



- Trends in disability in (younger) adults?
- Factors driving the trends (the role of pain)?
- Impact of COVID on disability & pain trends?

- NHIS ~ 2000 to 2023
- Adults 18-44, 45-64



#### Based on:

- Zajacova & Margolis. 2024 "Trends in Disability and Limitations among U.S. Adults Age 18-44, 2000-2018."
  American Journal of Epidemiology, forthcoming.
- Ruan, Zajacova, Zimmer, Grol-Prokopczyk. 2024 "Does Pain Explain Trends in Disability? An Analysis of Middle-Aged and Older U.S. Adults, 2002–2018" *Journals of Gerontology: Social Sciences*. Online Aug 28, 2024
- Ruan, Zajacova, Grol-Prokopczyk, Zimmer. "How Much Does Pain Contribute to Educational Disparities in Disability?" Under review.
- Zajacova, Grol-Prokopczyk, Nahin. "Pain before, during, and after COVID-19 among US adults." In preparation.
- Zajacova, Cheung, Grol-Prokopczyk, Nahin. "Pain trends among US adults 2010-2021." In preparation.
- Farina, Martino, Riebler, Zajacova. "Education and Age-Specific Trends in Cognitive Difficulties Across US States". In preparation.
- Lawrence & Zajacova. "Diverging Trends in Cardiometabolic Health for Americans with and without College Degrees." In preparation.

#### Disability & limitation trends, 2000-2018, adults 18-44

- Red=trend up•
- White=flat
- Blue=down
- Controls
  - M1 only age, sex
  - M2 + demographics
  - M3 + education
  - M4 + BMI
  - M5 + smoking
  - M6 + alcohol use
  - M7 + conditions
  - M8 + distress
  - M9 all controls

Any disability/limitation

Disability

ADL

IADL

**Activity limitations** 

Cognitive

Walking

Work

Other activity lims.

Sensory limitations

Vision

Hearing

Functional limitations

Carrying

Climbing

Grasping

Reaching

Sitting 2 hrs

Standing 2hrs

Stooping

Walk 3 blocks

Pushing

Relaxing

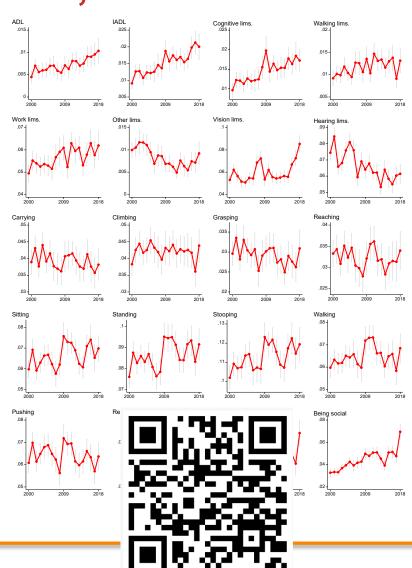
Social limitations

Going out

Socializing

#### Disability & limitation trends, 2000-2018, adults 18-44

- Countervailing trends
  - Increases in ADL/IADL, social, cognitive
  - Relatively stable mobility limitations
    - Decreases in hearing (not vision) & 'other' lims.
- Countervailing drivers
  - edu, smoking, alcohol use suppress increases
  - BMI, distress explain some of the increases
- Combining domains into 'any disability' obscures complex nuanced mixed trends.

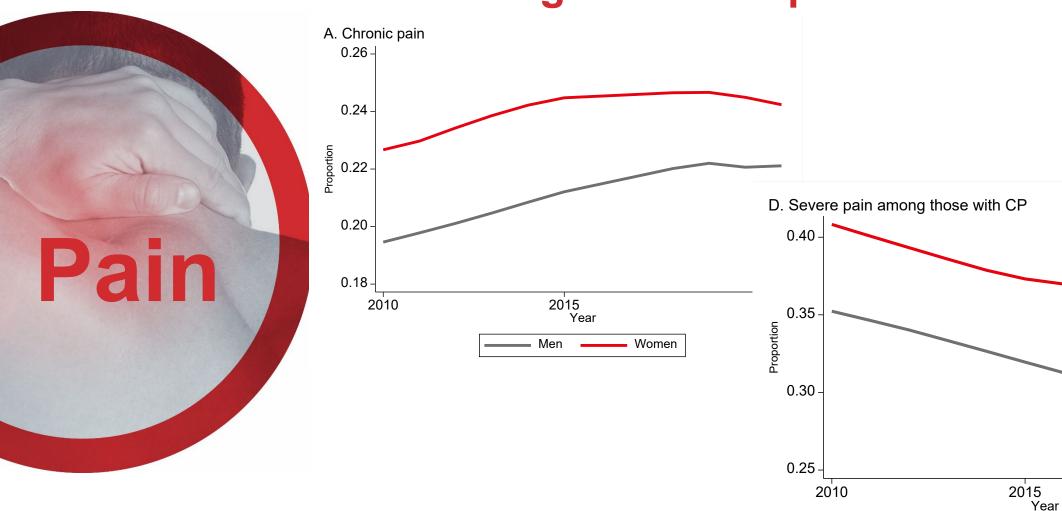


Men

Women

2021

#### Similar countervailing trends for pain measures

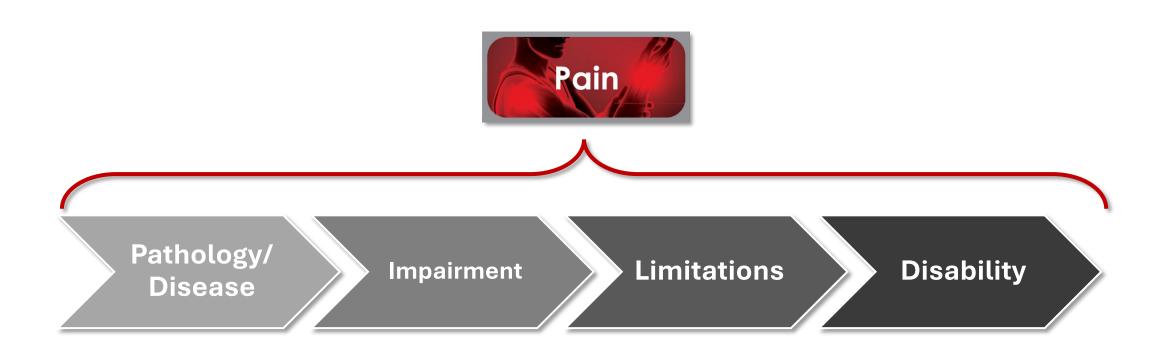


# Pain and disability

## How are they related?

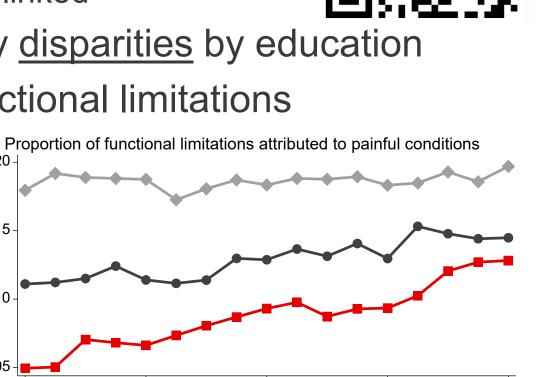
Conceptual model & empirical evidence

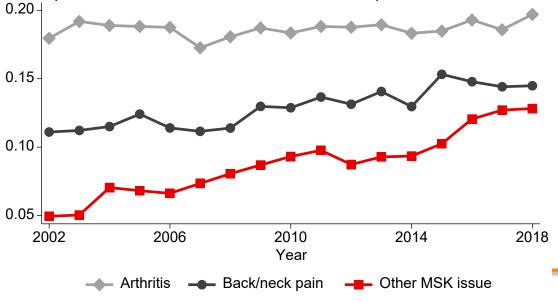
#### The disablement process



#### Pain and disability are strongly linked

- Pain triples/quadruples the <u>prevalence</u> of limitations
  - Any pain and any disability domain linked
- Pain explains 18-34% of disability disparities by education
- Pain explains 40% of trend in functional limitations
  - 2002-2018, adults 45-64
- Pain attributions of limitations are increasing
  - 10 million more FLs due to pain





## Pain and disability

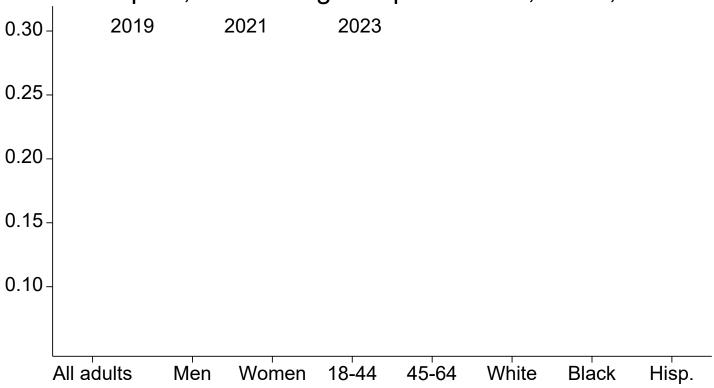
## How are they related?

Conceptual model & empirical evidence

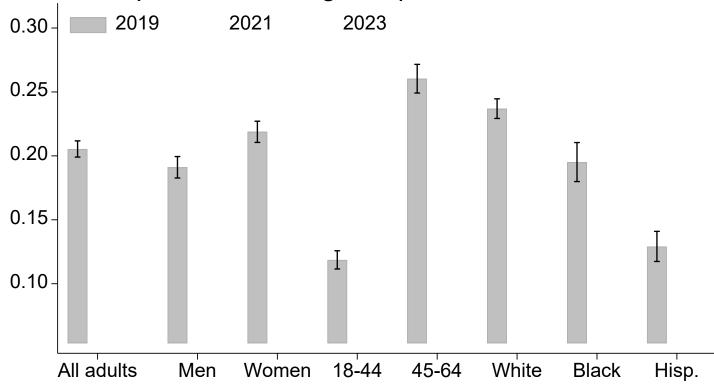
Pain central to disability, including disability trends

- COVID directly increases likelihood of chronic pain
- Pandemic caused widespread disruptions & changes

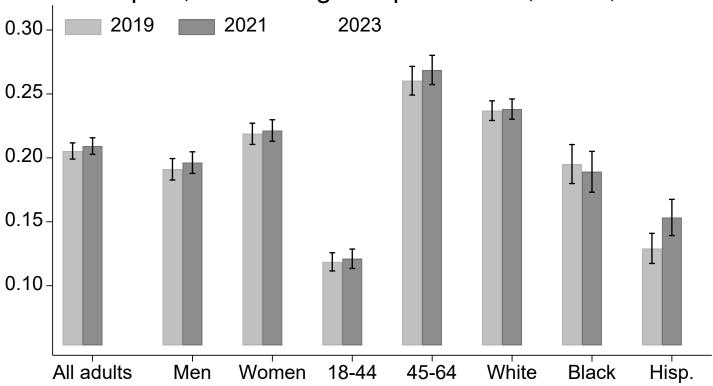




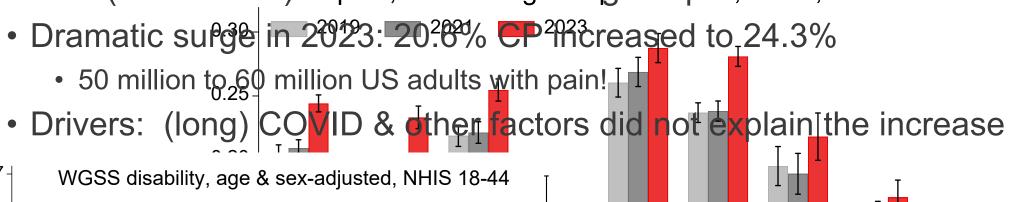
Chronic pain, crude weighted prevalence, NHIS, 18+

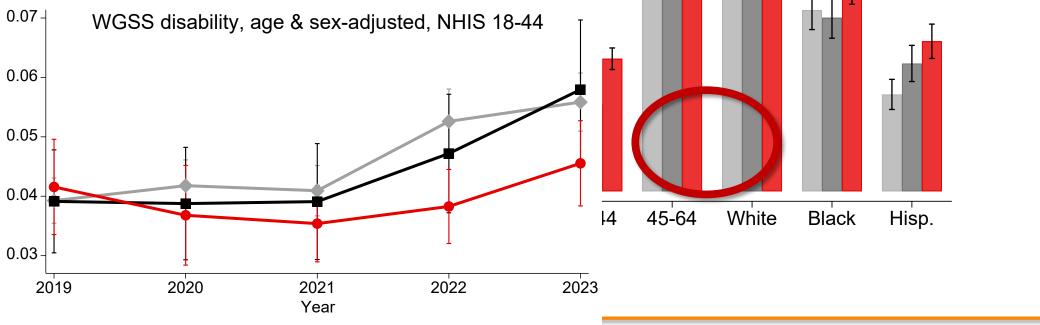


Chronic pain, crude weighted prevalence, NHIS, 18+



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- Trends in disability in (younger) adults?
  - Countervailing (mixed trends)
    - Social and cognitive limitation increases
- Factors driving the trends?
  - Countervailing forces
  - 'Standard' covariates don't explain the trends
- Impact of COVID on disability & pain trends?
  - Surge after, not during, the pandemic

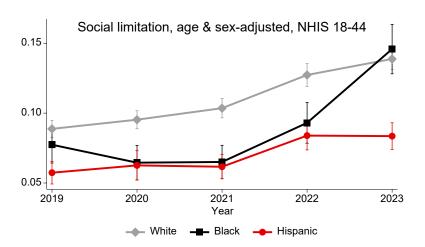
#### Implications for research, policy

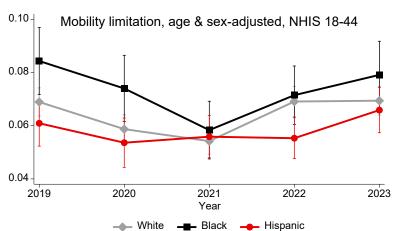
- Measurement matters
- Pain is central in disablement process & disability trends
  - Pain as invisible disability
- To explain trends, consider macro-level inputs (policies)

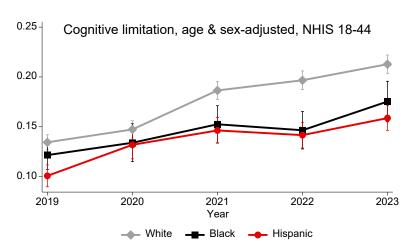


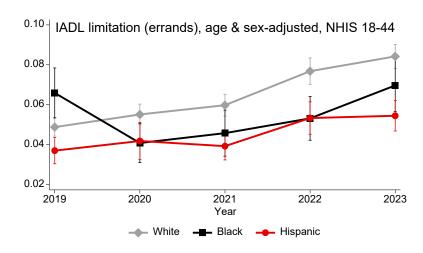
### EXTRA SLIDES

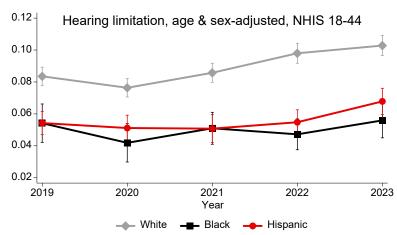
#### Disabilities before, during, and after COVID

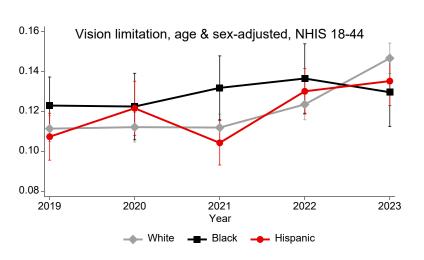




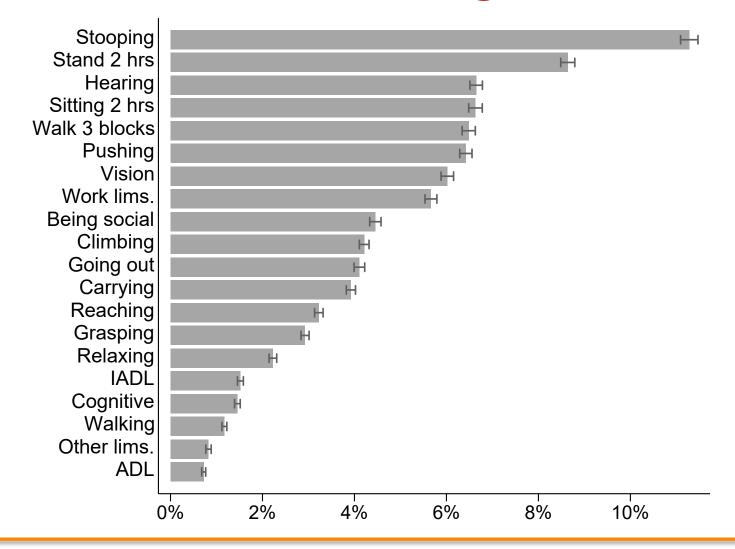




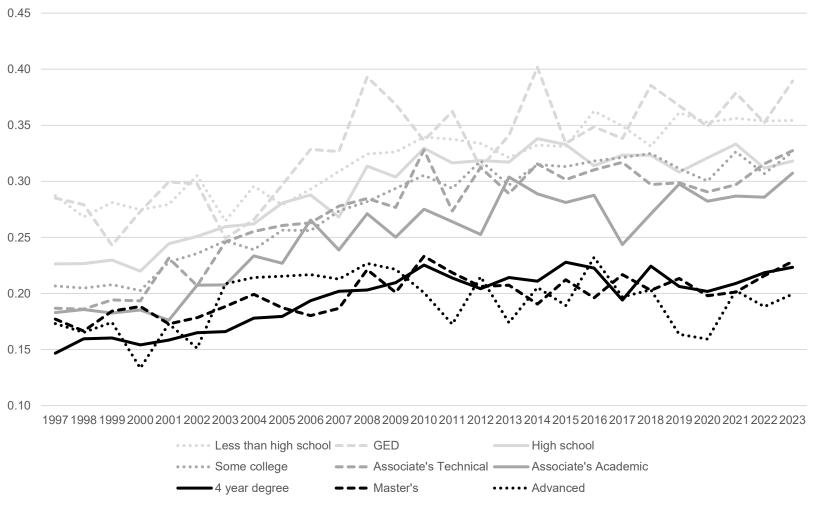




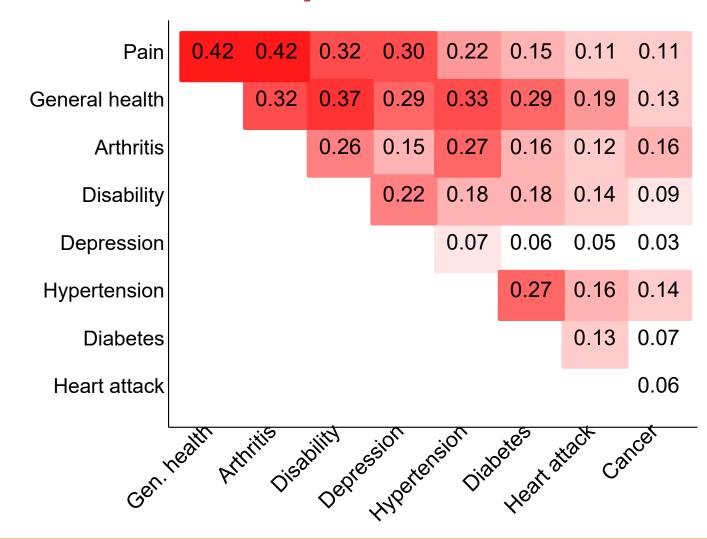
#### Prevalence of disabilities, age 18-44, NHIS 2000-2018



### Trends in cardiometabolic health by education among adults 25-64, 1997-2023: circulatory disease



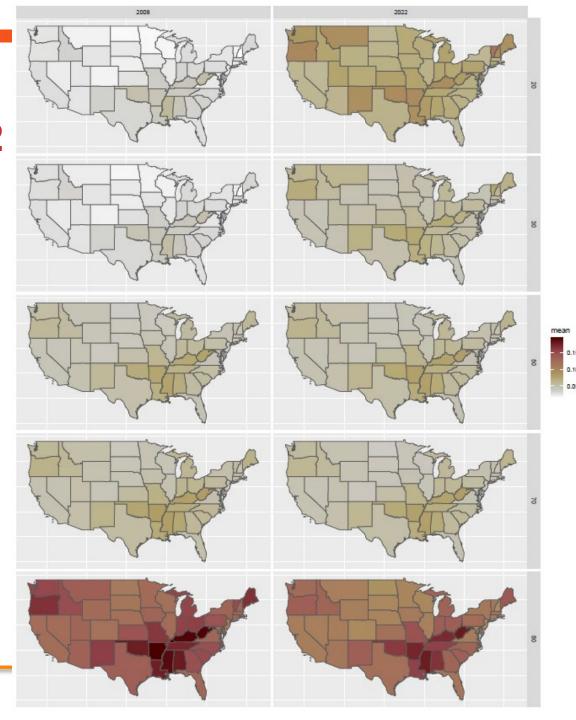
#### Association between pain & other health domains



#### **Cognitive difficulties 2008-2022**

decreased among older adults but increased among younger adults

Source: ACS



- The National Academies' Committee on Population, in collaboration with the National Institute on Aging, initiated this public workshop to bring together an interdisciplinary group of experts to discuss trends in disability and disabling morbidity among the U.S. working age population (ages 25-64). The workshop will identify key research and data priorities regarding:
- The measurement of trends and disparities in working-age disabilities and disabling morbidities;
- Social and economic factors influencing trends in disabling conditions, with a specific focus on work and employment-related drivers;
- Implications of Covid and post-Covid developments for key public programs.
- One motivation for this workshop is that health and disability trends among working age populations have been less encouraging than those at older ages. Increases in working-age disability and related morbidity and disparities therein may have important implications for labor force participation and a range of public disability, health, and income benefit programs in the coming decades. These trends also have important interactions with labor markets and changing occupational distributions for accessibility and work capacity. The COVID-19 pandemic's impact on working conditions (e.g., remote work) also presents opportunities to consider the role of organizational factors including those associated with the workplace. Employment is an important channel for both understanding changes in disability over time as well as potentially intervening to improve functional capacity and welfare. Discussion of research opportunities to inform such interventions, as well social safety net policies that consider functional capacity and work capacity, will be a key feature of the workshop.

### Session 2: Period and cohort trends in disabling morbidity —health and medical drivers

- Among the working-age population, what are the health-related factors driving trends and disparities in disability and disabling morbidity (e.g., obesity, cardiovascular disease, diabetes, physical and psychological pain)?
- What impacts have COVID-19 and long COVID had on projected trends in disability?
- What countervailing trends have emerged for different age/demographic groups? What do the various longitudinal data sources reveal?
- How are disability trends interacting with those for other health and risk factors?

Presenters (15 minutes each):

- Emily Agree (Moderator)
- Hiram Beltrán-Sánchez, University of California-Los Angeles, committee member. Disability trends and trajectories in the COVID era.
- ➤ **Neil Mehta**, *University of Texas Medical Branch*. Overview of disability/physical functioning/health and the roles of obesity and related cardio-metabolic conditions.
- Anna Zajacova, Western University, Ontario. Disability trends among adults 18-44; APC trends in pain and other outcomes and links between pain and disability.