Disparities in Pain:

How are they changing over time?

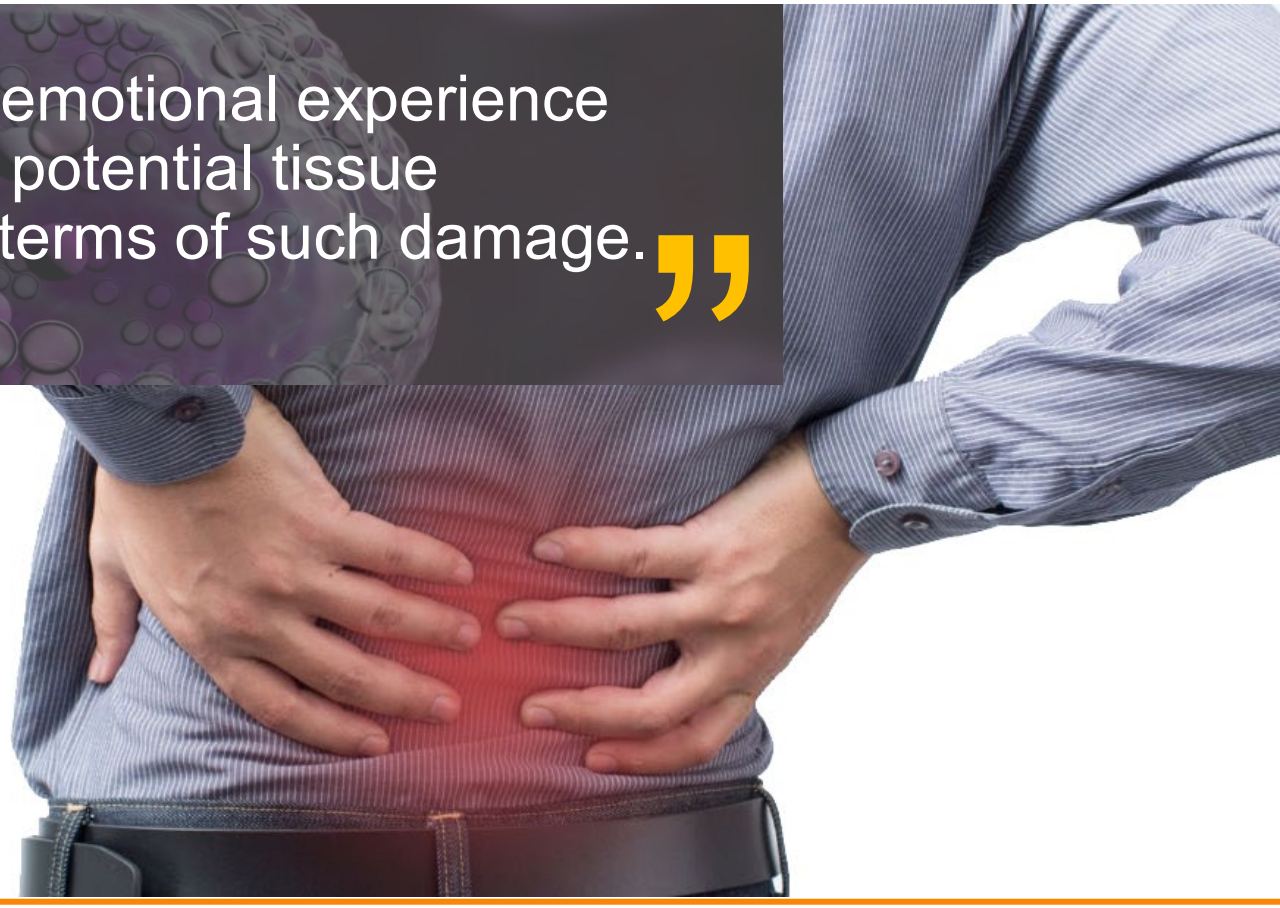
Anna Zajacova
Zachary Zimmer
Hanna Grol-Prokopczyk

2020 TRENDS Annual Meeting

What is pain?

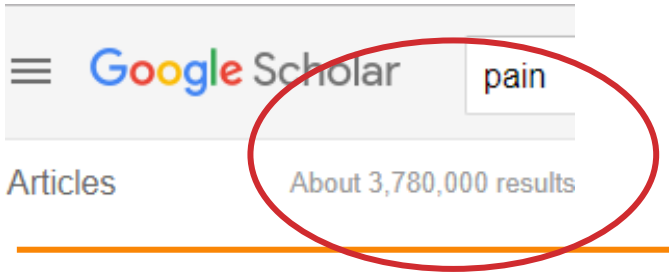
Definition

> Unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.
>
> (IASP 1979)



High burden of pain

- **Ubiquitous**: Affects more than diabetes, HD, cancer combined.
- **Universal**: Affects all groups in population
- **Impactful**: Most common reason for health care use, disability
- **Costly**: > $600,000,000,000 annually
- **Studied extensively**: primarily clinical



Neglected in population health research

Since 2000, articles on pain*

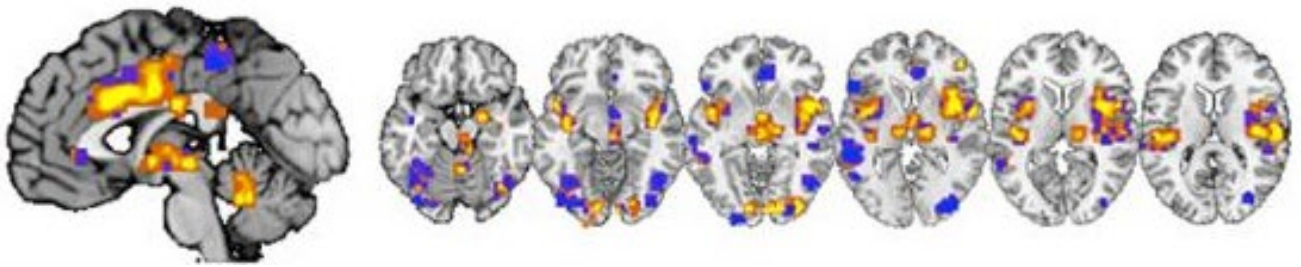
- 3 in Social Science and Medicine
- 2 in JHSB
- 1 in Demography

*All databases, “pain” in title

(The pain of) measuring pain

Pain is subjective

- Necessarily self-reported
- Perfect for health surveys!



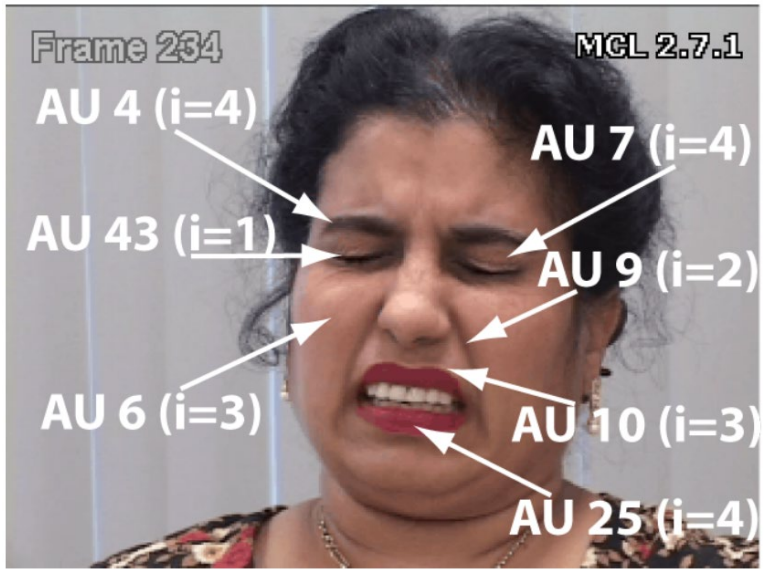
Research Paper

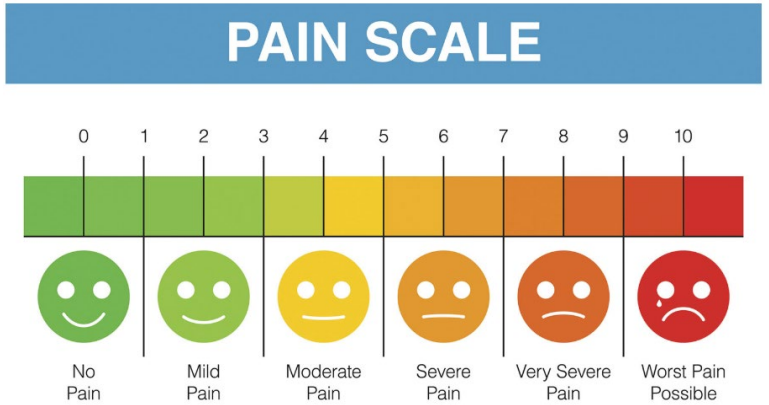
An equine pain face

Karina B Gleerup [a], Björn Forkman [a], Casper Lindegaard [b], Pia H Andersen [c]

Show more

https://doi.org/10.1111/vaa.12212





Measuring pain in population health surveys

Global

Are you often troubled with pain? (HRS)

Site-specific

Do you have [low-back, knee, neck,…] pain? (NHIS)

Both include time horizon, usually 3 months

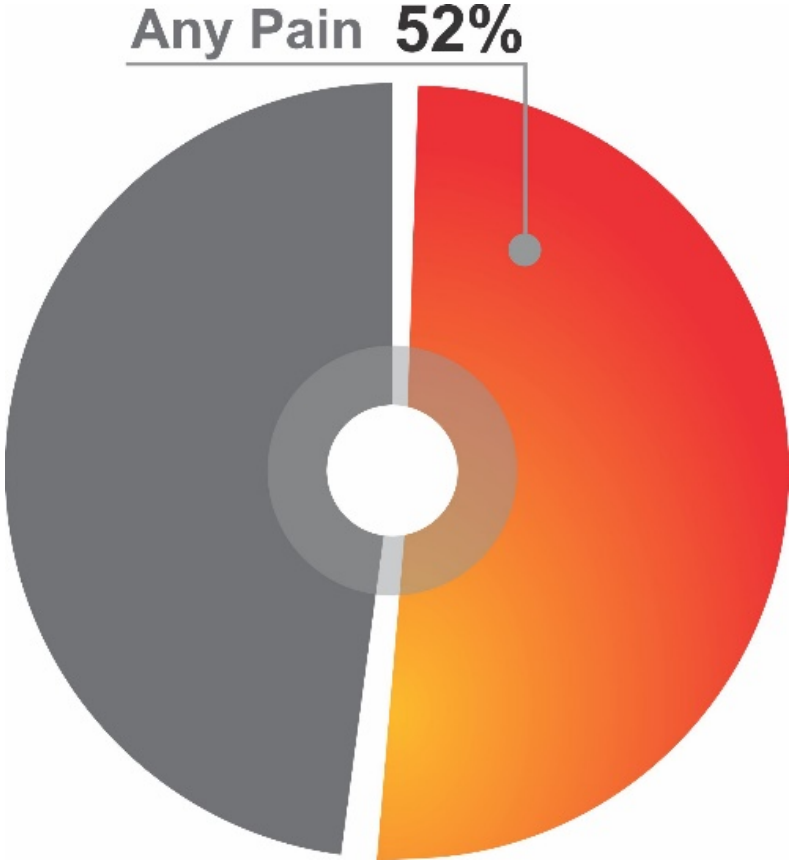
High concurrent and predictive validity

- Correlated with physical and mental conditions
- Predicts disability and mortality

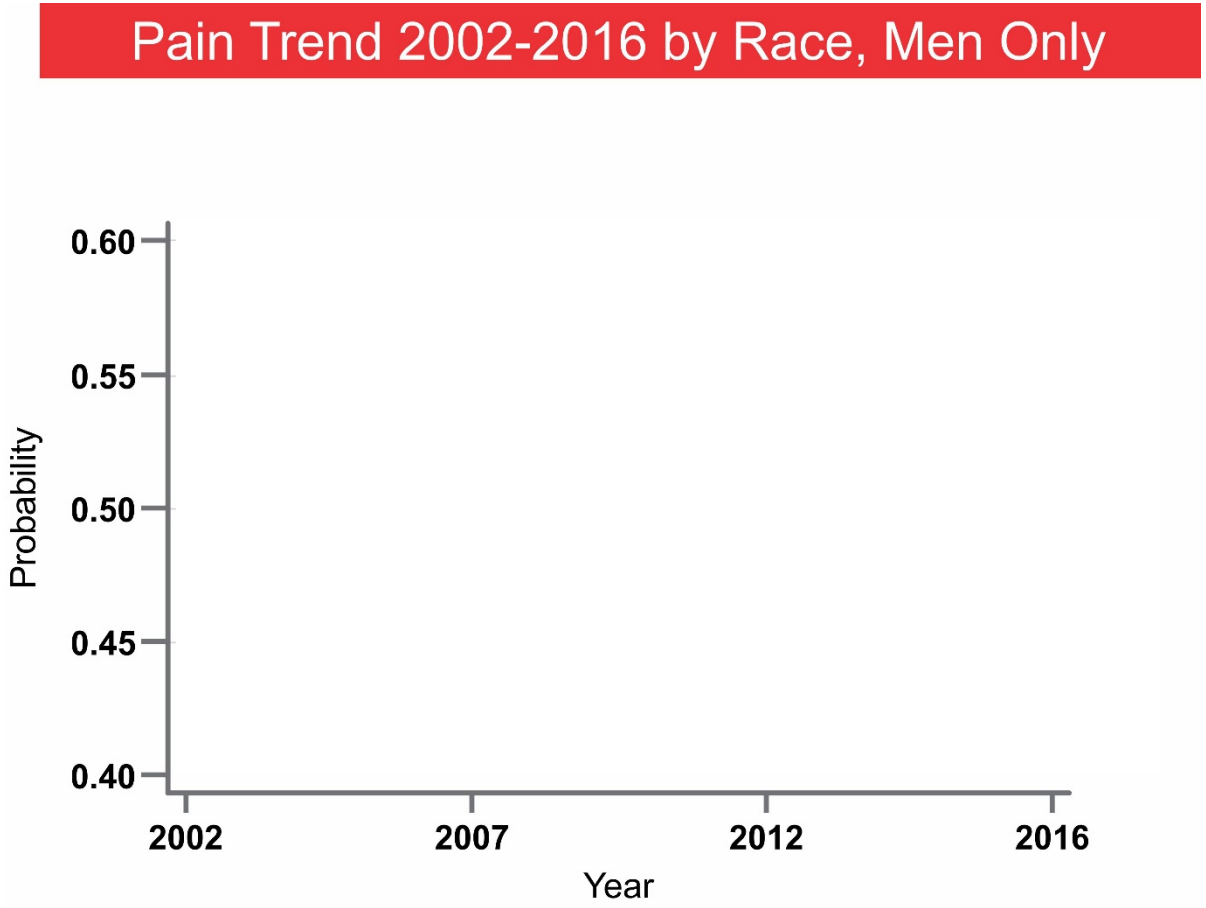
Disablement process

High pain prevalence…

2002-2018 NHIS, US adults 25-84

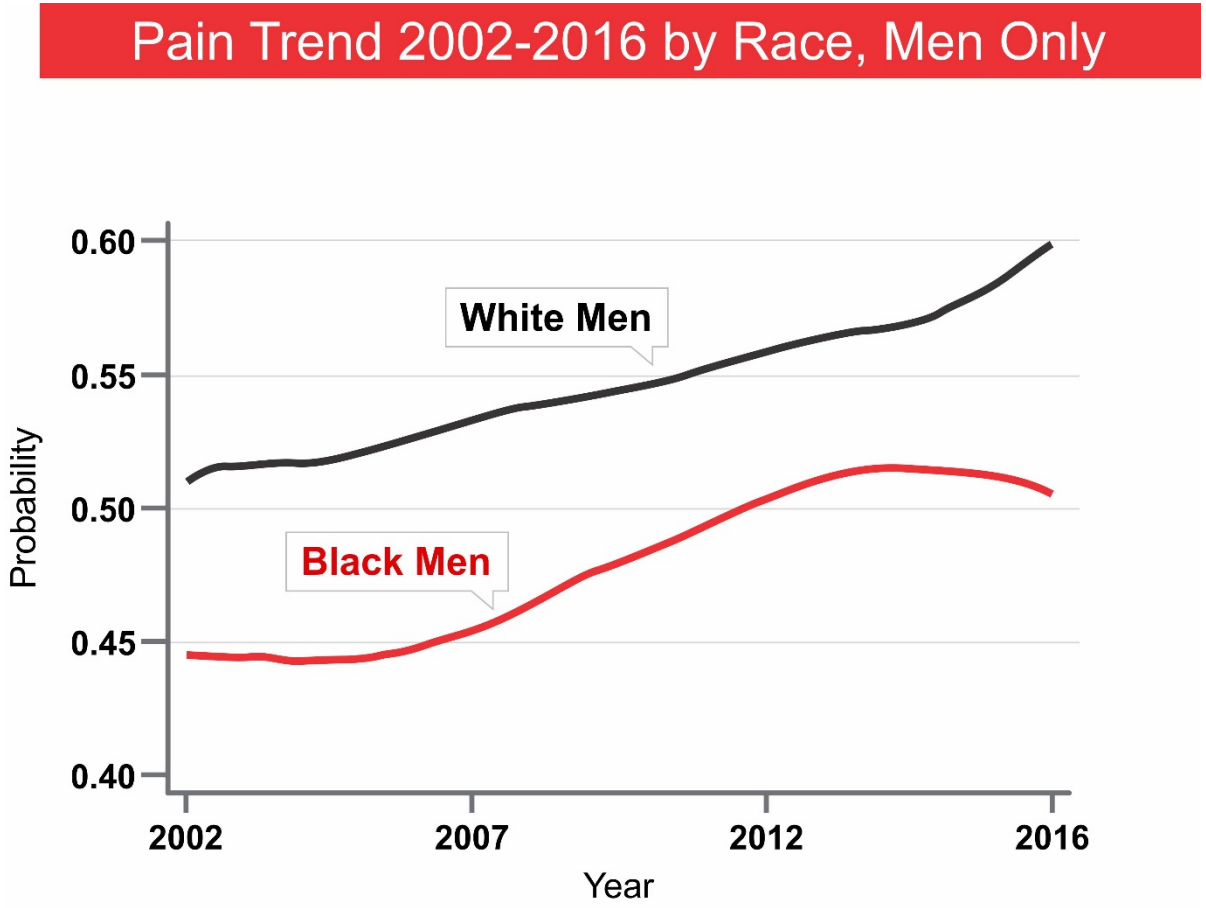


High pain prevalence… and growing



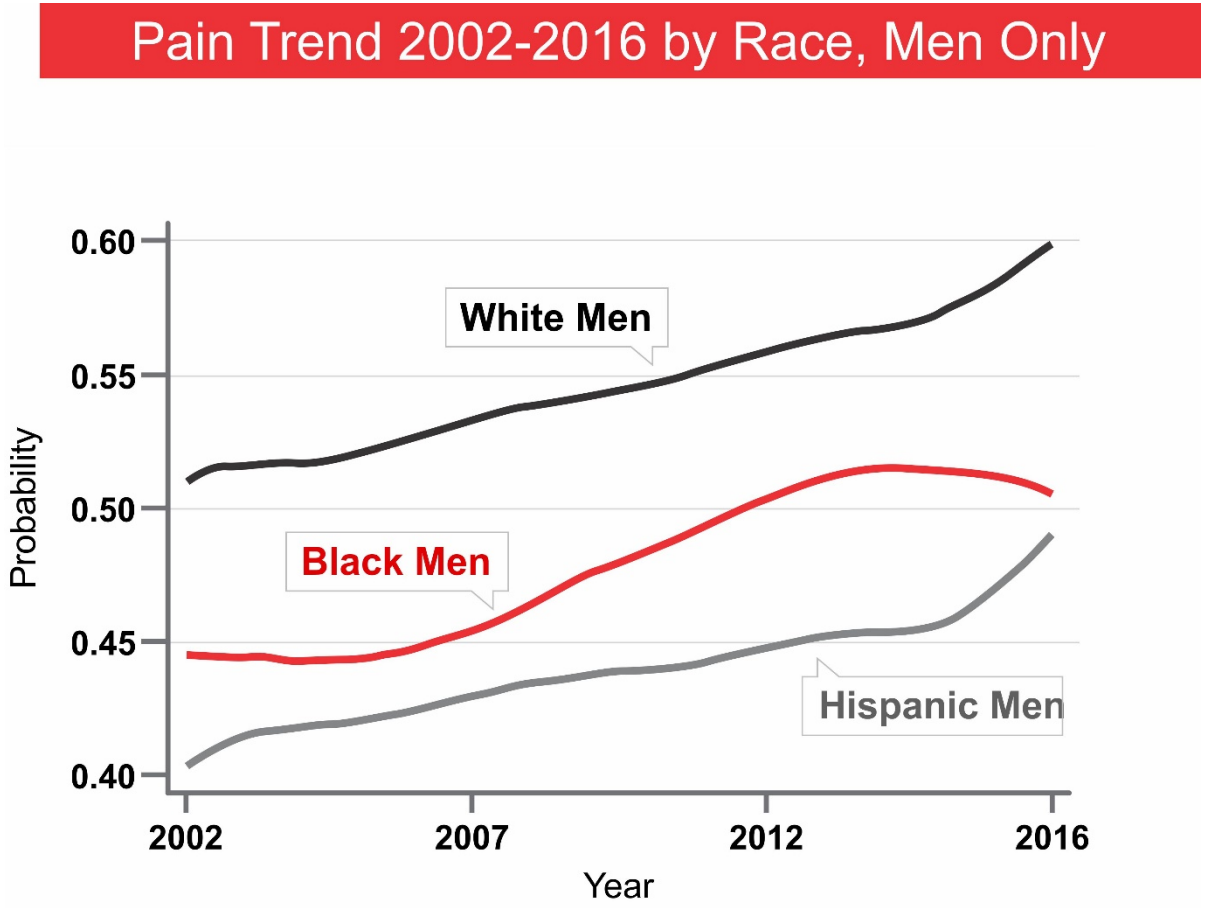
From semiparametric age-adjusted model of pain.

High pain prevalence… and growing



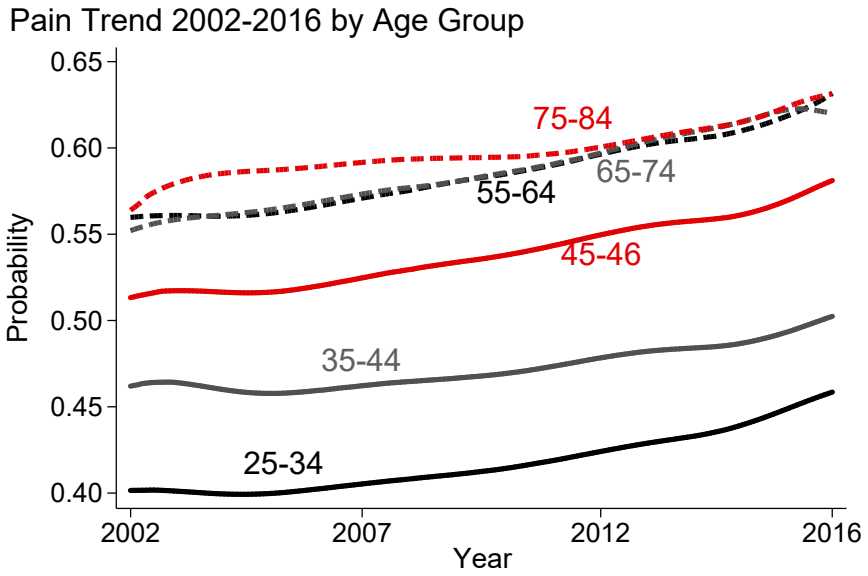
From semiparametric age-adjusted model of pain.

High pain prevalence… and growing

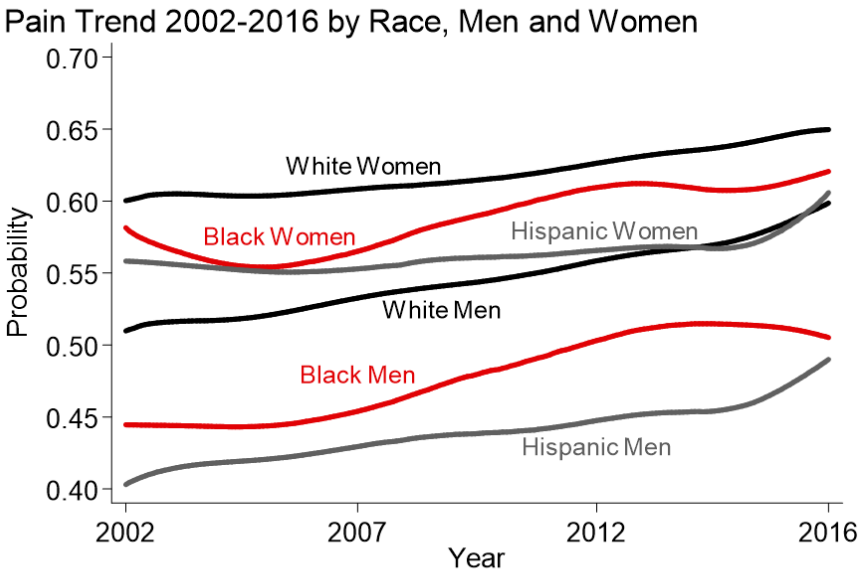


From semiparametric age-adjusted model of pain.

High pain prevalence… and growing

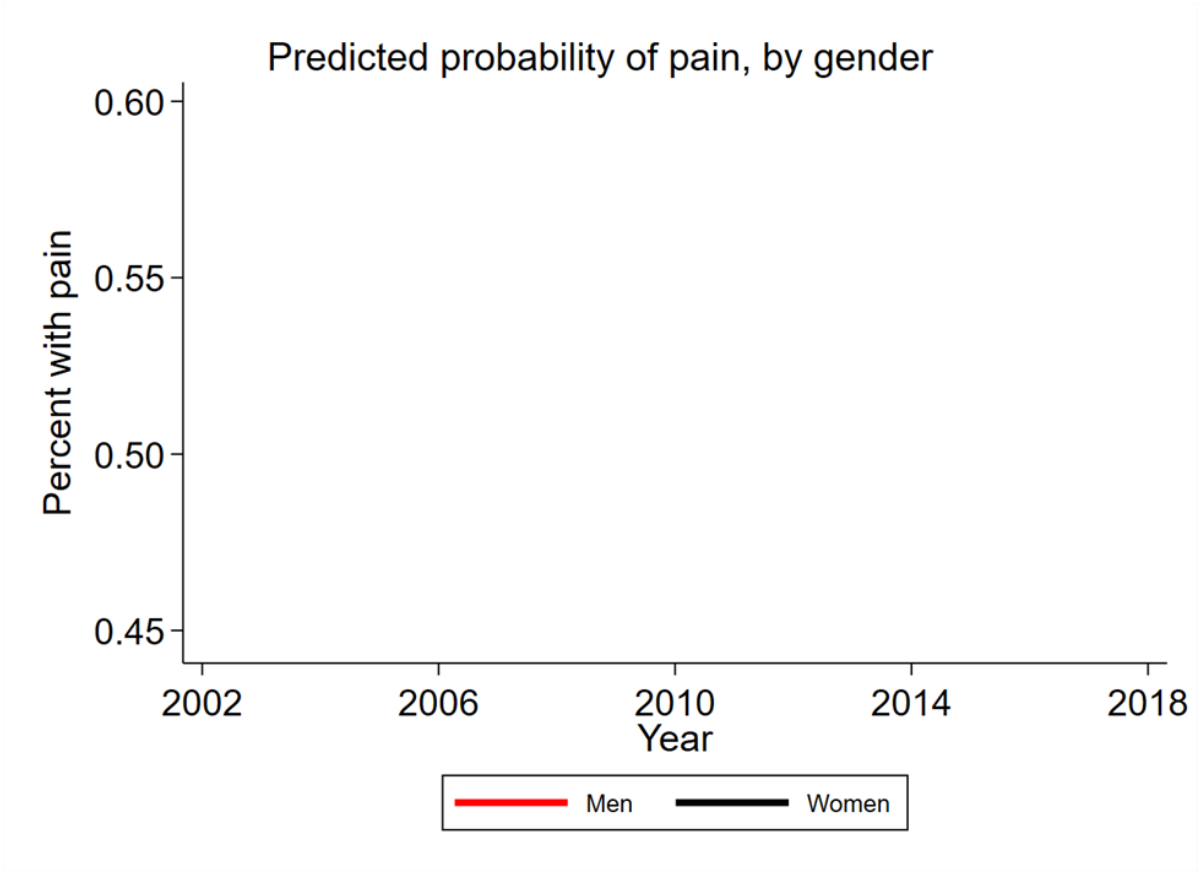


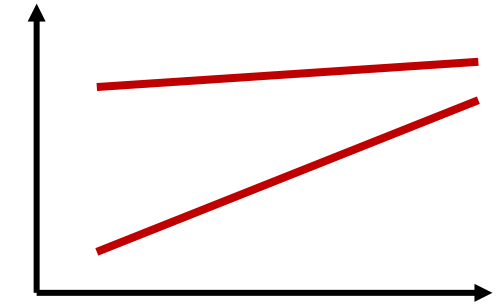
From semiparametric sex and race-adjusted model of pain.



From semiparametric age-adjusted model of pain.

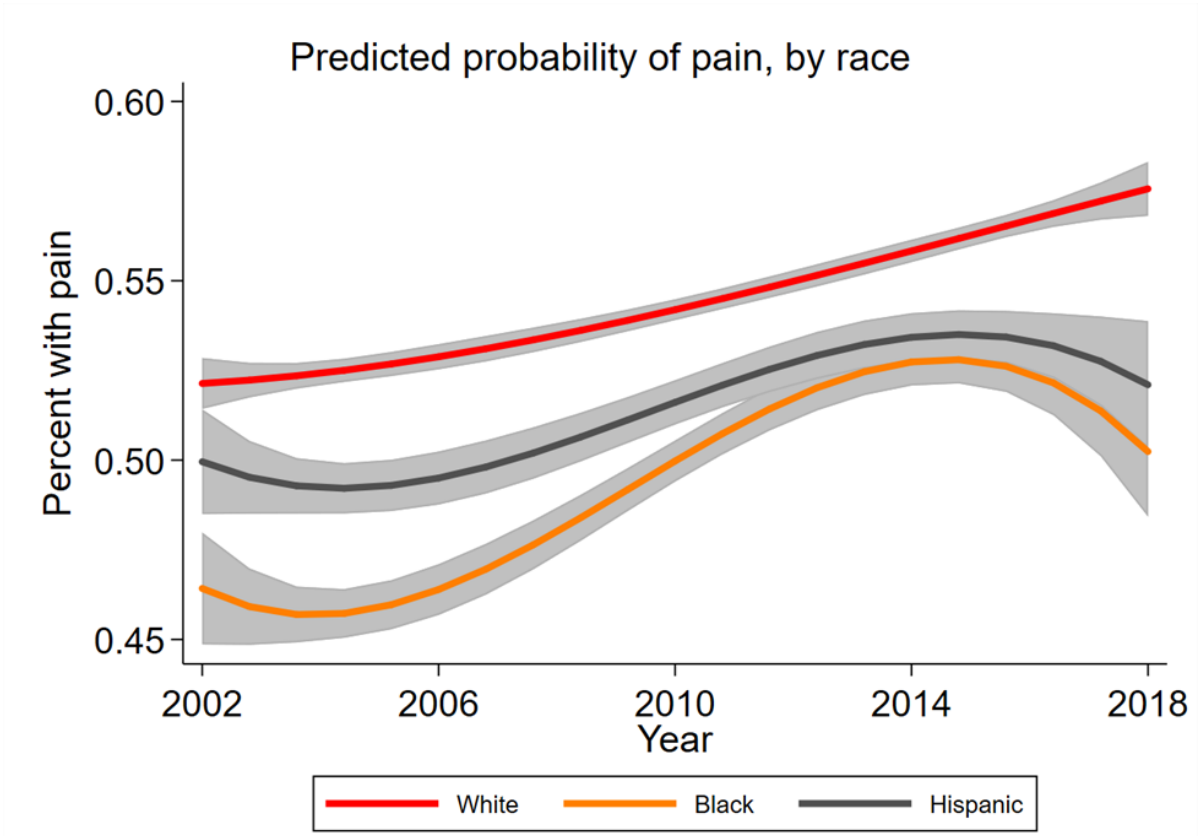
Pain Disparities: change over time?

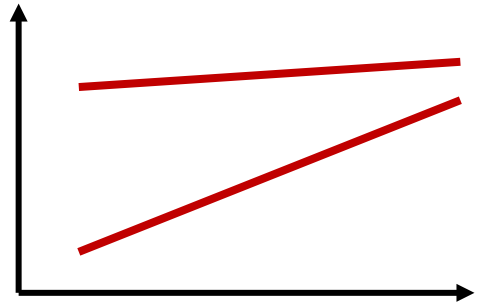




Gender: convergence

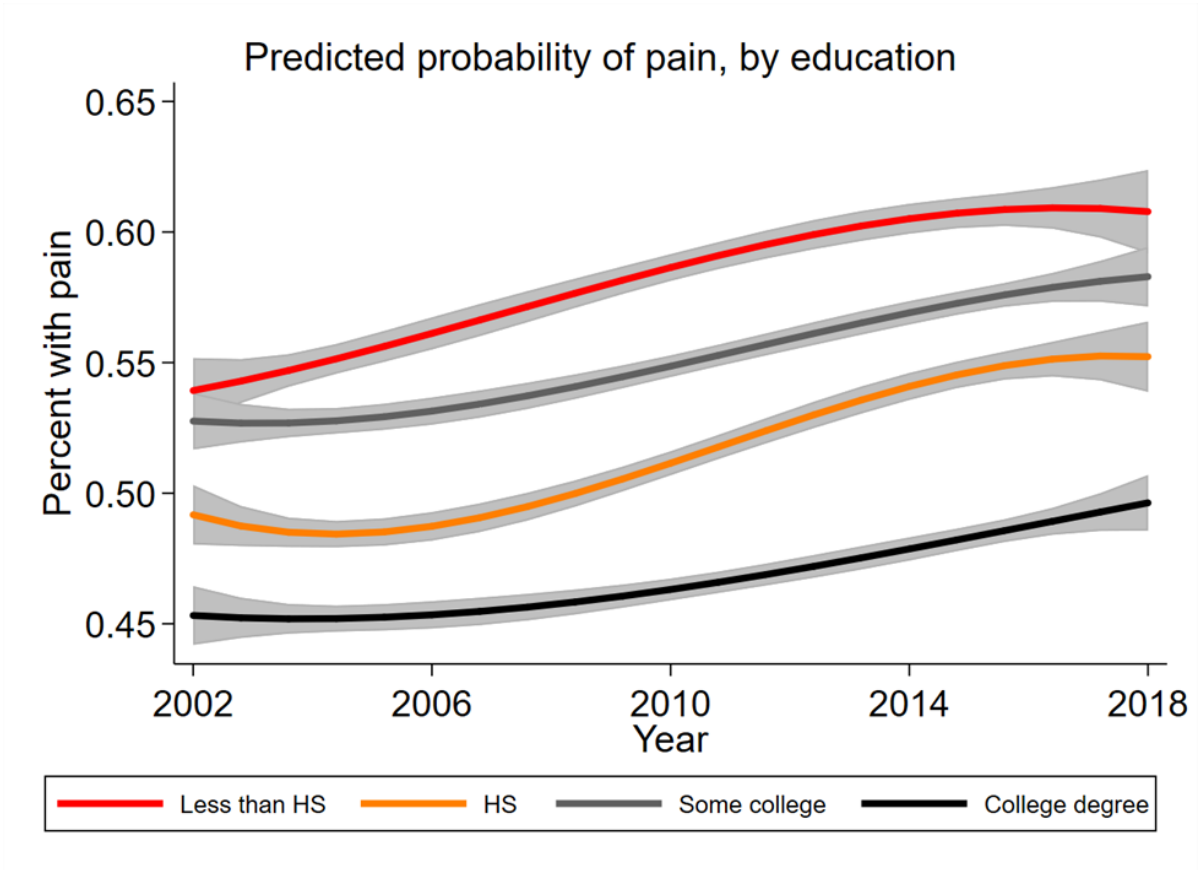
Pain Disparities: change over time?

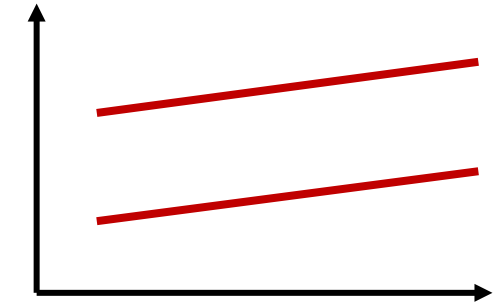




Race: black-white convergence

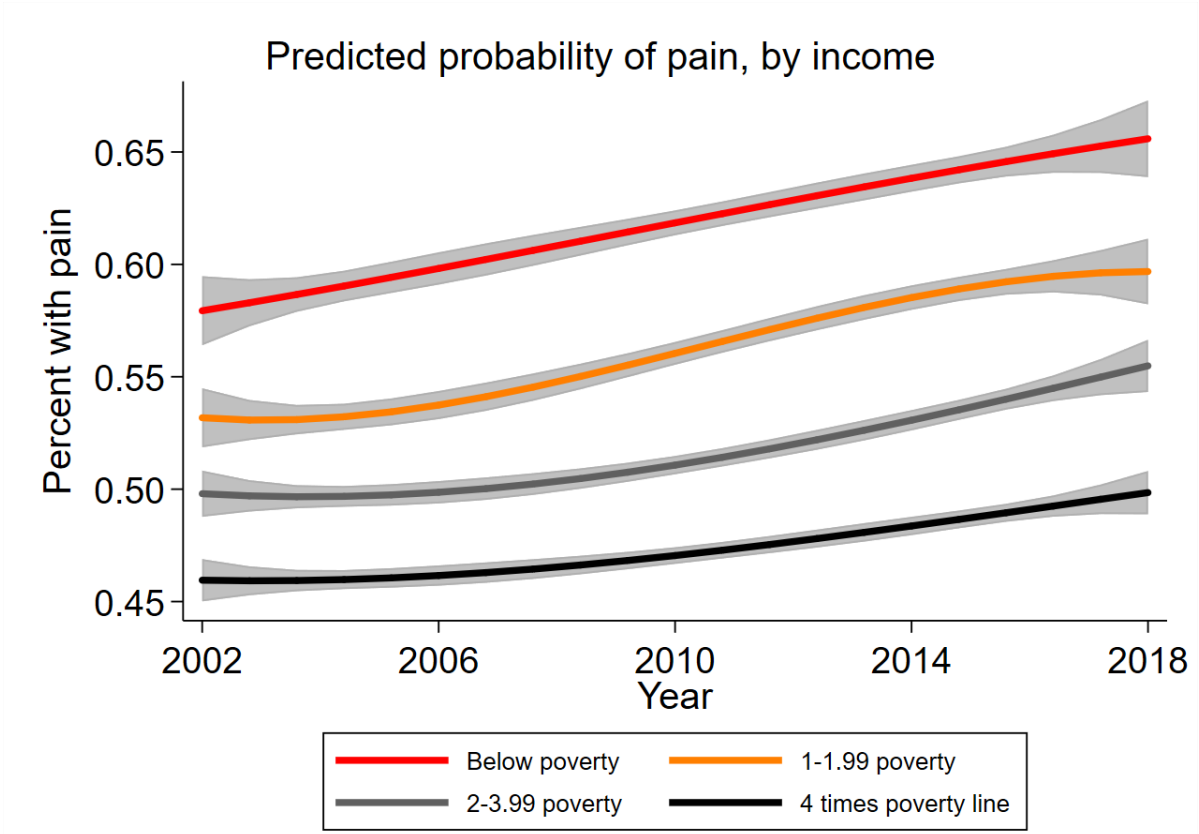
Pain Disparities: change over time?

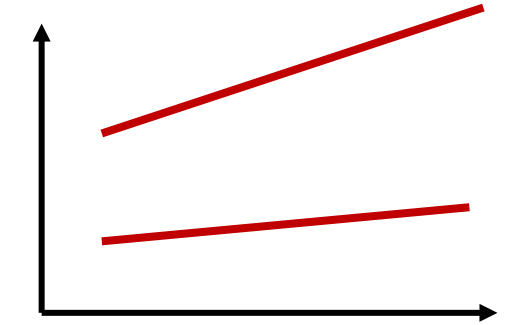




Education: some divergence

Pain Disparities: change over time?





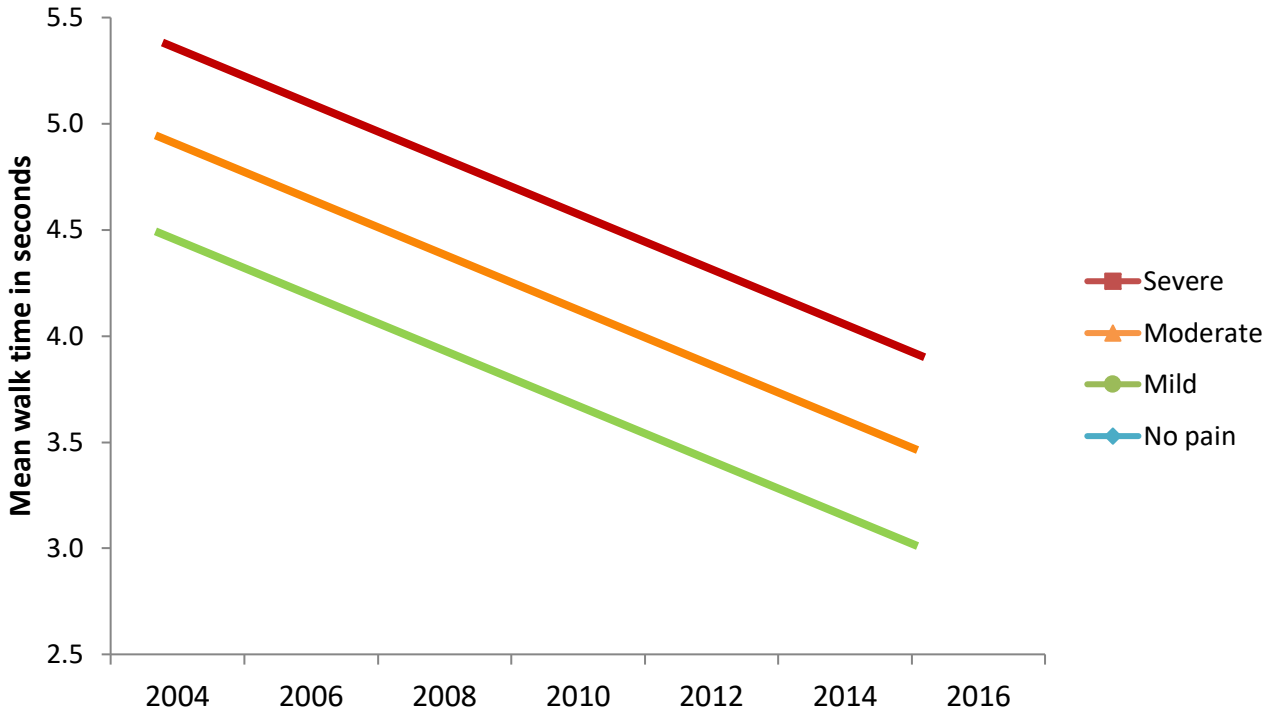
Income: divergence

Pain Disparities: change over time?

- Convergence for gender & race, divergence for SES
- **But predominant patter: increase in pain for all groups**

Pain Change over time: due to ‘reporting’ changes?

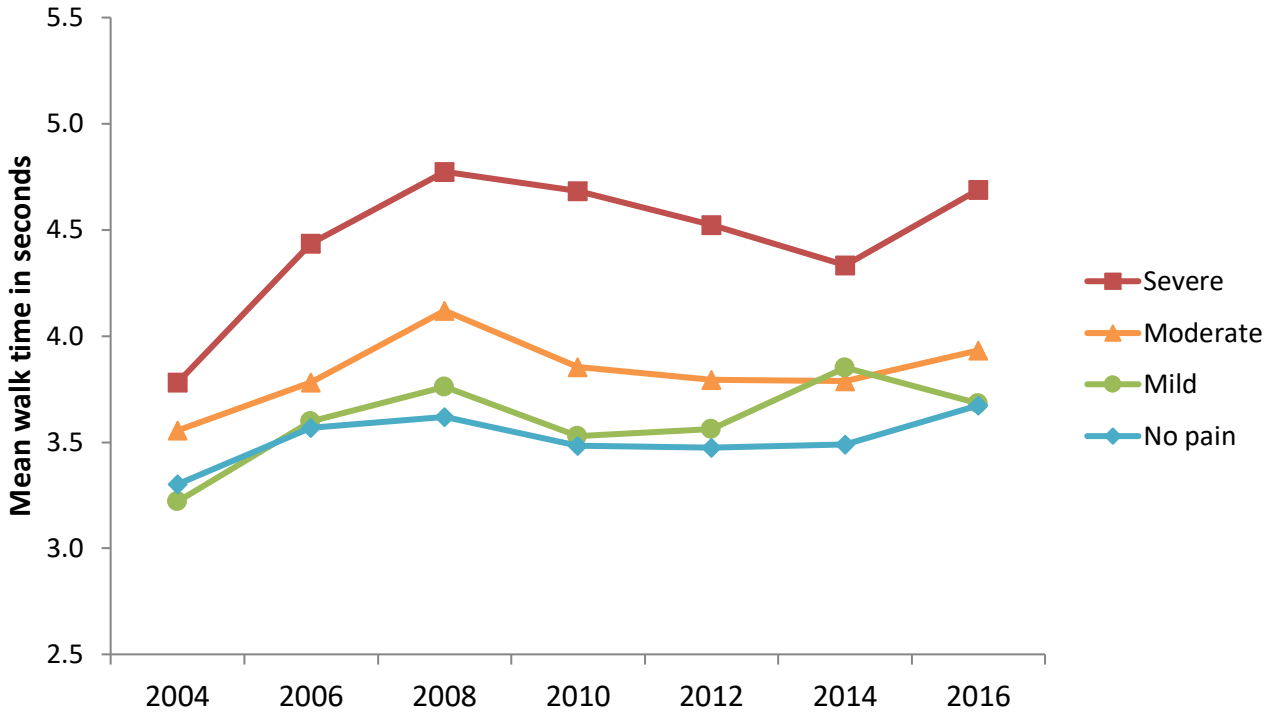
HRS data (Grol-Prokopczyk et al)



If respondents more ‘expressive’ (report pain more readily)

Pain Change over time: due to ‘reporting’ changes?

HRS data (Grol-Prokopczyk et al)



No evidence pain reporting more ‘expressive’

Disparities in Pain:

How are they changing over time?

Attenuation across demographic groups

Amplification across SES

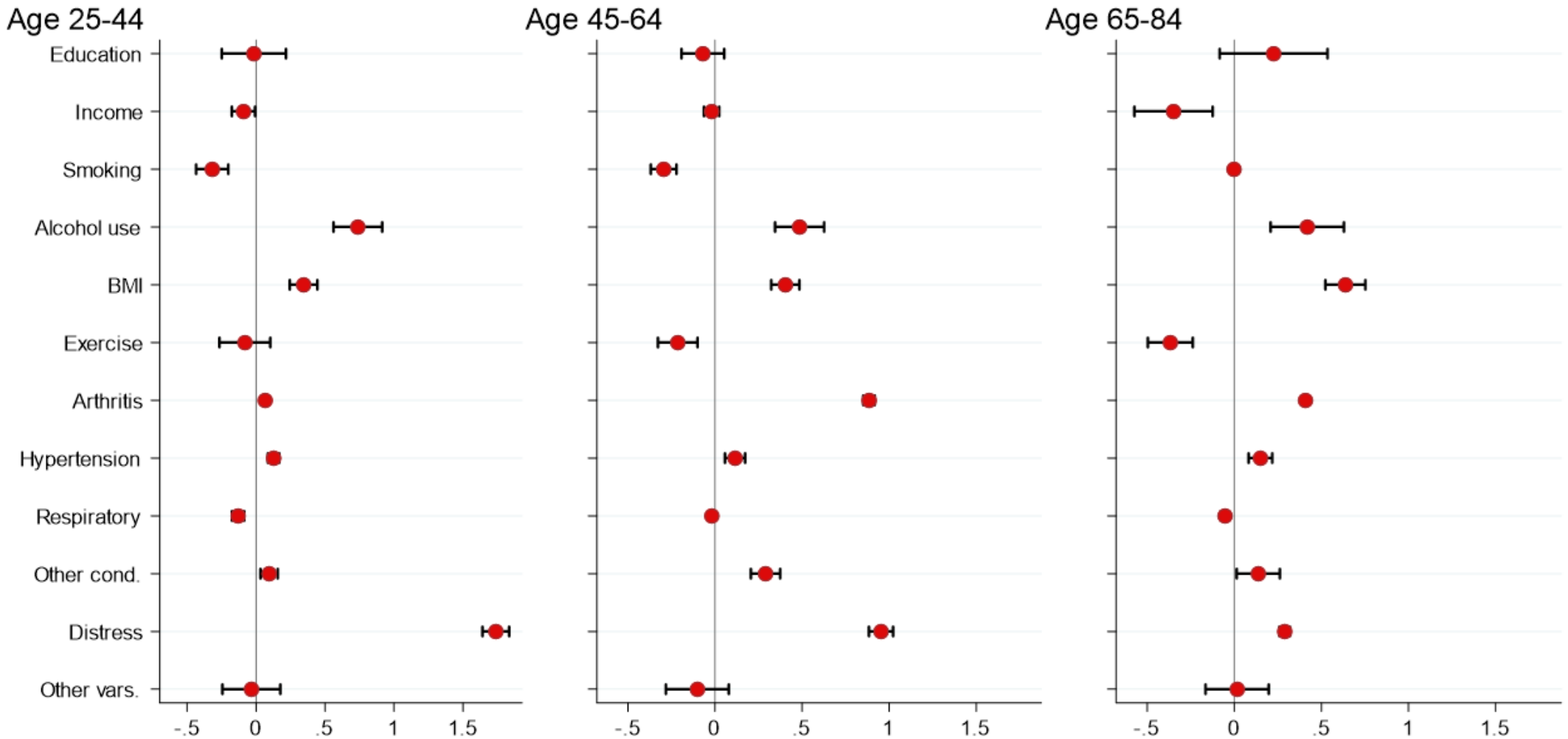
But especially increases for all

Not (just) due to reporting changes

Anna Zajacova
Zachary Zimmer
Hanna Grol-Prokopczyk

2020 TRENDS Annual Meeting

Figure 2. Contribution of changes in composition, by age group.



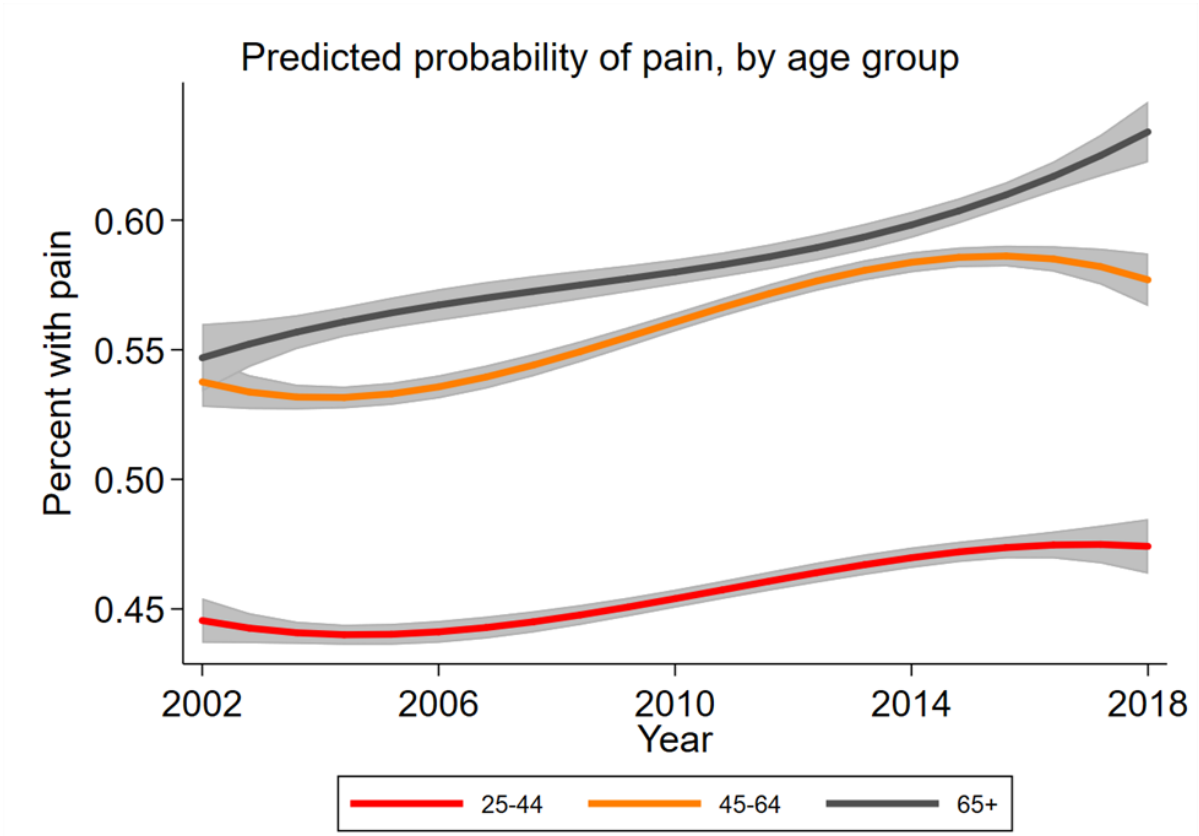
Coefficients and their 95% CIs estimating the contribution of compositional differences between 2002-04 and 2016-18 populations to pain prevalence differences

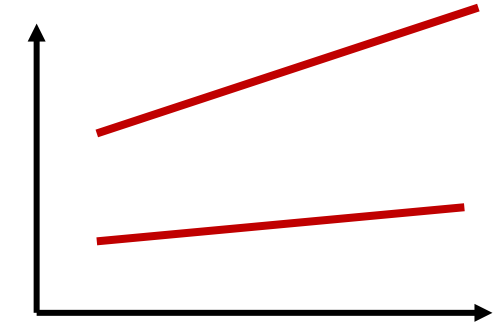
Table 4. Percent change in pain trend when adjusting for single covariate in models of pain trends 2002 to 2018.

Age 25-44		Age 45-64		Age 65-84		Total	
Distress (K6)	-76%	Distress (K6)	-36%	BMI	-21%	Distress (K6)	-40%
Alcohol use	-34%	BMI	-23%	Hypertension	-13%	BMI	-25%
BMI	-31%	Alcohol use	-14%	Diabetes	-9%	Alcohol use	-20%
Hypertension	-16%	Diabetes	-9%	Kidney cond.	-7%	Hypertension	-13%
Homeowner	-14%	Homeowner	-8%	Alcohol use	-6%	Diabetes	-9%
Diabetes	-8%	Hypertension	-7%	Cancer	-6%	Homeowner	-8%
Married	-7%	Married	-4%	Distress (K6)	-5%	Cancer	-3%
Liver cond.	-3%	Cancer	-3%	Liver cond.	-2%	Married	-3%
Stroke	-3%	Liver cond.	-1%	Homeowner	-1%	Liver cond.	-2%
Heart cond.	-3%	Stroke	-1%	Married	0%	Kidney cond.	-2%
Cancer	-1%	Kidney cond.	-1%	Children	0%	Stroke	0%
Arthritis	0%	Income	0%	Stroke	1%	Children	0%
Employment	1%	Children	1%	Smoking	2%	Arthritis	1%
Kidney cond.	1%	Respiratory	6%	Arthritis	4%	Employment	1%
Prior empl.	1%	Prior empl.	7%	Employment	4%	Prior empl.	2%
Children	2%	Employment	7%	Prior empl.	4%	Heart cond.	4%
Income	3%	Heart cond.	8%	Respiratory	5%	Income	6%
Phys. Activity	9%	Arthritis	14%	Heart cond.	7%	Respiratory	7%
Respiratory	10%	Education	17%	Phys. Activity	12%	Phys. Activity	14%
Smoking	28%	Phys. Activity	18%	Education	14%	Smoking	19%
Education	30%	Smoking	24%	Income	14%	Education	20%

Source: NHIS 2002 to 2018.

Pain Disparities: change over time?

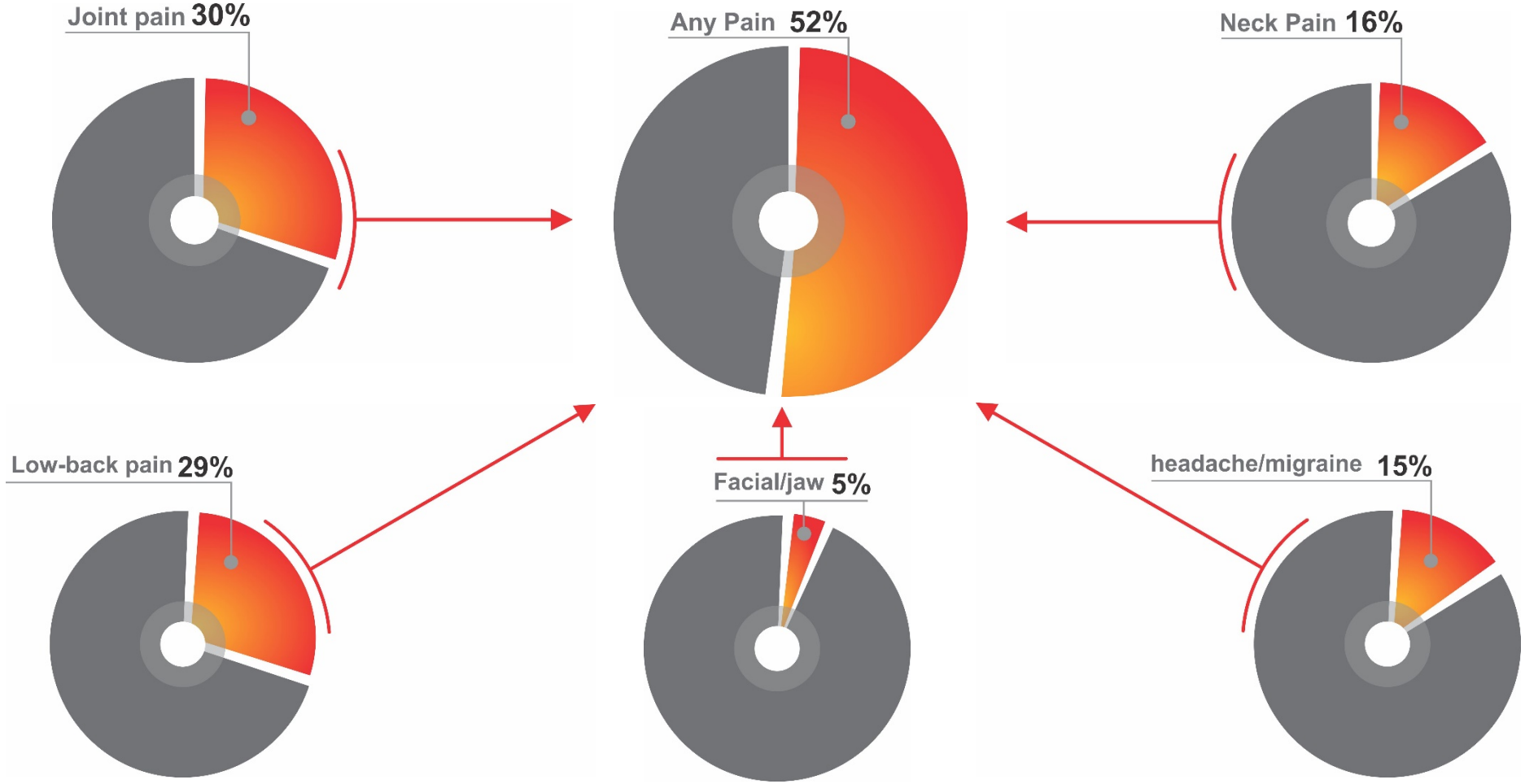




Age/cohort: ???

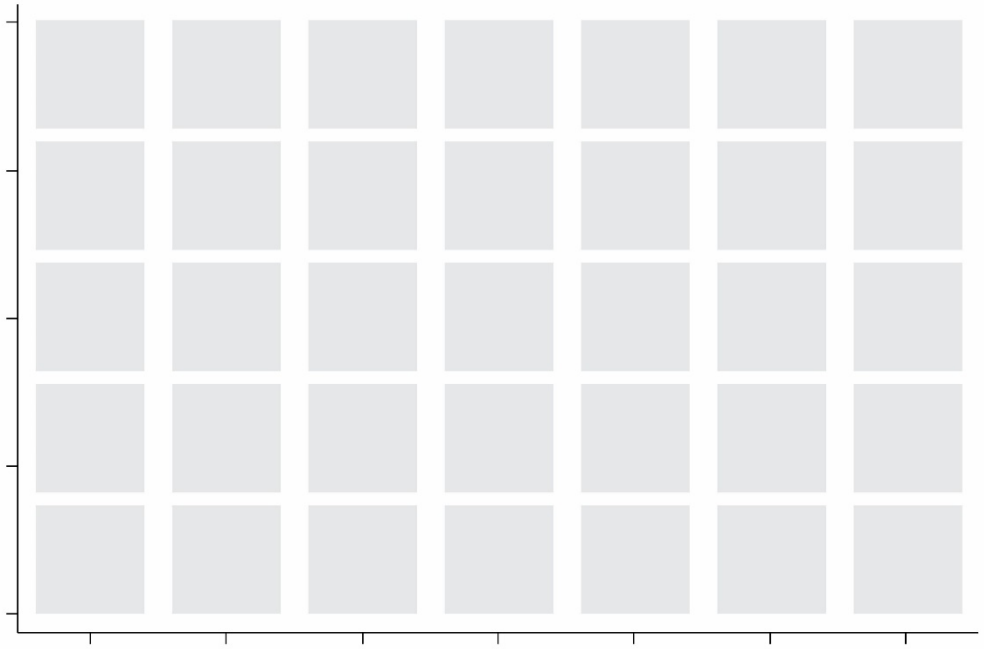
High pain prevalence…

2002-2018 NHIS, US adults 25-84

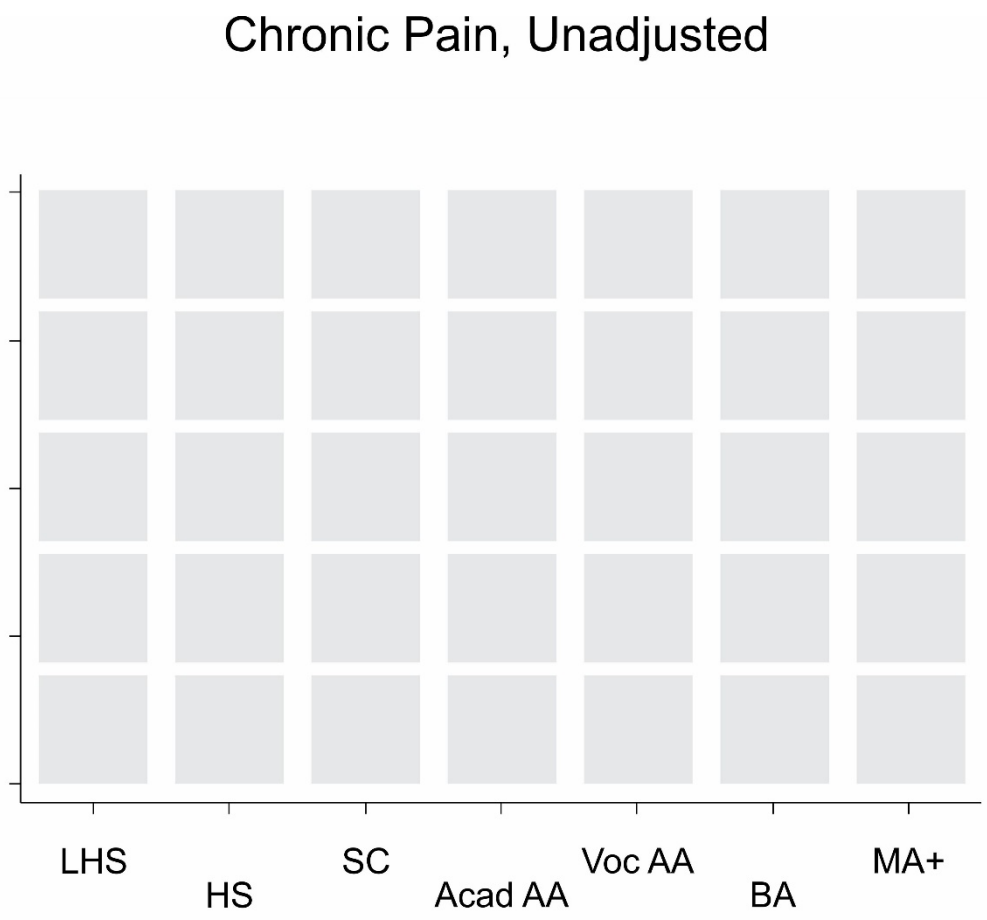


Social disparities similar to other indicators

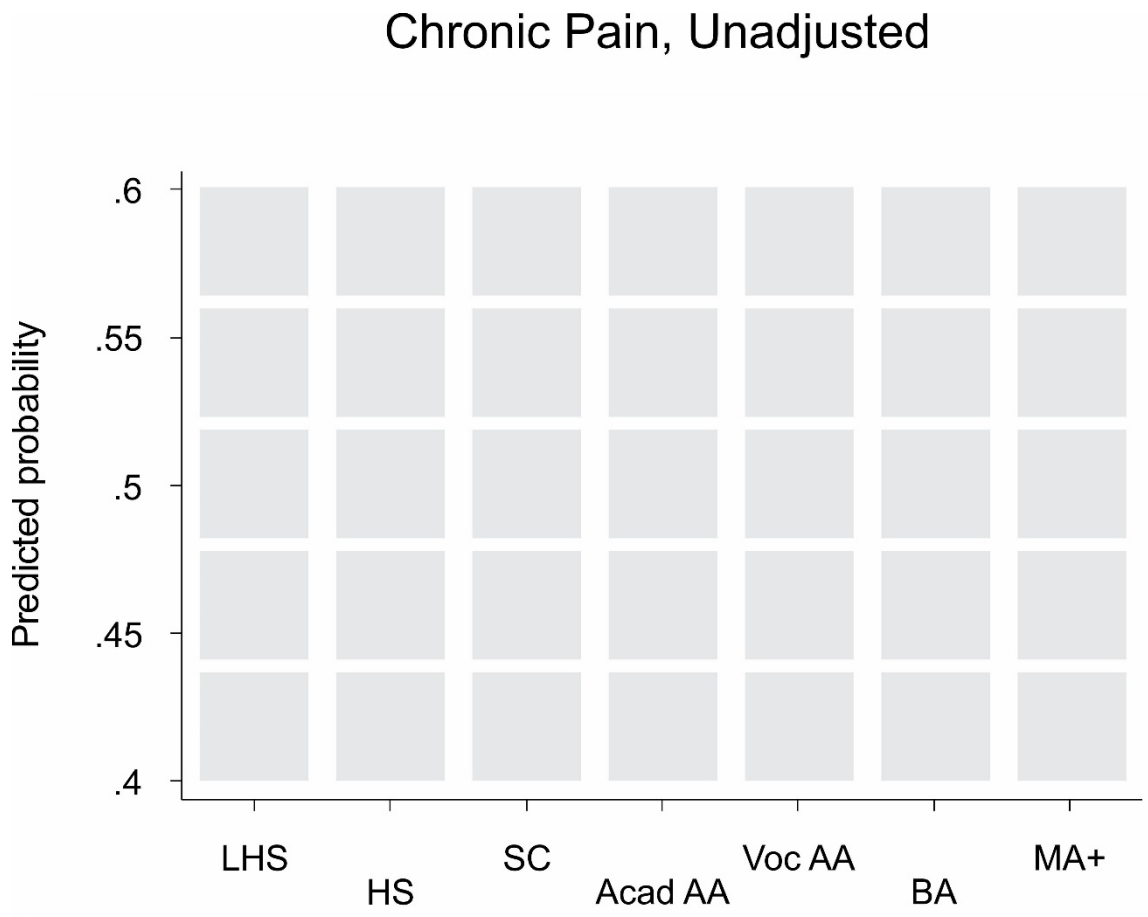
Chronic Pain, Unadjusted



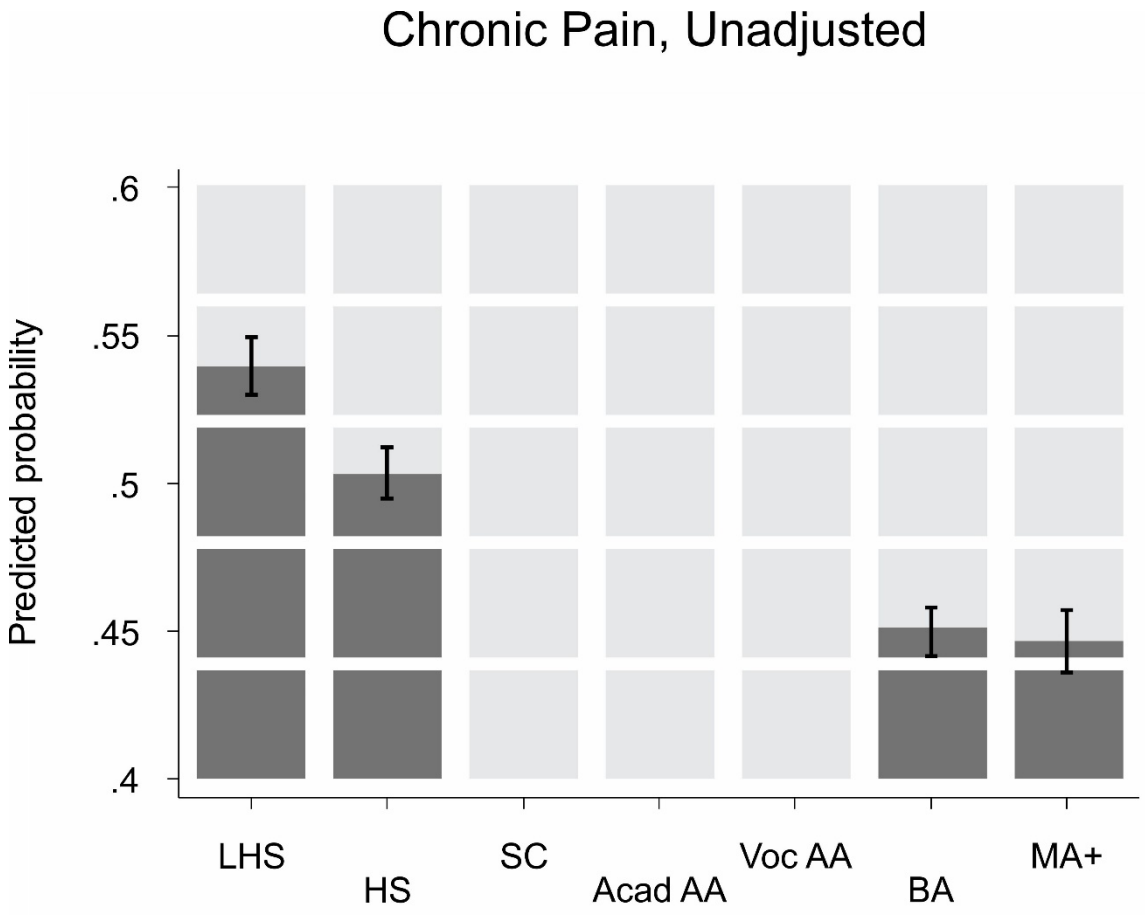
Social disparities similar to other indicators



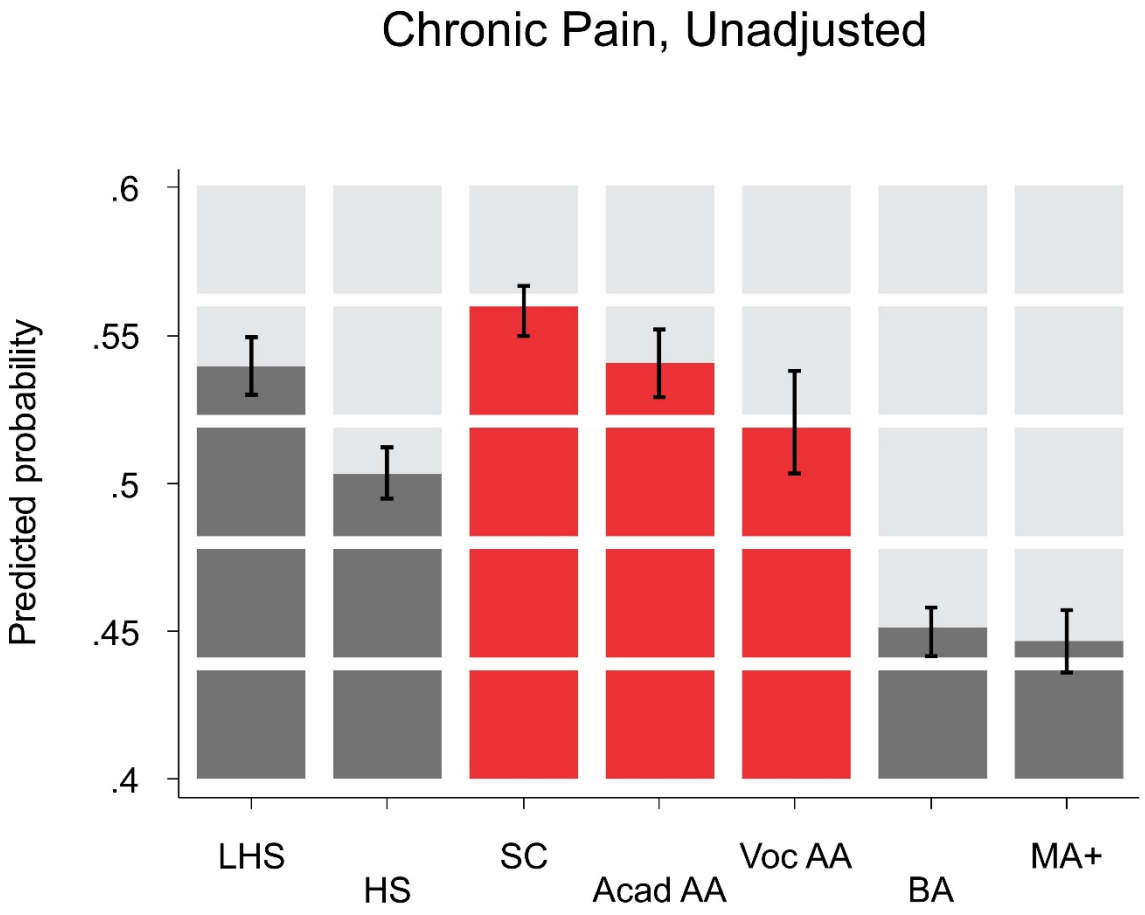
Social disparities similar to other indicators



Social disparities similar to other indicators



Social disparities similar to other indicators



Social disparities similar to other indicators