Insurance Mandates: Colorectal Cancer Screening Utilization and Racial/Ethnic Disparities

Michael Preston, University of Arkansas for Medical Sciences
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Michael A. Preston, Ph.D., M.P.H.
University of Arkansas for Medical Sciences

mapreston@uams.edu
@MDonP

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Presentation Outline

* Background and Significance
* Objective
* Methods
* Econometric Framework
* Results
* Conclusions
* Implications for Policy and Practice
Colorectal Cancer in the U.S.

- Third leading cause of cancer-related deaths in men and women when counted separately
- Second leading cause of cancer-related deaths in men and women when counted collectively
- 136K+ new cases
- 50K+ deaths
- 1+ million survivors
- Over the past 20+ years, death rates have decreased
- Disparities remain among medically underserved populations

American Cancer Society, 2014
Colorectal Cancer Screening

- Early detection has been a major contributor to the overall decline in new cases and deaths from CRC
- Screening allows for detection and removal of precancerous polyps before they progress to cancer (Cancer Facts & Figures 2012)
- Screening allows for earlier detection when disease is easier to cure
- Improvement in treatment over the years
- Healthy People 2020 screening goal 70.5%
Compliance or adherence to screening guidelines reduces disparities.

Higher mortality rates remain among disadvantaged and underserved that are part of racial and ethnic minorities and rural populations which tend to be low-income, under-insured, and uninsured.

Racial and ethnic minorities such as AA are less likely to be screened and more likely to die.

5-year survival rate in AA was 53% compared to 63% in Whites from 1992 to 1999 (Agrawal et al., 2005).
Colorectal Cancer Screening Rates (BRFSS, 2010)

Source: CDC, 2010
Insurance Coverage Mandate States in the U.S.

Mandate State

Source: SCLD, 2012
Policy that requires insurers to cover the cost of medical services they would not otherwise if a mandate is not in place

Not all states passed mandates related to CRC

Variation in the types of mandates that were passed
  * Differences in the amount of cost-sharing

Mandates reduced out-of-pocket expenses
  * Increase CRC screenings
The Colorectal Cancer Act of 2005
  * Rep Elliot; Sen Steele, Sen Critcher, Sen Whitaker

Established:
  * CRC Control and Research Demonstration Project
    * UAMS Cancer Control (PI: Henry-Tillman)
  * Policy that requires insurers to cover CRC screenings
    * 2 main exemptions
      * Employer self-funded benefit plans (mainly large employers)
      * No restrictions on cost-sharing

AR Example: Act 2236
2010, Patient Protection and Affordable Care Act (ACA)
- Decrease the number of uninsured Americans
- Reduce the overall cost of health care
- Insurance coverage mandates for preventive health services
  - Closed loop-holes in state mandates
    - Employer self-funded benefit plans
    - No restrictions on cost-sharing
Law of Demand

As out-of-pocket costs decrease...

...the quantity of colorectal screenings increase
Goal of Research Study

* To evaluate the impact of health insurance coverage mandates on overall CRC screening rates and CRC screening disparities.
Methods

* Difference-in-differences (DID)
  * Measures the difference in CRC screening before and after policy
  * Measures the difference in CRC screening b/w the treatment and control groups
* Treatment group: non-mandate states
* Control group: mandate states
* DID allows us to identify causal effects of a policy on CRC screening
**Data**

- Behavioral Risk Factor Surveillance System (BRFSS)
  - Study population is a sample of U.S. adults age 50 or greater
- National Cancer Institute State Cancer Legislative Database
  - Used to determine provisions, exemptions, and enforcements of state mandates
- The dataset was used to assess state-level estimates of health behaviors and health care utilization by building a state-year longitudinal data file
- This data file provided information on types of CRC screening, date latest test was performed, insurance status, race/ethnicity and SES for years studied
- Analytical sample 34,017 (M:25,729; NM:8,288)
  - Person-years
Analysis

* Model Specification:

* Difference-in-differences (DD)

\[ (\text{CRCscreening}_{\text{reform, post}} - \text{CRCscreening}_{\text{reform, pre}}) - (\text{CRCscreening}_{\text{non-reform, post}} - \text{CRCscreening}_{\text{non-reform, pre}}) \]

* \[ Y_{c,s,t} = \alpha + \beta_0 + \beta_1*\text{REFORM}_t + \beta_2*\text{POST}_s + \beta_3*\text{REFORM}_t*\text{POST}_s + X\beta_4 + \delta_s + \varepsilon_{s,t} \]
Analysis

* Model Specification:

* Difference-in-difference-in-differences (DDD)

\[ Y_{c,s,t} = \alpha + \beta_0 + \beta_1 * \text{REFORM}_t + \beta_2 * \text{POST}_s + \beta_3 \text{RACE}_{i,y} + \beta_4 * \text{REFORM}_t * \text{POST}_s + \beta_5 * \text{REFORM}_t * \text{RACE}_{i,y} + \beta_6 * \text{POST}_s * \text{RACE}_{i,y} + \beta_7 * \text{REFORM}_t * \text{POST}_s * \text{RACE}_{i,y} + X\beta_8 + \delta_s + \varepsilon_{s,t} \]

* \[ Y_{c,s,t} = \alpha + \beta_0 + \beta_1 * \text{REFORM}_t + \beta_2 * \text{POST}_s + \beta_3 \text{UNINS}_{i,y} + \beta_4 * \text{REFORM}_t * \text{POST}_s + \beta_5 * \text{REFORM}_t * \text{UNINS}_{i,y} + \beta_6 * \text{POST}_s * \text{UNINS}_{i,y} + \beta_7 * \text{REFORM}_t * \text{POST}_s * \text{UNINS}_{i,y} + X\beta_8 + \delta_s + \varepsilon_{s,t} \]
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Received colorectal cancer screening (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Overall colorectal screening test (n=1,571,267)</td>
<td>61.55</td>
<td>38.45</td>
</tr>
<tr>
<td>Endoscopic test (n=930,547)</td>
<td>95.61</td>
<td>4.39</td>
</tr>
<tr>
<td>FOBT test (n=660,167)</td>
<td>35.92</td>
<td>64.08</td>
</tr>
<tr>
<td>Mean age +/- s.d. (in years)</td>
<td>66.2 +/-10</td>
<td>63.8 +/-11</td>
</tr>
<tr>
<td>Mandate state coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61.78</td>
<td>38.22</td>
</tr>
<tr>
<td>No</td>
<td>61.13</td>
<td>38.87</td>
</tr>
<tr>
<td>Health care reform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>64.24</td>
<td>35.76</td>
</tr>
<tr>
<td>Pre</td>
<td>58.79</td>
<td>41.21</td>
</tr>
</tbody>
</table>
Table 2. Summary statistics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Pre-health care reform</th>
<th>Post-health care reform</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Mean age +/- s.d. (in years)</td>
<td>64.93</td>
<td>10.199</td>
</tr>
<tr>
<td>Self-reported health status (Fair/poor)</td>
<td>26.99</td>
<td>0.444</td>
</tr>
<tr>
<td>Covered by health insurance</td>
<td>92.92</td>
<td>0.256</td>
</tr>
<tr>
<td>Did not see doctor due to medical costs</td>
<td><strong>9.06</strong></td>
<td>0.287</td>
</tr>
<tr>
<td>Doctor visit</td>
<td>1.29</td>
<td>0.649</td>
</tr>
<tr>
<td>Presence of a personal physician</td>
<td><strong>93.97</strong></td>
<td>0.238</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whites</td>
<td><strong>81.99</strong></td>
<td>0.384</td>
</tr>
<tr>
<td>Hispanics</td>
<td>3.74</td>
<td>0.190</td>
</tr>
<tr>
<td>Marital status</td>
<td>51.46</td>
<td>0.500</td>
</tr>
<tr>
<td>Male</td>
<td>38.42</td>
<td>0.486</td>
</tr>
</tbody>
</table>
Table 3. Marginal Effects of Health Care Reform on Colorectal Cancer Screening

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>Marginal Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate state coverage</td>
<td>-0.376</td>
<td>0.278</td>
<td>-0.080</td>
</tr>
<tr>
<td>Health care reform</td>
<td>0.0113</td>
<td>0.0931</td>
<td>0.00241</td>
</tr>
<tr>
<td>Health care reform effect</td>
<td>0.161*</td>
<td>0.100</td>
<td>0.0344</td>
</tr>
<tr>
<td>Variable</td>
<td>Coefficient</td>
<td>SE</td>
<td>Marginal Effects</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------------</td>
<td>------</td>
<td>------------------</td>
</tr>
<tr>
<td>Mandate state coverage</td>
<td>-0.291</td>
<td>0.260</td>
<td>-0.0621</td>
</tr>
<tr>
<td>Health care reform</td>
<td>0.0452</td>
<td>0.0685</td>
<td>0.00965</td>
</tr>
<tr>
<td>Health care reform effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonwhites vs whites/Caucasians</td>
<td>-0.120**</td>
<td>0.0594</td>
<td>-0.0257</td>
</tr>
<tr>
<td>African Americans vs whites</td>
<td>-0.153*</td>
<td>0.0911</td>
<td>-0.0325</td>
</tr>
<tr>
<td>Hispanics vs whites</td>
<td>-0.0735</td>
<td>0.449</td>
<td>-0.0156</td>
</tr>
<tr>
<td>Health care reform effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uninsured vs insured</td>
<td>-0.228**</td>
<td>0.0963</td>
<td>-0.0487</td>
</tr>
</tbody>
</table>
Conclusions

- Health care reform increased the probability of having a CRC screening by 3.4 percentage points on average
- Estimated 2.87 million additional age-eligible persons will receive a colorectal cancer screening as a result of health care reform
- Increased screening among whites
- Decreased screening among AA and Hispanics
- Increased screening among insured
- Clearly found evidence that ACA influences CRC screening
- Our analysis supports the implementation of health care reform and stronger policies that increase colorectal cancer screenings overall
This research demonstrates that insurance mandates increased colorectal cancer screenings by reducing out-of-pocket costs.

Future health care reforms that increase access to preventive services, such as CRC screening, are likely with low out-of-pocket costs and will increase the number of people who are “up-to-date”.

Starting 2014, all US citizens are required to have health coverage.

Expect demand to increase for CRC screening.
• Identify best ways to design health systems for preventive services that target medically underserved populations
• Disparities continue to increase with health policies that reduce out-of-pocket expenses. Additional measures are required to reduce disparities in screenings among nonwhites and Hispanics
• Important to know if health coverage expansions decrease disparities
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Michael A. Preston, Ph.D., M.P.H.
mapreston@uams.edu
@MDonP

Archive: http://works.bepress.com/michael_preston

University of Arkansas for Medical Sciences
Cancer Control
Little Rock, AR