TRENDS IN US WOMEN'S HEALTH BY EDUCATION, 1997-2014.

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Consultants: Linda G. Martin, Robert F. Schoeni
1. Project motivation

- **Mortality** trends among women: worrisome
  - Increases driven by *low-educated* women
- **Health** trends: mixed in most recent studies
  - 1980-90s: decreasing limitations and disability
    - Increasing average educational attainment partial cause?
  - Early 2000s: stall among non-elderly women
    - Increasing obesity partial cause?
    - Reminds us of mortality trends
1. Project motivation

- **Mortality** trends among women: worrisome
  - Increases driven by low-educated women

- **Health** trends: mixed in most recent studies

- **Gaps** in health trends literature:
  1. Trends known only to early 2000s
     - What is happening now? What does it portend for the near future?
  2. In health trends, less focus on subgroups differences
     - Do education-specific trends in health mirror those for mortality?
  3. Unclear what causes the observed edu-specific patterns
     - What role do health behaviors and economic factors play?
2. Project aims

1. Determine women’s health trends by education
   • What are recent health trends among women?
   • Are the trends similar across educational levels?

2. Assess the role of HB and SES in the trends
   - Obesity, smoking
   - Economic wellbeing
   • Do the major contributors to the mortality trends also contribute to health trends?
Disability process

- Physiological dysregulation
- Morbidity
- Functional limitations
- Disability
- Death

Project focus
Disability process

Physiological dysregulation → Morbidity → Functional limitations → Disability → Death

Today’s focus
Health domains

1. Morbidity: sum of chronic conditions
2. Functional limitations
   a) Physical / movement
   b) Sensory (vision, hearing)
   c) Cognitive
   d) Emotional (depressive symptoms)
3. Disability
   a) ADL/IADL limitations
   b) Work limitations
   c) Social limitations
Health domains

1. Morbidity: sum of chronic conditions

2. Functional limitations
   a) **Physical / movement**
   b) Sensory (vision, hearing)
   c) Cognitive
   d) Emotional (depressive symptoms)

3. Disability
   a) **ADL/IADL limitations**
   b) Work limitations
   c) Social limitations
Approach

Data: NHIS 1997-2013
Sample: Women 45-84 (?) (N~141,000)
Predictors: year (trend), age and education

Estimation (?)

Graphical -- LOWESS, GAM
Formal tests -- Regression

\[ \text{logit}(\text{disability}) = \beta_0 + \beta_1 \text{year} + \beta_2 \text{edu} + \beta_3 \text{year*edu} + \ldots \]

**trend** **trend differs by edu?**
Aggregate trends

Trends in functional limitations, women ages 45-84

Trends in disability, women ages 45-84

Non-decreasing prevalence since early 2000s
Aggregate trends: non/elderly

Trends in functional limitations, women ages 45-64 and 65-84

Trends in disability, women ages 45-64 and 65-84

Increasing prevalence among non-elderly women
Cubic year, logistic regression

Trends in functional limitations, women ages 45-64 and 65-84

Trends in disabilities, women ages 45-64 and 65-84

Adjusting for age doesn’t change the story
Aggregate trend summary

• Prevalence of limitations and disability appears to increase since early 2000s.
On to Aim 1

• Prevalence of limitations and disability appears to increase since early 2000s.

• **Aim 1: Which groups drive the trend?**
  
  Hypothesis: the low-educated group(s).
Women 45-84, by education

Trends in functional limitations, by education, age 45-84

Trends in disability, by education, age 45-84

Stable or increasing prevalence across education
Women 45-64, by education

Trends in functional limitations, by education, age 45-64

Trends in disability, by education, age 45-64

Increasing prevalence in most edu groups
Increasing edu inequalities (?)
Women 65-84, by education

Trends in functional limitations, by education, age 65-84

Trends in disability, by education, age 65-84

Increasing prevalence in most edu groups
Stable edu inequalities (?)
Formal tests for trends & divergence

- Model trend as linear 2003-2013 (?)

\[
\logit(Y) = \beta_0 + \beta_1 \text{year} + \beta_1 \text{edu} + \beta_2 \text{year} \times \text{edu} + \ldots
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Formal tests for trends & divergence

- Model trend as linear 2003-2013
- $\text{logit}(Y) = \beta_0 + \beta_1 \text{year} + \beta_1 \text{edu} + \beta_2 \text{year} \times \text{edu} + \ldots$

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Summary of early findings

• Prevalence of lims/disability: stable or increasing
• Increases appear greater in non-elderly women
• Increases across education groups (unexpected)
  • largest increases among the least-educated (expected)

• Next: Aim 2 -- what factors explain these trends?
4 questions to consider

• Conceptually, how can this project be strengthened?
• Methodologically, where can we take this?
• Main weaknesses, fixable or not?
• Strengths of the project, especially strengths we haven’t considered?

Thank you.
4 questions to consider

• Conceptually, how can this project be strengthened?
• Methodologically, where can we take this?
• Main weaknesses, fixable or not?
• Strengths of the project, especially strengths we haven’t considered?

Thank you.
Next Steps

- Describe what happens next:
- Research the ideas generated?
- Follow up with larger group?
- Generate action items for follow-up:
- Start turning ideas into reality.
Questions/comments to self/Jennifer

• Must include weights
• How to present findings? The 45-84, 45-64, 65-84 seems cumbersome (esp. with many outcomes)
• Include age 85 that’s top-coded? There is a big jump from values at 84 and at 85+

```
.sum actlim funclim adlhelp iadlhelp equipment if age==84

  Variable |    Obs  |   Mean  |     Std. Dev. |     Min  |     Max
  +-----------+---------+----------+--------------+----------+----------
  actlim | 1704 | .5264085 | .4994487 | 0 | 1
  funclim | 1690 | .7952663 | .4036283 | 0 | 1
  adlhelp | 1705 | .1043988 | .3058669 | 0 | 1
  iadlhelp | 1705 | .2645161 | .4412046 | 0 | 1
  equipment | 1702 | .3607521 | .4803598 | 0 | 1

.sum actlim funclim adlhelp iadlhelp equipment if age==85

  Variable |    Obs  |   Mean  |     Std. Dev. |     Min  |     Max
  +-----------+---------+----------+--------------+----------+----------
  actlim | 8213 | .6472665 | .4778497 | 0 | 1
  funclim | 8151 | .8480312 | .360941 | 0 | 1
  adlhelp | 8215 | .1788716 | .3815832 | 0 | 1
  iadlhelp | 8214 | .3903092 | .4878493 | 0 | 1
  equipment | 8190 | .4946154 | .4997938 | 0 | 1
```
Learn ppt shortcuts

• Also, DRAW ON THE SCREEN
• Press the Ctrl-P key combination to display a pen on the screen. Then, using the left mouse button, draw on the slide as you wish. To erase what you have drawn, press the E key. To hide the pen, press the A key or the Ctrl-H key combination.
Physiological dysregulation → Morbidity → Functional limitations → Disability → Death