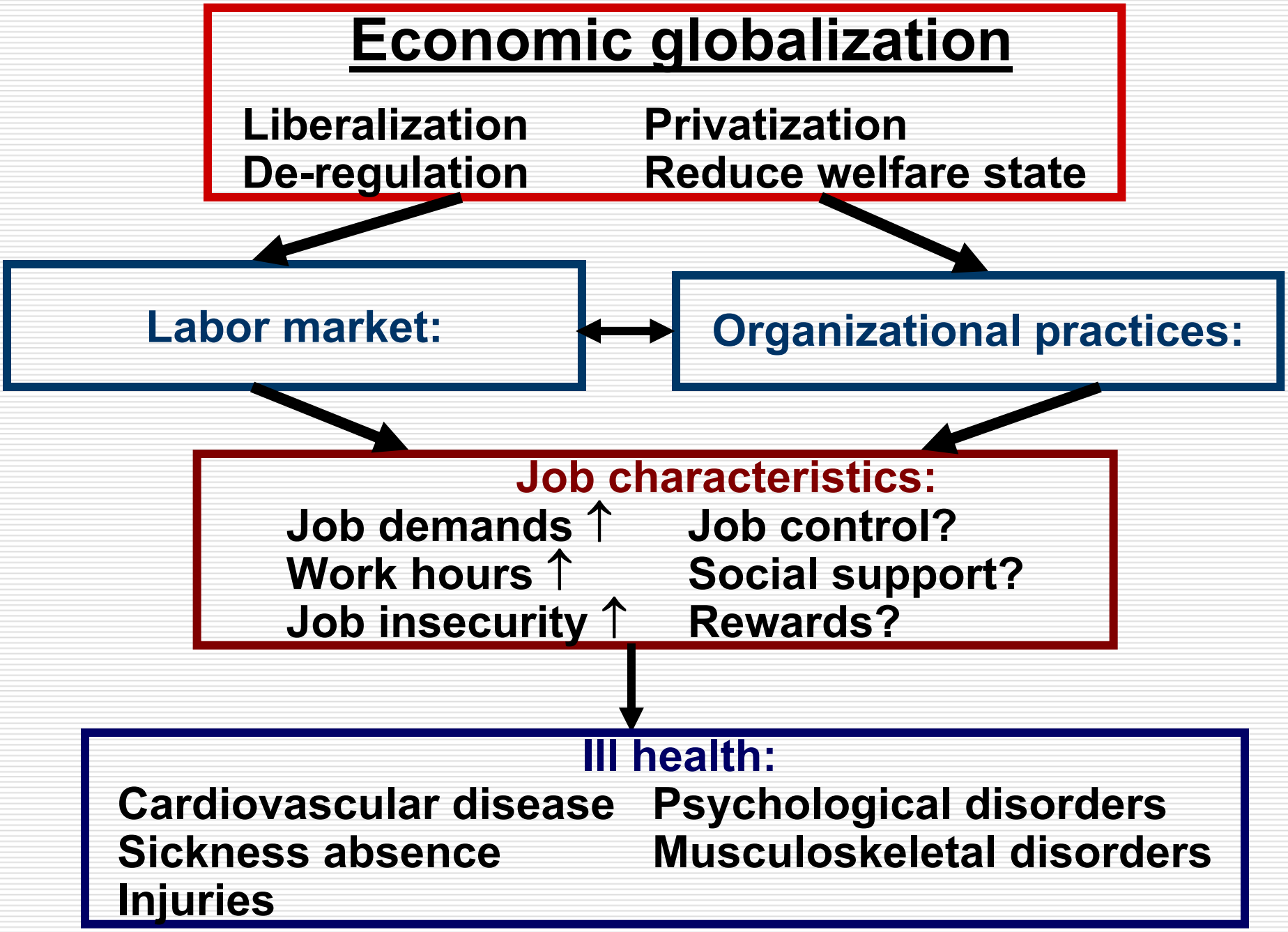
- worker abuse still commonplace in many Chinese factories that supply Western companies
- in the Pearl River Delta region, factory workers lose or break about 40,000 fingers on the job every yr
- child labor
- 16-hour days on fast-moving assembly lines
- paying less than minimum wage

David Barboza, New York Times, January 5, 2008

Lean Manufacturing Comes to China:

A Case Study of Its Impact on Workplace Health and Safety

Brown GD, O'Rourke D. International Journal of Occupational & Environmental Health 2007;13:249–57.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Labor market:
Organizational practices:
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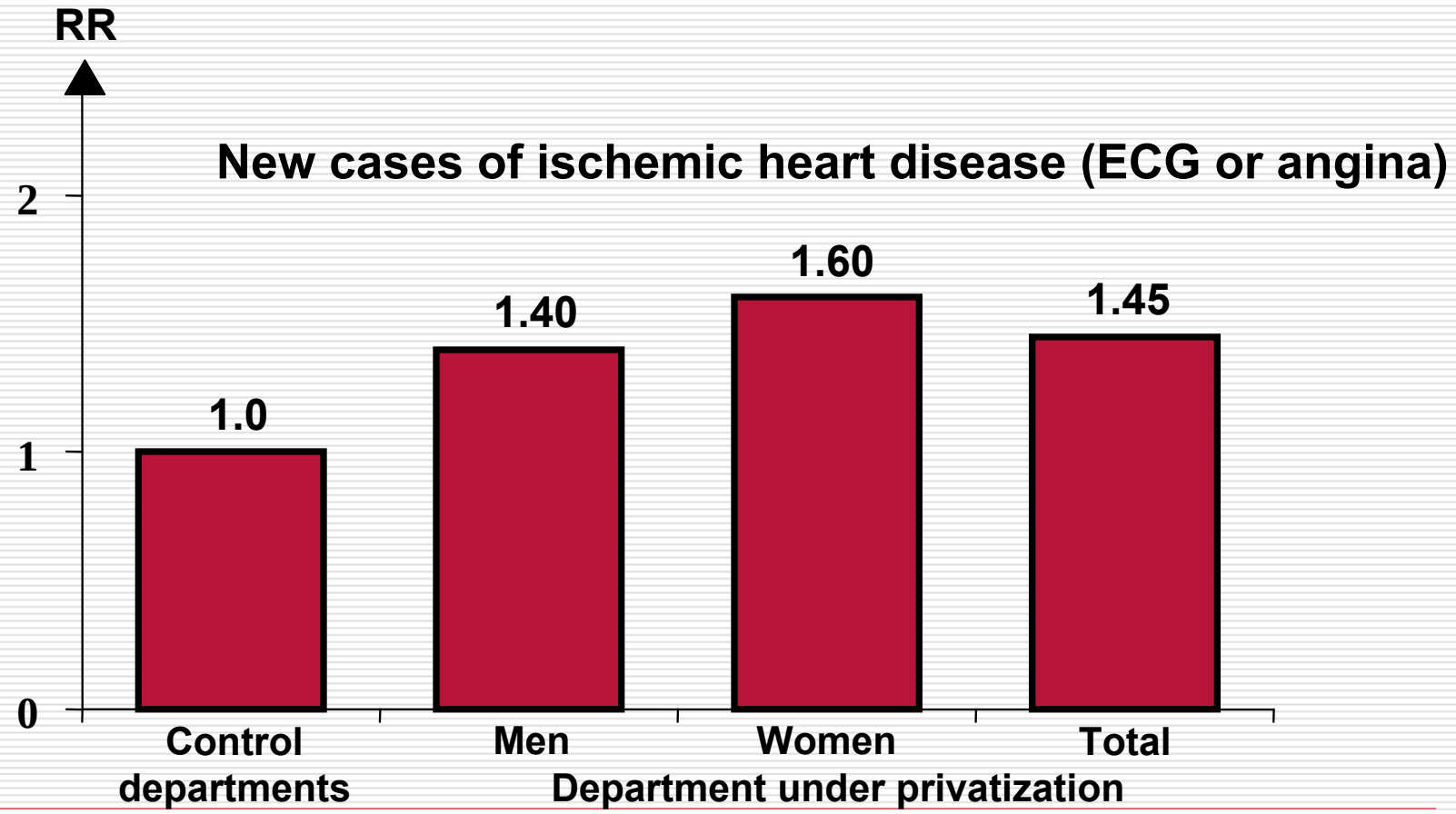
Social support?
Rewards?
Ill health:
Cardiovascular disease
Sickness absence
Injuries
Psychological disorders
Musculoskeletal disorders

Increase in heart disease rates in British civil servants undergoing privatization

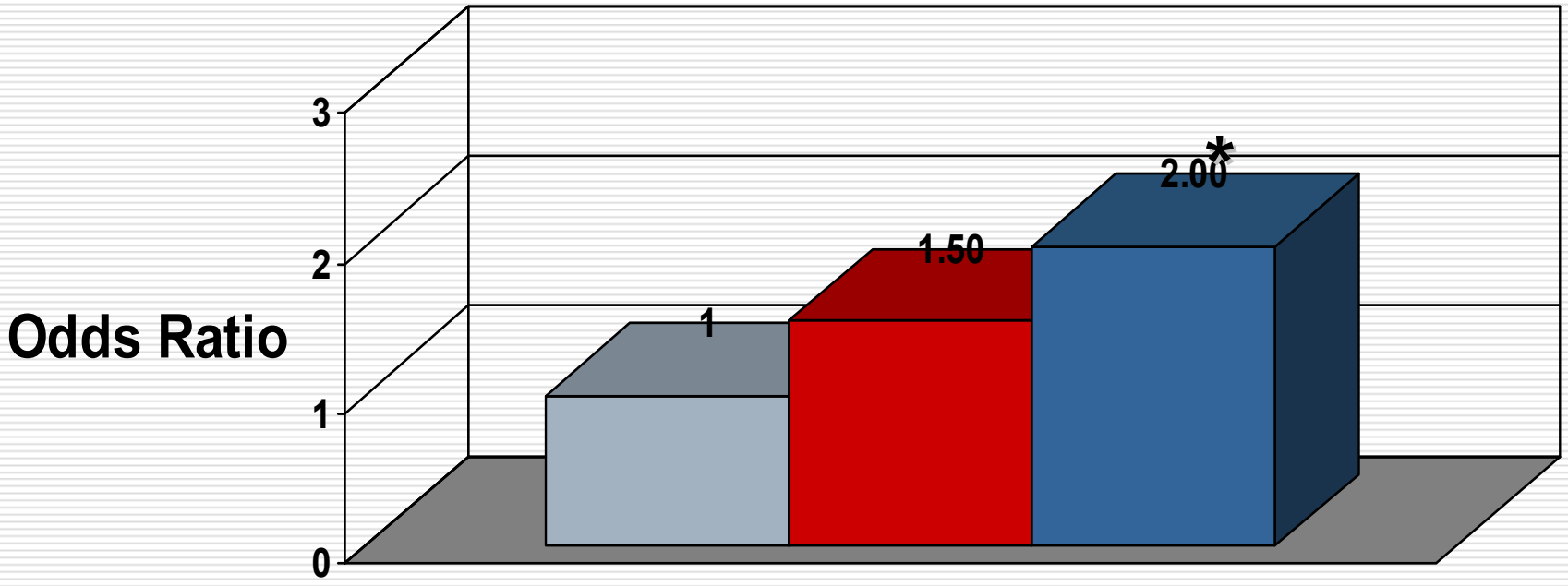
(5 yr follow-up, n=8,354)



Ferrie et al. Am J Public Health 1998;88:1030-1036.

Downsizing increases CVD death rates

(22,430 Finnish municipal workers, age 19-62, in 4 cities, 7.5 yr follow-up)



Personnel decrease in each occup. group in each city: **<8% (ref)** **8-18%** **>18%**

Adjusted for age, sex, SES, type of employment; *p<.05; p(trend) =0.043

Vahtera J, Kivimaki M, Pentti J, Linna A, Virtanen M, Virtanen P, Ferrie JE. *BMJ* 2004; 328:555.

Lean production in auto manufacturing increases injuries, stress

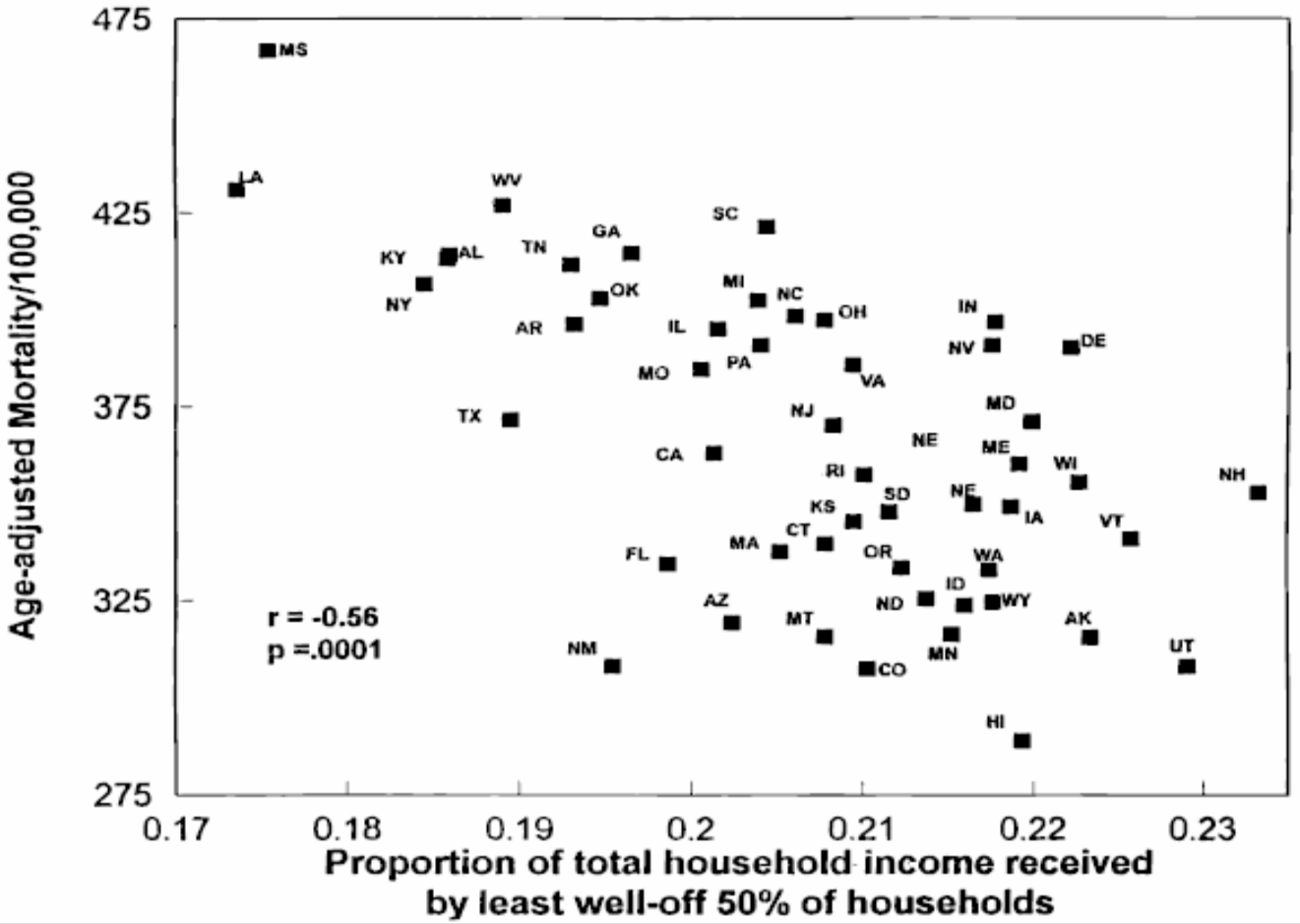
	Musculoskeletal Disorders	Stress, Fatigue
Canadian surveys		
16 Canadian Auto Parts Suppliers	0	?+
CAMI (GM-Suzuki), Canada		?+
CAMI, GM, Ford, Chrysler in Canada	?+	+
U.S. case studies		
Auto Alliance (Mazda-Ford), Michigan	+	
6 Japanese "transplants", U.S., Canada	+	+
NUMMI (GM-Toyota), California	+	
Subaru-Isuzu, Indiana	+	+
Jidosha, USA	+	
British surveys		
Truck manufacturer		+
Auto parts company		+, 0

0 = no association, ?+ = equivocal positive association, + = positive association

Landsbergis PA, Cahill J, Schnall P. The impact of lean production and related new systems of work organization on worker health. Journal of Occupational Health Psychology 1999;4(2):108-130.

Higher cardiovascular death rates if higher income inequality

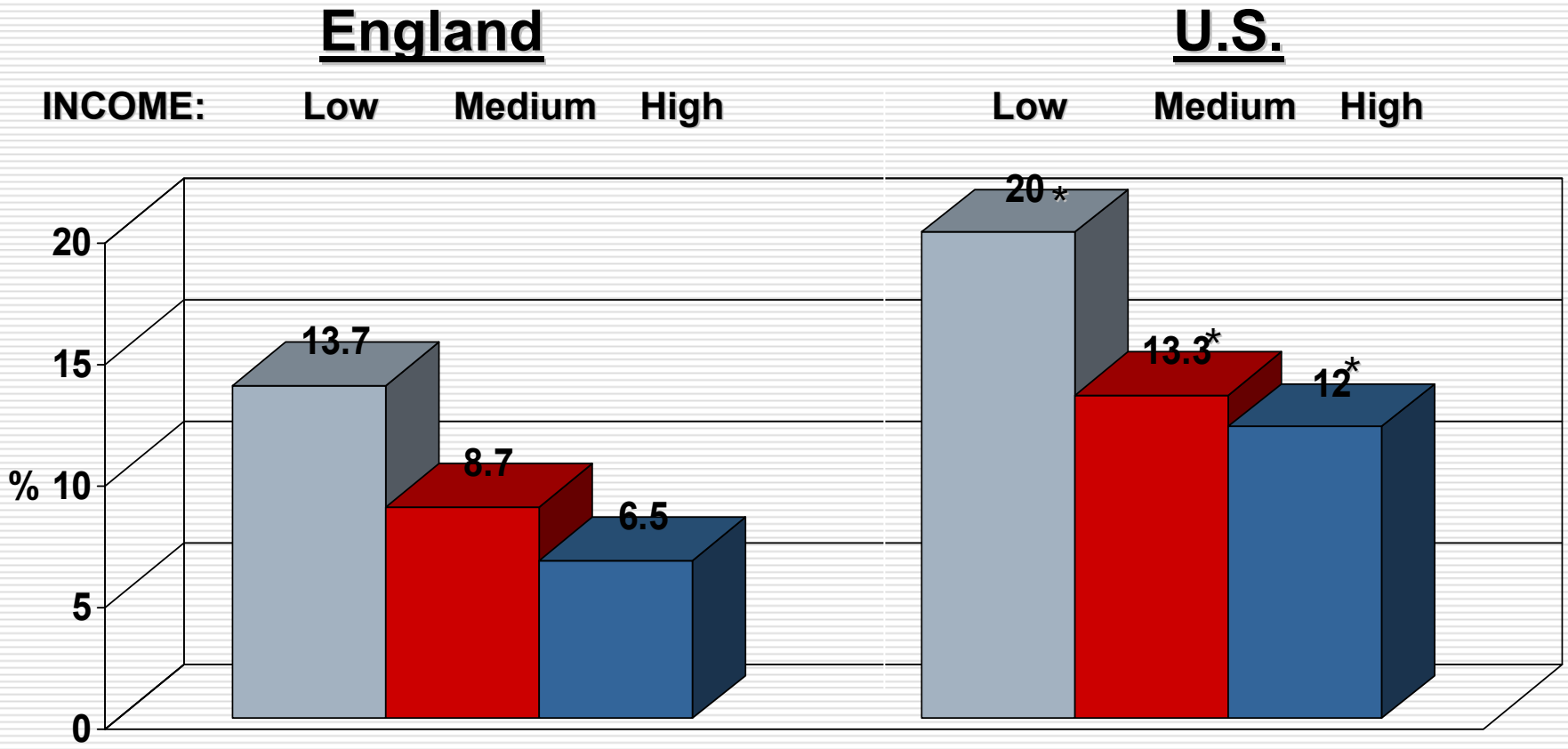
(U.S. states, 1990)



Kaplan GA, Lynch JW. Socioeconomic considerations in the primordial prevention of cardiovascular disease. Preventive Medicine 1999;29:S30–S35.

Greater prevalence of heart disease in U.S. vs. Britain

(age 55-64 yrs)



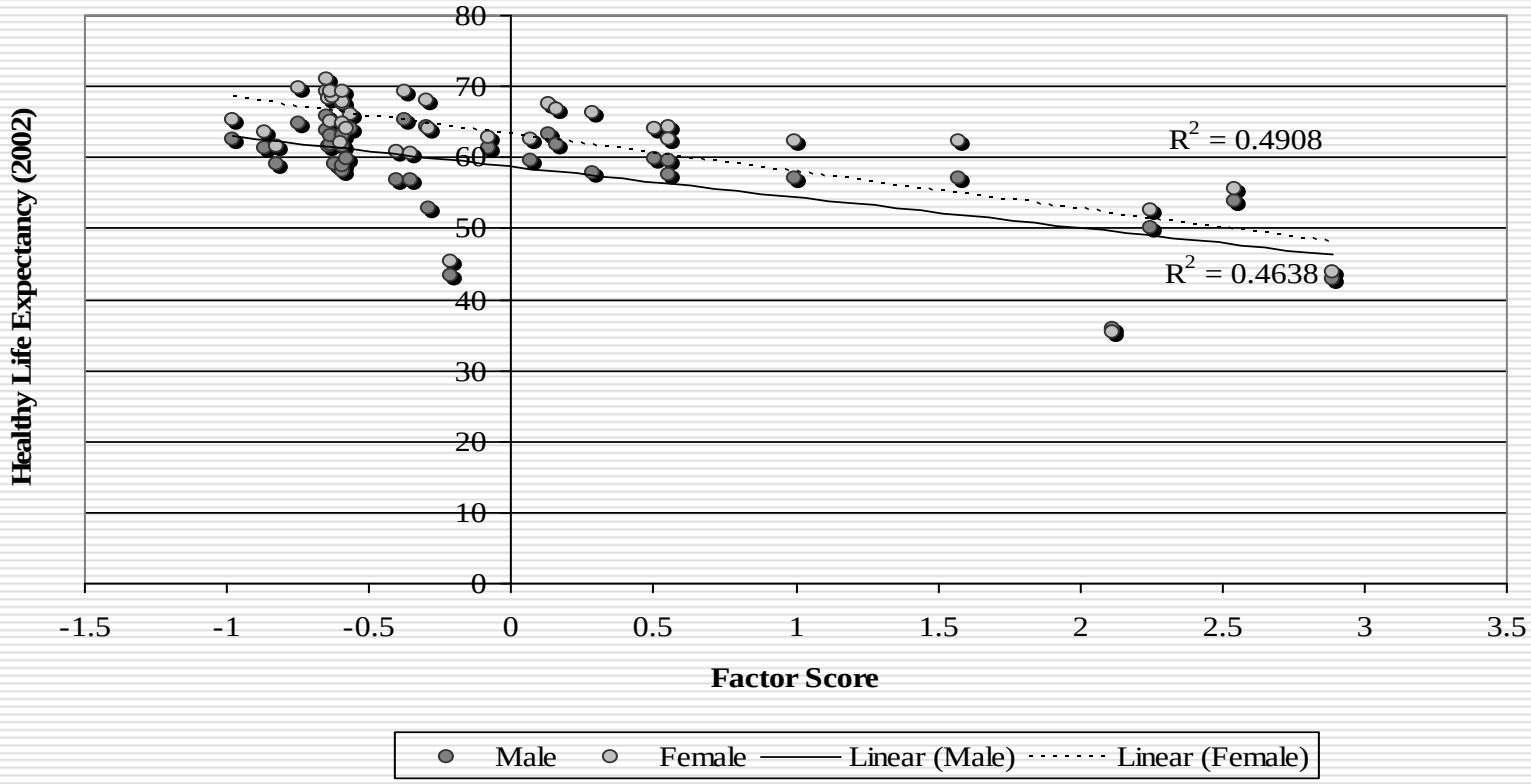
*p<.05 (England vs U.S.), based on national surveys in 2002

Banks J, Marmot M, Oldfield Z, Smith J. Disease and disadvantage in the United States and England. JAMA 2006;295(17):2037-2045.

Lower healthy life expectancy if greater labor market inequality

(larger informal economy)

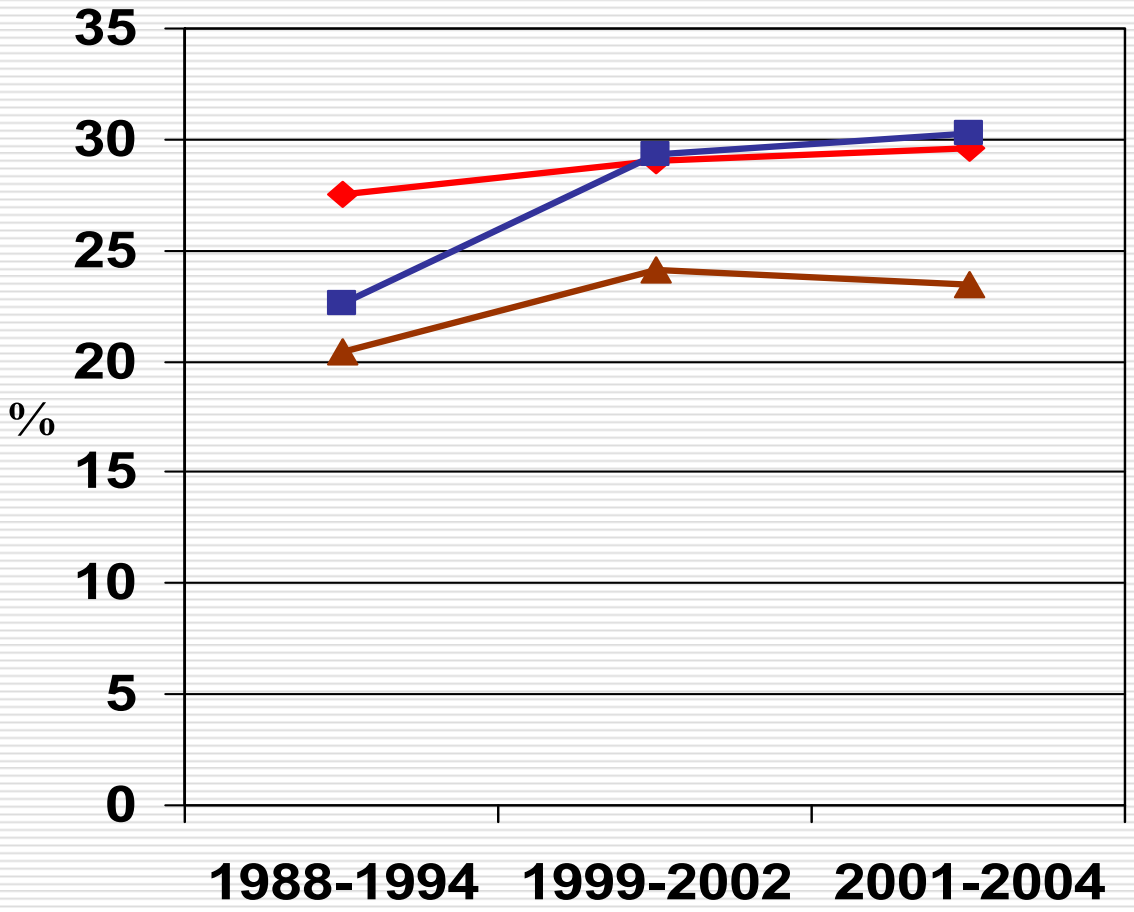
Low & middle income countries:



Benach J, Muntaner C, Santana V (coords). Employment, work, and health inequalities: A worldwide perspective. Geneva: World Health Organization (forthcoming).

Increase in hypertension prevalence, U.S.

age 20-74, ≥140/90 or HTN meds



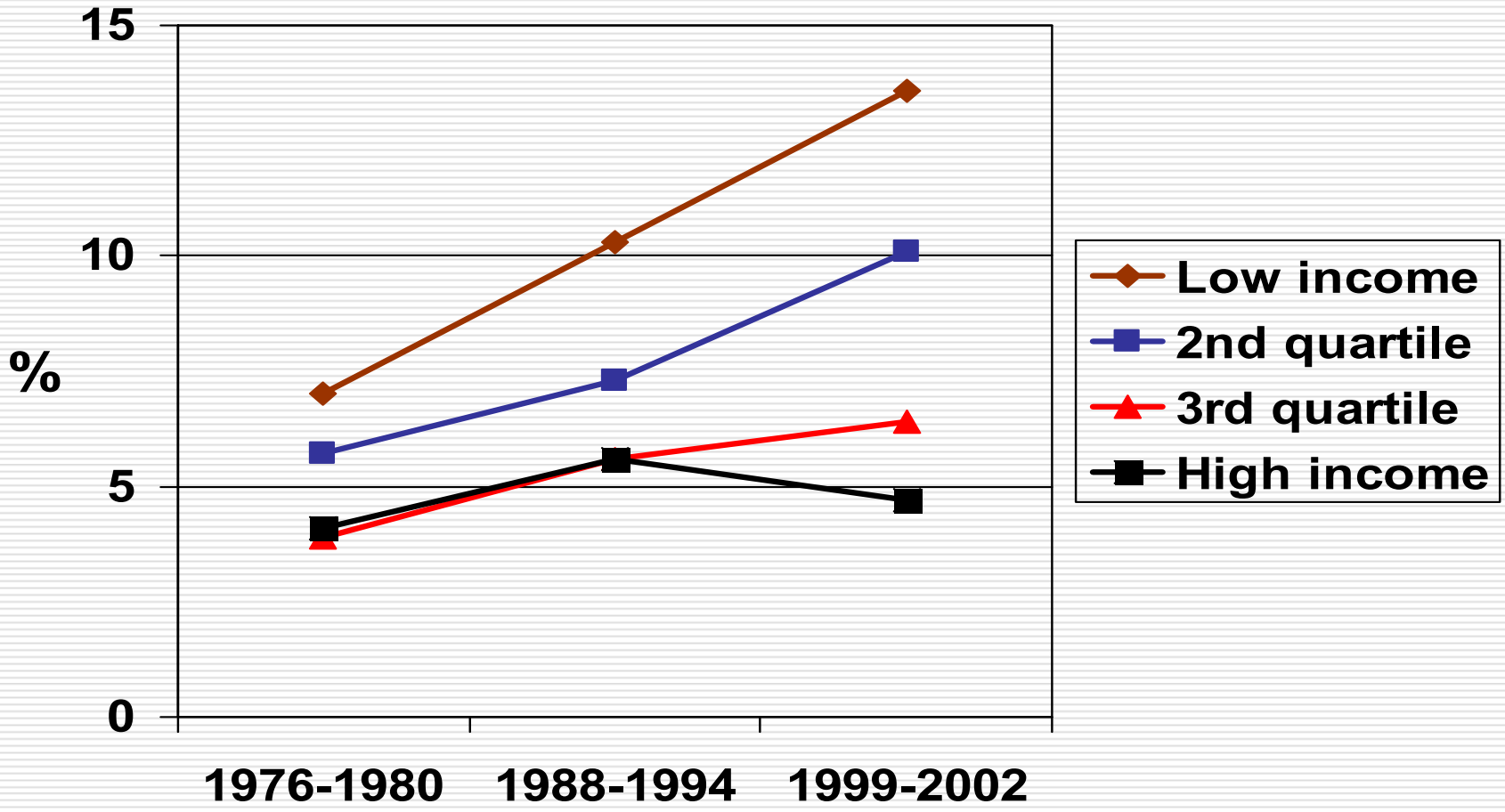
Income:

- Below 100% of poverty level
- 100%-less than 200%
- 200% or more

similar increase in developed countries

Based on average of blood pressure readings. In 2001–2004, 77% of participants had three blood pressure readings. National Center for Health Statistics. Health, United States, 2006. Hyattsville, MD: 2006

Increase in diabetes prevalence, U.S.
age 25-74



Kanjilal et al. Archives of Internal Medicine 2006;166:2348-2355.

Cardiovascular disease, work and stress

The Worldwide CVD Disease Epidemic

- Cardiovascular disease (CVD) is the major cause of morbidity & mortality in the industrialized world.
- CVD represents a significant public health problem-**a pandemic** - despite trends towards lowered rates of CVD mortality in N. America & Western Europe.
- Dramatic increases in cardiovascular morbidity & mortality over last 30 years in former Soviet Union & other East European countries. (De Faire, 1997)
- Rising prevalence rates observed in many developing countries.
- "...cardiovascular disease worldwide will climb from the second most common cause of death...in 1990, to first place, with more than 36% of all deaths in 2020". (Braunwald 1997, p.1364)

Schnall PL et al. Why the Workplace and Cardiovascular Disease. In: Schnall PL, Belkic KL, Landsbergis PA, Baker D, Eds. The Workplace and Cardiovascular Disease. Occupational Medicine: State of the Art Reviews. 2000;15(1).

CVD in China: An "Epidemiologic Crossroads"

- CVD as cause of death = 12.1% (1957); ↑38% (2002)
  - Smoking: 61% of men, 7% of women (rates increasing)
  - Overweight: 33% of adults
  - Type II diabetes: prevalence ↗ 3 times (1980-1994)
    - estimate: ↗ 68% (1995-2025)
  - Hypertension: age 15+: 5.1% (1959), 7.7% (1980), 11.3% (1991)
    - age 18+: 18.8% (2002)
    - only 30% aware, 6% controlled

Liu L. Cardiovascular diseases in China. Biochemistry and Cell Biology 2007;85:157-163.
Greenberg H, Raymond SU, Leeder SR. Cardiovascular disease and global health: Threat and opportunity. *Health Affairs* DOI 10.1377/hlthaff.W5.31 ©2005.

CVD in the United States

- USA: CVD causes 41% of all deaths. (American Heart Association, 1998)
- USA: estimated 250,000-350,000 people annually die suddenly of heart disease. (Blake, 1995)
- Another 250,000 people die each year more slowly due to manifest chronic CVD.

Schnall PL et al. Why the Workplace and Cardiovascular Disease. In: Schnall PL, Belkic KL, Landsbergis PA, Baker D, Eds. The Workplace and Cardiovascular Disease. Occupational Medicine: State of the Art Reviews. 2000;15(1).

The social nature of CVD risk factors

Traditional Risk factors are all recent phenomena (occurring in the past 150 years)

- Smoking ↑ **+ / -** –>> mass production begins end 19th Century
- Elevated Cholesterol ↑ **+ / -** –>> emerges with diets rich in meat & dairy
- Obesity ↑ **+ +** –>> with sedentary labor
- Hypertension ↑ **+** –>> with modern work & communities
- Diabetes ↑ **+ +** –>> with obesity

Proximate causes of CVD

These traditional risk factors represent relatively “proximate” causes of CVD, each with a complex set of determinants, many of which are psychosocial in origin.

Hypertension: A case history of a social epidemiological approach

- Essential hypertension: major risk factor for CHD and for left ventricular hypertrophy, stroke, renal disease & many other major pathologic processes.
- Hypertension afflicts 60-80 million Americans and 900 million people worldwide.
- Identified risk factors (i.e., obesity, salt intake, genetics, age, alcohol intake) explain only a small part of the risk.

Schnall PL et al. Why the Workplace and Cardiovascular Disease. In: Schnall PL, Belkic KL, Landsbergis PA, Baker D, Eds. The Workplace and Cardiovascular Disease. Occupational Medicine: State of the Art Reviews. 2000;15(1).

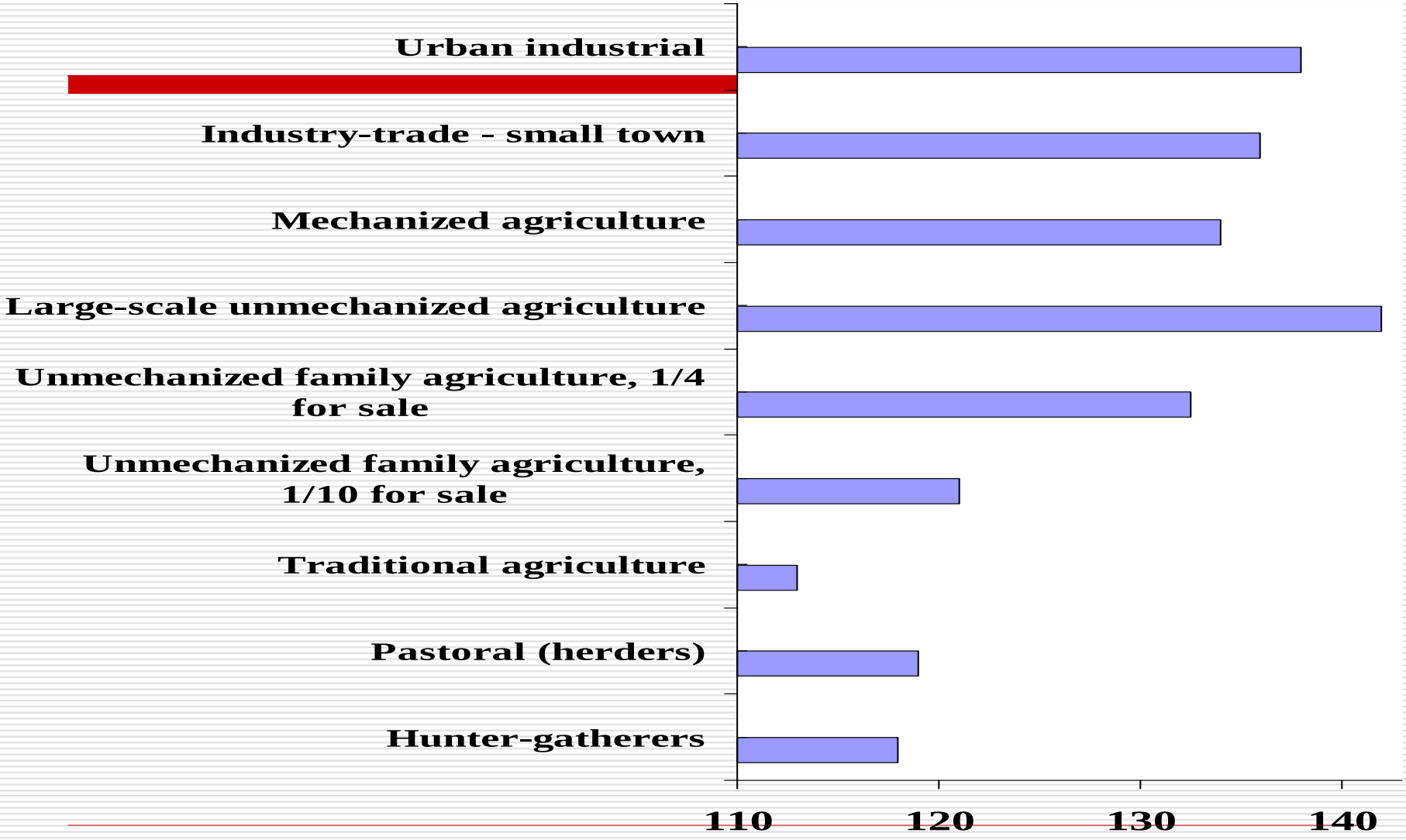
Hypertension as a disease of industrialized society

Hypertension as an epidemic seems likely to be of relatively recent historical origins

- Minimal hypertension disease burden among hunter-gatherers, non-market agricultural communities & other non-industrialized societies. (Waldron, 1982)
- Industrial society: hypertension socially patterned by class, race, ethnicity, urbanicity & gender.
- Evidence implicates the “unidentified” causes of essential hypertension as likely including ubiquitous exposures.
- Need to examine diet, lifestyle, work or community.
- Adequate explanatory risk factor needs to incorporate the above-mentioned social patterning of the disease.

Schnall PL et al. Why the Workplace and Cardiovascular Disease. In: Schnall PL, Belkic KL, Landsbergis PA, Baker D, Eds. The Workplace and Cardiovascular Disease. Occupational Medicine: State of the Art Reviews. 2000;15(1).

Average systolic BP (mm Hg), men aged 50-60



Waldron I, et al. Cross-cultural variation in blood pressure. Soc Sci Med 16:419-430, 1982

Rising prevalence of CVD/hypertension in developed countries during past 100-200 yrs.

- **CVD & hypertension parallel the transformation of work**
  - from agricultural & relatively autonomous craft-based work
  - to machine-based (including computer-based) labor, characteristic of assembly line & mass production:
    - high workload demands + low control/autonomy ("job strain")
    - during economic growth or in non-union settings: long work hrs.

Landsbergis P, Schnall P, Belkic K, Schwartz J, Baker D, Pickering T. Working conditions and masked (hidden) hypertension: Insights into the global epidemic of hypertension. *Scandinavian Journal of Work Environment and Health* (in press.)

Work and blood pressure

- The work environment is where adults now spend majority of waking hours.
- Work activities increasingly characterized as demanding, constraining & in other ways highly stressful.
- **Blood pressure (BP) is elevated during working hours.**
- Performing demanding, constraining & otherwise mentally stressful activity **provokes sharp rises in BP**.
- Specific features of work are implicated as important causes of hypertension, as well as CVD., e.g. Job strain

Schnall PL et al. Why the Workplace and Cardiovascular Disease. In: Schnall PL, Belkic KL, Landsbergis PA, Baker D, Eds. The Workplace and Cardiovascular Disease. Occupational Medicine: State of the Art Reviews. 2000;15(1).

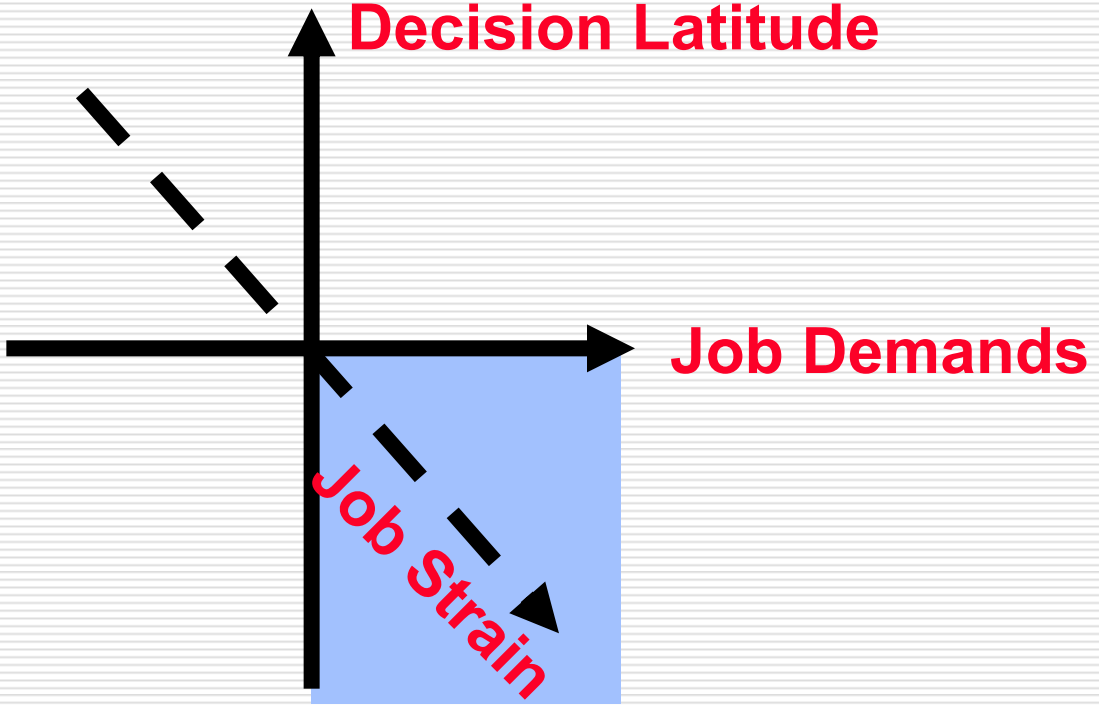
Workplace risk factors for hypertension

- **Direct effects**
  - BP higher at work than home (on work day) , lower on non-workday
  - Job strain (most widely studied)
  - Long work hours
  - Effort-reward imbalance
  - Threat-avoidant vigilant work (professional driver)
  - Evening, night, rotating shift work (mixed evidence) (night work listed as potential carcinogen; IARC 2007)
  - Noise, lead, arsenic (some evidence)
- **Mediation**
  - Work stressors → overweight, alcohol → HTN
  - Low SES → work stressors → HTN
- **Interaction**: low SES x work stressors → HTN

Job Strain

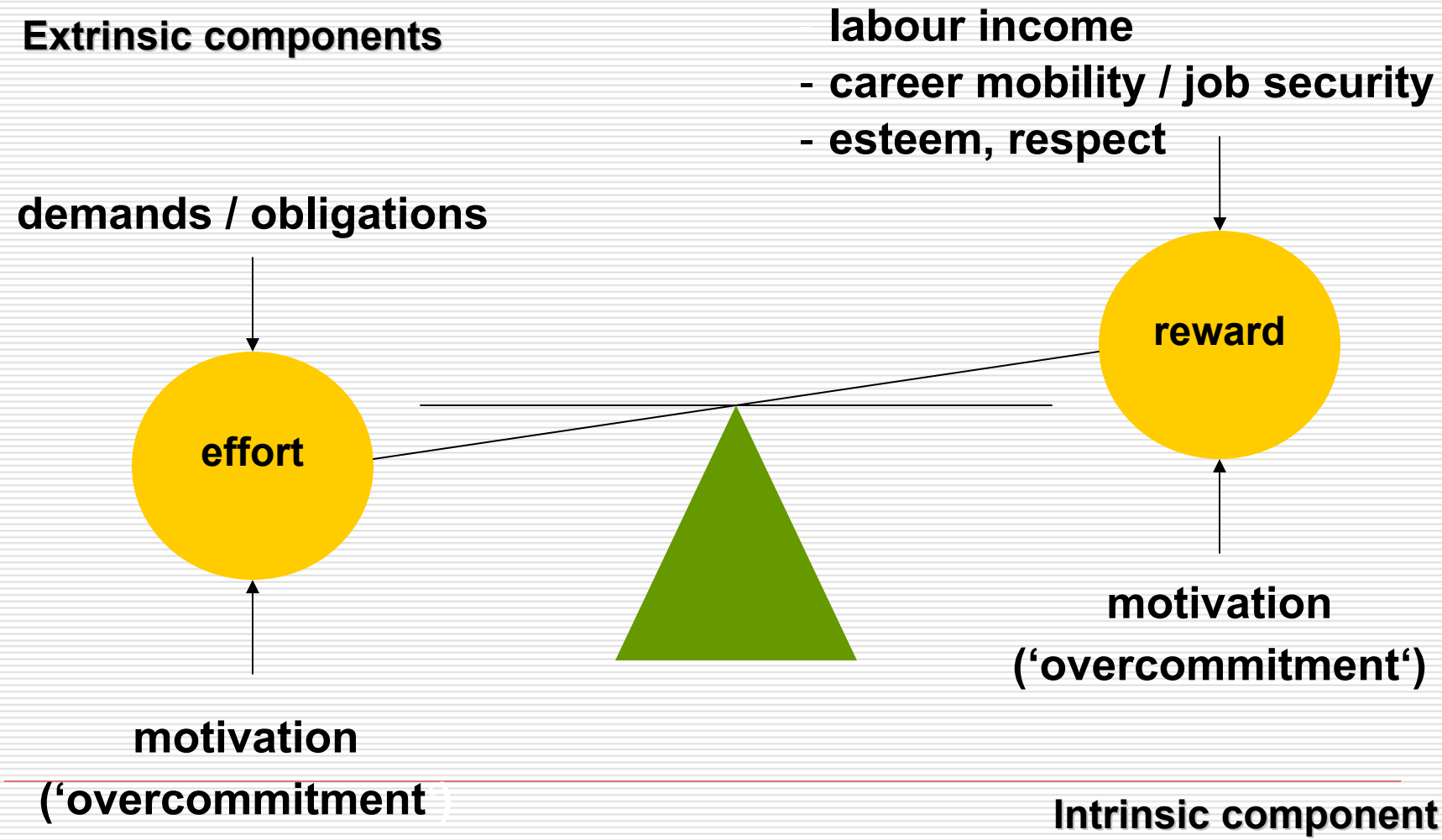
(Karasek and Theorell)

Combination of: HIGH psychological job demands and LOW job decision latitude

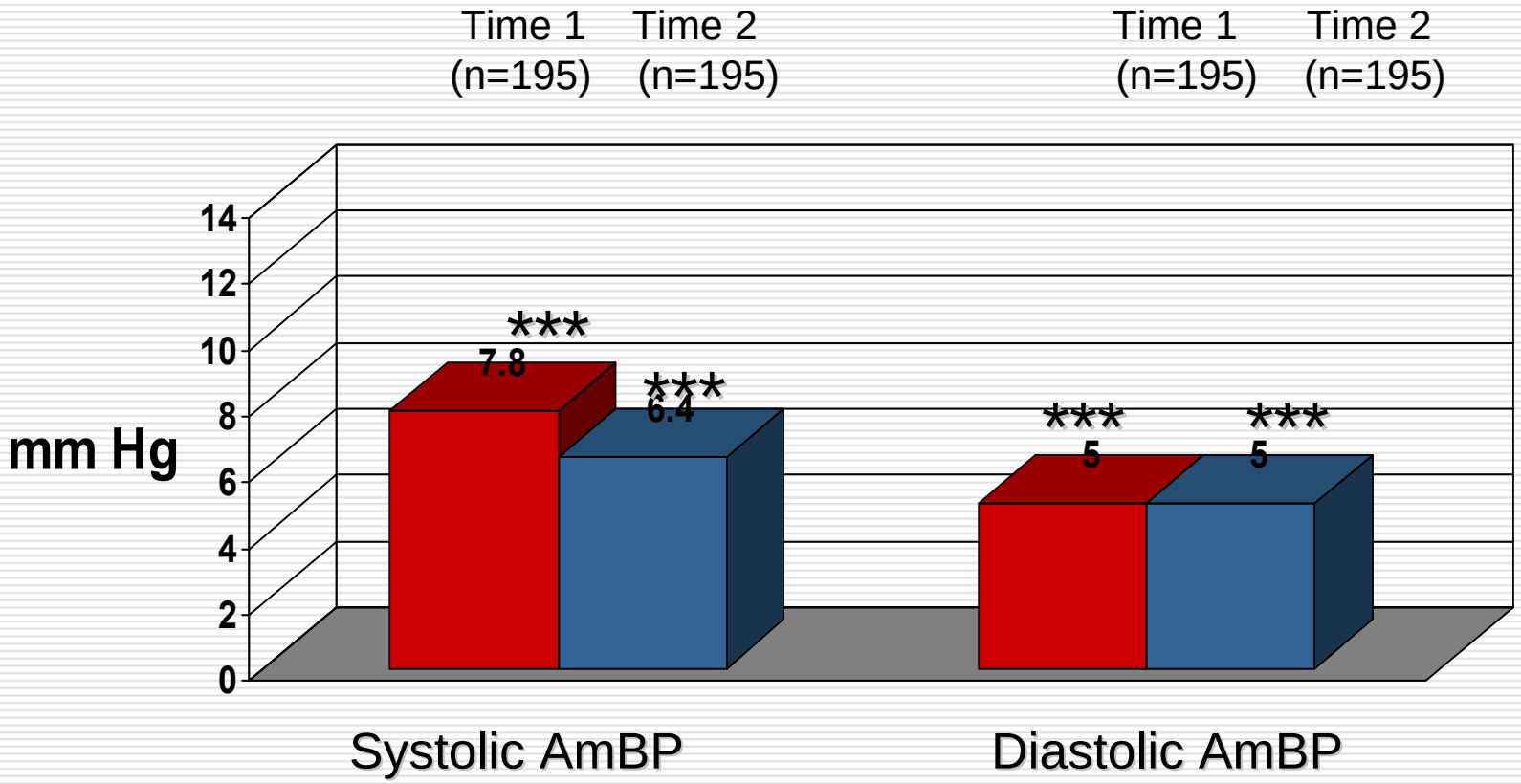


The model of effort-reward imbalance

(Siegrist 1996)



Job Strain and Work Ambulatory BP
(men, Time 1 and Time 2)



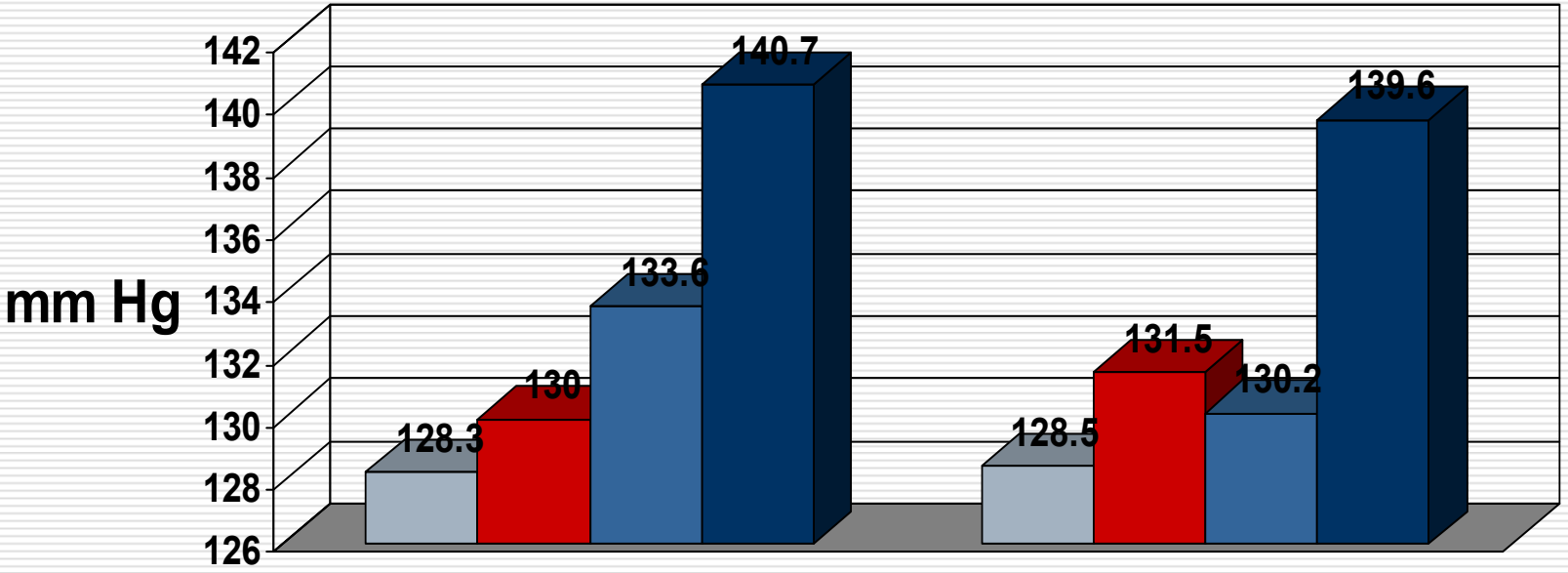
controlling for age, education, body mass index, race, smoking, alcohol use, work site

***p<.001

Schnall PL, Schwartz JE, Landsbergis PA, Warren K, Pickering TG. Psychosomatic Medicine 1998;60:697-706.

Chronic Job Strain and Work Systolic Ambulatory BP (n=195 men, Time 1 and 2)

Strain-T1:	no	no	yes	yes	no	no	yes	yes
Strain-T2:	no	yes	no	yes	no	yes	no	yes



controlling for age, education, body mass index, race, smoking, alcohol use, work site

Schnall PL, Schwartz JE, Landsbergis PA, Warren K, Pickering TG. Psychosomatic Medicine 1998;60:697-706.

Job strain and Ambulatory BP in Belgian Workers (2007)

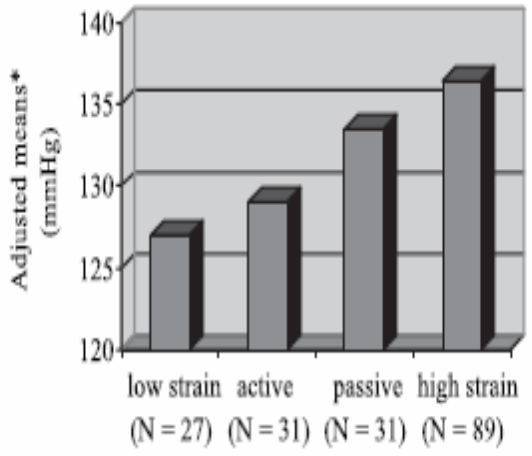


Fig. 1. Adjusted association between quadrant groups of job strain and mean systolic blood pressure at work (mm Hg). *Adjusted for gender, age, body mass index, smoking, high physical demands of the job, high stress outside work, mean level of physical activity prior to blood pressure measurements, and occupation.

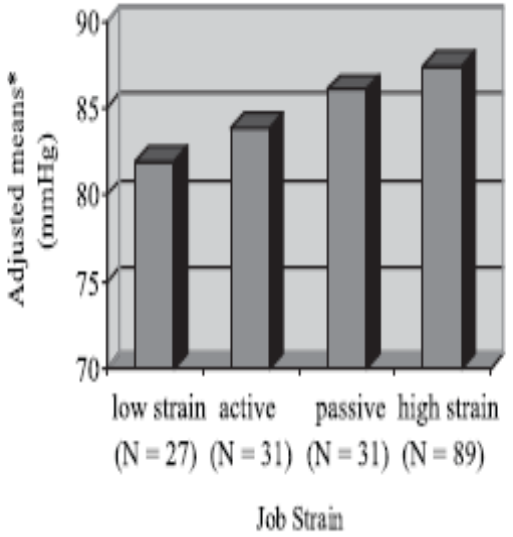


Fig. 2. Adjusted association between quadrant groups of job strain and mean diastolic blood pressure at work (mm Hg). *Adjusted for gender, age, body mass index, smoking, high physical demands of the job, high stress outside work, mean level of physical activity prior to blood pressure measurements, and occupation.

Clays et al. High Job Strain and Ambulatory Blood Pressure in Middle-Aged Men and Women From the Belgian Job Stress Study. JOEM 49(4) April 2007

Population attributable risk % for CVD due to Job Strain

Study population	Study Years	Outcome	% Job Strain Exposure	RR	PAR%
New York City men	1985-8	HTN	21	2.8	27.4
U.S. men - HES	1960-2	MI	21.8	2.48	24.4
U.S. men - HANES	1971-5	MI	23.2	3.28	34.6
Swedish men	1976-86	CVD	20	1.9	15.3
European men and women	1996	CVD	30	1.5-2.0	13-23
			%exposed		
Swedish men	1977-90	CVD	75[1]	1.72	35
Danish men	1991	CVD	6[2]	2	6
Danish women	1991	CVD	16[2]	2	14

[1] exposed to medium and low work control

[2] exposed to monotonous high-paced work

Ways in which social class impacts health

Direct effect of class on health

poor nutrition

stressful communities

Indirect effect

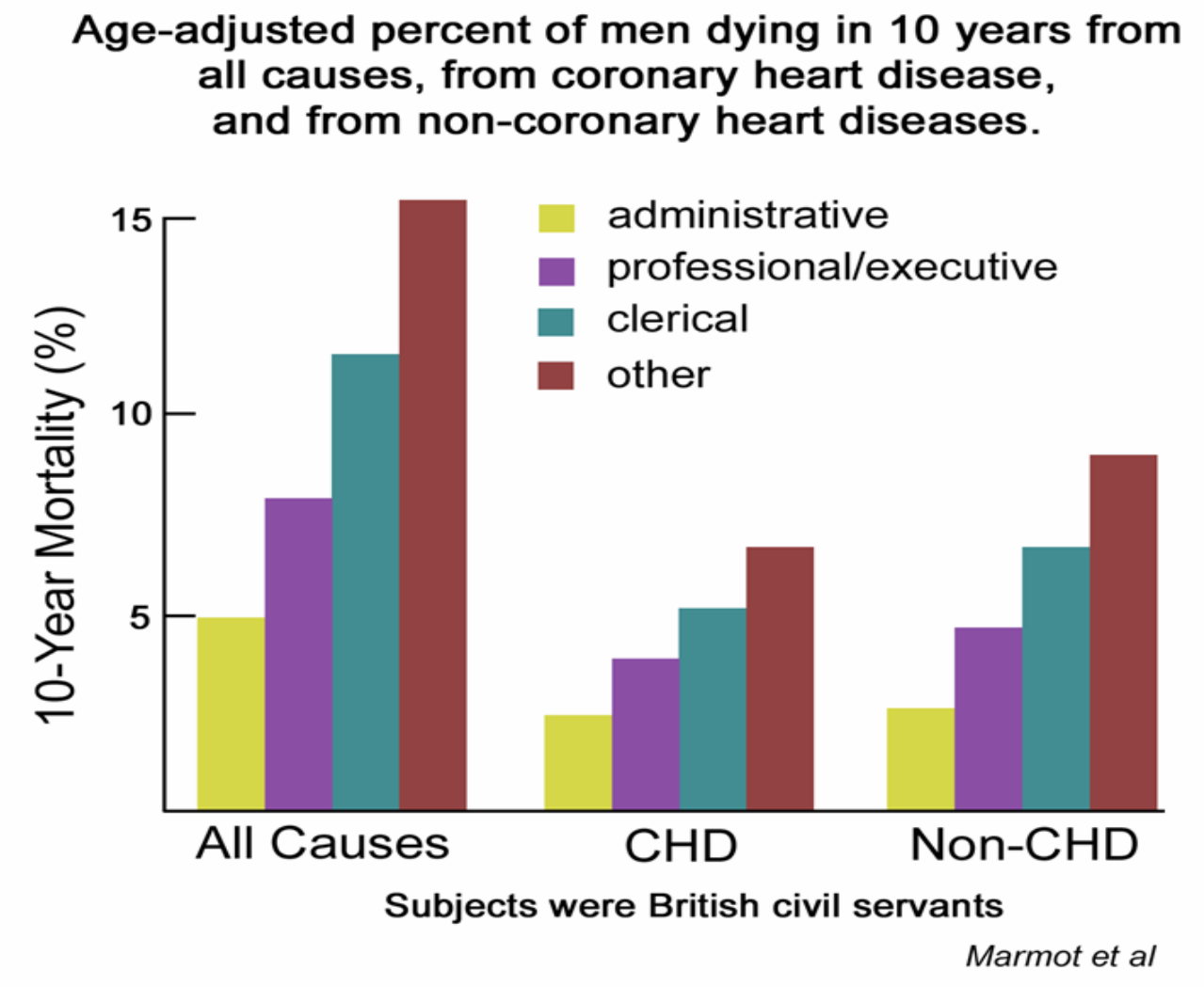
unhealthy behaviors

increased exposure to unhealthy working conditions, etc.

Interaction effect

work and class cause more than additive effect

The social class “gradient” in disease



Ways in which social class impacts health

Direct effect of class on health

- poor nutrition
- stressful communities

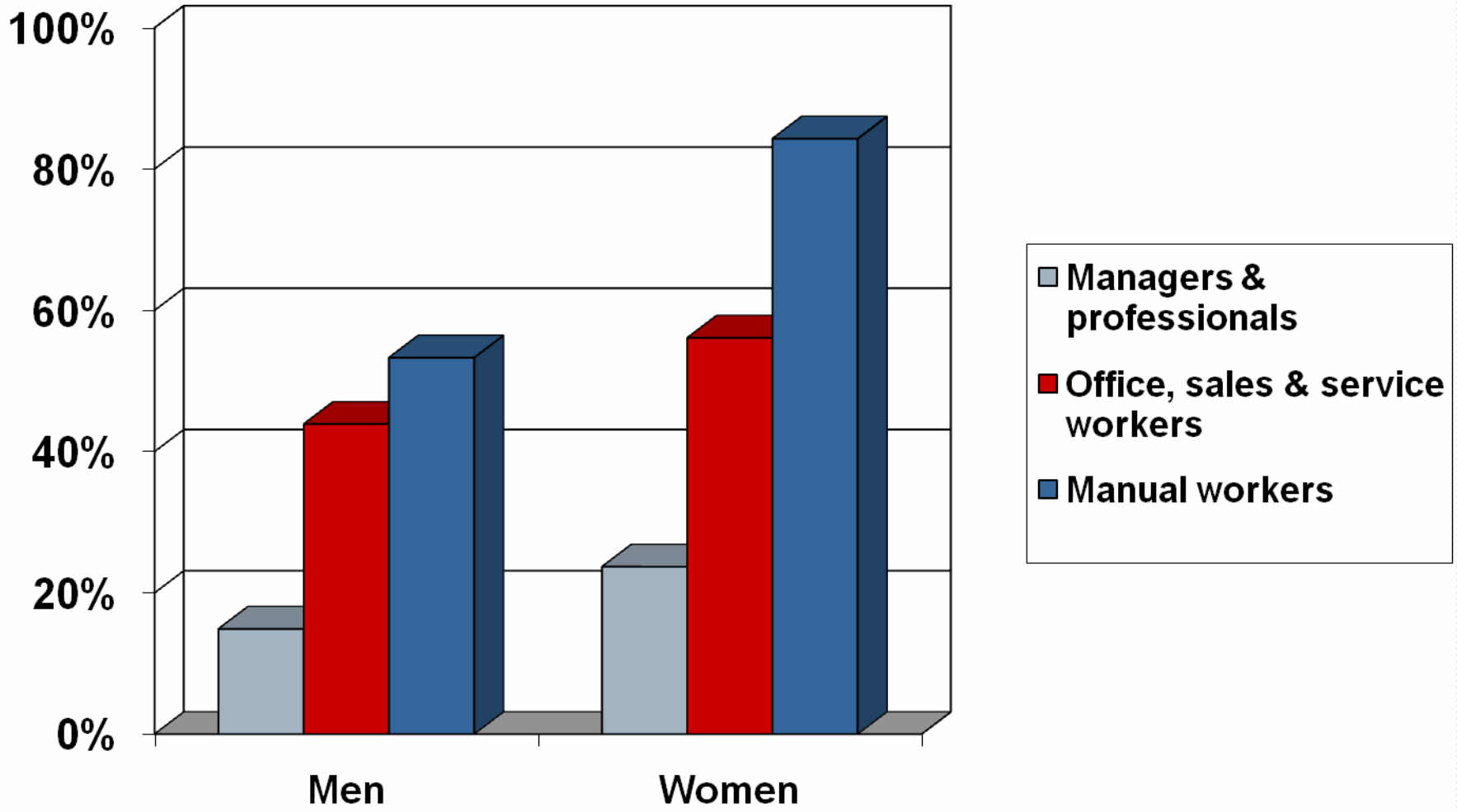
Indirect effect

- unhealthy behaviors
- increased exposure to unhealthy working conditions, etc.

Interaction effect

- work and class cause more than additive effect

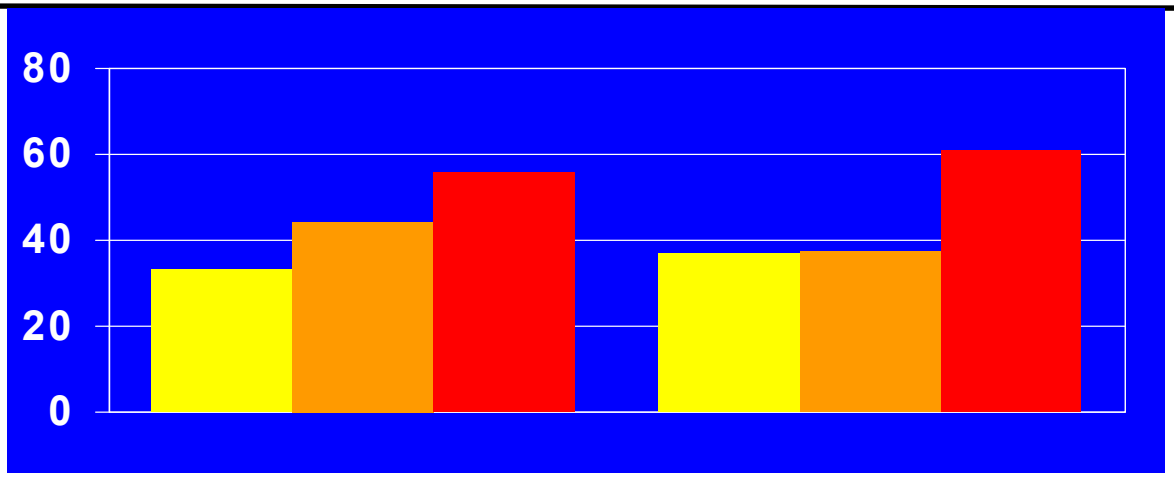
% European men & women in *high strain* or *passive* jobs (class gradient clearer)



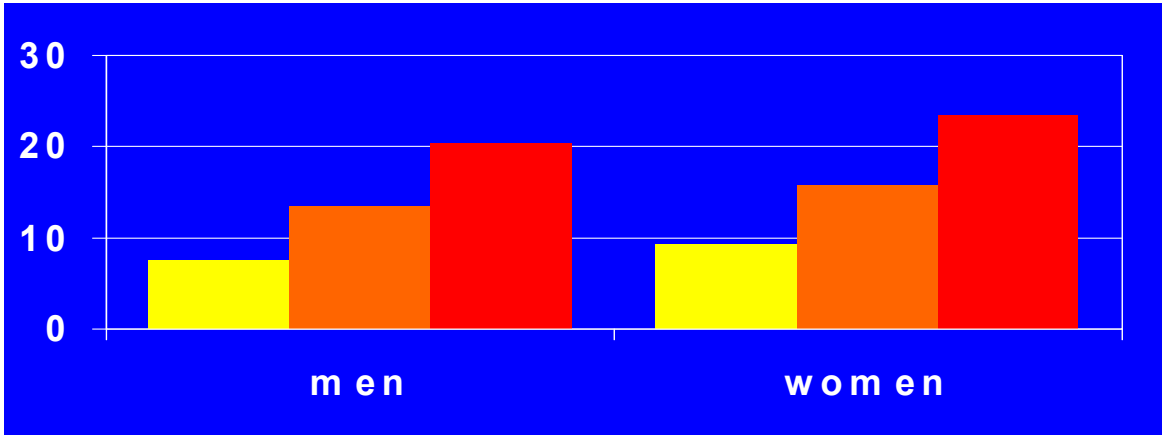
JACE study: 8 centers (Belgium, France, Italy, the Netherlands, and Sweden), N=37,161. Choi, B., et al. *An Orthogonal Relationship between Social Class Gradient and Job Strain Axis of the Demand-Control Model*. 4th ICOH conference on work environment and cardiovascular disease, Newport Beach, CA,2005.

Prevalence of psychosocial work stress according to social grade: Whitehall II - Study

Effort-reward imbalance model:
% imbalance between effort and reward



Demand-control model:
% job strain (observer judgement)

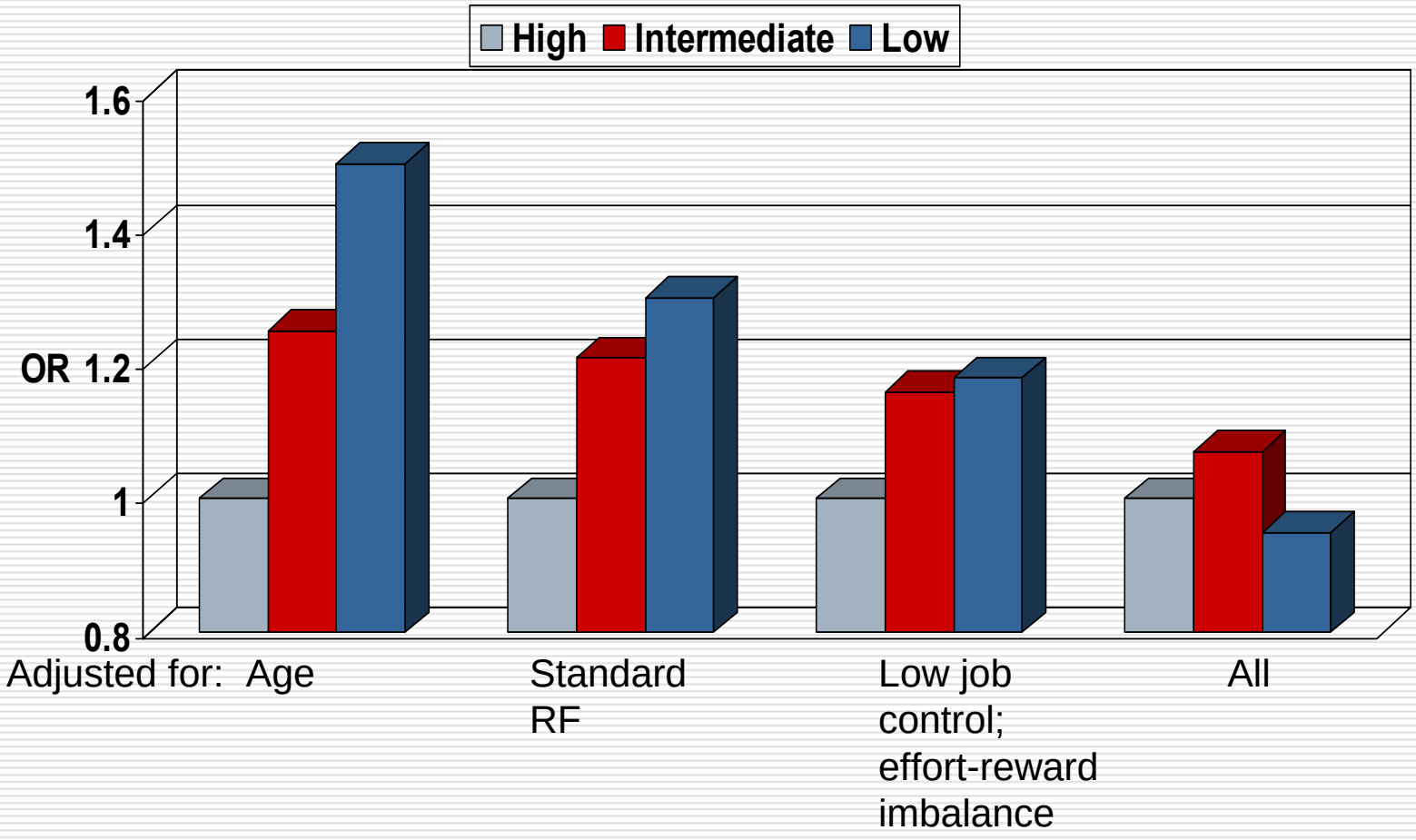


high,
middle,
low occupational status

Bosma et al. American Journal of Public Health 1998;88:70.

Occupational status and new CHD

(male British civil servants, n=6,895, 5.3 yr. follow-up)

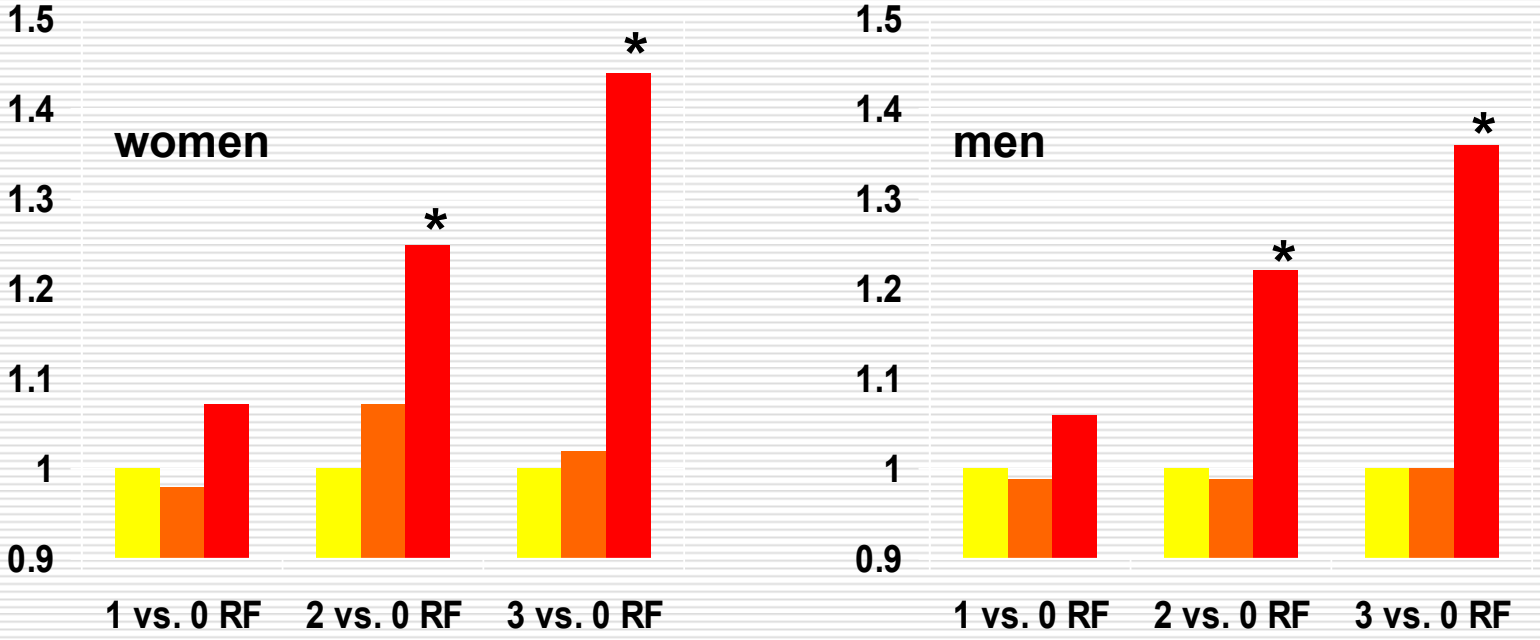


Marmot et al. Lancet 1997;350:235-239.

Work stress (ERI) and co-manifestation of behavioural risk factors of CHD

(N=28.844 women and 7233 men, public service, Finland)

Risk factors (RF): BMI ≥ 25, smoking, heavy alcohol consumption, physical inactivity; Odds ratios, adj. for age, SES, marital status



Kouvonen et al. (2006), BMC Publ Health, 6: 24.

Ways in which social class impacts health

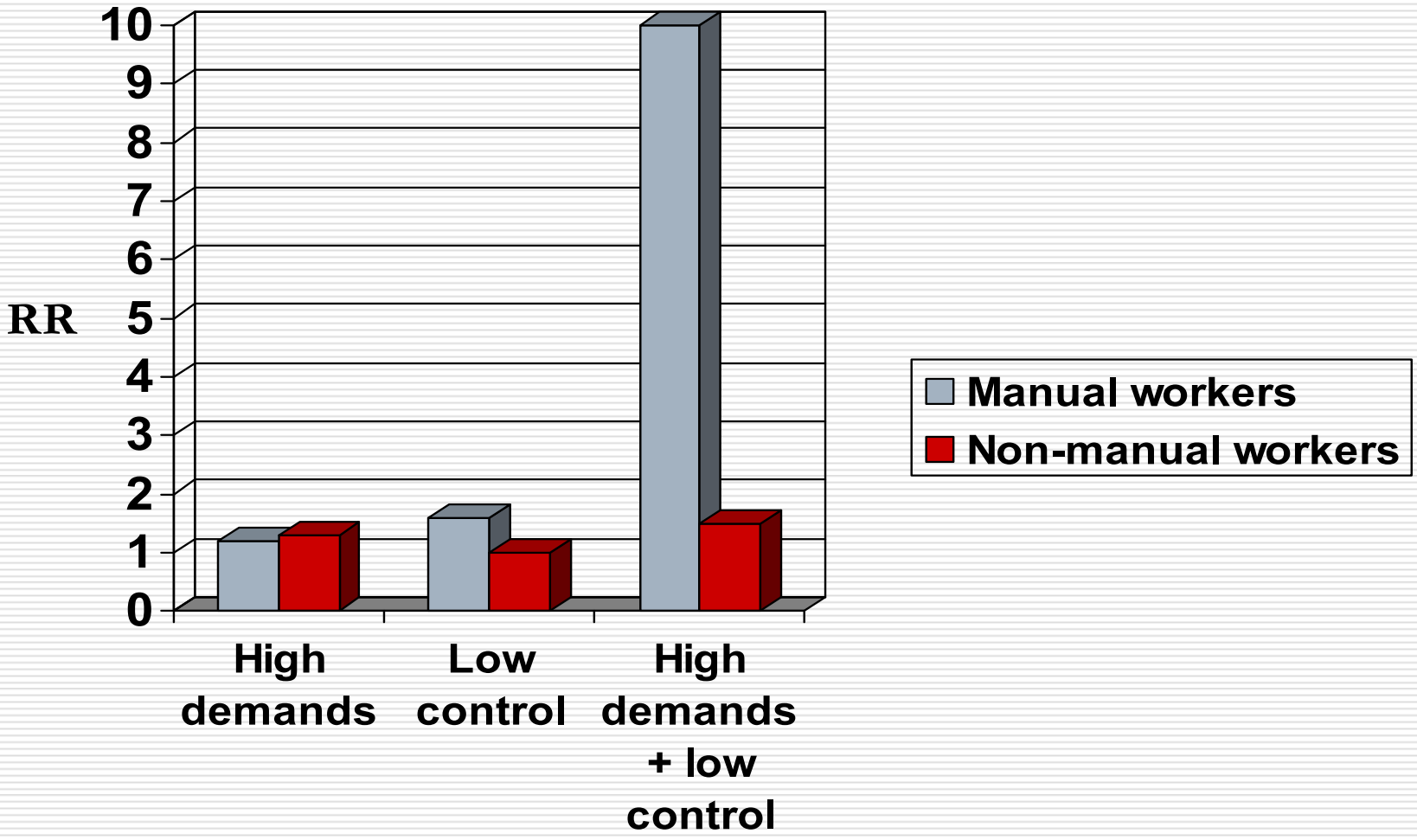
Direct effect of class on health
- poor nutrition
- stressful communities

Indirect effect
- unhealthy behaviors
- increased exposure to unhealthy working conditions, etc.

Interaction effect
- work and class cause more than additive effect

Risk of heart attack among male workers in Stockholm, 45-64 yrs old

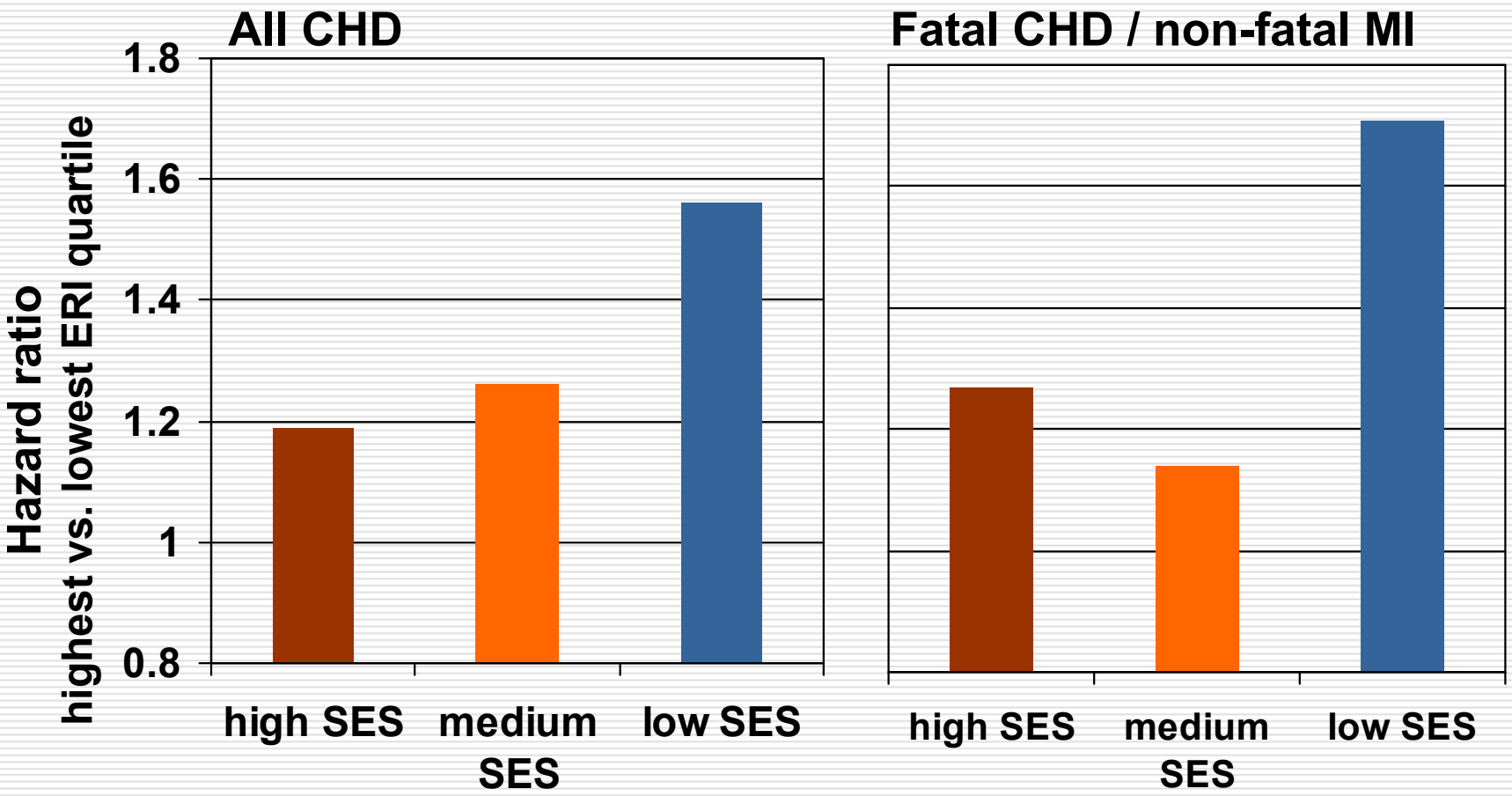
(1992-94, 1047 cases & 1450 controls)



Hallqvist, et al, SHEEP Study, Soc Sci Med, 1998;46: 1405-15

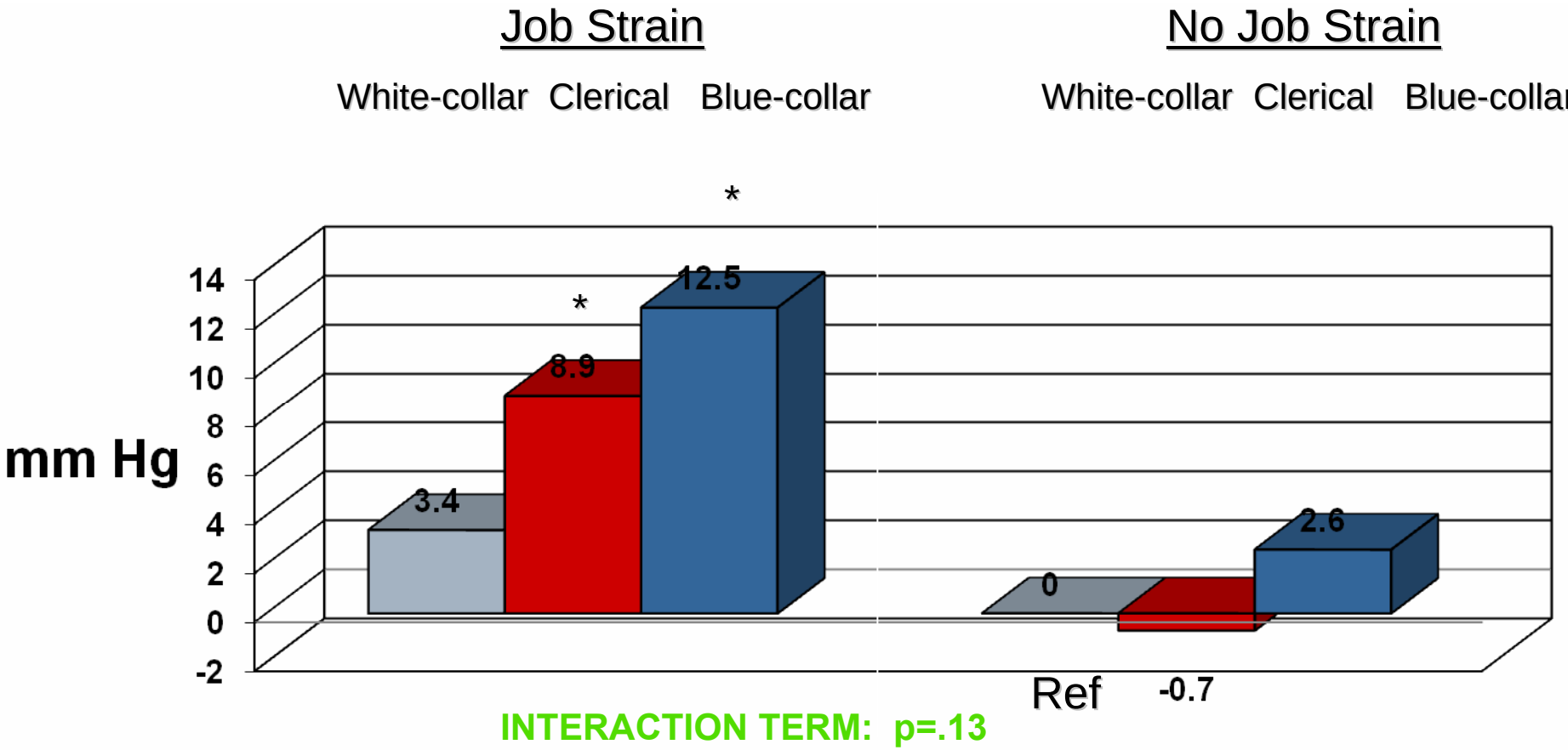
Risk of heart disease: interaction between low social class and effort-reward imbalance

Whitehall II-Study; 11 yr follow-up (N=10,308 male & female civil servants)



H. Kuper et al. Occupational and Environmental Medicine 2002;59:777-784.

Job Strain and Work Ambulatory Systolic BP by Occupational Status (n=283 men, Time 1)



controlling for age, body mass index, race, smoking, alcohol use and work site

#p<.10, *p<.05 (vs. Ref group)

Landsbergis et al. In Adler, NE, Marmot M, McEwen BS, Stewart J (eds.) Socioeconomic status and health in industrialized nations (pp. 414-6). New York: New York Academy of Sciences, 1999.

Work, mental health and productivity costs

Depression

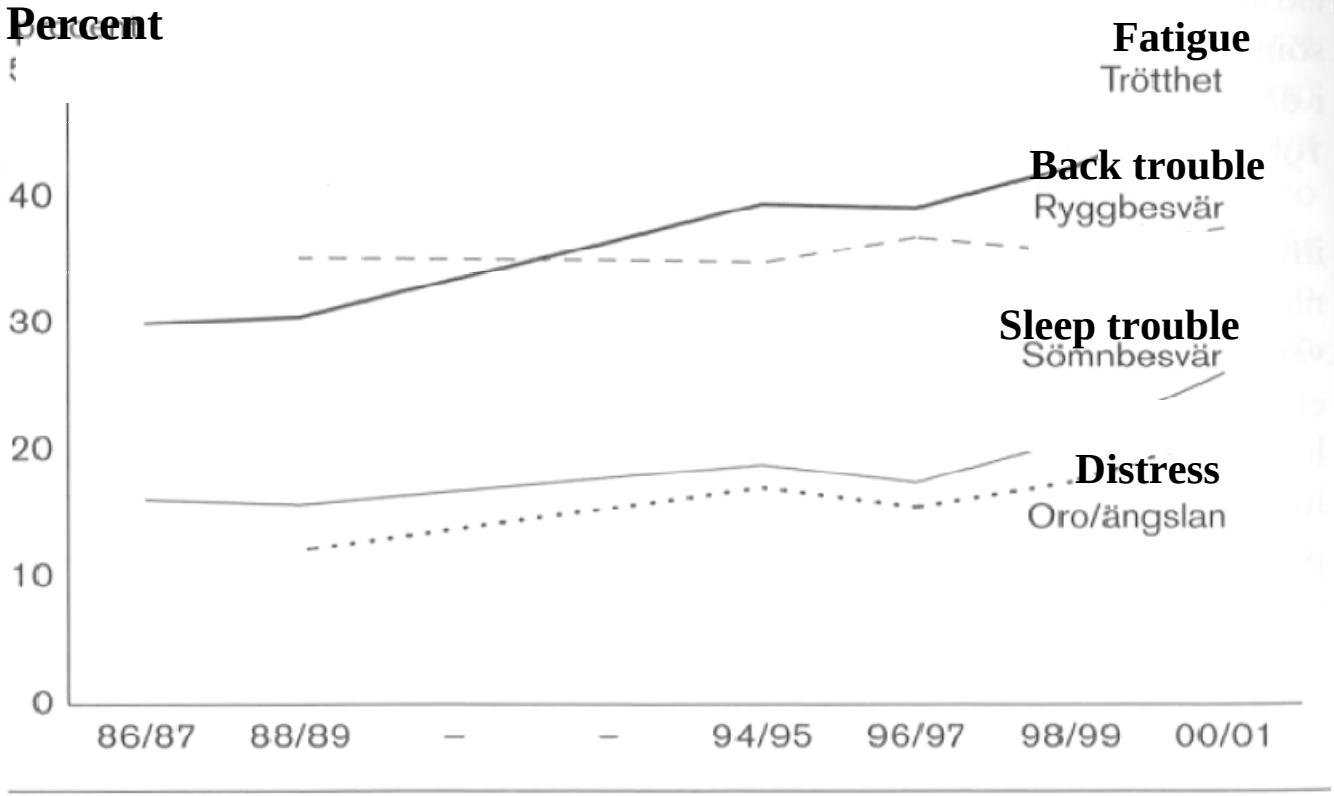
- Depression is among the leading causes of disability worldwide and is projected to become the second leading cause of the global burden of disease by 2020 (WHO. Information on mental health disorders management: depression: 2008)

- In any given 12 month period, 9.6 % of the population, or about 20.9 million American adults, suffer from a depressive illness – much higher than other countries (World Mental Health Survey Consortium. JAMA, 2004 (291)21 2581)

Results of mental health studies (Finland, Germany, Poland, UK, USA)

- The incidence & costs of mental health problems are increasing in many countries.
- "while the origins of mental instability are complex…a number of common threads appear to link the high prevalence of stress, burnout and depression to changes taking place in the labour market, due partly to the effects of economic globalization." (Gabriel P, Liimatainen M-R. Mental health in the workplace. Geneva: International Labor Office; 2000)
- 8% of depression can be attributed globally to environmental factors, in particular occupational stress (Prüss-Üsten A, Corvalán C. WHO, Geneva 2006)

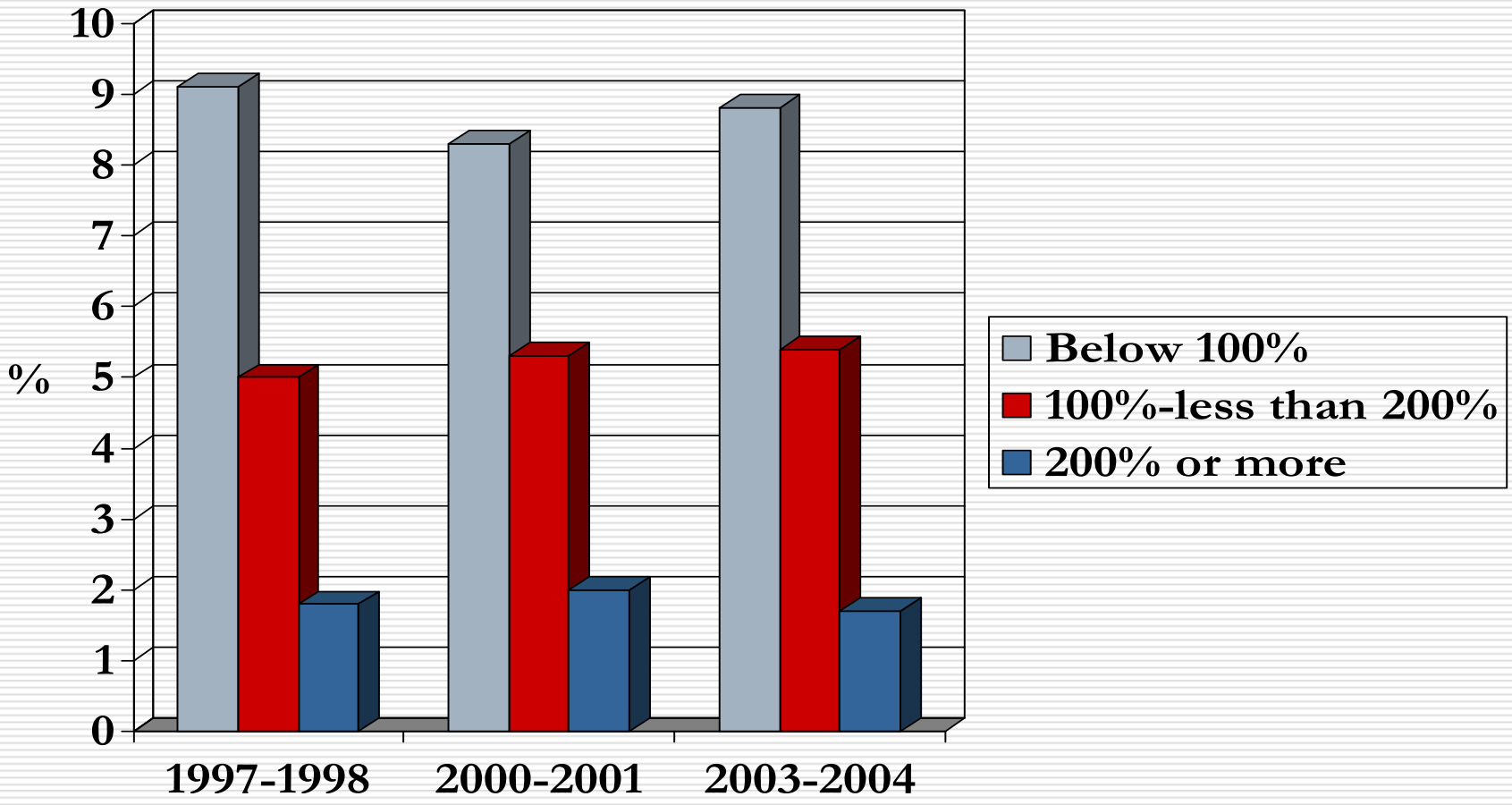
Trends in psychological distress



Figur 6.1. Utveckling för trötthet, ryggbesvär, sömnbesvär samt oro/ängslan från 1986–87 fram till 2000–01. Data saknas för åren 1990–93. (Källa: ULF.)

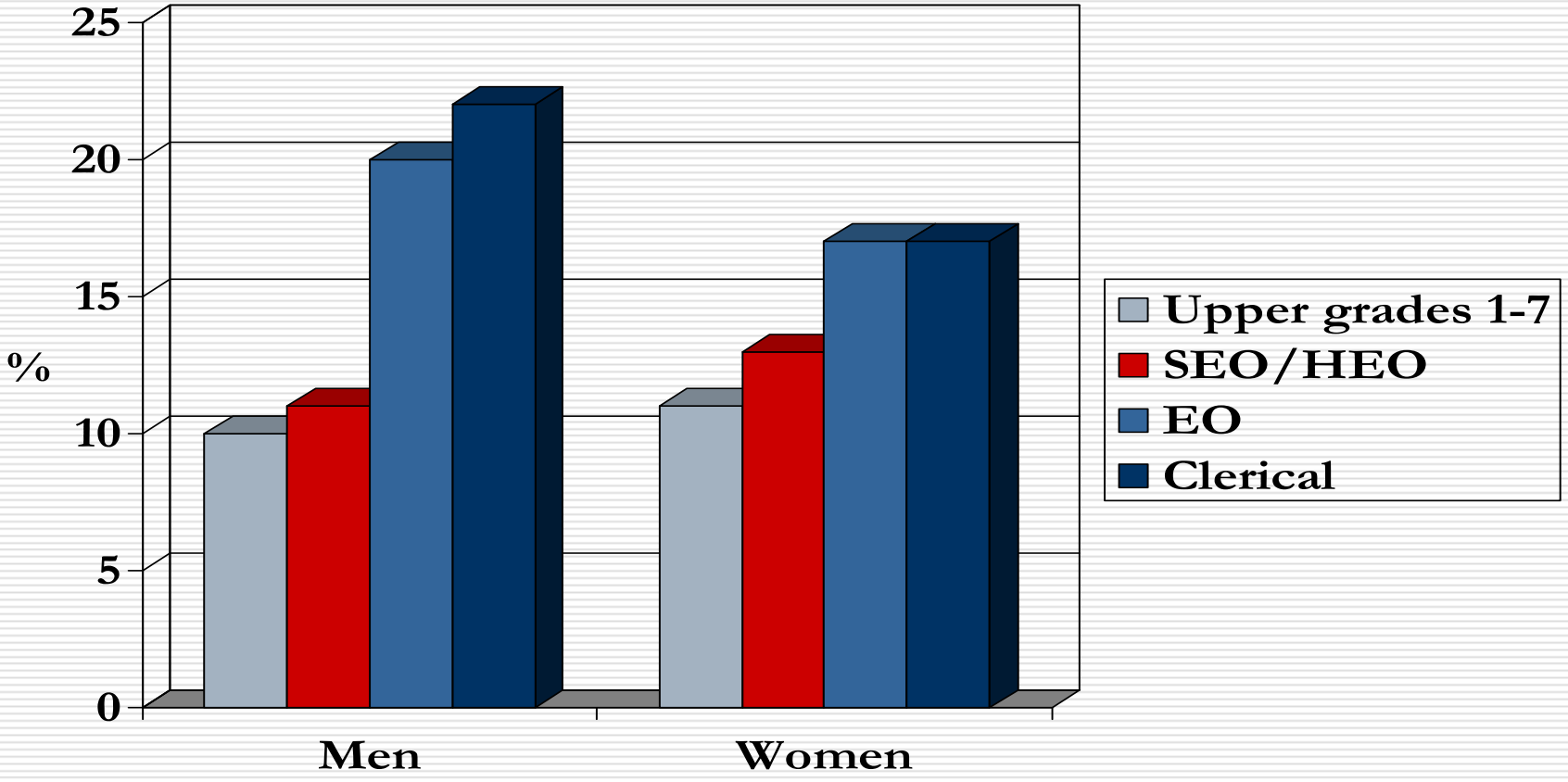
Adult Swedish population, 1986-2001. Gustafsson & Lundberg, eds. Arbetsliv och hälsa, 2004.

Serious Psychological Distress by Income (% poverty level), age 18+, U.S.



National Center for Health Statistics. Health, United States, 2006. Hyattsville, MD: 2006

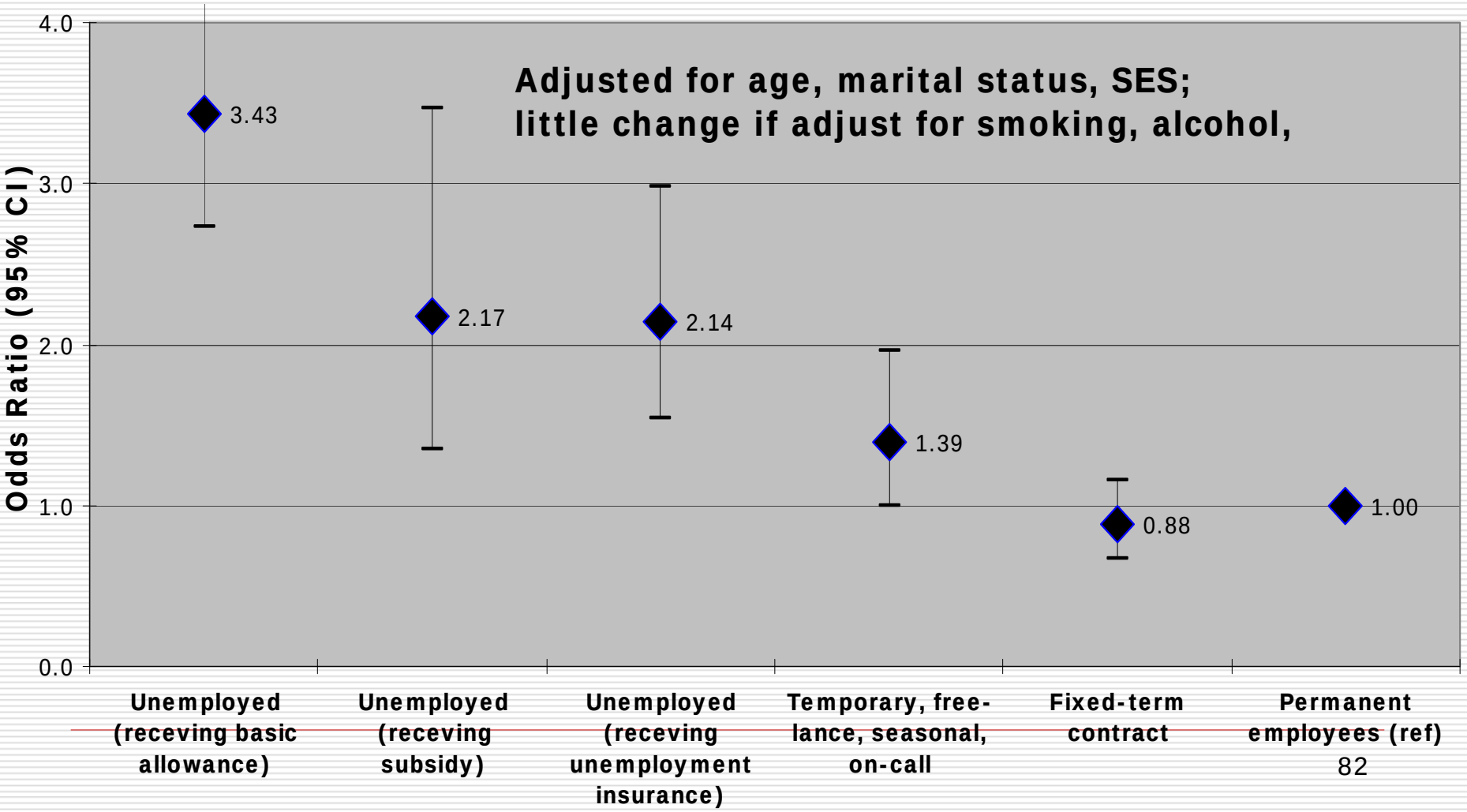
High levels of symptoms of depression among British civil servants, 1997-99, n=7,270



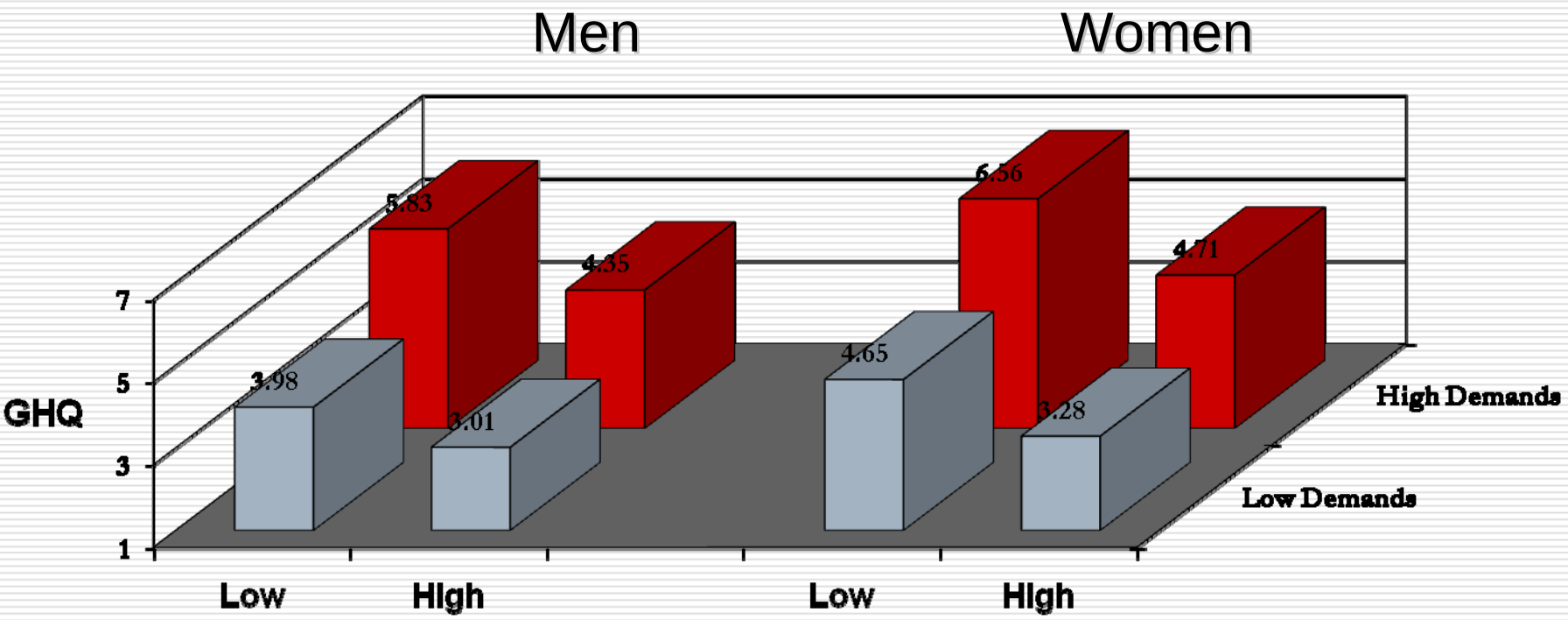
Stansfeld S et al. *Journal of Epidemiology and Community Health* 2003;57:361-367.

Precarious work and depression in the Finnish population: Men

(Virtanen et al. Int J Epidemiol 2003;32:1015–1021)



Psychiatric disorder (30-item GHQ) among 10,314 British civil servants (Adjusted for age, employment grade)

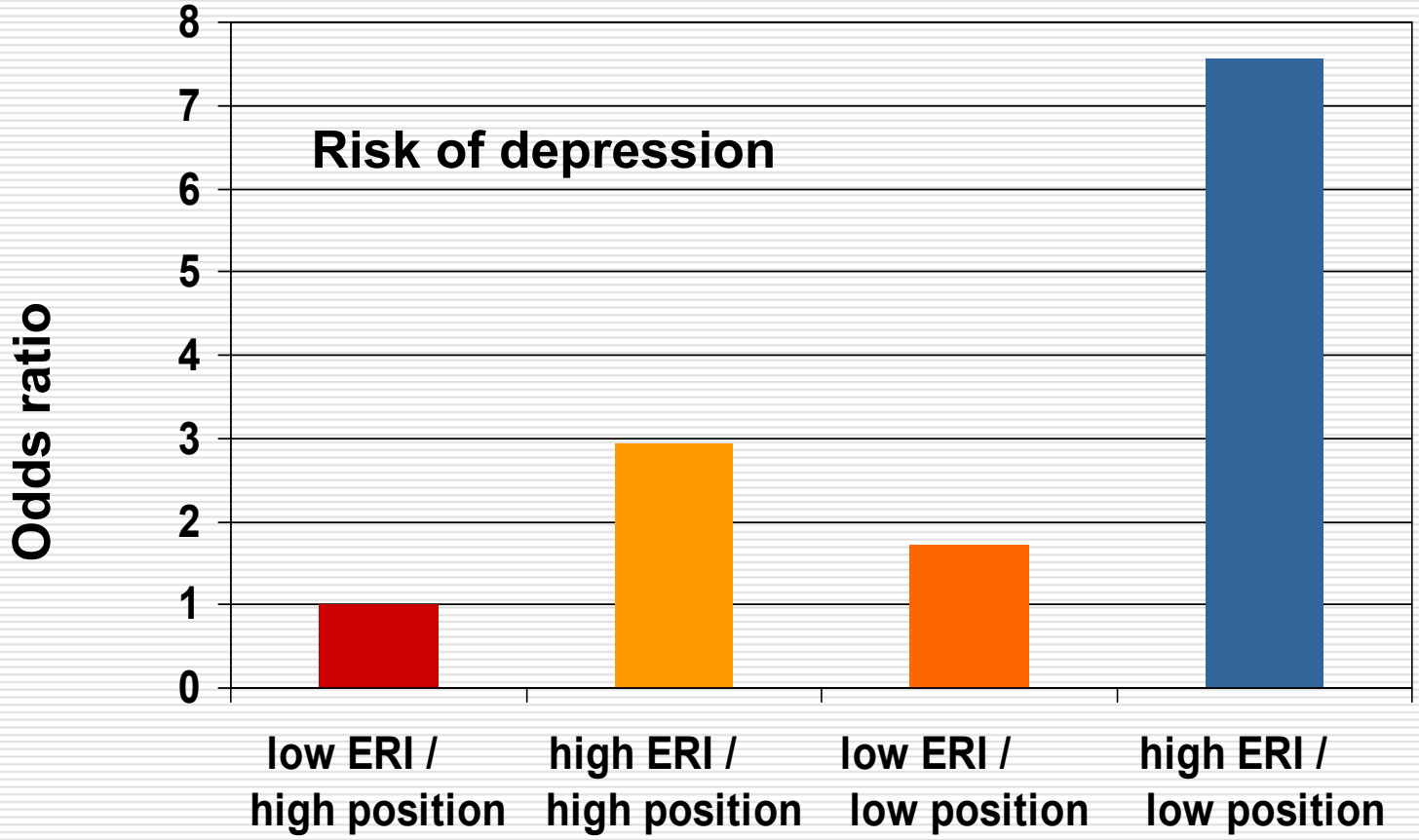


Also significant after controlling for mood and negative affectivity

Stansfield SA, North FM, White I, Marmot MG. *J Epidemiol Commun Health* 1995;49:48-53

Effort-reward imbalance (ERI), occupational position and depression

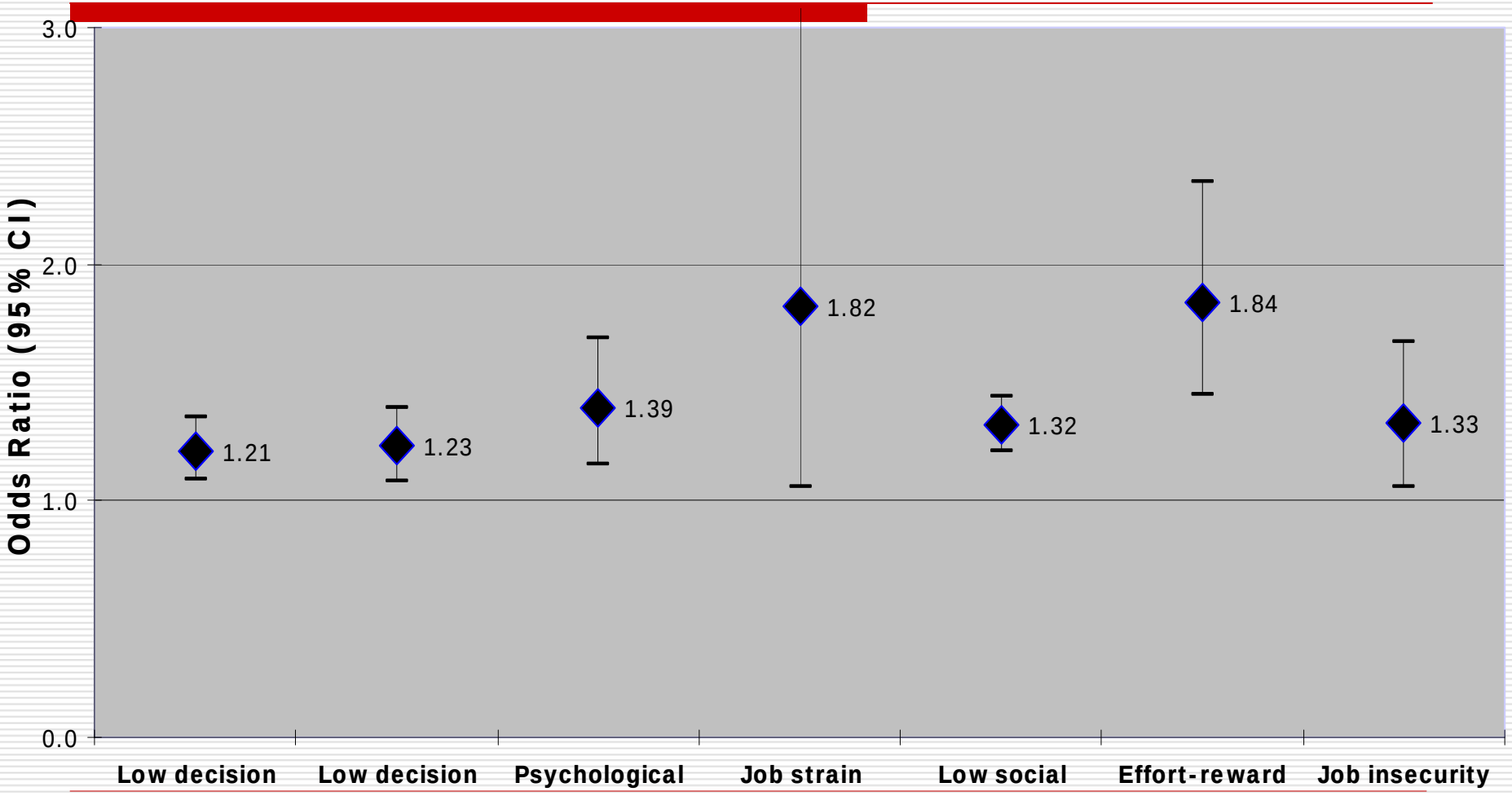
(HNR Study; baseline; N=1811 men and women aged 45-65)



N. Wege, N. Dragano, J. Siegrist (2007), JECH (in press).

Meta-analysis of the association of work stressors and common mental disorders

(Stansfeld SL, Candy B. Scand J Work Environ Health 2006;32(6,special issue):443-462.)



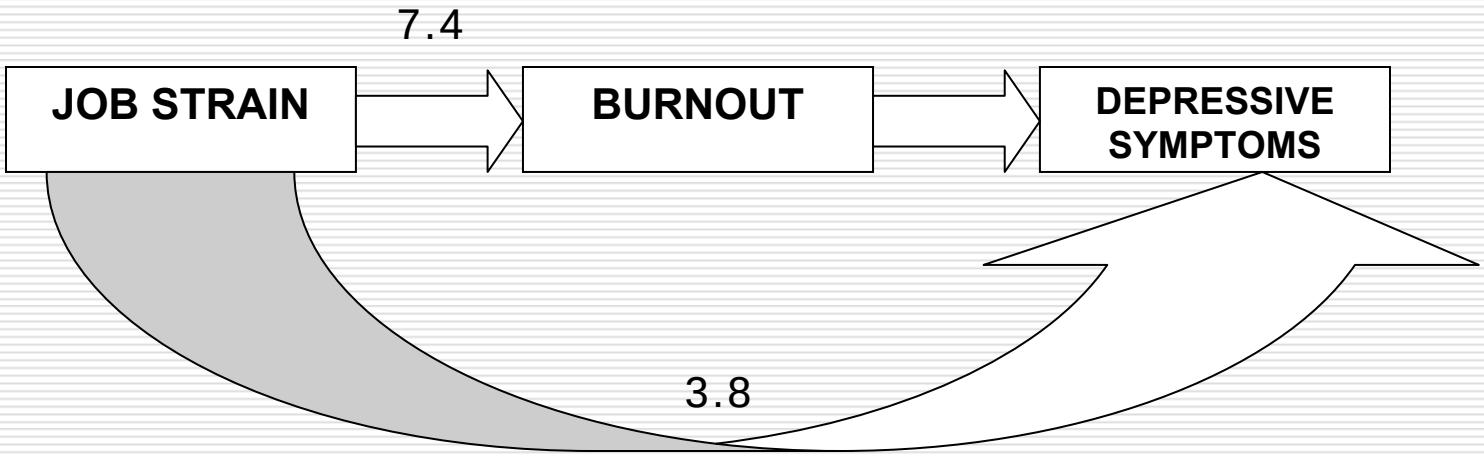
Burnout

- Symptoms include:
  - Predominance of fatigue symptoms
  - Atypical physical distress symptoms
  - Symptoms are work-related
  - Symptoms appear in “normal” persons who did not suffer from prior psychopathology
  - Decreased effectiveness and impaired work performance due to negative attitudes and behaviors
- Three dimensions: emotional exhaustion, depersonalization, and personal accomplishment.

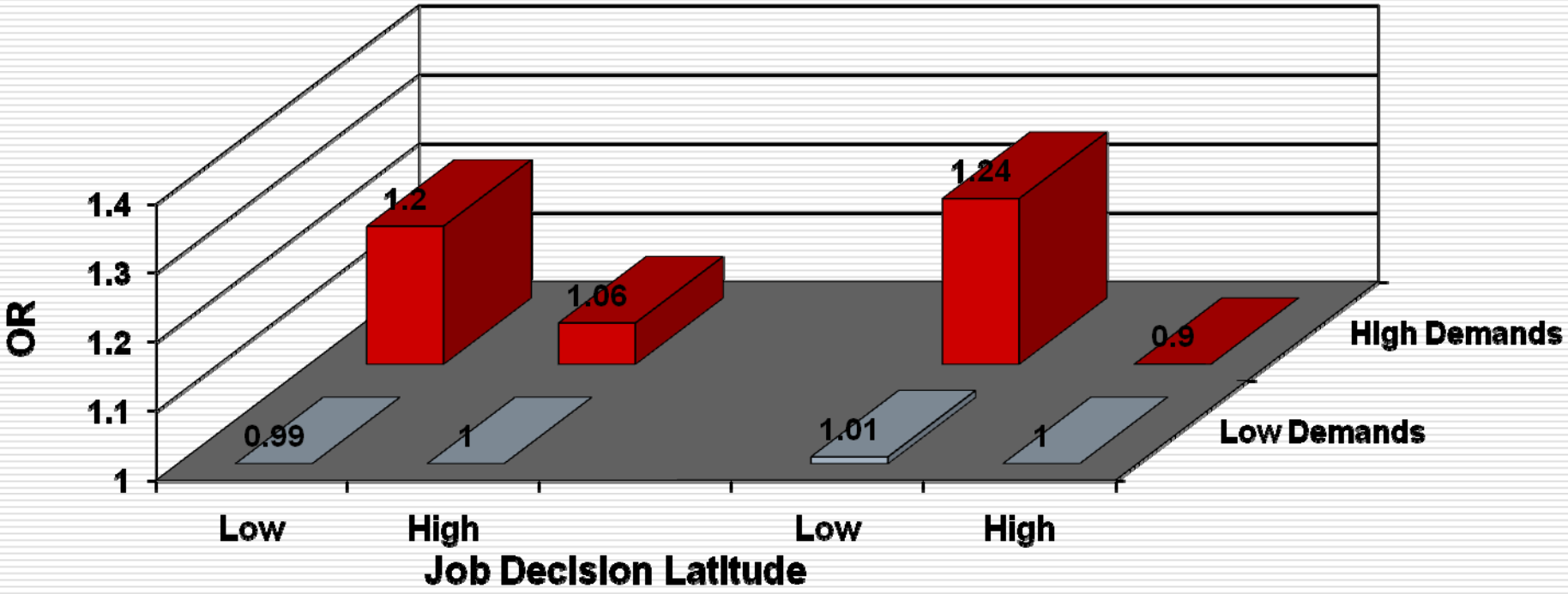
Job strain, burnout & depression

- Most studies show an association between job strain and burnout (Van der Doef M, Maes S. 1999)

- Burnout may in part mediate the association between job strain & depression (Ahola et al. 2006)



Job strain and sickness absence:
20 month follow-up among 1,793 Quebec nurses



Short-term sick leave (1-5 days)

Medically certified sick leave for mental health problems

Bourbonnais R, Mondor M. *Am J Industrial Medicine* 2001; 39:194-202.

Direct and indirect costs of illness

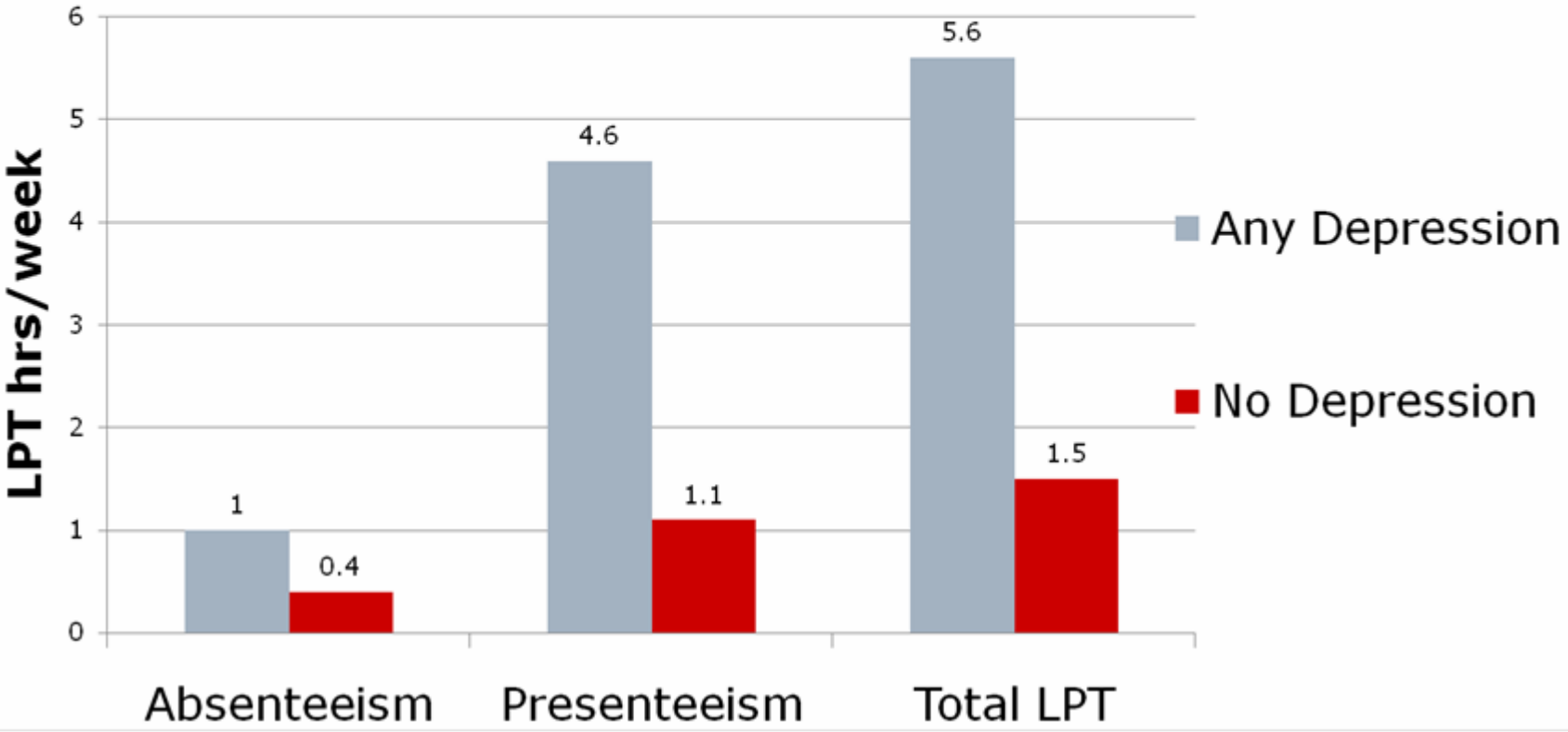
- **Direct Costs -** health insurance premiums and worker's compensation.

- **Indirect Costs -** absenteeism/sick leave, disability, turnover, presenteeism

  - **Illnesses among the top contributors to these costs include: hypertension, acute MI, depressive disorders etc.(Institute of Health and Productivity Studies)**

Jauregui, M, Schnall PL. Work, Psychosocial Stressors and the Bottom Line In: Schnall et al (eds) Unhealthy Work: Causes, Consequences, Cures, Baywood (forthcoming 2008)

Average Lost Productive Time (LPT) Among US Workers with Depression and in the Absence of Depression



- Depression costs employers **$44 billion a year** in lost productivity alone (Stewart et al JOEM 2003).

Cost of heart disease

- The cost of cardiovascular diseases and stroke in the United States for 2007 is estimated at $431.8 billion, including direct costs for health care expenditures and indirect costs (lost productivity from death and disability).

American Heart Association. Heart Disease and Stroke Statistics—2007 Update. Dallas, Texas: American Heart Association; 2007.

Business stakeholders and the bottom line

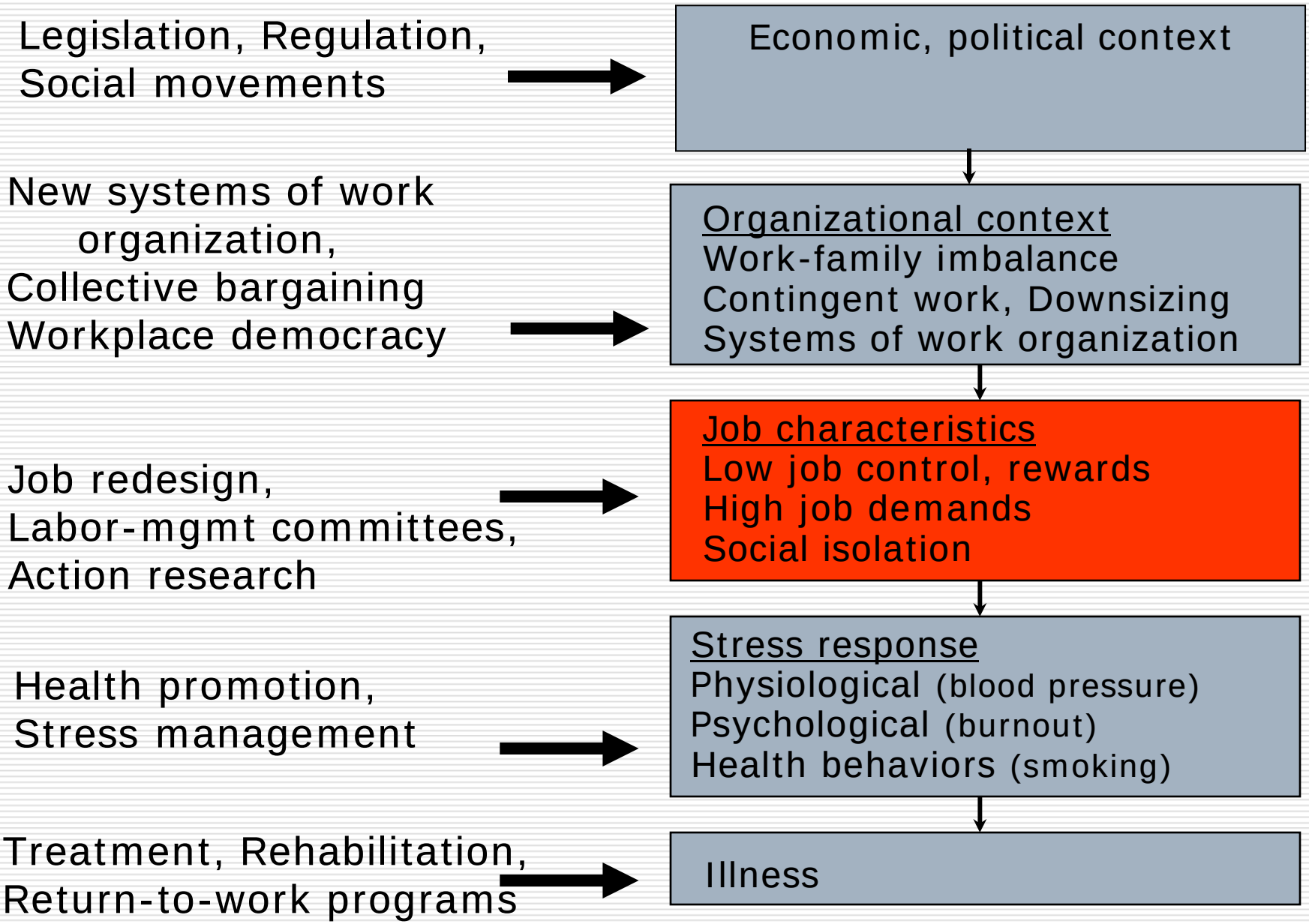
- **“The threat that identifying new work-related illnesses will translate into expanded grounds for workers’ compensation claims and more costs is a major deterrent to recognizing more workplace etiologies…”**

- **“The dual role of employer and insurer that many companies play gives companies great power and interest in determining what will be recognized as illness or not, particularly work-related…”**

(Gordon DR, Jauregui M, Schnall PL. Stakeholder Perspectives on Work and Stress: Seeking Common Ground. In: Unhealthy Work: Causes, Consequences, Cures. Baywood (forthcoming 2008)

The Cures

How do we go about making change?



Participatory action research (PAR): Hotel room cleaners: San Francisco & Las Vegas

- PAR: effective methodology to describe problems, apply systems view, uncover physical & psychosocial stress factors, improve work organization, measure results
- Hotel room cleaners, San Francisco, 1998: union initiated partnership, defined priorities
- Results presented to union-mgmt contract committee
  - 1999 contract: daily room quota from 15 → 14 or 13
  - 2007 contract reached further improvements

Lee PT, Krause N. The impact of a worker health study on working conditions. J Public Health Policy 2002;23:268-285. Creating Luxury, Enduring Pain. UNITE-HERE, April 2006; Casey M, Rosskam E. Organizing and cllaborating to reduce hotel workers' injuries. In Schnall P et al (eds.) *Unhealthy Work* Baywood (forthcoming 2008)

Participatory action research: Airport check-in workers: Switzerland & Canada

Some key results:

- Universal baggage limit of 21 kilos introduced globally
- Canadian Auto Workers' Union & mgt. re-designed check-in workstations at 1 study airport; similar changes at others
- ITF report sent to collective bargaining agents in 200 countries
- International press coverage
- Publications
- ILO tripartite seminar
- ILO report disseminated globally

Rosskam E., Excess Baggage: Leveling the load and changing the workplace, Baywood, New York, 2007

Other approaches

- Kaiser Permanente Labor-Management Partnership
- Cooperative agreements (MCTF-SEIU)
- Need to integrate health promotion/stress management with occupational health

Garcia, L.. The Maintenance Cooperation Trust Fund: *Combating worker exploitation and unfair competition Through collective action with responsible employers.* In Schnall P et al (eds) *Unhealthy Work.* Baywood (forthcoming 2008); Schmidt K., Gerwig, K., Safety Drives Kaiser Permanente's Labor Management Partnership. In Schnall P et al (eds). *Unhealthy Work.* Baywood (forthcoming 2008)

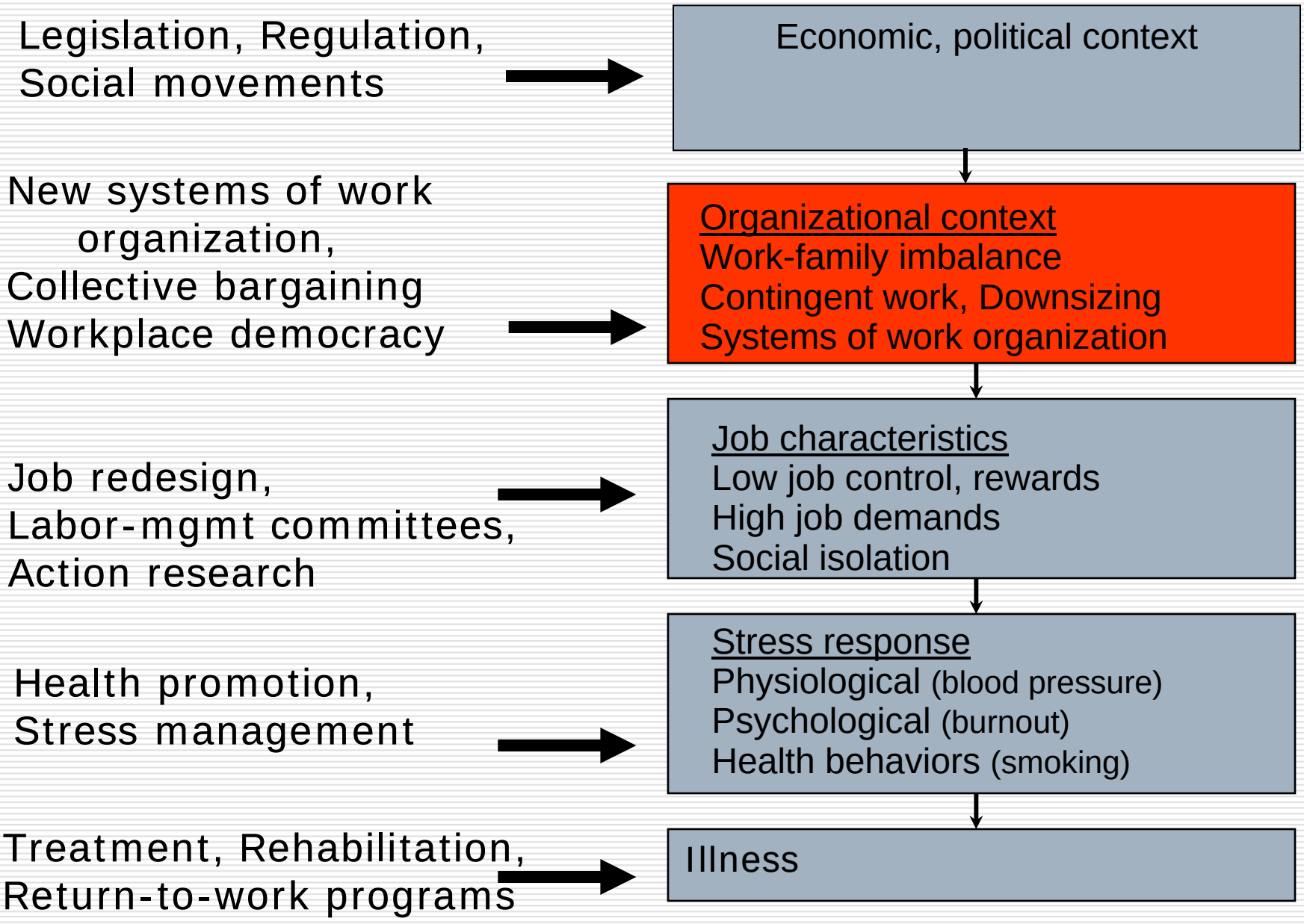
Increasing worker control/participation decreases stress, improves health

job stress intervention studies

- work re-organization → increased employee job control → improved mental health, sickness absence, performance (Bond & Bunce, 2001, UK)
- high employee participation → decreases in work demands, improved social support, decreases in stress levels (Eklof et al 2004, Sweden)
- a collaborative/participatory approach in the intervention → led to improved co-worker relations, job security (Lindstrom 2000, Finland)

LaMontagne AD, Keegel T, Louie AM, Ostry A, Landsbergis PA. A Systematic Review of the Job Stress 98 Intervention Evaluation Literature: 1990—2005. *International Journal of Occupational and Environmental Health* 2007;13:268–280.

How do we go about making change?



Systems of work organization

- Socio-technical systems (England, Scandinavia)
  - Self-directed worker teams (control pace, content)
  - Longer cycle time
  - Higher skill levels
  - More flexible work organization

Landsbergis PA, Cahill J, Schnall P. *Journal of Occupational Health Psychology* 1999;4(2):108-130.

Collective bargaining

- Chemical & physical hazards, shiftwork
- Job demands: staffing; workload
- Job control: flextime; voluntary O/T; less repetitive work; participate in decision-making; skills training; promotion opportunities
- Job social support: supv. training; reduce social isolation; team building
- Job security
- Work climate: harassment, discrimination
- Family friendly programs: childcare, eldercare, family leave, flextime
- Process: Grievance procedure, labor-mgmt. health & safety committees

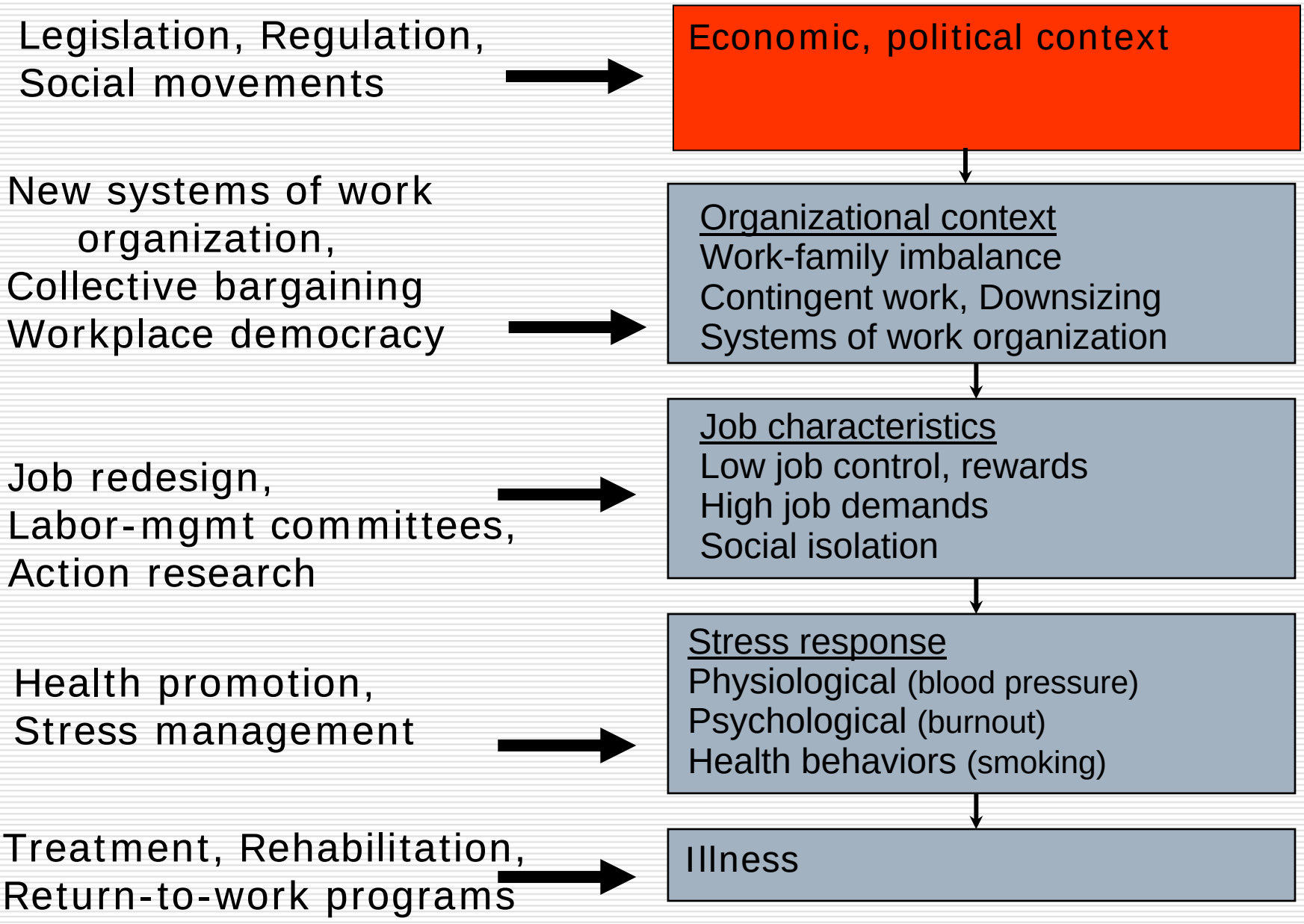
Landsbergis P. Collective bargaining to reduce CVD risk factors. *Occupational Medicine: State of the Art Reviews*. 2000;15(1):287-292.

Collective bargaining:
Reducing the stress of electronic monitoring

- Call centers
  - CWA/AT&T eliminated individ. measurement, secret monitoring
    - Supervision by peers, discussing calls with employee led to:
      - fewer customer complaints & grievances
      - less absenteeism
    - Customer complaints to Fedex led to de-emphasis on number of calls

Office of Technology Assessment. The Electronic Supervisor: New Technology, New Tensions. Washington, DC, 1987.; Gruber J. GPS monitoring and the global workforce. Labor and Employment Law, 2007; Smith MJ, Amick BC. Electronic monitoring at the workplace: Implications for employee control and job stress. In Sauter SL, Hurrell, JJ, Jr, Cooper CL (Eds.) Job control and worker health (pp. 275-289). New York: Wiley, 1989.

How do we go about making change?



Legislation & Regulation (U.S.)

- National legislation/regulation needed
  - OSHA ergonomic regulations (machine-pacing, overtime, work pace, rest breaks, job rotation)
  - Paid vacation time, paid sick leave, pensions, health care
- U.S. state legislation
  - Minimum staffing levels (e.g. nurses)
  - Bans on mandatory overtime (health care workers)
  - Paid family leave

Examples of healthy policy proposals

- 2007: Sen. Kennedy (D-Mass.) & Rep. DeLauro (D-Conn.) introduced Healthy Families Act (S. 910 and H.R. 1542): require employers with 15 or more employees to provide workers 7 paid sick leave days/year to take care of themselves or a family member

- $5,000 baby bond

- UK implemented baby bond (2005)

Legislation & Regulation (Europe)

- Scandinavian Work Environment Acts (1970s)
- European Union directive (12 June 1989)
  - Less monotonous work at predetermined pace to improve health
- European Council directive (1996)
  - Right to refuse >48 hrs/wk
- European Commission Guidance on work-related stress (2000)
- European labor-management (8 October 2004)
  - Framework agreement on work-related stress

Swedish Work Environment Act, 1977

(amended May 30, 1991, chapter 2, section 1)

- The employee shall be given the opportunity of participating in the design of his/her own working situation
- Technology, work organization & job content shall be designed in such a way that the employee is not subjected to physical or mental strains which can lead to illness or accidents
- Ensure that work provides opportunities for:
  - variety, social contact & co-operation
  - personal & professional development

England under current Labour government (1997-2007)

- Social safety net strengthened
- Efforts to reverse increase in inequality & poverty from 1980s
- Poverty rate cut in ½ since 1997
- Minimum wage now worth 2x U.S.
- Tax credit for low wage workers, child tax benefit larger than U.S.

Krugman, P. NY Times, December 25, 2006.

Social democratic governments & welfare state expenditures mean lower infant mortality

	Years					
	1972	1977	1982	1987	1992	1996
Power relations						
Pro-redistributive parties' cumulative years of government	-0·472*	-0·546*	-0·464*	-0·352	-0·507†	-0·747†
Welfare state						
Public health expenditure	-0·237	-0·579†	-0·604†	-0·761†	-0·734†	-0·676†
Health care coverage	-0·541†	-0·506†	-0·061	-0·065	-0·251	-0·366

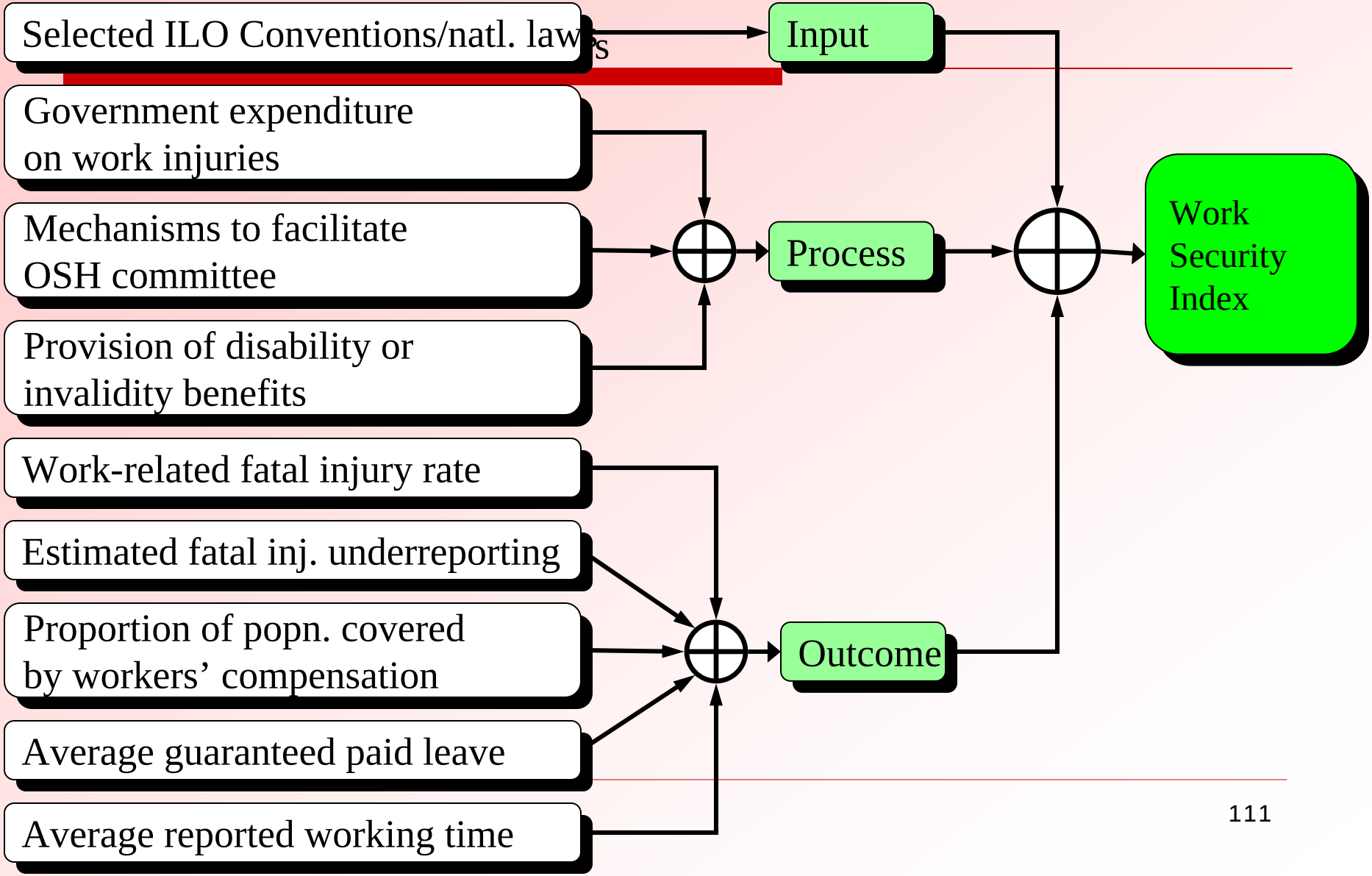
(correlations with infant mortality rate)

Navarro, Muntaner, Borrell, Benach, Quiroga, Rodriguez-Sanz, Verges, Pasarin, Politics and health outcomes, Lancet 2006;368:1033-1037.

Reconceptualize occupational health away from technocratic/medical models to principles based on citizenship rights (*work security*)

- Protection against accidents & illness at work through OSHE regulations;
- Protection from violence, discrimination, harassment, stress,
- Limits on hours of work;
- Rights to employment & income security, compensation benefits, pension security, maternity protection, absenteeism protection, holidays, reasonable work scheduling & work organization;
- Protection through legislation, enforcement, inspections;
- Right to association;
- Right to collective bargaining;
- Right to health care, education, child care;
- Right to refuse unsafe work;
- Right to joint labor-management OSH committees;
- Right to know about work-related hazards;
- Protection for “whistle-blowers”.

Work Security Index



Work Security Index: Protecting Workers' Security

The index be used to guide policy & help to prioritize use of resources

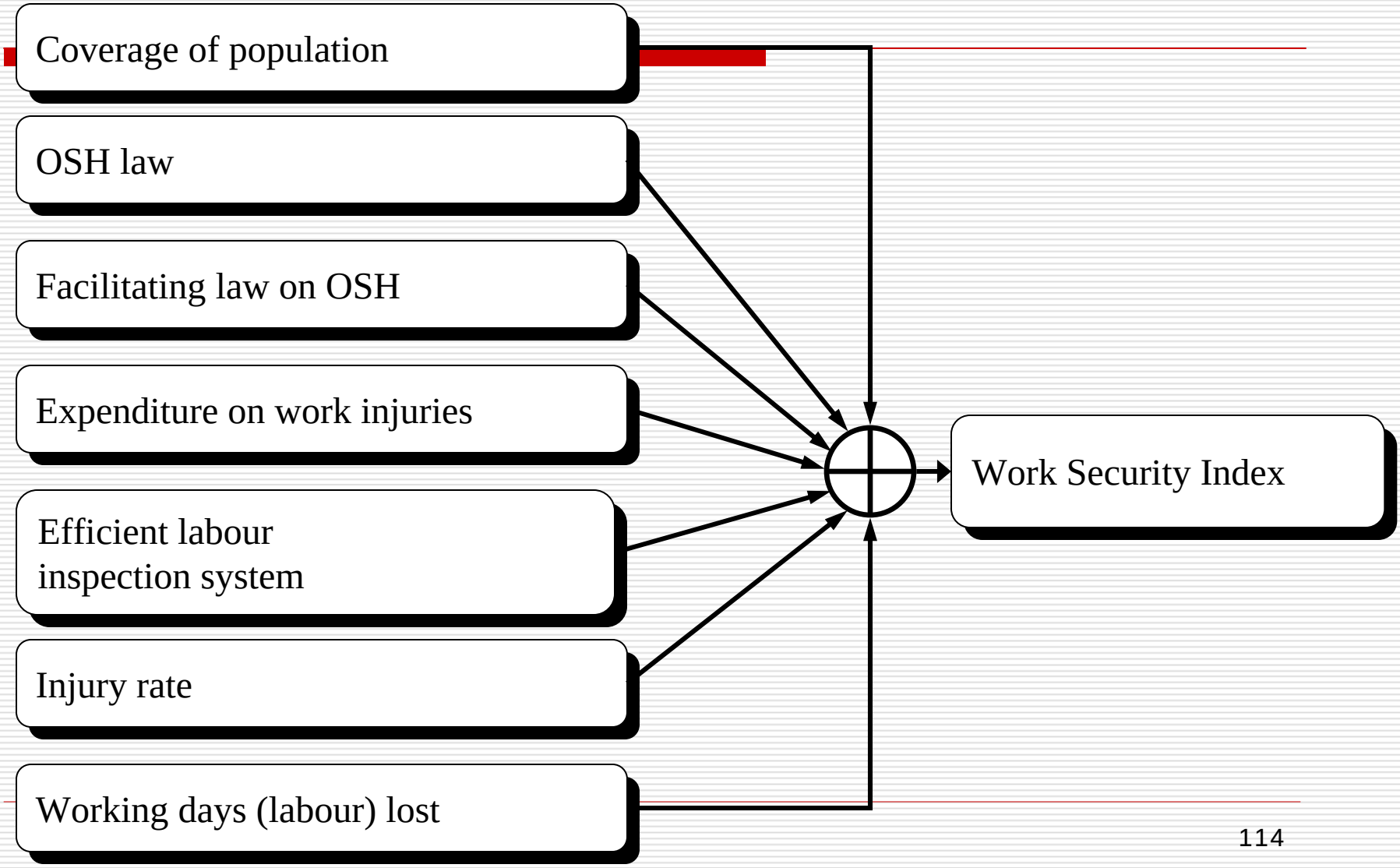
- Country clustering
- Country ranking by regions
- Ranking of States
- Prioritizing by country, region, state for degree of performance on worker protection
- Use indicators to build enterprise work security index to rank how well enterprises perform in protecting workers' health

How well is the USA protecting workers' health?

Ranking	26	27	28	29	30	31	32	... (95)
Countries	Hungary	Lithuania	Slovakia	United States	Croatia	Latvia	Argentina	
Work Security Index	0.665	0.665	0.660	0.656	0.646	0.633	0.628	
Conv. 1: Restricting hours of work	No	Yes	Yes	No	No	No.5	Yes	
Conv. 103: Maternity Protection	Yes	No	No	No	Yes	No	No	
Conv. 132: Annual Holidays with Pay	Yes	No	No	No	Yes	Yes	No	
Conv. 155: Existence of OSH law	Yes	No	Yes	No	Yes	Yes	No	
Conv. 159: No discrimination against disabled workers	Yes	Yes	Yes	No	Yes	No	Yes	
Conv. 161: Establishment of OH services	Yes	No	Yes	No	Yes	No	No	
Conv. 171: Restricting night work	No	Yes	No	No	No	No	No	
Law on OSH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Law on paid leave	Yes	Yes	Yes	No	Yes	Yes	Yes	
Law on disability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Law on paid maternity leave	Yes	Yes	Yes	No	Yes	Yes	Yes	
Government spending on workers' compensation	0.13	0.09	0.12	0.49	0.12	0.09	0.17	
OSH board or committee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Earnings-related cash benefits for injured workers	63.0	80.0	76.0	66.7	85.0	80.0	70.0	
Fatal Occupational injuries - ILO estimates	11.4	6.0	8.4	4.5	9.1	7.4	11.1	
Level of injury underreporting	Medium	High	High	Low	High	High	Medium	
% Wage workers (proxy of % workers covered for work injury)	84.8	79.2	53.9	92.6	75.2	84.7	72.1	
Average paid leave (corrected with % wage empl.)	21.2	15.8	13.5	9.3	13.5	17.0	17.3	
Average reported working time	44.0	36.4	36.5	34.5	41.9	41.2	42.2	
Input	0.944	0.833	0.888	0.222	0.944	0.805	0.777	
Process	0.553	0.599	0.600	0.761	0.635	0.599	0.603	
Outcome	0.582	0.614	0.576	0.820	0.503	0.564	0.567	

Annycke, Bonnet, Khan, Figueiredo, Rosskam, Standing, *Economic security for a better world*, ILO, Geneva, 2004.

Work Security *Proxy* Measures



Sample Countries: Africa

Country	Egypt	Ghana	South Africa	Sudan	Tanzania
Coverage of population	Good	Good	Good	Bad	Good
OSH law	Yes	N/A	Yes	N/A	N/A
Facilitating law on OSH	Yes	N/A	Yes	N/A	N/A
Expenditure on work injuries as % of GDP	0.08	0.06	0.11	N/A	0.06
Efficient labor inspection system	Yes	Yes	Yes	Yes	Yes
Injury rate (compared to regional average)	Lower	Lower	Lower	Lower	Lower
Labour lost (compared to regional average)	Higher	Lower	Lower	Higher	Lower

Sample Countries: Asia

Country	China	India	Indonesia	Japan	Thailand
Coverage of population	Bad	Bad	Bad	Bad	Good
OSH law	Yes	Yes	Yes	N/A	Yes
Facilitating law on OSH	Yes	Yes	Yes	N/A	No
Expenditure on work injuries as % of GDP	0.07	0.07	0.07	0.66	0.1
Efficient labor inspection system	Yes	Yes	Yes	Yes	Yes
Injury rate (compared to regional average)	#N/A	Higher	Lower	Lower	Lower
Labour lost (compared to regional average)	#N/A	#N/A	Lower	Lower	Higher

Forging an approach to justice, security, health & well being

- Insecurity encourages discriminatory, unfair attitudes
- Widespread support for provision of security for all forms of work
- In sum, strong support for principles of universalism, social solidarity & work

These views should be a yardstick for forward-looking policy formulation.

ILO PSS data from 48,000 people in 13 developing/transitional countries.

Annycke, Bonnet, Khan, Figueiredo, Rosskam, Standing, *Economic security for a better world*, ILO, Geneva, 2004.

What is required to achieve justice, more equality & better health & work?

- A universal floor of basic social protection through which no one can fall
- Mechanisms of social solidarity (redistributive feature)
- Multiple pillars of support & service provision, with the State providing the floor & overseeing whole structure
- Scope for community measures
- Governance & regulatory regime that provides a balance of all legitimate interests; accountable & transparent
- Mechanisms for public interest auditing & evaluation

Making changes to work

- Educate unions, workers, employers about healthy job design & work organization
- Research on job stressors, high risk occupations & high risk workplaces
- Conduct & evaluate interventions to reduce job stressors
- Combine primary prevention with secondary prevention
- Promote (& evaluate) collective bargaining on reducing job stressors
- Promote (& evaluate) regulation, legislation to improve work environment & reduce social inequality

Conclusions

Globalization, Inequality and Work

- Aspects of globalization impact people's health.
- Two of the mechanisms/processes include:
  - increasing social inequality
  - the rapidly changing nature of work
- **These changes have contributed to an epidemic of work-related illnesses**
- Research in this area tends to be ignored in the U.S.

Global epidemics are not natural

- **Global epidemics of heart disease, stroke, obesity, diabetes are not the natural results of aging**
  - Products of industrialization, urbanization & chronic stress from changing nature of work:
  - Labor market stressors
    - precarious employment
    - reduced social protection
  - Work organization stressors
    - Job strain
    - Effort-reward imbalance
    - Long work hours

Work-related Illness

By age 50, most U.S. workers suffer from at least one work-related illnesses including:

- Cardiovascular disease
  - including hypertension & heart disease
- Work-related mental health conditions
  - including burnout, depression, anxiety-related disorders
- Musculoskeletal disorders
  - including back, neck and repetitive strain injuries

How does work contribute to these epidemics?

- Changing labor market & work organization contribute to chronic stress

- Exposure to chronic stress at work (& other environments)
  - has cumulative impact
  - can lead to physical & mental illness

- Stress is a social process with social causes (e.g, work organization)
  - focusing on individual responsibility for “stress” distracts from these social causes

Healthy Work

- Healthy work requires more than the absence of noxious workplace psychosocial stressors or shorter work weeks…
- **People need:**
  - to perceive their skills are being used on the job
  - to have a say in how their job is done
  - reasonable & fair work demands
  - to be treated with respect and not as objects
  - their interests & needs taken into account in decision-making

Achieving Healthy Work

- Legislation to reduce workplace stressors (as in Europe)
- Increased minimum wage, fair taxation
- Job protection & social benefits (e.g. pensions)
- Comprehensive, prevention-focused national health care
- Paid sick leave, family leave, vacation time
- Limits on legal hours of work per week
- Workers' compensation laws recognize illnesses related to work stressors
- Support for collective bargaining to improve work environment, including legal protection for joining unions

The European Social Model

- View that society should combine sustainable economic growth with ever-improving living & working conditions
- Full employment, good quality jobs, equal opportunities, social protection for all, social inclusion, involving citizens in decisions that affect them
- Social dialogue, collective bargaining & workers' protection crucial factors in promoting innovation, productivity, competitiveness
- This distinguishes Europe, where post-war social progress has matched economic growth, from the US model, where small numbers of individuals have benefited at the expense of the majority
- Europe must continue to sustain this social model as an example for other countries around the world

Unhealthy Work

Causes, Consequences and Cures (working title)

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Editors

Peter L. Schnall

Marnie Dobson

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Associate Editors

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