

# Trends in working conditions, health and socioeconomic health inequalities, and interventions to reduce socioeconomic health inequalities

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Worker Health: Work as a Social Determinant of Health  
Oregon Institute of Occupational Health Sciences  
November 13, 2020

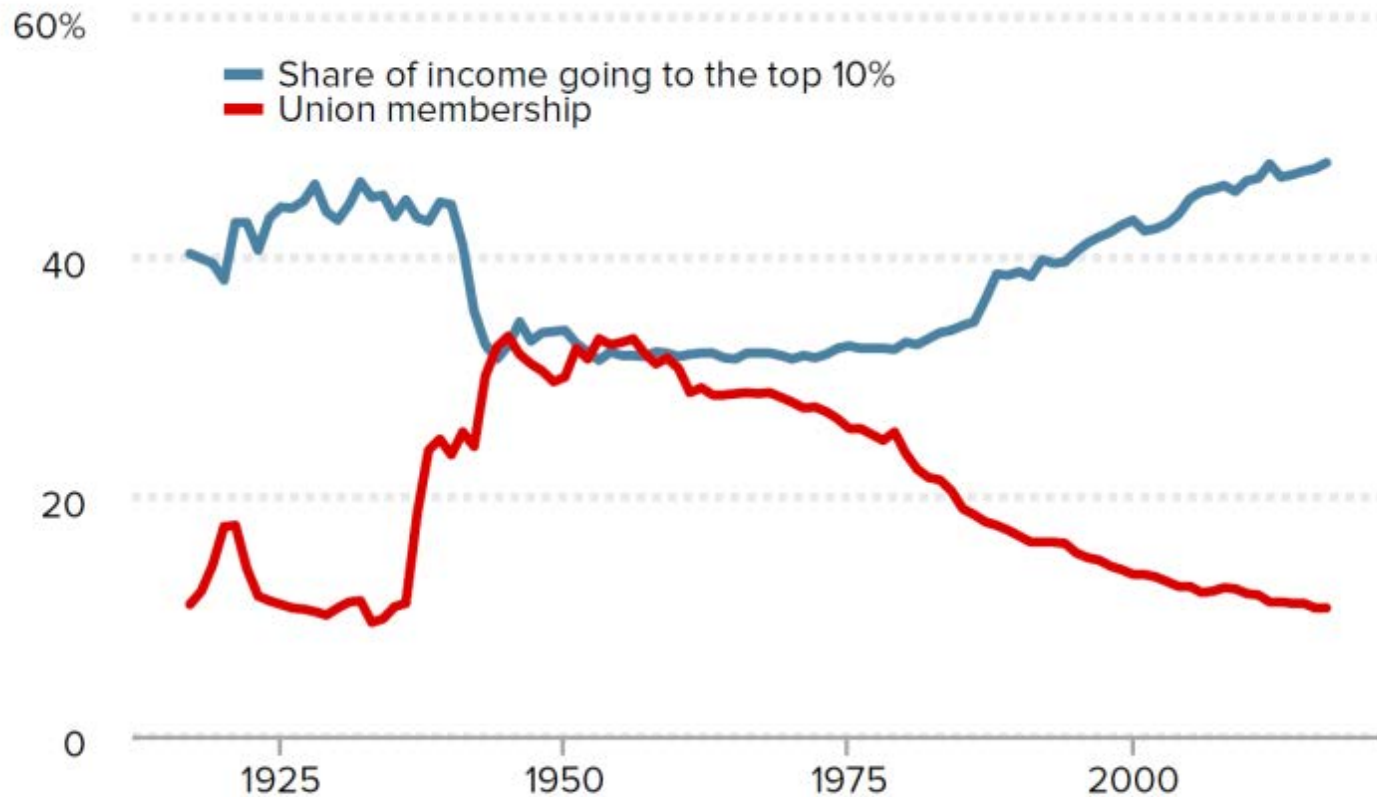
# Outline

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- I. Trends (primarily U.S.) in:
  - A. Working conditions
  - B. Health
  - C. Socioeconomic health inequalities
- II. Interventions to reduce socioeconomic health inequalities

# I. A. As union membership declines, income inequality increases

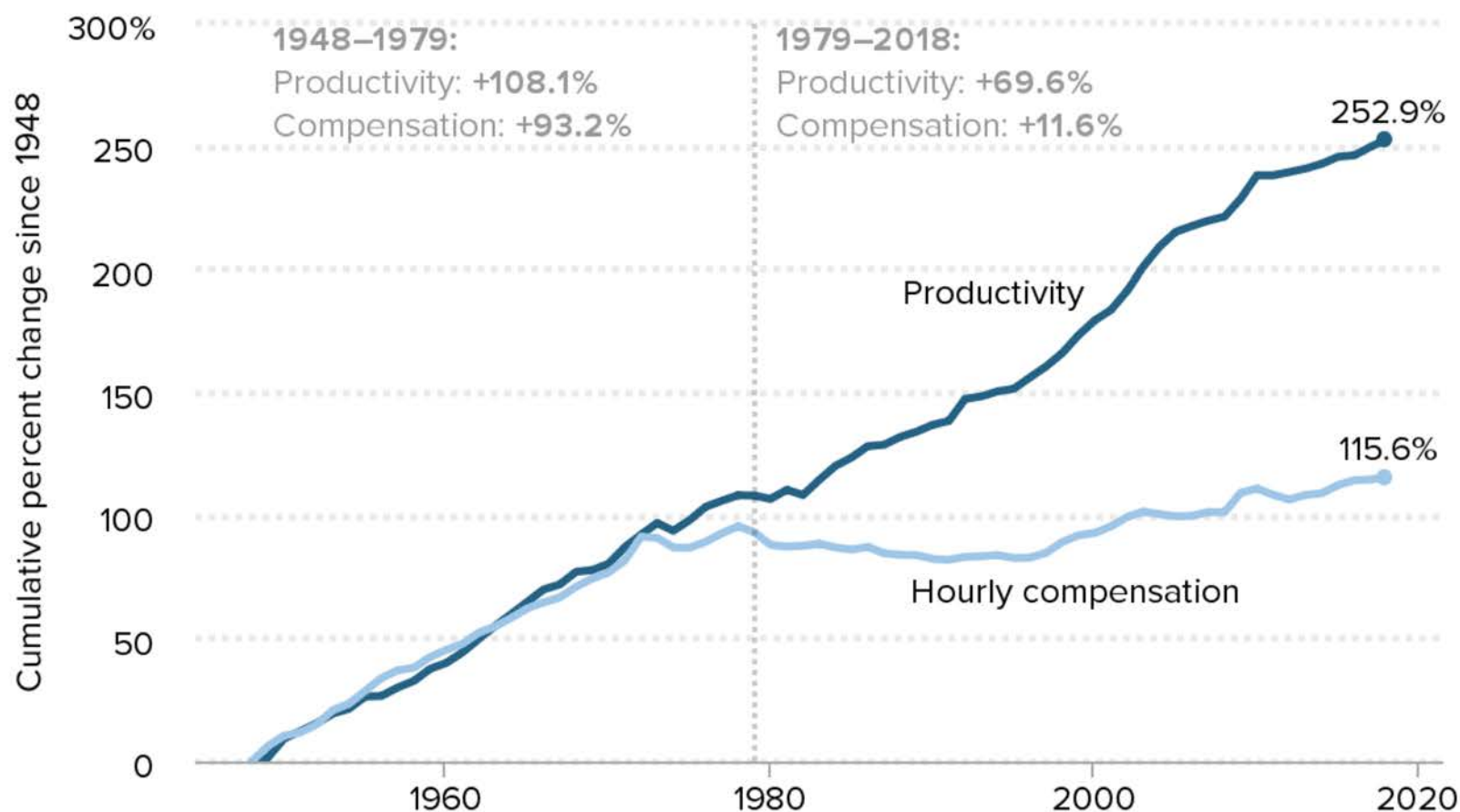
Union membership and share of income going to the top 10%, 1917–2017



**Source:** Reproduced from Figure A in Heidi Shierholz, *Working People Have Been Thwarted in Their Efforts to Bargain for Better Wages by Attacks on Unions*, Economic Policy Institute, August 2019.

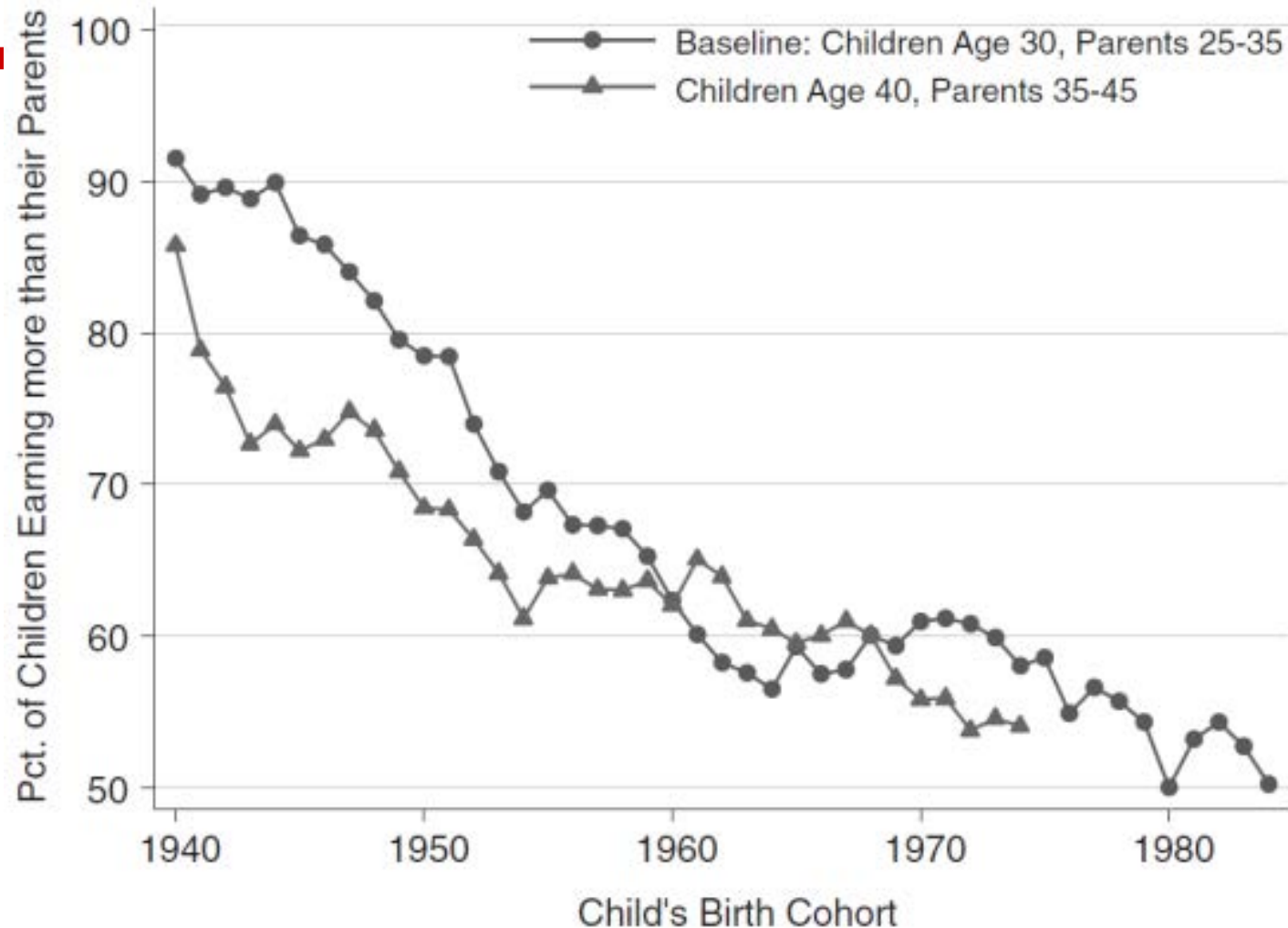
# The gap between productivity and a typical worker's compensation has increased dramatically since 1979

Productivity growth and hourly compensation growth, 1948–2018



# Declining social mobility in US

(% of children earning >parents)



# Lean production (Toyota Production System)

## → stress, musculoskeletal disorders

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- ❑ 1999 review of studies of auto plants in U.S. & Canada, lean production →
  - Increased musculoskeletal Sx
  - Intensified work pace & demands, overtime
  - Modest, temporary increases in job control, skill
- ❑ 2013 update (16 studies, 9 countries, most: manufacturing)
  - Increased stress, psychological distress
- ❑ Now, moved into:
  - Public sector (new public management)
  - Lean health care



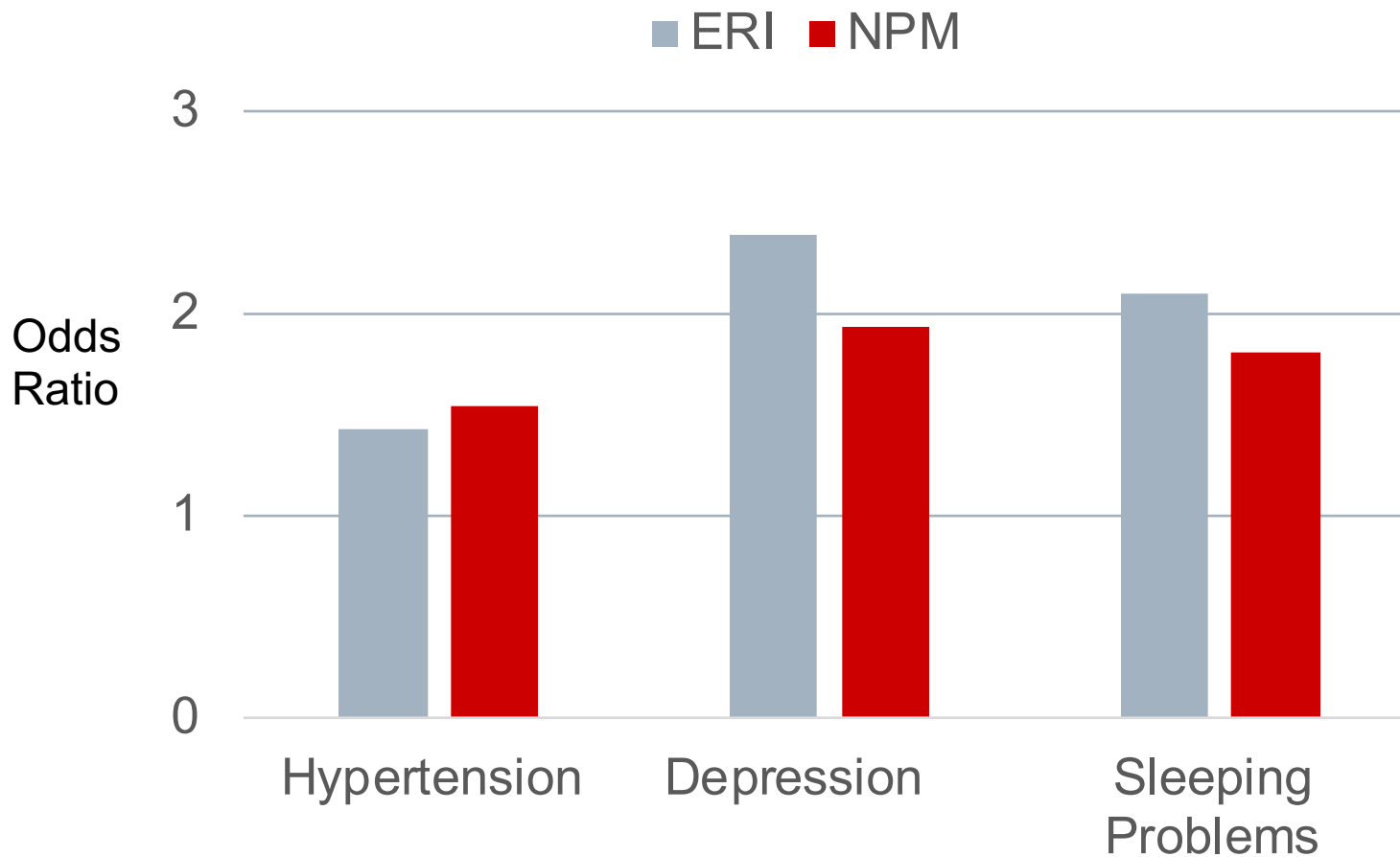




Figure 1: The relationship between policy, working conditions, workplace exposures, service quality and health for social services workers (J. Zelnick)

# ERI, New Public Management associated with ill health

NYC social workers (risk due to 1 s.d., age & race adjusted, n=1,819-2,016, p<.001)



ERI and NPM:  $r=0.54$



# Lean Sigma— Will It Work for Healthcare?

*Journal of Healthcare Information Management — Vol. 19, No. 1*

*James A. Bahensky, MS, Janet Roe, and Romy Bolton*

## Lean Health Care: What Can Hospitals Learn from a World-Class Automaker?

Christopher S. Kim, MD, MBA<sup>1,2</sup>  
David A. Spahlinger, MD<sup>1</sup>  
Jeanne M. Kin, JD, MHA<sup>3</sup>  
John E. Billi, MD<sup>1</sup>

**BACKGROUND:** With health care costs continuing to rise, a variety of process improvement methodologies have been proposed to address the reported inefficiencies in health care delivery. Lean production is one such method. The management philosophy and tools of lean production come from the manufacturing industry, where they were pioneered by Toyota Motor Corporation, which is

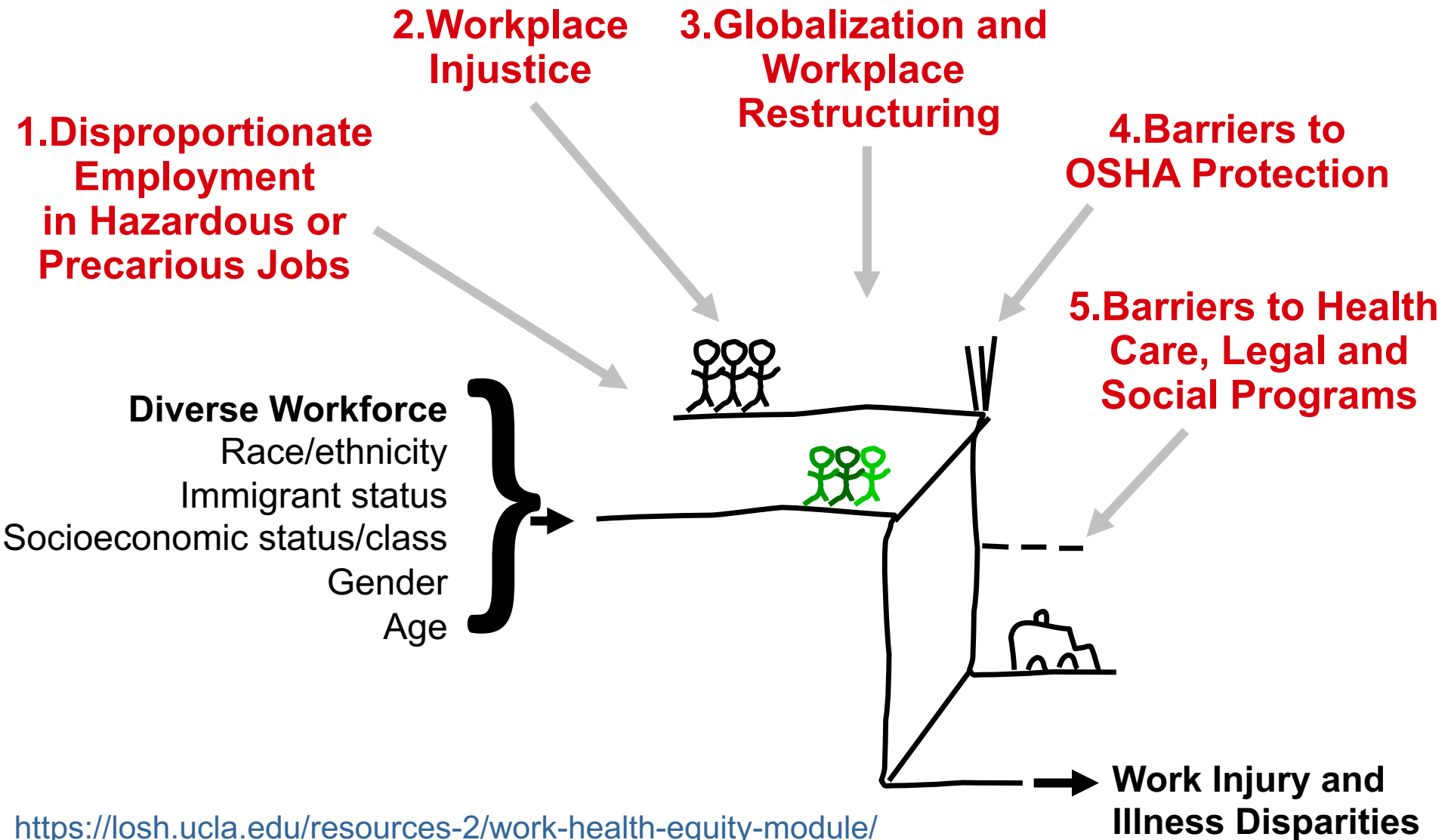
## Going Lean in Health Care

Institute for Healthcare Improvement Cambridge, Massachusetts

# Lean thinking for the NHS

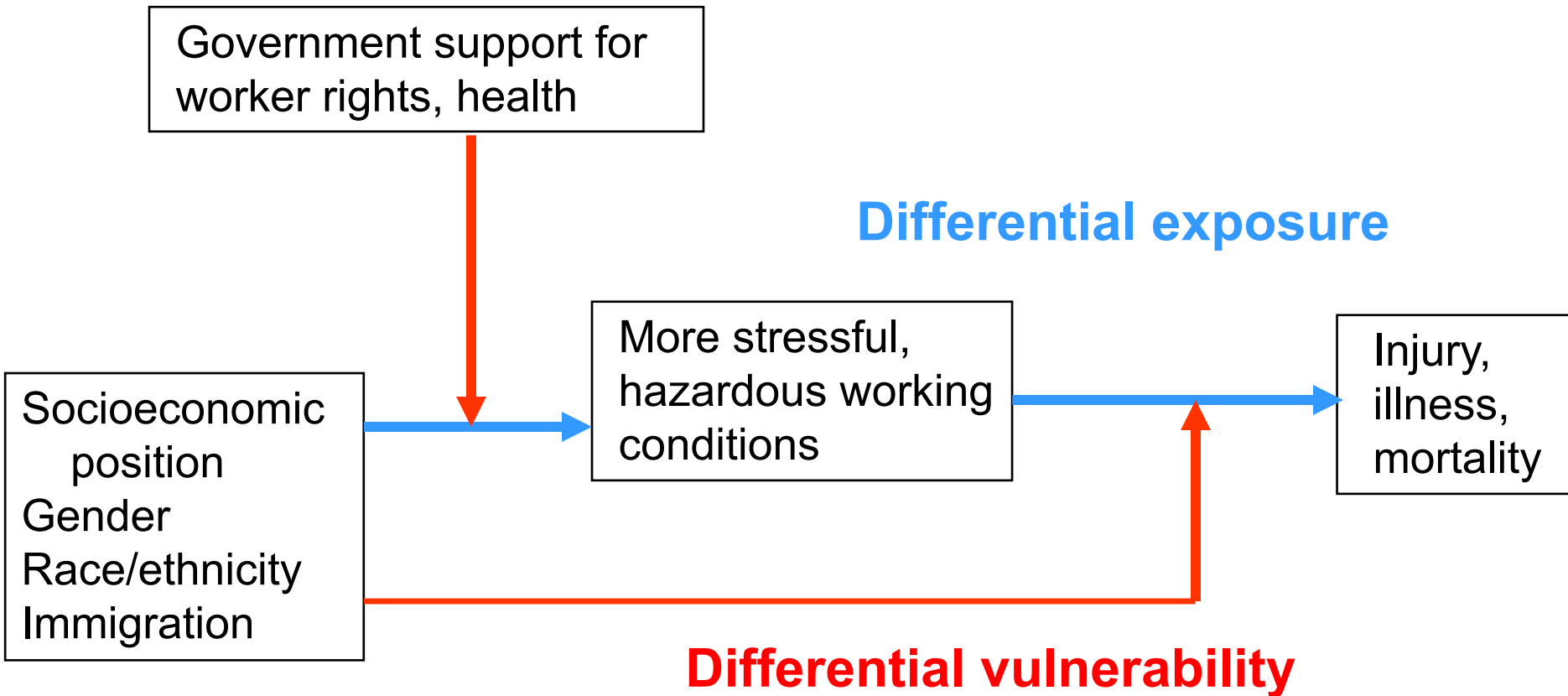
Daniel Jones and Alan Mitchell, Lean Enterprise Academy UK

# How Occupational Health Inequalities Occur



# Social stratification & health inequalities

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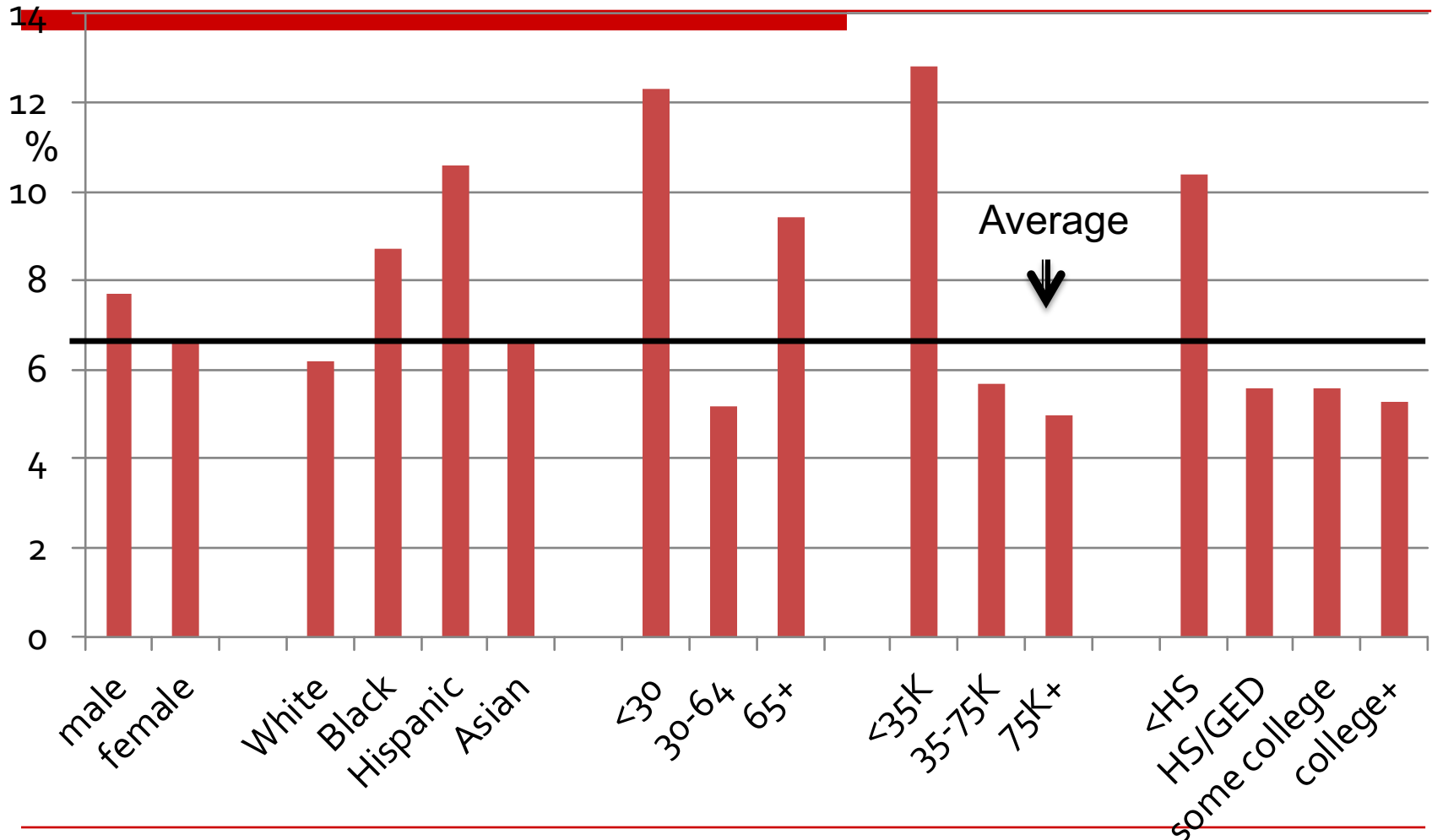


# Does work organization or job insecurity contribute to occupational health inequities?

	Low socioeconomic position	Gender	Workers of color, immigrants
Differential exposure			
Job insecurity	+	+	+
Work organization	+	-	+
Differential vulnerability			
Job insecurity	+	-	-
Work organization	+	-	-
consistent (+) or inconsistent (-) findings Shaded areas: limited research inquiry (<5 studies)			

# Differential exposure:

Workers of color & low income workers more likely to be in temporary jobs



## Lower SEP workers face more work stressors



## Low income



# Shiftwork

## Low supervisor support<sup>14</sup>





## Truck drivers are overtired, overworked and underpaid

July 25, 2018 6:46am EDT

More than half of all U.S. truck drivers exceed the federal limit of 60 hours per week. [5m3photos/shutterstock.com](#)



## Tesla failed to tell regulators about dozens of factory injuries

Email

Twitter

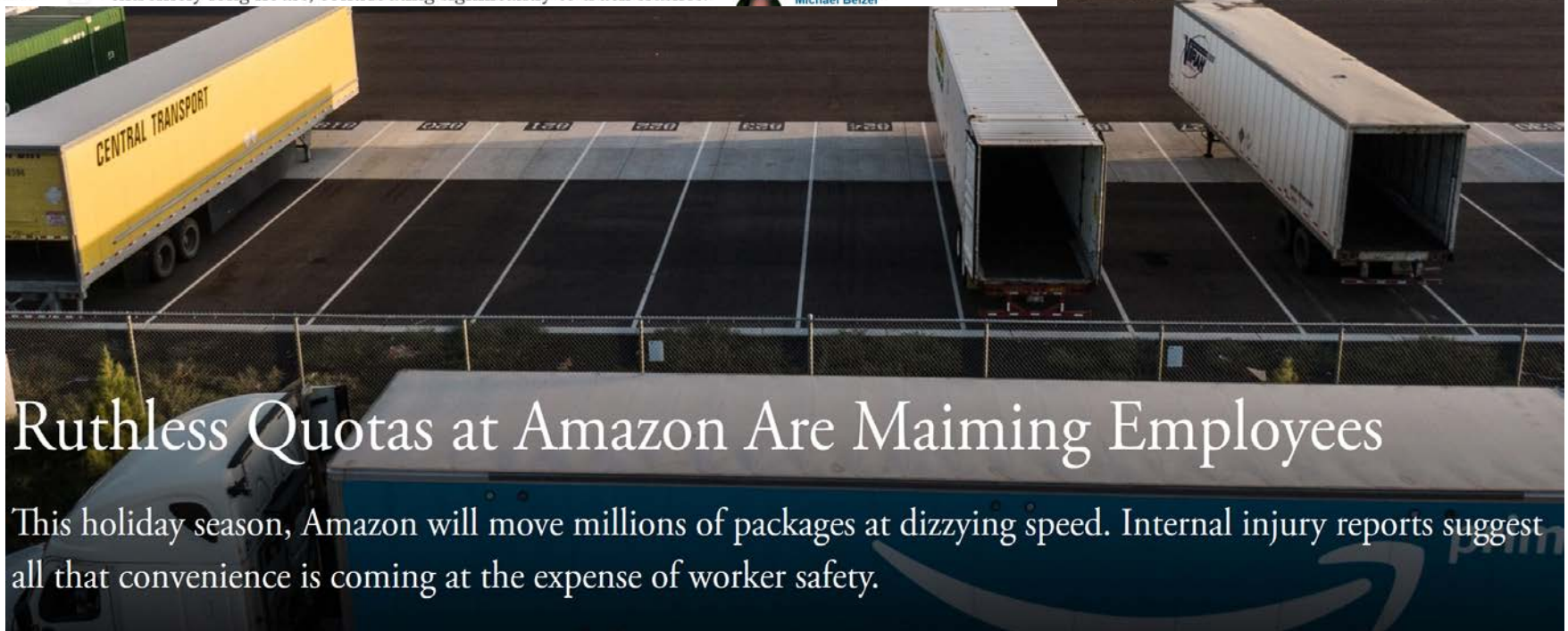
60

Research shows that economic pressure pushes drivers to work extremely long hours, contributing significantly to truck crashes.

Author



Michael Belzer



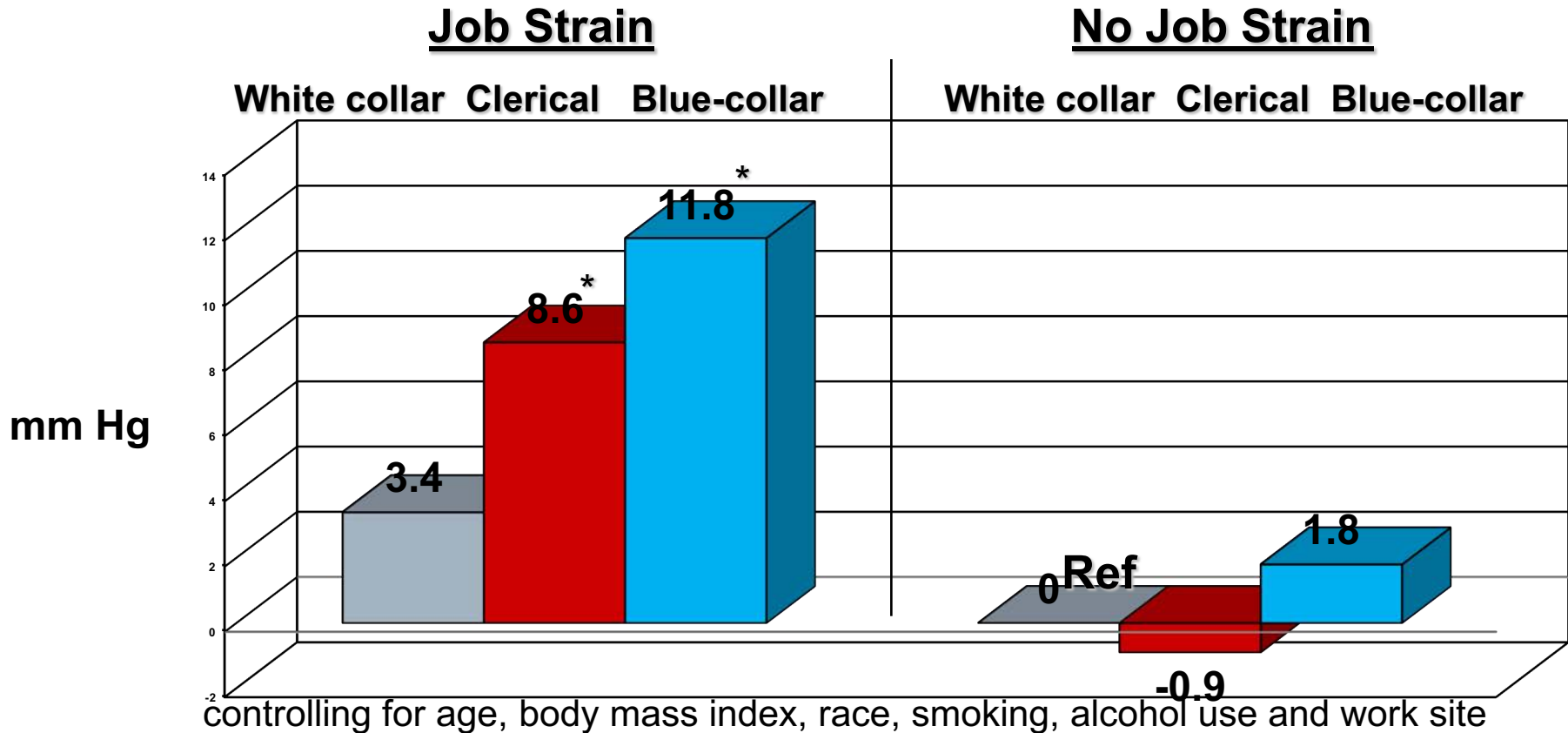
## Ruthless Quotas at Amazon Are Maiming Employees

This holiday season, Amazon will move millions of packages at dizzying speed. Internal injury reports suggest all that convenience is coming at the expense of worker safety.



# Differential vulnerability:

Stronger assoc. of job strain & work ambulatory systolic BP in blue-collar workers (n=283 men, NYC)



\*p<.05 (vs Ref group)

INTERACTION TERM: p=.13

# Health Effects of Work Stressors

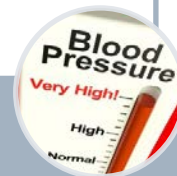
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- JOB STRAIN
- EFFORT-REWARD IMBALANCE
- LONG WORK HOURS
- ORGANIZATIONAL INJUSTICE
- DOWNSIZING
- SHIFT WORK



CARDIOVASCULAR DISEASE

- JOB STRAIN
- EFFORT-REWARD IMBALANCE
- WORK-FAMILY CONFLICT
- THREAT-AVOIDANT VIGILANCE



HIGH BLOOD PRESSURE

- JOB STRAIN
- EFFORT-REWARD IMBALANCE
- WORK-FAMILY CONFLICT
- LONG WORK HOURS
- LOW SOCIAL SUPPORT
- ORGANIZATIONAL INJUSTICE
- BULLYING/HARASSMENT

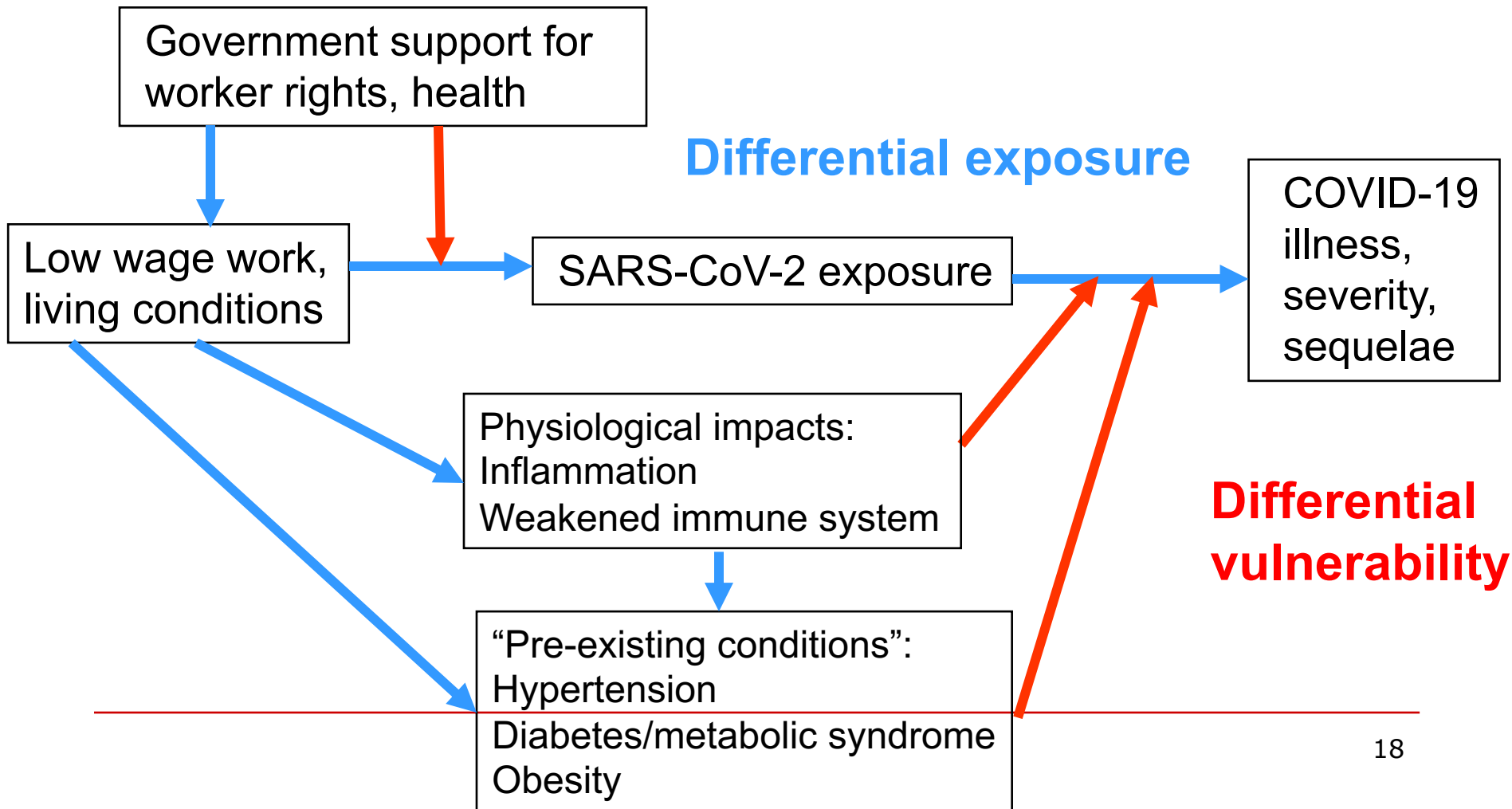


BURNOUT/ DEPRESSION

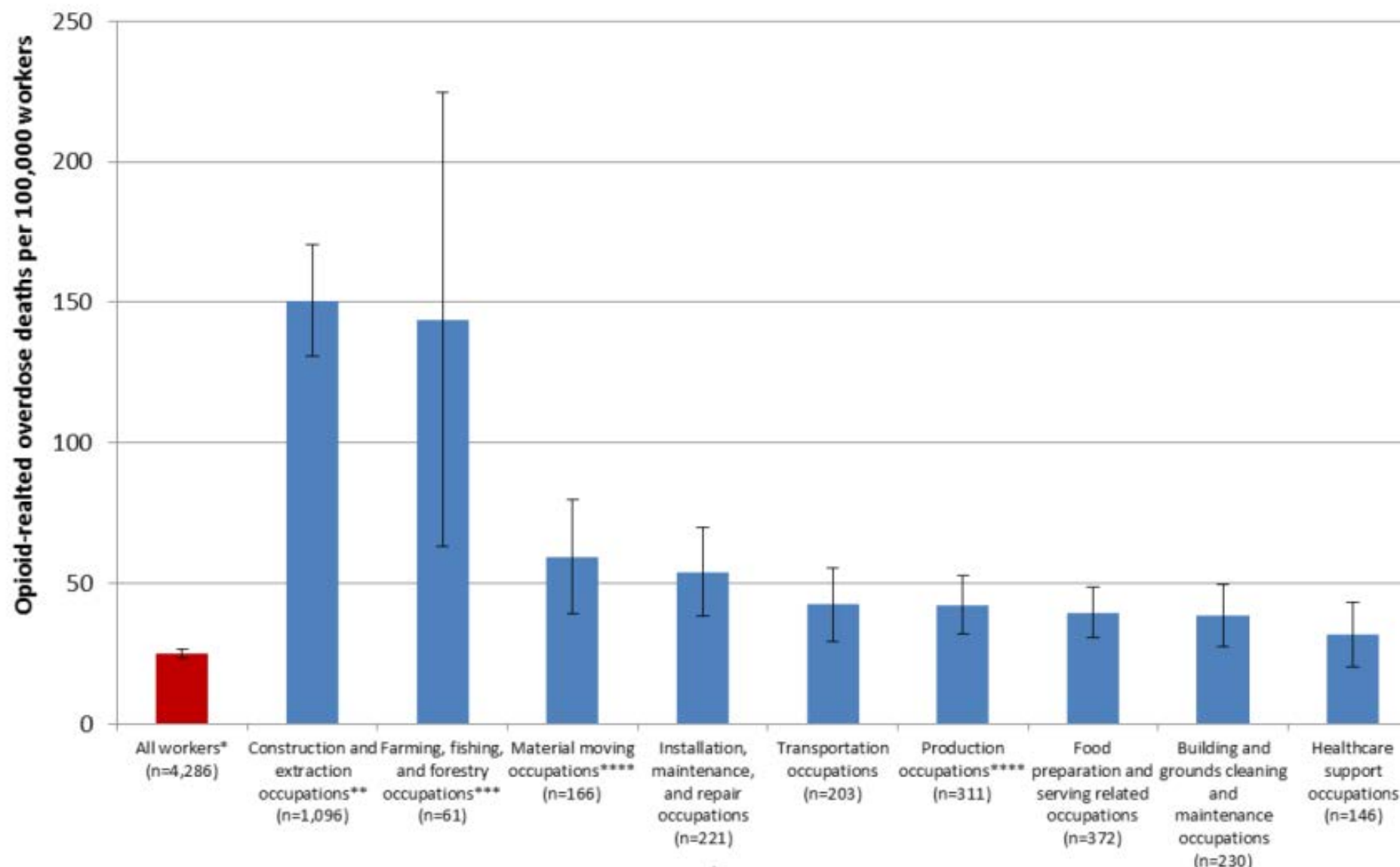
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Also: acute injuries, musculoskeletal disorders, suicide risk, substance use, COVID-19

# Socioeconomic inequalities in **COVID-19** risk: Employment conditions, job/life stressors



**Figure 2. Occupation groups with opioid-related overdose death rates significantly higher than the average rate for all workers, Massachusetts workers, 2011-2015, n=4,302**

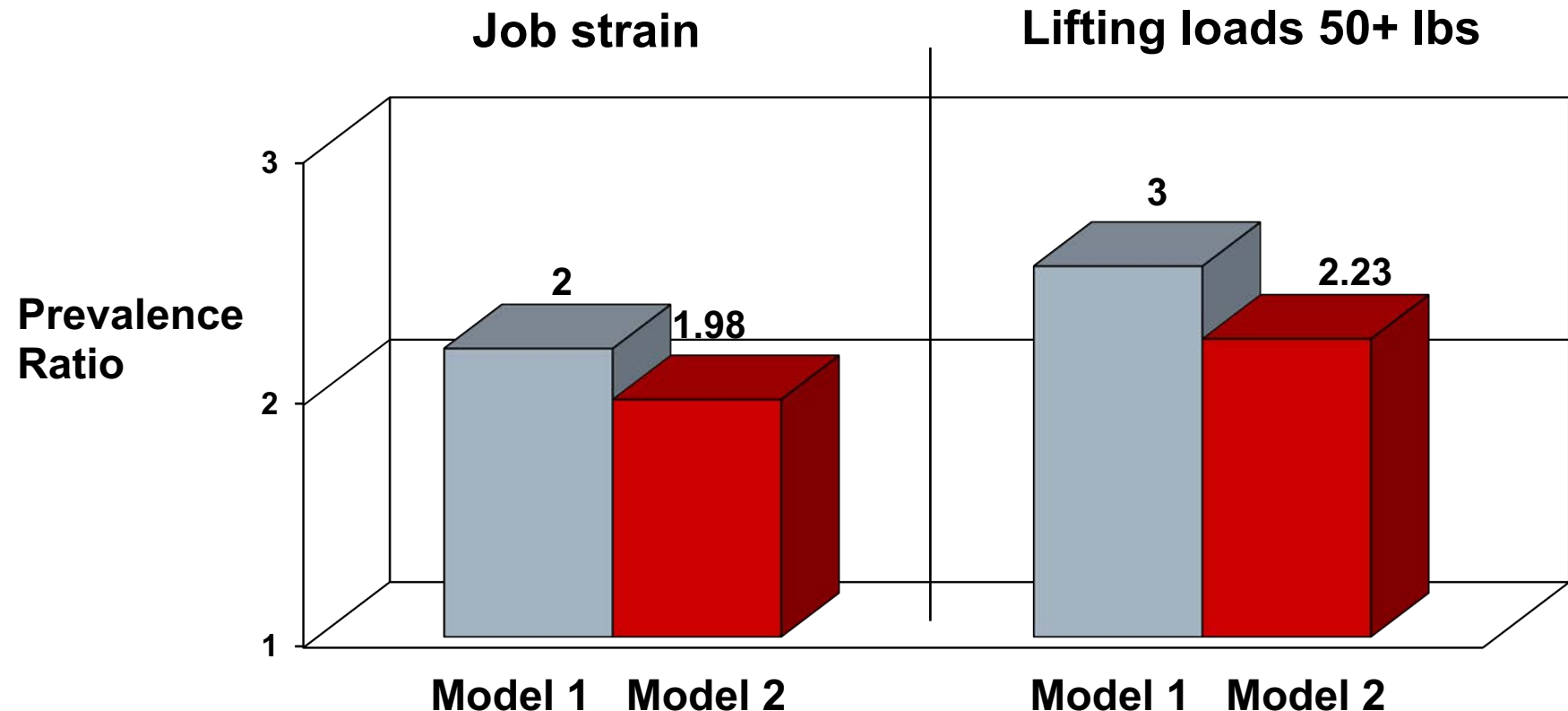


Massachusetts Department of Public Health, Occupational Health Surveillance Program (2018); 15 Opioid-related Overdose Deaths in Massachusetts by Industry and Occupation, 2011-2015.

# Differential exposure:

Lower SES → Job strain (high demand-low control work),  
physical job demands → opioid use disorder (3.8%)

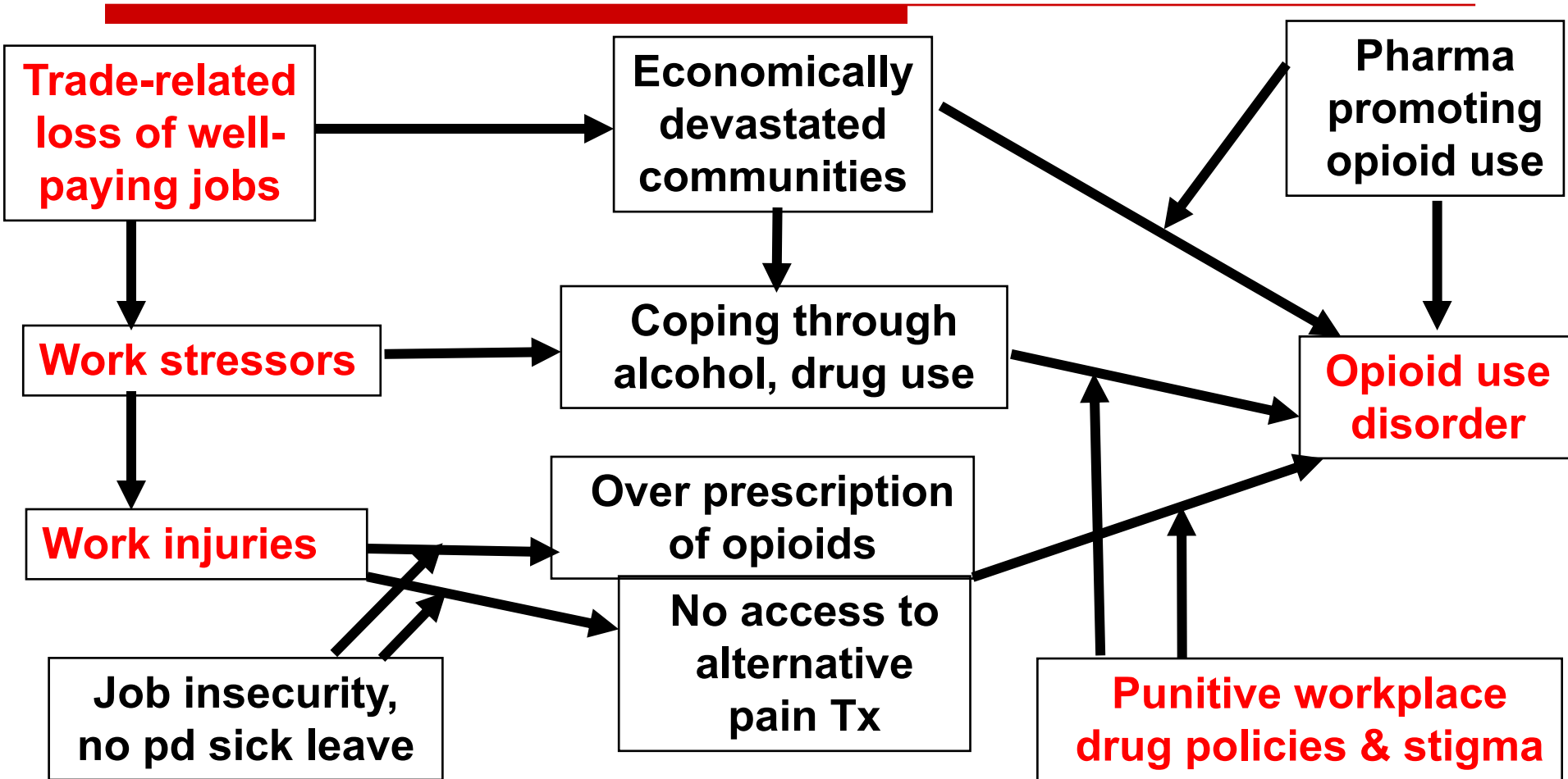
MIDUS II Study, U.S., 2004–2006, 2134 workers, mean age 51 yrs



Model 1: Adj age, race, household income;

Model 2: ~~+other working conditions, backache, mental disorders~~

# Socioeconomic inequalities in **opioid use disorder**: Employment conditions, job stressors & injuries



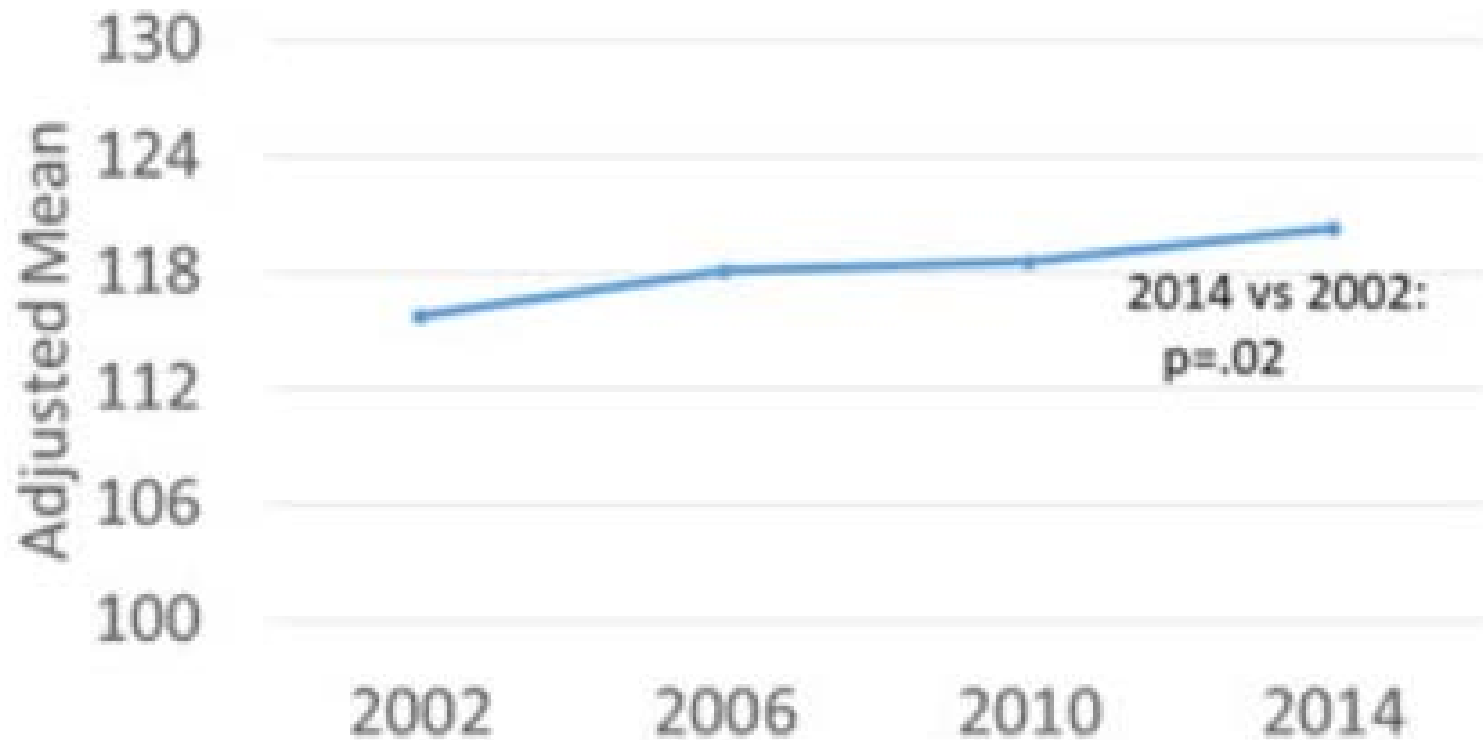
# Stressful & hazardous working conditions contribute to ill health

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- ☐ Are those working conditions increasing (in the U.S.)?



## I. B. Work stressors are increasing

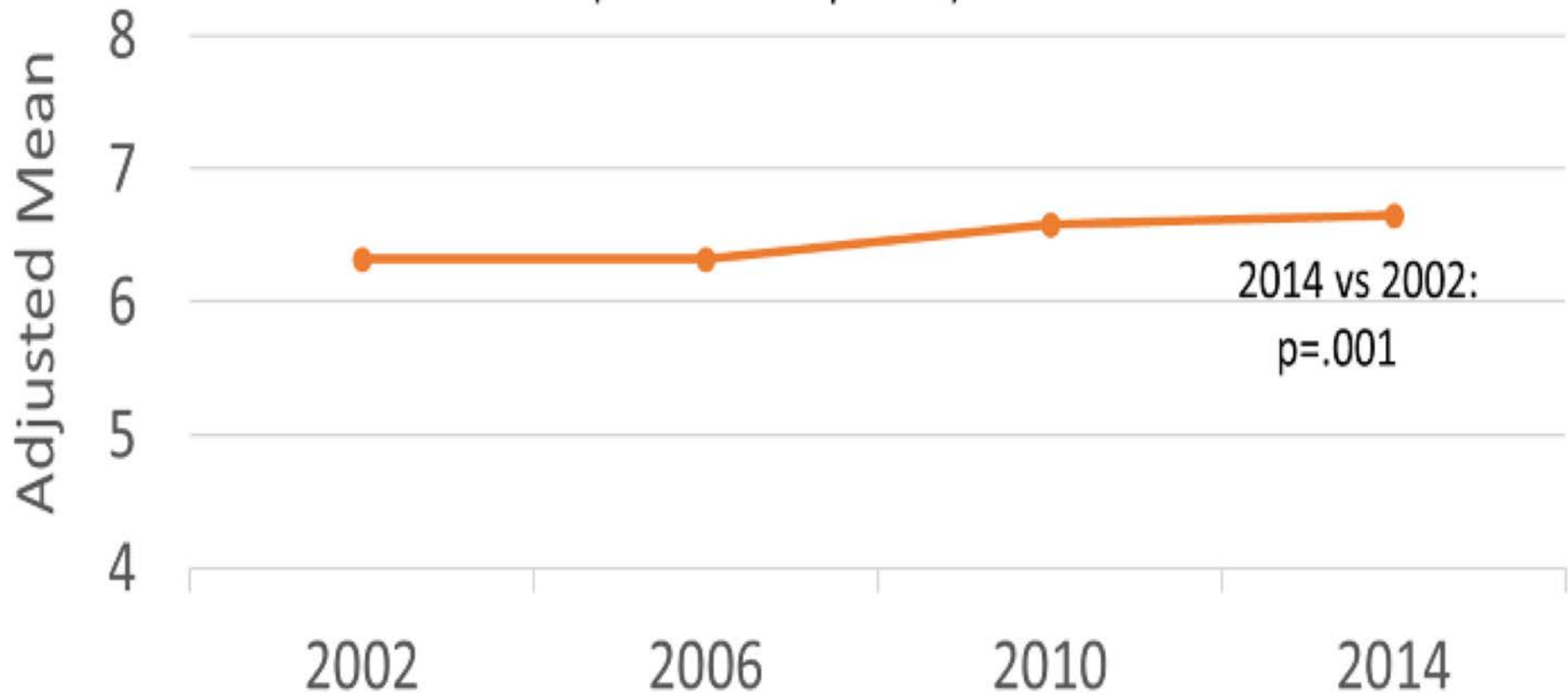


**FIGURE 1** Trend in job strain, 2002-2014: NIOSH QWL surveys

Adjusted for age, sex, race/ethnicity, education, hours worked per week, and unemployment rate

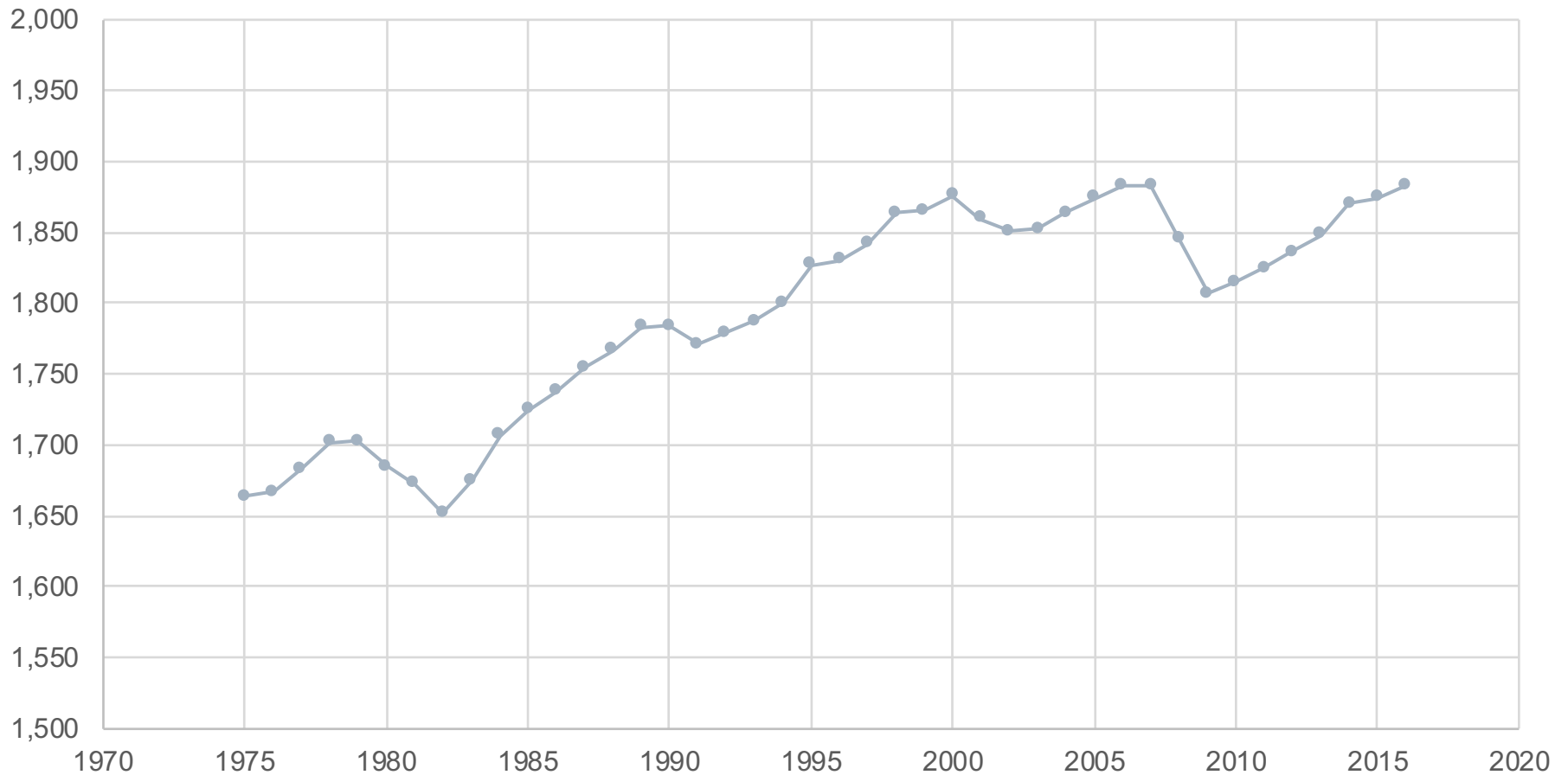
Figure 3. Increase in work-family conflict, 2002-2014

(linear trend:  $p=.001$ )



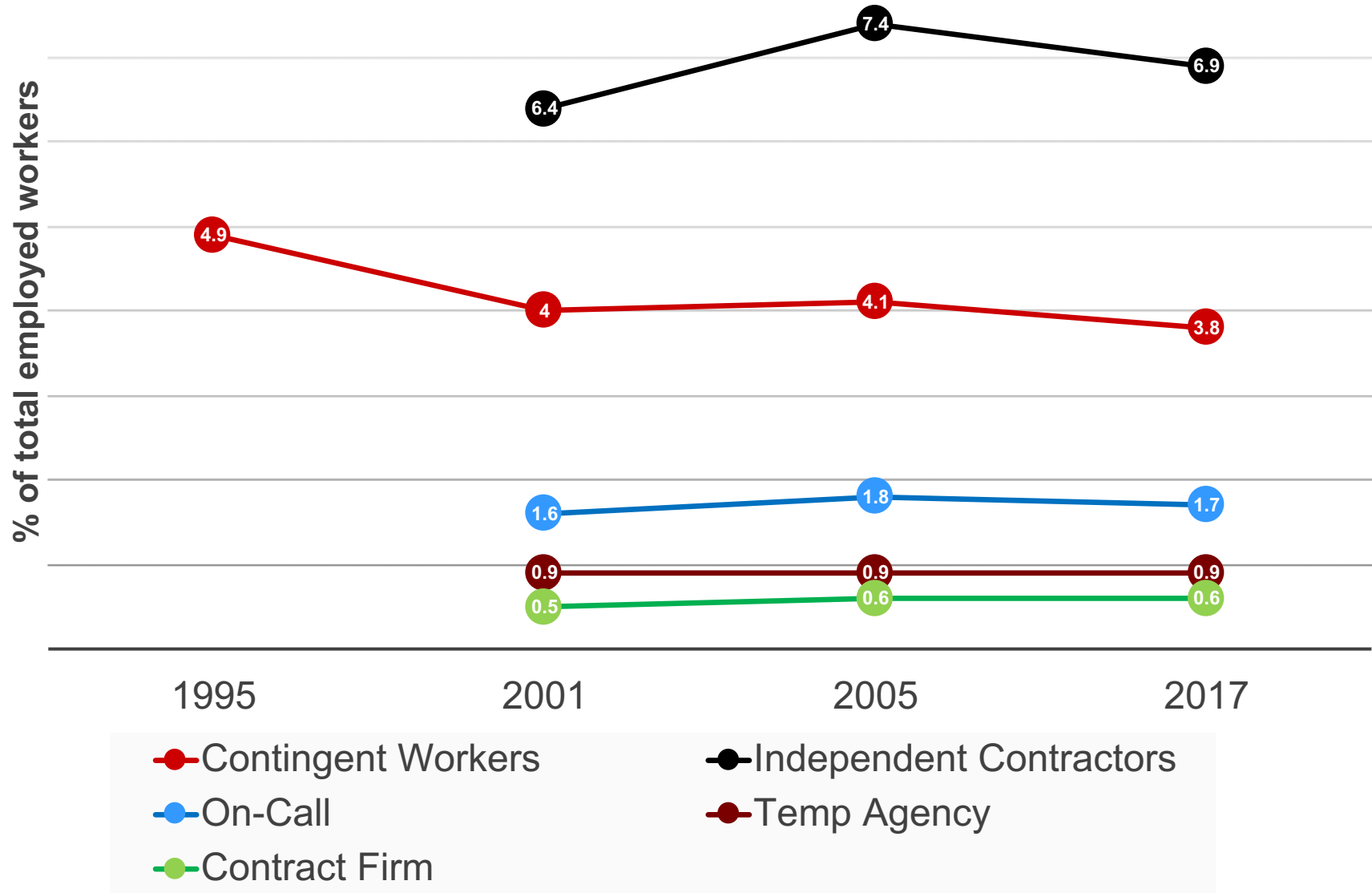
Adjusted for age, sex, race/ethnicity, education, hours worked per week, and unemployment rate

# Increase in annual hours worked, U.S., 1975-2016



# No Increase in Standard Definition: Contingent (“temporary jobs”) and Alternative Work Arrangements

(Contingent Work Suppl., Current Population Survey, BLS 1995-2017)



# Broader definition of “precarious work”: appears to be increasing

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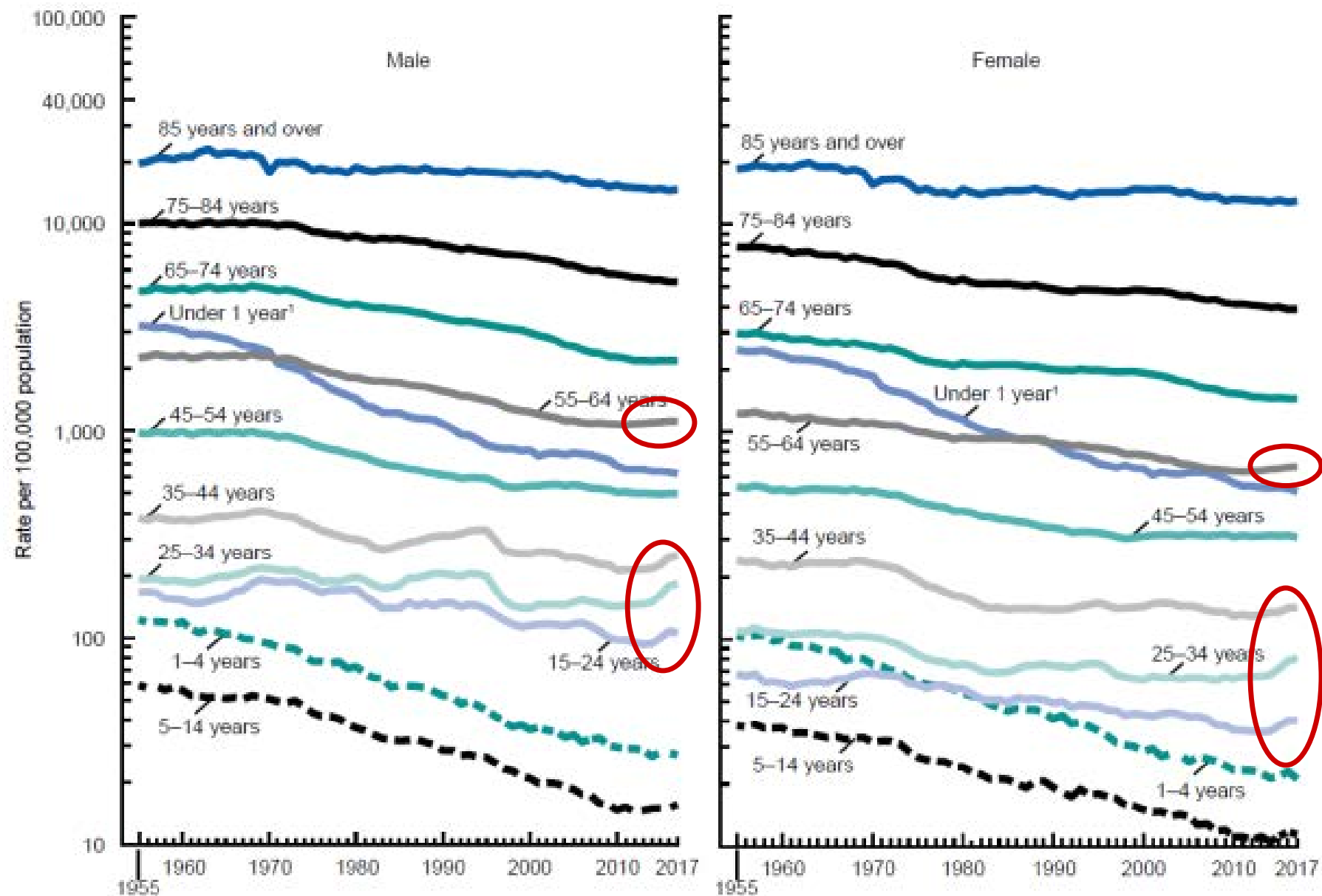
- Flexibilization of labor markets away from standard employment relationships
- Includes:
  - Chronic job insecurity
  - Contract/temp work
  - Lower wages
  - Less social protection & labor rights
  - Stressful working conditions (less job autonomy, control over schedules)

# A number of work stressors are increasing, but....

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- ☐ Are they increasing illness rates?
- ☐ Are there greater increases in lower SEP groups – increases in socioeconomic health inequalities (or disparities)?

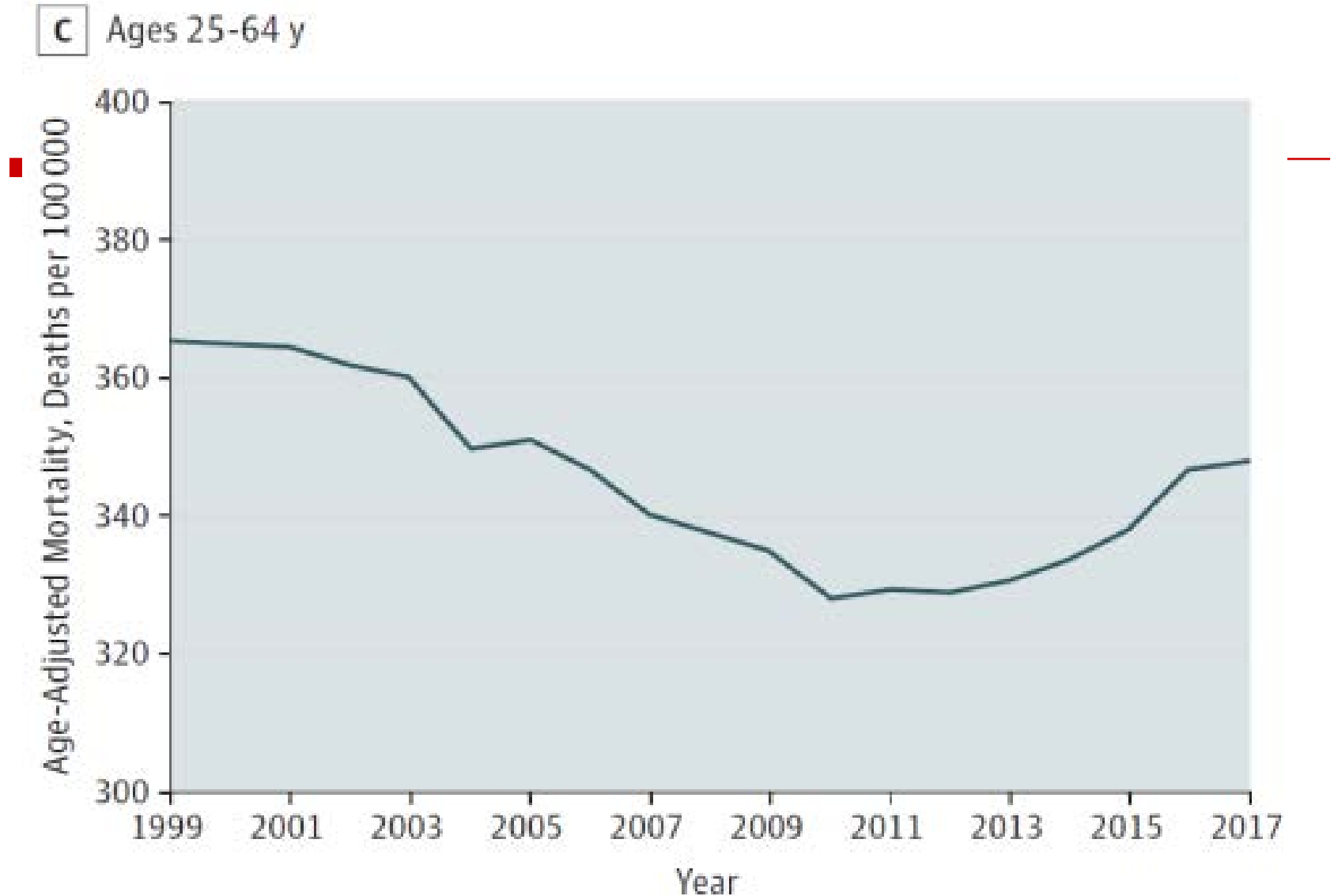
# I. C. U.S. all-cause mortality increasing in **working-age** groups



Kochanek KD et al. Deaths: Final data for 2017. National Vital Statistics Reports, 2019;68(9):June 24.



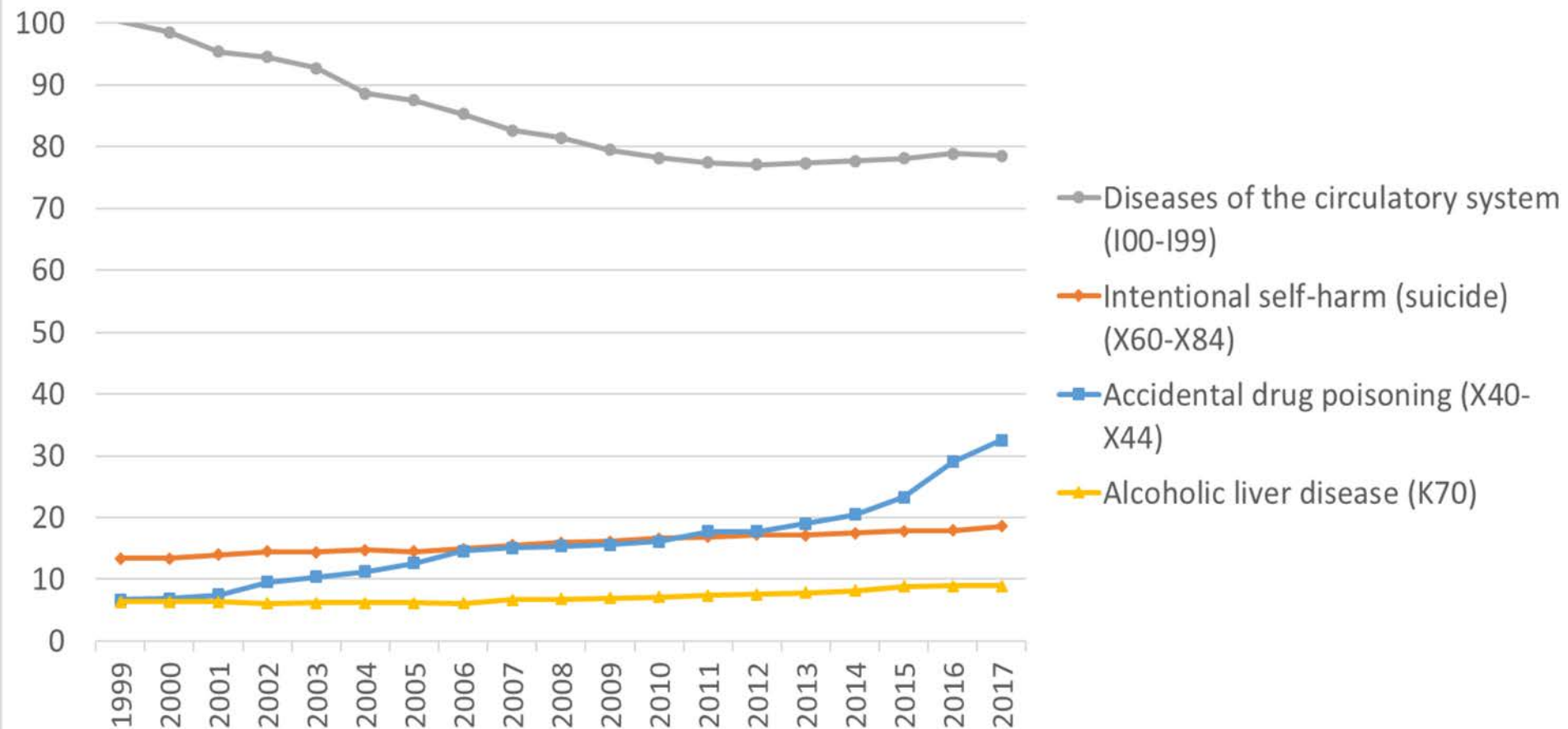
# U.S. all-cause mortality increasing in **working-age** populations



Woolf SH, Schoomaker H. Life Expectancy and Mortality Rates in the United States, 1959-2017. JAMA. 2019;322(20):1996-2016.

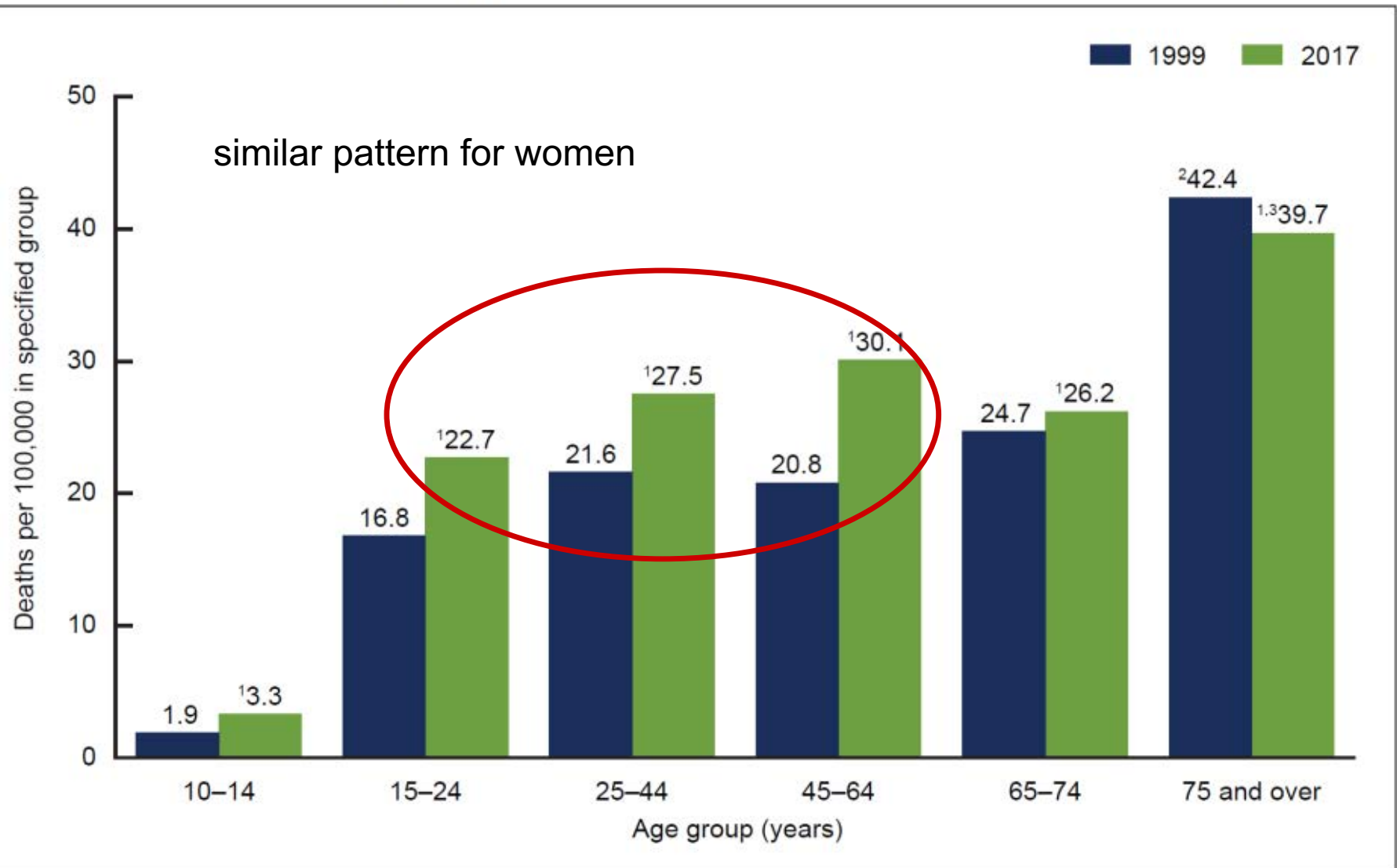
# Increase driven by stress-related diseases

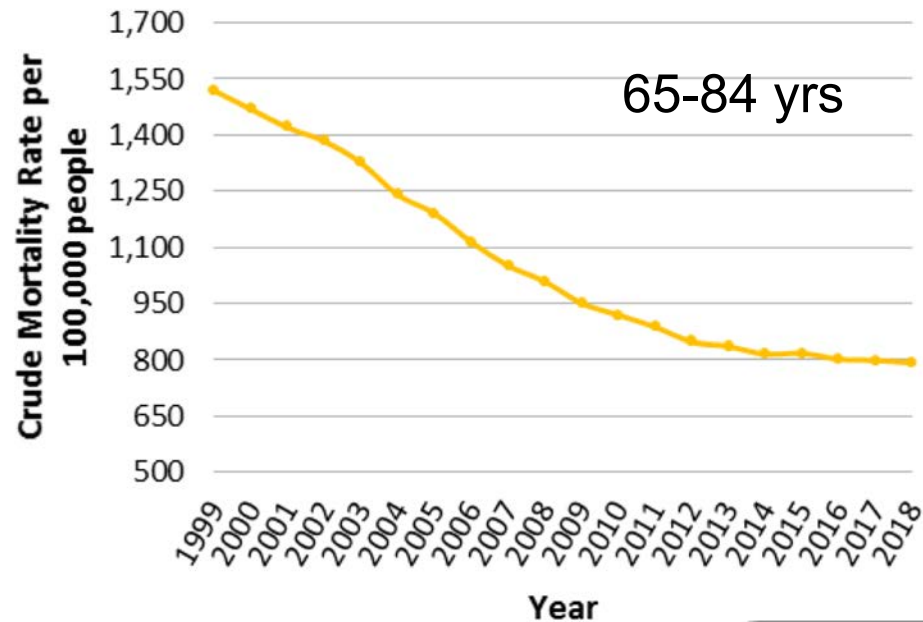
Age-adjusted mortality rates (per 100,000) ages 25-64,  
1999-2017



# Suicide rates increasing in *working-age populations*

Figure 3. Suicide rates for males, by age group: United States, 1999 and 2017

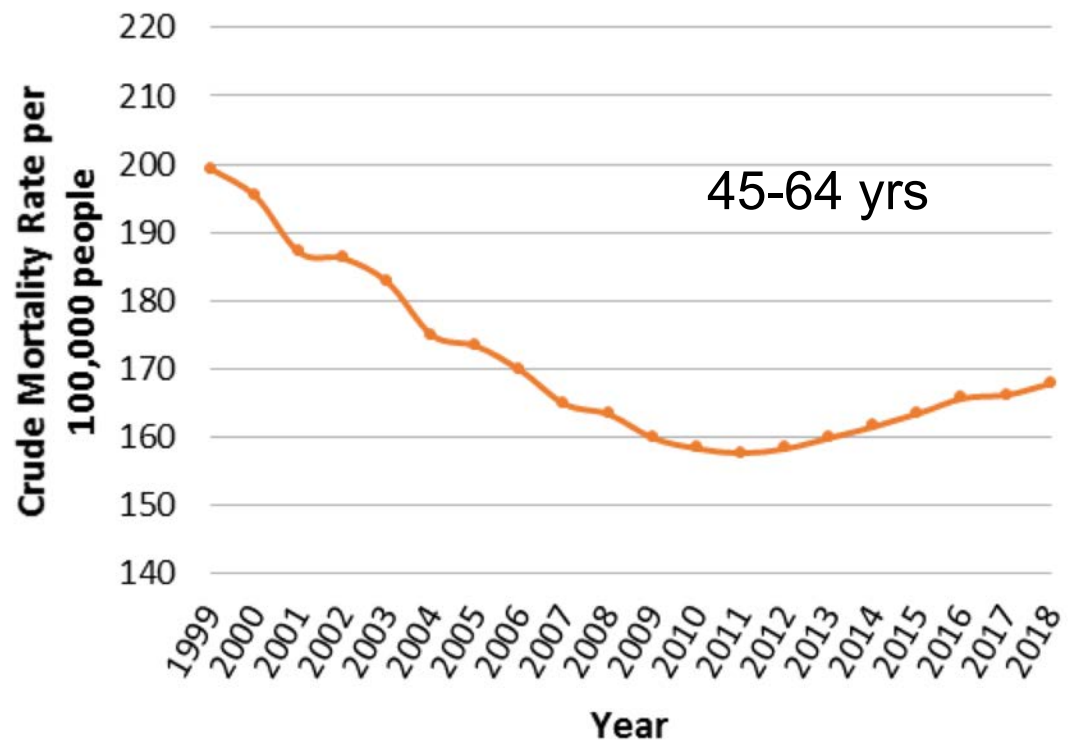




# U.S. cardiovascular disease mortality

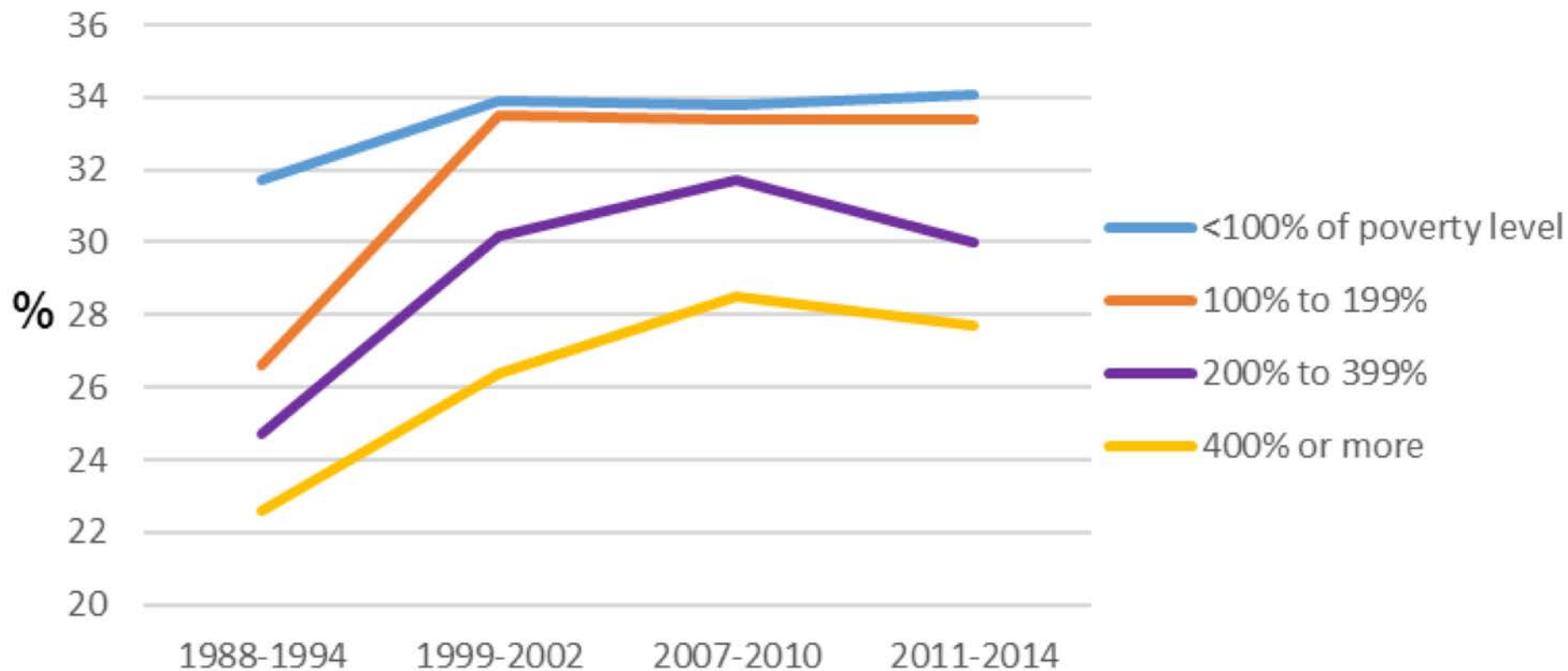
Decline ended in retired age group

*Increasing* in older working age group

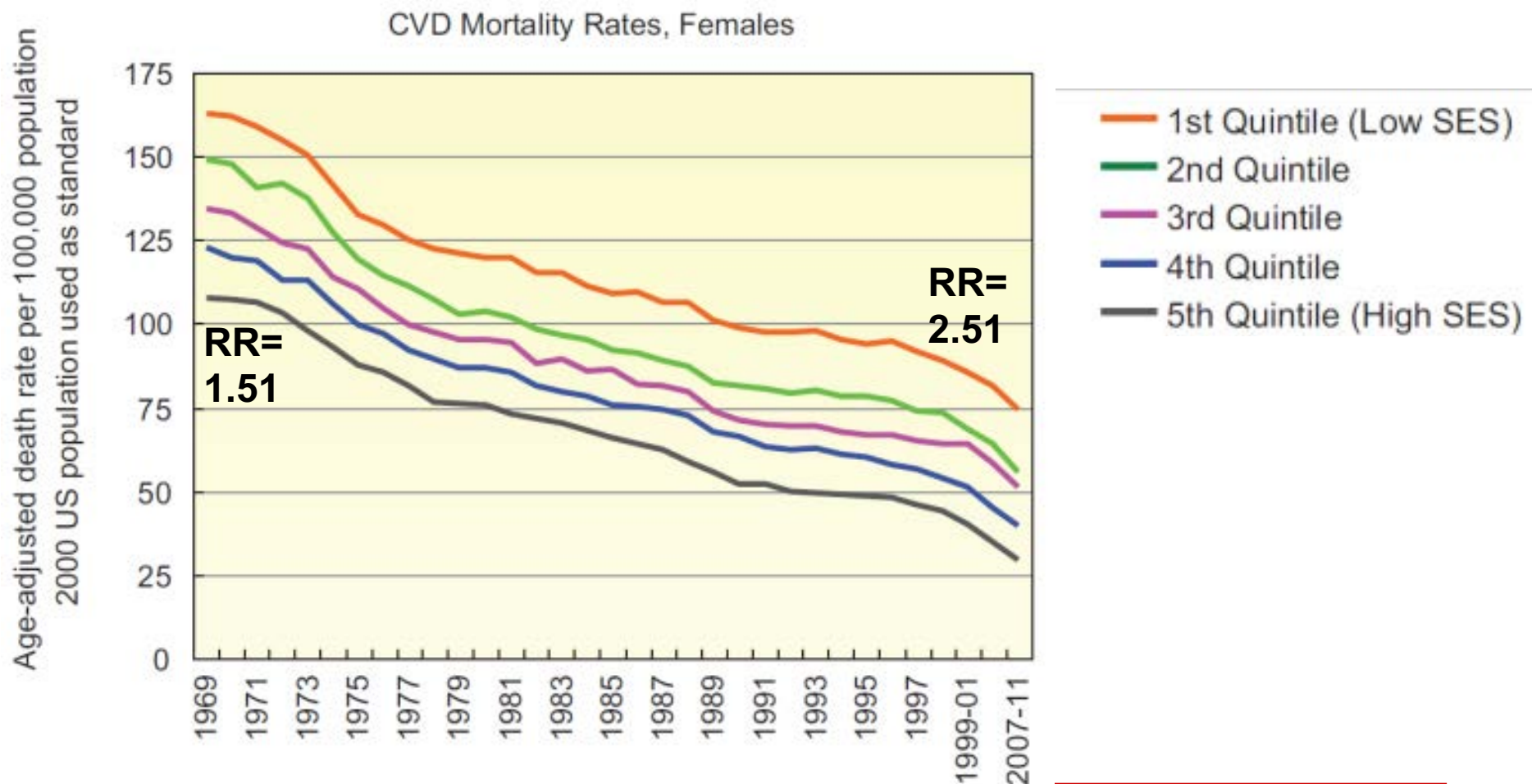


# Increasing socioeconomic inequities: recently for **hypertension** prevalence

Hypertension, age 20+, by income,  
NHANES (BP $\geq$ 140/90 or meds%, Health, U.S., 2016)



# Increasing socioeconomic inequities: County-level **CVD Mortality**, U.S. females, 1969-2011 (similar trend for men)



## II. Interventions to reduce socioeconomic health inequalities

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- ❑ Targeted to lower income workers
  - ❑ Thus, also reach workers of color, immigrants
  - ❑ Common types:
    - Safety & health training
    - Workplace participatory action research
    - Collective bargaining
    - Laws & regulations
-



# High-risk post-disaster workplace: Immigrant day laborers often hired

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- ❑ OSH training in NYC for 500 partnering with trusted CBO:



- ❑ Positive evaluation: post-training telephone evaluation survey
- ❑ Reached 10,000 workers throughout U.S.


# Immigrant Worker Disaster Resiliency Workgroup (linking immigrant communities with agencies, resources)



**Activate and Connect!**  
Disaster Preparedness Curriculum

**User's Guide**  
Objective: To prepare and respond to emergencies and other disasters in the context of our organization's local efforts, and to strengthen connections with our organization.

This training has five tasks.  
TOTAL TIME: 2 hours



**NYC**  
Emergency  
Management

New York City  
Voluntary Organizations  
Active in Disaster

OFFICE OF THE PRESIDENT  
BOROUGH OF MANHATTAN  
THE CITY OF NEW YORK

The New York County  
District Attorney's Office

Cuervo I, Leopold L, Baron S. Promoting community preparedness and resilience: A Latino immigrant community-driven project following Hurricane Sandy. American Journal of Public Health 2017;107:S161–S164.

# Current study: Domestic cleaners: Immigrant low SES women



- ☐ Preliminary survey (n=400)
  - 50% - no health insurance, no pd sick time, pd <min wage
  - 20% - verbal abuse
- ☐ Measure chemical exposures: hazardous vs safer practices
- ☐ Train-the-trainer w/ National Domestic Workers Alliance
- ☐ Prevention campaign
- ☐ Thanks to Dr. Sherry Baron



# Participatory action research: Quebec hospital

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- ❑ Risk assessment using employee surveys to measure
  - work stressors (JCQ & ERI surveys)
  - psychological distress
- ❑ Qualitative assessment
  - interviews with key informants
- ❑ Development of an intervention team
  - 2 researchers, 1 RA, 3 head nurses, 3 RNs, 1 nurses' aide, 1 reception clerk, 1 rep from HR & 1 from nursing, 2 local union reps
- ❑ Feedback to management, employees & unions
  - comparison of work stressors & psych distress to provincial averages
- ❑ Team recommendations
  - 56 adverse work conditions & proposed solutions

# Participatory action research: Quebec hospital

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## Examples:

- ☐ Consultation with nurses on staffing, training plan & schedule
  - ☐ Ergonomic improvements
  - ☐ Improve team communication, support
  - ☐ Task rotation between nurses & aides
  - ☐ Job enrichment, training for nurses' aides
  - ☐ Reduce delays in filling open staff positions (nurses, clerks)
  - ☐ Better guidance, training of new staff
  - ☐ Discuss with doctors that nurses' work is taken for granted
-

# Participatory action research: Quebec hospital (results after 3 yrs)

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## Intervention hospital

Reduction of several work  
stressors (demands, low rewards)

NS change in supervisor support

NS change in sleeping problems,  
psych distress

Reduction in work related &  
personal burnout

## Control hospital

NS reduction of work stressors

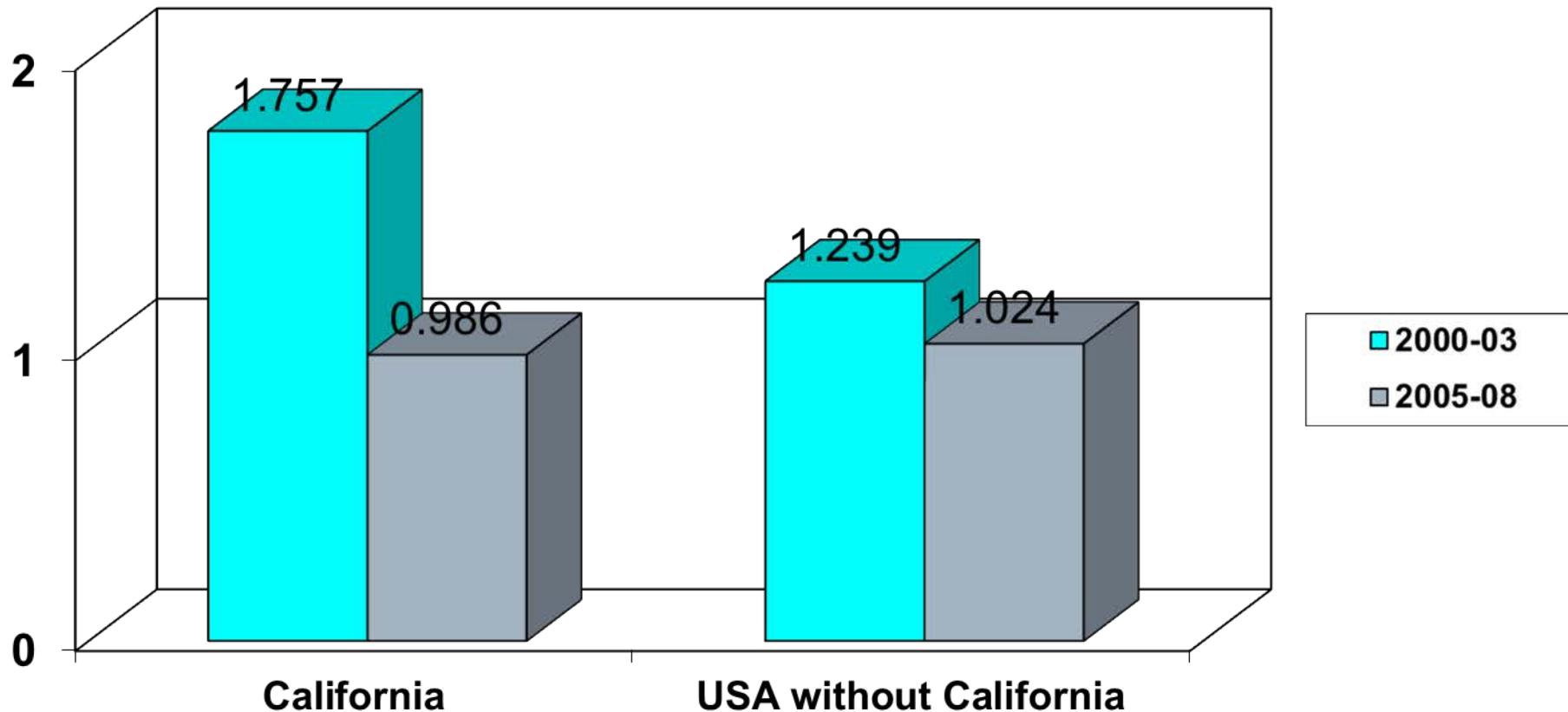
Decline in supervisor support

NS change in sleeping problems,  
psych distress

NS change in burnout

# 2004 California nurse-to-patient ratio law & RN injury rates

(Lost workday non-fatal injury & illness rates/100 RNs/year, BLS)



Similar difference for LPNs, or if 3 or 5 year intervals included.

Leigh JP, Markis CA, Iosif A-M, Romano PS. Int Arch Occup Environ Health 2015;88:477-484.

# Many more organizational interventions need evaluation research

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- ❑ Other laws & regulations
    - pd sick days, pd family leave
  - ❑ Collective bargaining language
  - ❑ Rarely studied for impact on working conditions, health, health inequalities
    - even though contracts, laws are legally binding
    - potential for > effectiveness
-



# Number of people impacted by recently passed state and local comprehensive fair workweek laws

Jurisdiction	Laws	Industries covered	Number of workers covered
<b><i>San Francisco</i></b>	Formula Retail Employee Rights Ordinances (March 2016)	Retail trade	23,000
<b><i>San José</i></b>	Opportunity to Work Ordinance (March 2017)	Private sector	175,000
<b><i>Emeryville, Calif.</i></b>	Fair Workweek Ordinance (July 2017)	Retail trade and fast food	2,500
<b><i>Seattle</i></b>	Secure Scheduling Ordinance (July 2017)	Retail trade and fast food	40,000
<b><i>Oregon</i></b>	Fair Work Week Act (August 2017)	Retail trade and accommodation & food services	172,000
<b><i>New York City</i></b>	Fair Workweek Law (November 2017)	Retail trade and fast food	327,000
<b><i>Total</i></b>			739,500

<https://healthywork.org/wp-content/uploads/2019/09/018-HWC-Website-Page-Content-Resources-Healthy-Work-Strategies-Work-scheduling-legislation-v1-092019-300res-CYMK.pdf>

# Collective bargaining: LA teachers' contract to reduce job stress & to help low income students (7/1/19-6/30/22)

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- ❑ Reduction in class size
- ❑ Special Ed: access to caseload reports, caseload caps
- ❑ >say on: budgets, substitutes, at school district meetings
- ❑ Meet students' needs:
  - Less standardized testing, random police searches of students
  - >nurses, counselors, librarians, mental health professionals
  - immigrant defense fund
  - >green space
- ❑ Broad economic, racial & social justice agenda, including saving public education, which helped to build community support for the strike

# Hotel housekeepers' efforts to reduce health inequalities

- ❑ Many immigrants, women, workers of color
- ❑ Participatory action research (1998+)
  - Inequities in injury rates
  - Workplace hazards
- ❑ Collective bargaining
  - Room quotas
  - Staffing, fair assignment of work
- ❑ Legislation
  - Panic buttons to prevent sexual harassment (NJ, Chicago)
- ❑ Regulation
  - CalOSHA Housekeepers Ergonomics Standard (7/1/18)



# Many countries have work stress prevention policies, guidelines, standards, laws

- ❑ EU-OSHA Guidelines/Directives
- ❑ UK Management Standards for work-related stress
- ❑ National Standard of Canada for Psychological Health & Safety in the Workplace
- ❑ Japanese National Policy: Stress Check Program
- ❑ +Australia, South Korea, Colombia, Mexico, Chile...
- ❑ U.S. - no guidelines regarding work stress prevention or healthy work!

The screenshot shows the website of the European Agency for Safety and Health at Work. The header includes the agency's logo, a 25th anniversary badge (1994-2019), and the European Union flag. A navigation bar contains links for Home, Themes, Emerging risks, Surveys & Statistics, Legislation, and Campaigns & Awareness. The main content area is titled 'Framework agreement on work-related stress'. It includes a search bar, a 'Search' button, and a 'Legislation' sidebar with links to EU directives, EU guidelines, and EU standards. The main text describes the 2004 framework agreement signed by the European Trade Union Confederation and employers' confederations, aimed at increasing awareness of work-related stress. The authors are Norito Kawakami and Akizumi Tsutsumi, with affiliations to the University of Tokyo and Kitasato University.



## TACKLING WORK-RELATED STRESS USING THE MANAGEMENT STANDARDS APPROACH

A step-by-step workbook



Stress is a major cause of sickness absence in the workplace and costs over £5 billion a year in Great Britain. It affects individuals, their families and colleagues by impacting on their health but it also impacts on employers with costs relating to sickness absence, replacement staff, lost production and increased accidents.

This workbook will help your organisation meet its legal duty to assess the risks to its employees from work-related stress and gives advice and practical guidance on how to manage work-related stress. It promotes the Management Standards approach to tackling work-related stress – a systematic approach to implementing an organisational procedure for managing work-related stress. It uses a clear step-by-step method which includes checklists to help you make sure you have completed a stage before you move to the next step. HSE's stress webpages support the workbook with other guidance and tools.

# “Psychosocial safety climate”

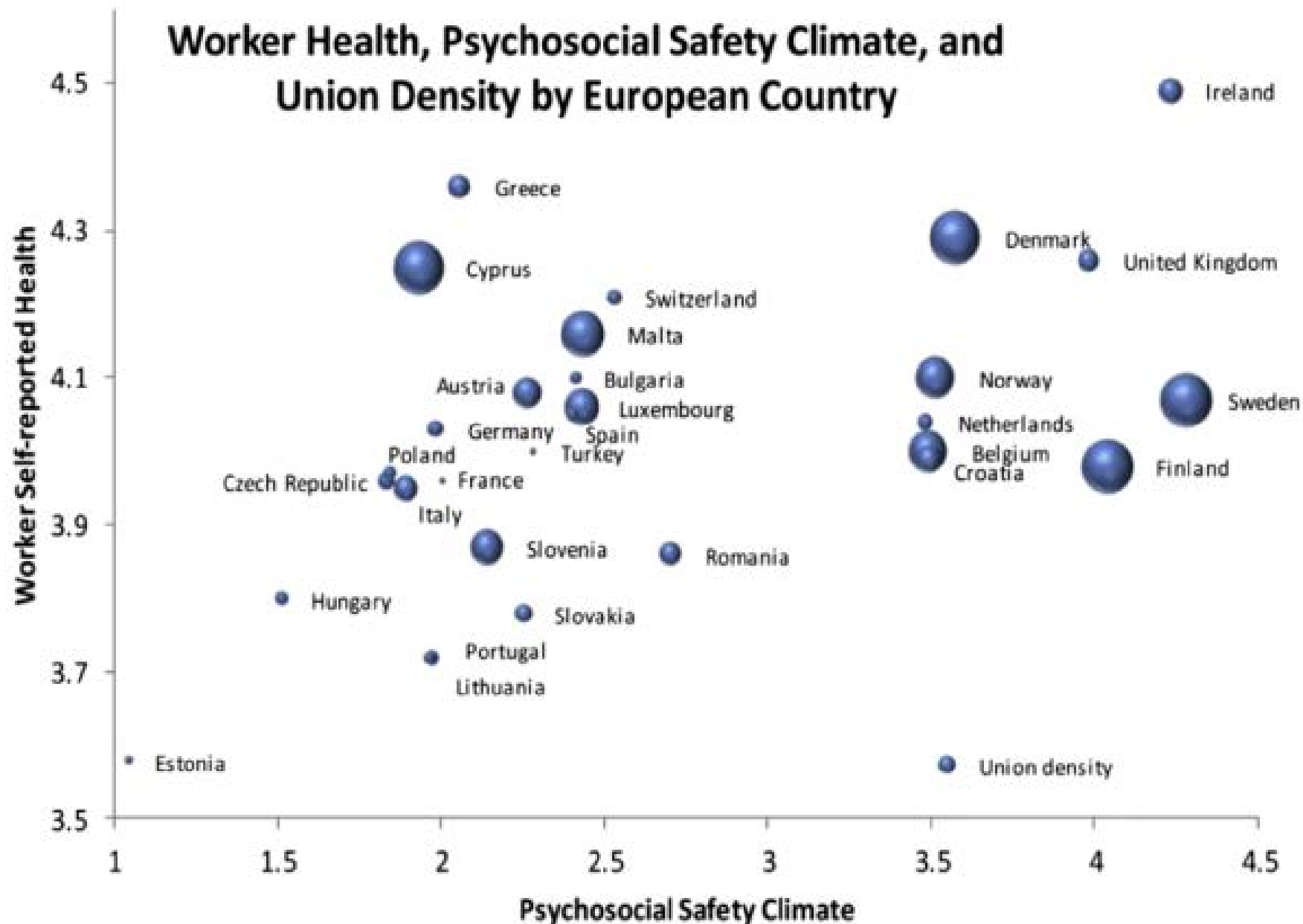
(data from European wide surveys)

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OSH managers were asked 5 questions that represented best procedures to deal with psychosocial risks & consultation & participation in the resolution of workplace psychosocial risks:

“Does your establishment have a procedure to deal with”:

- (1) work-related stress
  - (2) bullying or harassment
  - (3) work-related violence?”
  - (4) “What about the role of employees: Have they been consulted regarding measures to deal with psychosocial risks?”
  - (5) “Are employees encouraged to participate actively in the implementation and evaluation of the measures?”
-



Dollard MF, Nesar D. Worker health is good for the economy: Union density and psychosocial safety climate as determinants of country differences in worker health and productivity in 31 European countries. *Social Science & Medicine*. 2013;92:114-123.



# Healthy Work Strategies

**Healthy Work Strategies** include workplace policies, programs, contract language, regulations and laws designed to reduce sources of stress at work (work stressors), and to make work and workers healthier. Each report below is a **summary** about how to improve the organization of work to reduce work stressors, such as:

Long work hours, bullying, sexual harassment, discrimination, threats of violence, understaffing, job insecurity, lack of supervisor or coworker support, work-family conflict, job demands, lack of job control, job strain, and “effort-reward imbalance.”

**The types of Healthy Work Strategies below include:**

- + [Workplace research studies and programs to reduce work stressors](#)
- + [Labor-Management Contracts](#)
- + [Laws and Regulations](#)

If you have any questions or comments about these reports, or have updates or new programs, policies, or laws that you would like us to include, please feel free to [contact us](#).

- + [Acknowledgements](#)