Estimating the Costs to Mississippi Medicaid Attributable to Tobacco

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Association for Public Policy Analysis and Management
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November 9, 2019
Overview

- Background
- Methodology
- Results
Background

- Policymakers’ interests:
  - Want most recent data available, especially in matters that affect the budget
  - Medicaid example of churning enrollment, ACA expansions, etc.

- Researchers’ directive:
  - Use consistent, reliable data, especially when combining data sources for inferential statistical analysis
Background continued

Costs to Mississippi Medicaid for tobacco-related illness:
- Center for Mississippi Health Policy contracted with Hilltop to estimate tobacco-related costs in 2018
- Aspired to inform January 2019 legislative session debate on tobacco tax
- Mississippi did not enact ACA expansion
- Mississippi tobacco tax per pack: $0.68
Using most recent completed annual Medicaid claims, this method accounts for:
- Unique characteristics of the Mississippi Medicaid population
- Health care delivery system distinctions, rural settings, poverty rates
- Payment policies to providers

Although other studies of state-level Medicaid costs used claims data for specific diseases, we have not found studies using these data to estimate tobacco-related costs as a whole for a specific state.

Different studies applied national estimates of tobacco burden to state’s total Medicaid expenditures to develop state-level cost estimates.
Methodology

- Center for Mississippi Health Policy facilitated transfer of CY 2016 and 2017 de-identified claims data from Mississippi Medicaid to Hilltop

- Use of claims data so far appears unique and allows for most timely data
  - 12 months previous allow for lags in providers’ submission of claims
  - Two years of data to capture short-term changes
  - 2016 first full year to use ICD10 codes
Use existing literature on tobacco’s contribution to specific disease burdens

- Counts on peer review process of professional medical and economic journals to apply multivariate methods to isolate the contribution of tobacco use from other causal factors.

- Much of the literature on tobacco’s contribution to disease was summarized in the 2014 Surgeon General’s report: *The Health Consequences of Smoking—50 Years of Progress*.

- Search for more recent literature on diseases identified by S.G. Report with newly discovered connections to tobacco.
Methodology continued

- For each smoking-related disease/condition identified in the literature, calculate a smoking-attributable fraction (SAF) based on relative risk for smokers versus non-smokers and the estimated rate of smoking in the Medicaid population.

- SAF Calculation depends on two factors:
  - Relative Risk (RR) of how much smoking increases disease occurrence. E.g. RR=5.0 means smokers have 5x higher risk.
  - The proportion of smokers in the (Medicaid) population = Smoking Rate.

\[
SAF = \frac{Smoking \ Rate \times (RR - 1)}{Smoking \ Rate \times (RR - 1) + 1}
\]
Methodology continued

- Smoking Rate is constant (33.7% estimated in MS Medicaid from CMS survey data)
- RR varies according to the disease
## Sample Relative Risk Estimates Used

<table>
<thead>
<tr>
<th>Category</th>
<th>Acute Myeloid Leukemia</th>
<th>Breast</th>
<th>Cervical and Uterine</th>
<th>Colorectal Cancer</th>
<th>Esophageal Cancer</th>
<th>Renal</th>
<th>Laryngeal Cancer</th>
<th>Pharynx Cancer</th>
<th>Cancer</th>
<th>Pancreatic</th>
<th>Prostate</th>
<th>Stomach</th>
<th>Tracheal, Lung, and Bronchial</th>
<th>Urinary and Bladder</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR</td>
<td>1.4</td>
<td>1.2</td>
<td>1.6</td>
<td>1.4</td>
<td>7.8</td>
<td>2.0</td>
<td>14.0</td>
<td>11.0</td>
<td>1.5</td>
<td>2.3</td>
<td>1.1</td>
<td>2.0</td>
<td>14.0</td>
<td>2.5</td>
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<tr>
<td>Cardiac and Vascular Diseases</td>
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<td></td>
</tr>
<tr>
<td>RR</td>
<td>7</td>
<td>2</td>
<td>3.5</td>
<td>3.0</td>
<td>2.0</td>
<td>1.6</td>
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<td>Respiratory Diseases</td>
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</tr>
<tr>
<td>RR</td>
<td>2</td>
<td>14.6</td>
<td>12</td>
<td>2.0</td>
<td>2.4</td>
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<tr>
<td>Other Diseases</td>
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</tr>
<tr>
<td>RR</td>
<td>1.7</td>
<td>1.5</td>
<td>1.4</td>
<td>3.0</td>
<td>1.2</td>
<td>1.5</td>
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</tbody>
</table>
Methodology continued

- Apply the calculated SAF for each disease/condition to the sum of payments for claims that listed the disease as a primary diagnosis in order to estimate expenditures attributable to smoking
- Also applied the SAF to prescription drug costs for disease-specific drugs
  - will not capture all drug spending for each disease if the drugs have multiple uses
- Estimated tobacco-attributable costs related to chemotherapy and secondhand smoking using a similar methodology
- Special case for calculating nursing facility (NF) costs to Medicaid
- Many NF claims had primary DX for non-smoking related conditions: hypertension, fatigue, muscle weakness, etc., so could not be attributed to smoking under the standard method
Methodology continued

- Matched persons with NF claims to their other claims to identify whether they had other medical services where smoking-related disease was primary then applied those SAFs to the NF claims.

- Assumes that the SAFs calculated for acute and chronic health conditions are a reasonable proxy for the unavailable SAF for the physical, cognitive, and health service needs that lead individuals to use NF services.
## Estimates of Costs of Tobacco-Attributable Illness to Mississippi Medicaid

<table>
<thead>
<tr>
<th>Cost Description</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Costs of Treatment for Tobacco-Attributable Conditions as Primary Diagnoses</td>
<td>$241,134,957</td>
<td>$246,616,165</td>
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<tr>
<td>Costs of Conditions from Secondhand Smoke</td>
<td>$18,612,551</td>
<td>$19,547,028</td>
</tr>
<tr>
<td>Nursing Facility Costs Estimated from Other Claims for Tobacco-Attributable Conditions</td>
<td>$123,535,768</td>
<td>$124,892,593</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>$4,666,951</td>
<td>$4,867,313</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$387,952,243</strong></td>
<td><strong>$395,925,117</strong></td>
</tr>
</tbody>
</table>
Estimated Smoking-Attributable Expenditures as a Percentage of Mississippi Medicaid Medical Expenditures

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Mississippi Medicaid Health Expenses</td>
<td>$4,399,338,301</td>
<td>$4,303,793,903</td>
</tr>
<tr>
<td>Estimated Smoking-Attributable Amounts</td>
<td>$387,952,243</td>
<td>$395,925,117</td>
</tr>
<tr>
<td>Percentage of Total Health Expenses Attributable to Smoking</td>
<td>8.8%</td>
<td>9.2%</td>
</tr>
</tbody>
</table>
Media: January 20, 2019, Northeast Mississippi Daily Journal: The tobacco expense report was among the items presented this week during a state Senate Medicaid committee hearing by Dr. Steve Demetropoulos, who serves as the chairman of the state Medicaid Medical Advisory Board.

“This is as close as you can get for real time data for this population,” said Tupelo pulmonologist Dr. Jim Rish, a member of the advisory board. “I hope they pay attention to it.”
Bill Text: MS HB1675 | 2019 | Regular Session | Introduced

**Bill Title:** Cigarettes; increase excise tax on.
**Spectrum:** Partisan Bill (Republican 1-0)
**Status:** *(Failed)* 2019-02-27 - Died In Committee [HB1675 Detail]

MISSISSIPPI LEGISLATURE
2019 Regular Session
To: Public Health and Human Services; Ways and Means
By: Representative Lamar
Conclusion

- This study estimates costs attributable to tobacco based on current levels of spending recorded in Mississippi Medicaid’s transactions with health care providers and estimated SAFs generated from the current literature on higher risks of diseases from smoking.

- As these diseases are still being studied, estimates of the SAF may change in the future. Efforts to prevent people from starting to smoke and encouraging existing smokers to quit may result in lower future prevalence of smoking as well.
Nevertheless, this methodology can be adapted and updated for any states by researchers having access to Medicaid claims to estimated current expenditures.

Such studies’ influence on the policy process will depend on other factors, such as the timing of legislation and competition from other issues.
The Hilltop Institute is a nonpartisan research organization at the University of Maryland, Baltimore County (UMBC) dedicated to improving the health and wellbeing of people and communities. We conduct cutting-edge data analytics and translational research on behalf of government agencies, foundations, and nonprofit organizations to inform public policy at the national, state, and local levels.

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