Health Consequences of Insurance Coverage

Health Economics
Bill Evans

Research question

- Research question: what does insurance status do for health?
- Why might help?
- Why not?
- What evidence have we seen to date?
- Problems for identification
  - Insurance rates vary systematically across groups
  - People with poor health or more expected spending have higher demand for insurance
  - High socioeconomic status more likely to have insurance

MEPS, 18-64 Years of Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Insured</th>
<th>Uninsured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>42.1</td>
<td>38.4</td>
</tr>
<tr>
<td>% Male</td>
<td>44.6%</td>
<td>50.4%</td>
</tr>
<tr>
<td>% &lt; HS</td>
<td>17.6%</td>
<td>43.0%</td>
</tr>
<tr>
<td>% College</td>
<td>27.0%</td>
<td>8.9%</td>
</tr>
<tr>
<td>% Black</td>
<td>14.9%</td>
<td>14.0%</td>
</tr>
<tr>
<td>% Hispanic</td>
<td>18.2%</td>
<td>47.7%</td>
</tr>
<tr>
<td>Fair/poor health</td>
<td>15.9%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Fair/poor mental</td>
<td>7.7%</td>
<td>7.6%</td>
</tr>
<tr>
<td>% Smoke</td>
<td>21.3%</td>
<td>28.4%</td>
</tr>
<tr>
<td>% w/ Phys. Limit.</td>
<td>11.9%</td>
<td>8.2%</td>
</tr>
<tr>
<td>% diabetes</td>
<td>7.6%</td>
<td>5.2%</td>
</tr>
<tr>
<td>% high chol</td>
<td>24.0%</td>
<td>11.4%</td>
</tr>
<tr>
<td>% high BP</td>
<td>24.3%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Dr. Visits</td>
<td>6.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Hosp. Vis.</td>
<td>0.12</td>
<td>0.05</td>
</tr>
<tr>
<td>Total $ HC</td>
<td>$3959</td>
<td>$1041</td>
</tr>
</tbody>
</table>

Results so Far

- RAND HIE
  - No difference in health outcomes for the average person
  - Some evidence high coinsurance plays were detrimental to people with pre-existing conditions
  - Problem – key outcomes are rare (like mortality) so the experiment does not have the statistical power to detect differences

- Oregon HIE
  - No change in health based on medical tests (cholesterol, blood pressure, glycated hemoglobin, BMI, etc.)
  - Improvements in self reported health, especially mental health – people think they are healthier
Problems in this literature

- Have a very predictive measure of health, self reported health status, that is hard to scale across people
- In many situations, have good objective measures of health, biomarkers, that don’t seem to move
- One definitive outcome, mortality, that is very rare, even in 65-74 age group – need enormous samples to use this as an outcome

Evidence from the start of Medicare

- Health insurance for aged and disabled
- Become eligible when you turn 65
- Signed into law July 30, 1965 in Joplin, MO by President Johnson
- At the time, majority of the aged did not have insurance
- Rapid increase in insurance coverage for those 65+
- Think of as a difference-in-difference
  - Those aged 65+ are treatment
  - Near elderly are the control
  - Have data before/after age 65
### Un-insurance rates

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1963</th>
<th>1970</th>
<th>1977</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-54</td>
<td>28%</td>
<td>18%</td>
<td>13%</td>
</tr>
<tr>
<td>55-64</td>
<td>28%</td>
<td>25%</td>
<td>13%</td>
</tr>
<tr>
<td>65-74</td>
<td>34%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>75+</td>
<td>60%</td>
<td>4.6%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

### Affordable care act

- Passed March of 2010
- Mostly a bill to increase coverage
  - Expanding Medicaid
  - Established health ins. exchanges
  - Employer mandate
  - Individual mandate
- Different provisions introduced over time
**Individual mandate**

- Went into effect 2014
- Fines escalated over time
  - 2014: max of $95/person (up to 3) or 1% taxable income
  - 2015: max of $325/person (up to 3) or 2% of taxable income
  - 2016: max of $695/person (up to 3) or 3% of taxable income
- Has survived substantial constitutional challenge
  - Will talk about this the last week of October
- Fines set to $0 in 2019 by Tax Cut and Job Act of 2017

**Goldin et al.**

- In year 2015, 6.1 million returns were fined for not having health insurance
  - Eliminate some
    - Those < 18 or >64
    - Multiple addresses
- Leaves 4.5 million returns, twice as many people

**Goldin et al.**

- Treasury selected 3.9 million households to receive notice in early 2016 – reminding them how to avoid a penalty
- Group was selected at random
- If pilot increases insurance holding coverage – can use to identify impact of insurance
Study

- Tax records merged to Social Security master death file
- Identifies date of death but not cause of death
- Key – SSN is used in both so easy linkage

Figure 1: Coverage Rates by Month

Figure 3: Mortality Over Time by Treatment Group
$y_i = 1 \text{ if died}$

$x_i = \text{months of insurance}$

$z_i = 1 \text{ if treated}$

first stage : $z_i = \pi_0 + z_i \pi_1 + \mu_i$

Intention to treat : $y_i = \alpha_0 + z_i \alpha_1 + \nu_i$

$\pi_0 = \frac{dy}{dz}$

$\alpha_i = \frac{dy}{dz} = (\frac{dx}{dz})(\frac{dy}{dx})$

$\frac{\alpha_i}{\pi_i} = \frac{dy}{dx} = \text{Treatment on treated}$

$\alpha_i = \frac{dy}{dz}$

People in treatment group had 0.063 percentage points lower mortality – mean mortality is 1 – so 6% lower mortality

Doyle, RESTAT

- Examine outcomes of people involved in serious car crash
  - Taken away by ambulance
  - All receive some care
  - Question: what does insurance status do for quality of care?

- Why restrict to ambulance admits to the hospital?
CODES Data

- Crash Outcome Data Evaluation System
  - Links police accident reports to hospital discharge data
  - Only 23 states link (all payer states)

- Paper used data from WI, 1992-1997
  - 80% of all crash-related hospitalizations were linked

Police report data

- Driver characteristics (sex, seat location, belt use, insurance status)
- Accident scene
- Killed, incapacitating injury, non-incap injury

Hospital data

- Per discharge
- Minimal demographics
- Total charges and payer
- Procedure use
- Diagnostic characteristics
Card et al, *QJE*

Sample

- CA hospital admissions 1992-2002
- Restrict sample to those admitted through emergency department
  - e.g., Chronic bronchitis, heart attack, stroke
  - Why?
Facing VII

Estimates of the Discontinuity in Mortality Rates at Age 65 over Various Follow-Up Periods