The Impact of Health Care Reform on Hospital Care and Preventive Care: Evidence from Massachusetts

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Motivation

What would happen to hospital and preventive care if the US expanded to near-universal coverage?

• Other expansions provide limited evidence on potential impact of expansion to near-universal in US
  – Medicare (Finkelstein, 2007; Card, Dobkin, Maestas, 2008)
    • Only applied to elderly
    • Predated (drove?) cost increases in health care
  – Medicaid expansions (Currie and Gruber, 1996)
    • Only applied to specific populations – children and indigent
  – Universal coverage in other countries
    • Difficult to generalize to the mixed model of coverage in the US

• Massachusetts reform is widely considered to be the model for national reform ➔ natural experiment to study this question
Public Debate on the Impact of the Reform

The Massachusetts Health-Care 'Train Wreck'

The future of ObamaCare is unfolding here: runaway spending, price controls, open limits on care and medical licensing.

By JOSEPH RAGO

President Obama said earlier this year that the health-care bill that Congress passed “essentially identical” to the Massachusetts universal coverage plan that then-Gov. in 2006. No one but Mr. Romney disagrees.

The New York Times

April 21, 2010

EDITORIAL

Reform and Massachusetts

Four years after Massachusetts enacted its ambitious health care reform, the state has achieved its goal: covering most of the uninsured without seriously straining its budget. Most citizens seem to like it.
Public Debate on the Impact of the Reform

- First paper to assess the impact of the Massachusetts reform on hospital outcomes and preventive care that has a control group
- Existing research only addresses coverage
Key Provisions of Massachusetts and National Healthcare Reform

Massachusetts Reform, April 2006

- Individual mandate
  - Penalty is up to 50% of basic plan by months without coverage
- Employers mandated to provide coverage
  - >10 FTEs

- Medicaid expansions
  - Up to 100% of FPL for adults
  - Up to 300% of FPL for children

- Subsidized private plans through exchanges
  - Subsidies up to 300% of FPL

- Insurance exchange
  - Administered by the “Connector”
  - Benefit tiers Bronze-Gold and Young Adult Plans (YAPs)

Reference: Kaiser Family Foundation
Key Provisions of Massachusetts and National Healthcare Reform

**Massachusetts Reform, April 2006**
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- Insurance exchange
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  - Benefit tiers Bronze-Gold and Young Adult Plans (YAPs)

**National Reform, March 2010**
- Individual mandate
  - Penalty is higher of 2.5% of income or $2,085
- Employers mandated to provide coverage
  - >50 FTEs
  - >200 FTEs automatically enroll employees
- Medicaid expansions
  - Up to 133% of FPL
- Subsidized private plans through exchanges
  - Subsidies up to 400% of FPL
- Insurance exchanges
  - State level administration
  - Benefit tiers Bronze-Platinum and Catastrophic

Reference: Kaiser Family Foundation
Outline of Today’s Talk

• Empirical Strategy and Predictions
• Data
• Impact on Coverage
• Overall Impact on Hospital Outcomes
• Incidence
• Robustness
• Conclusions
Our Identification Strategy

• Difference-in-difference strategy
  – Compare MA pre- to post-reform relative to other states
  – Impact on insurance coverage
  – Impact on health care production:
    • LOS, access, prevention, quality, and cost

• Instrumental Variable Strategy
  – Impact of coverage on outcomes
  – Within age, gender, income, and race groups
  – Test for spillovers
Estimating Equation

\[ Y_{dht} = \alpha + \beta(MA \ast Post)_{ht} + \gamma(MA \ast During)_{ht} \]
\[ + \sum_t \theta_t(QuarterYear = t) + \sum_h \eta_h(Hospital = h) \]
\[ + [X_{dht}] + \varepsilon_{dht} \]
Our Outcomes of Interest

• Impact on coverage
• Impact on total volume and patient mix
• Overall impact on hospital outcomes
  – Length of stay
  – Admissions from emergency room
  – Preventive care
  – Costs
• Incidence by age, gender, income, and race
Outline of Today’s Talk

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Data Sources

• Current Population Survey (CPS) March Supplement
  – Representative sample of entire population
  – Information on insurance coverage and demographics

• Behavioral Risk Factor Surveillance System (BRFSS)
  – Representative survey data on health behaviors, prevention, and demographics

• National Inpatient Sample (NIS)
  – Primary data source for the study
Why focus on the hospitalized population?

• Limited population, but of interest in its own right
  – Vulnerable in terms of demographic characteristics and sickness
  – Responsible for most health care costs
  – Differential crowd out of private coverage
  – Data on insurance coverage don’t rely on self reporting

We examine hospitalized with NIS data
NIS Data - Introduction

• Approximate 20% sample of all hospitals in US
• Universe of discharges for each hospital in the sample in each year
• Use data on 2004-2008, by discharge quarter
• Total sample includes 36,362,108 discharges
• Each discharge: primary payer, admission from emergency room, length of stay, total charges (costs by hospital)
Outline of Today’s Talk

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Impact on Coverage of Nonelderly

88.2% nonelderly insured in MA Before, 93.9% nonelderly insured in MA After
89.5% all ages insured in MA Before, 94.5% all ages insured in MA After

MA ranked 7th in terms of coverage before the reform
National nonelderly average before reform: 82.8% (31 states + DC above average)
Impact on Coverage in NIS
Results by Type of Coverage

Table 1: Results by Type of Insurance Coverage In NIS

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>MA*After</td>
<td>-0.0231</td>
<td>0.0389</td>
<td>-0.0306</td>
<td>0.0042</td>
<td>0.0105</td>
</tr>
<tr>
<td></td>
<td>[-0.0300,-0.0162]***</td>
<td>[0.0265,0.0412]**</td>
<td>[-0.0376,-0.0233]***</td>
<td>[0.0013,0.0073]**</td>
<td>[0.0041,0.0172]**</td>
</tr>
<tr>
<td></td>
<td>[-0.0299,-0.0166]***</td>
<td>[0.0293,0.031]***</td>
<td>[-0.0385,-0.0236]***</td>
<td>[0.0014,0.0068]**</td>
<td>[0.0050,0.0181]**</td>
</tr>
<tr>
<td>MA*Duration</td>
<td>-0.0129</td>
<td>0.0365</td>
<td>-0.0224</td>
<td>-0.0003</td>
<td>0.0009</td>
</tr>
<tr>
<td></td>
<td>[-0.0176,-0.0083]***</td>
<td>[0.0293,0.0437]**</td>
<td>[-0.0274,-0.0173]***</td>
<td>[-0.0024,0.0017]**</td>
<td>[-0.0043,0.0026]**</td>
</tr>
<tr>
<td></td>
<td>[-0.0177,-0.0084]***</td>
<td>[0.0302,0.0438]**</td>
<td>[-0.0277,-0.0168]***</td>
<td>[-0.0025,0.0018]**</td>
<td>[-0.0049,0.0026]**</td>
</tr>
<tr>
<td>N (Nonelder γ)</td>
<td>23,860,930</td>
<td>23,860,930</td>
<td>23,860,930</td>
<td>23,860,930</td>
<td>23,860,930</td>
</tr>
<tr>
<td>R Squares</td>
<td>0.0659</td>
<td>0.1148</td>
<td>0.1532</td>
<td>0.0341</td>
<td>0.0689</td>
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<tr>
<td>Mean MA Before</td>
<td>0.0643</td>
<td>0.2460</td>
<td>0.5631</td>
<td>0.0973</td>
<td>0.0193</td>
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<tr>
<td>Mean Non-MA Before</td>
<td>0.0791</td>
<td>0.2876</td>
<td>0.4978</td>
<td>0.0928</td>
<td>0.0427</td>
</tr>
<tr>
<td>Mean MA After</td>
<td>0.0352</td>
<td>0.2594</td>
<td>0.5518</td>
<td>0.1177</td>
<td>0.0360</td>
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<tr>
<td>Mean Non-MA After</td>
<td>0.0817</td>
<td>0.2790</td>
<td>0.4923</td>
<td>0.1020</td>
<td>0.0450</td>
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<tr>
<td>MA*After with risk adjusters</td>
<td>[-0.0297,-0.0156]***</td>
<td>[0.0235,0.0514]**</td>
<td>[-0.0361,-0.0190]***</td>
<td>[-0.0007,0.0050]**</td>
<td>[0.0047,0.0168]**</td>
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<tr>
<td></td>
<td>0.0939</td>
<td>0.2232</td>
<td>0.2331</td>
<td>0.2006</td>
<td>0.0761</td>
</tr>
</tbody>
</table>

- Smaller (40%) increase in coverage in hospitalized population than in CPS
- Consistent with adverse selection
- Medicaid expansions happened rapidly
- Evidence of crowd out of private coverage
### Impact on Coverage in NIS
CommCare and No Coverage Info

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>16I CommCare</th>
<th>17I No Coverage Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA*After</td>
<td>0.0124</td>
<td>0.0015</td>
</tr>
<tr>
<td></td>
<td>[0.0123,0.0124]**</td>
<td>[0.0000,0.0030]**</td>
</tr>
<tr>
<td></td>
<td>[0.0124,0.0125]**</td>
<td>[0.0001,0.0029]**</td>
</tr>
<tr>
<td>MA*During</td>
<td>0.0029</td>
<td>-0.0017</td>
</tr>
<tr>
<td></td>
<td>[0.0029,0.0029]**</td>
<td>[-0.0065,0.0031]</td>
</tr>
<tr>
<td></td>
<td>[0.0029,0.0029]**</td>
<td>[-0.0076,0.0014]</td>
</tr>
<tr>
<td>N (Nonelder y)</td>
<td>23,860,930</td>
<td>23,913,983</td>
</tr>
<tr>
<td>R Squared</td>
<td>0.0249</td>
<td>0.0662</td>
</tr>
</tbody>
</table>

Mean MA Before: 0.0000
Mean Non-MA Before: 0.0000
Mean MA After: 0.0165
Mean Non-MA After: 0.0000

MA*After with risk adjusters: [0.0123,0.0124]** [0.0000,0.0028]**
R Squared: 0.0249 0.0666

- CommCare covered about 1.2 percent of the population
- Small change in the number of admissions w/o coverage info
Outline of Today’s Talk

• Empirical Strategy and Predictions
• Impact on Coverage
• Data
• **Overall Impact on Hospital Outcomes**
  – Length of Stay
  – Admissions from Emergency Room
  – Preventive Care
  – Costs
• Incidence
• Robustness
• Conclusions
Impact on Length of Stay

• Partial equilibrium
  – Increase in LOS if insurance induces moral hazard through decreased price and LOS indicates more care
  – Decrease in LOS if insurance decreases quantities through management of care or price reductions
  – Decrease in LOS if insurance impacts treatment decisions
    • Doctors are reticent to release uninsured patients due to lack of access to outpatient follow up

• General equilibrium
  – Hospitals alter production function following near-universal coverage
  – Potential spillovers across groups
Impact on Outcomes Beyond Insurance

**Table 2: Outcomes Beyond Insurance Coverage**

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Length of Stay</th>
<th>Log Length of Stay</th>
<th>Emergency Admit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA*After</td>
<td>0.056</td>
<td>0.0011</td>
<td>0.0010</td>
</tr>
<tr>
<td></td>
<td>[-0.099, -0.0008]**</td>
<td>[-0.0111, 0.0086]**</td>
<td>[-0.0397, -0.0007]**</td>
</tr>
<tr>
<td></td>
<td>[-0.1026, -0.0065]**</td>
<td>[-0.0113, 0.0066]**</td>
<td>[-0.0351, 0.0011]**</td>
</tr>
<tr>
<td>MA*During</td>
<td>-0.0037</td>
<td>0.0097</td>
<td>-0.0017**</td>
</tr>
<tr>
<td></td>
<td>[-0.0369, 0.0291]**</td>
<td>[-0.0022, 0.0095]**</td>
<td>[-0.0449, -0.0184]**</td>
</tr>
<tr>
<td></td>
<td>[-0.0367, 0.0238]**</td>
<td>[-0.0026, 0.0084]**</td>
<td>[-0.0469, -0.0166]**</td>
</tr>
<tr>
<td>N (Nonelder y)</td>
<td>23,913,183</td>
<td>23,913,183</td>
<td>23,913,183</td>
</tr>
<tr>
<td>R Squared</td>
<td>0.0335</td>
<td>0.0438</td>
<td>0.1088</td>
</tr>
<tr>
<td>Mean MA Before</td>
<td>5.4256</td>
<td>1.4257</td>
<td>0.3668</td>
</tr>
<tr>
<td>Mean Non-MA Before</td>
<td>5.0770</td>
<td>1.3552</td>
<td>0.3551</td>
</tr>
<tr>
<td>Mean MA After</td>
<td>5.3717</td>
<td>1.4355</td>
<td>0.4058</td>
</tr>
<tr>
<td>Mean Non-MA After</td>
<td>5.0950</td>
<td>1.3536</td>
<td>0.3745</td>
</tr>
<tr>
<td>MA*After with risk adjusters</td>
<td>[-0.1471, -0.0603]**</td>
<td>[-0.0186, -0.0023]**</td>
<td>[-0.0427, -0.0012]**</td>
</tr>
<tr>
<td>R Squared</td>
<td>0.3801</td>
<td>0.4038</td>
<td>0.2907</td>
</tr>
</tbody>
</table>

- **Length of stay decreases**
  - 1% in levels
  - 0.1% in logs – gives more weight to shorter stays – bigger reduction in longer stays
  - Consistent with more management of care, changes in treatment patterns or capacity constraints
  - Not consistent with moral hazard
- **LOS reductions not driven by selection into hospitals**
  - Larger reductions after including controls for patient severity → if anything, sicker patients received care in MA after reform
- **LOS not driven by capacity constraints → new capacity greater increase in discharges**
Impact on Outcomes Beyond Insurance

**Table 2: Outcomes Beyond Insurance Coverage**

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<tbody>
<tr>
<td>MA*After</td>
<td>0.050**</td>
<td>0.0011</td>
<td>0.0007</td>
</tr>
<tr>
<td>MA*During</td>
<td>-0.0037</td>
<td>0.0097</td>
<td>-0.0017**</td>
</tr>
<tr>
<td>N (N=5,019 cases)</td>
<td>23,913,183</td>
<td>23,913,183</td>
<td>23,913,183</td>
</tr>
<tr>
<td>R Squared</td>
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<td>0.0436</td>
<td>0.1084</td>
</tr>
<tr>
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<tr>
<td>Mean MA After</td>
<td>5.3717</td>
<td>1.4335</td>
<td>0.4058</td>
</tr>
<tr>
<td>Mean Non-MA After</td>
<td>5.0250</td>
<td>1.3536</td>
<td>0.3745</td>
</tr>
<tr>
<td>MA*After w/ risk adjustors</td>
<td>[-0.1471, -0.0603]**</td>
<td>[-0.0186, -0.0023]**</td>
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- LOS reductions not driven by selection into hospitals
  - Larger reductions after including controls for patient severity → if anything, sicker patients received care in MA after reform

- LOS not driven by capacity constraints → new capacity greater increase in discharges
Impact on
Admissions from Emergency Room (ER)

• Hospitals cannot turn patients away from ER
• Uninsured use ER as point of access
• Inefficient for a number of reasons
  – Wait to receive care until illness is acute (also observe in prevention indicators)
  – Care is more costly in ER (due both to prices and focus)
• Insurance lowers prices/barriers to outpatient care
  → Expect a reduction in inpatient admissions originating in the ER after the reform
• Cannot examine ER directly with our data
Impact on Outcomes Beyond Insurance

Table 2: Outcomes Beyond Insurance Coverage

<table>
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<tr>
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<tr>
<td>MA*After</td>
<td>0.0507</td>
<td>0.0011</td>
<td>0.0007</td>
</tr>
<tr>
<td></td>
<td>[-0.0999,-0.0008]**</td>
<td>[-0.0111,0.0086]**</td>
<td>[-0.0397,-0.0007]**</td>
</tr>
<tr>
<td></td>
<td>[-0.1026,-0.0065]**</td>
<td>[-0.0113,0.0066]**</td>
<td>[-0.0351,0.0011]**</td>
</tr>
<tr>
<td>MA*During</td>
<td>-0.0037</td>
<td>0.0097</td>
<td>-0.0017**</td>
</tr>
<tr>
<td></td>
<td>[-0.0369,0.0294]***</td>
<td>[-0.0022,0.0095]**</td>
<td>[-0.0149,-0.0184]***</td>
</tr>
<tr>
<td></td>
<td>[-0.0367,0.0238]**</td>
<td>[-0.0026,0.0084]**</td>
<td>[-0.0169,-0.0166]***</td>
</tr>
<tr>
<td>N (Nonelder y)</td>
<td>23,913,183</td>
<td>23,913,183</td>
<td>23,913,183</td>
</tr>
<tr>
<td>R Squared</td>
<td>0.0335</td>
<td>0.0438</td>
<td>0.1088</td>
</tr>
<tr>
<td>Mean MA Before</td>
<td>5.4256</td>
<td>1.4257</td>
<td>0.3668</td>
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<tr>
<td>Mean Non-MA Before</td>
<td>5.0770</td>
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<td>0.3551</td>
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<td>1.4355</td>
<td>0.4058</td>
</tr>
<tr>
<td>Mean Non-MA After</td>
<td>5.0920</td>
<td>1.3536</td>
<td>0.3745</td>
</tr>
<tr>
<td>MA*After</td>
<td>-0.1037</td>
<td>-0.0105</td>
<td>-0.0220</td>
</tr>
<tr>
<td>with risk adjusters</td>
<td>[-1.1371,-0.0603]**</td>
<td>[-0.0186,-0.0023]**</td>
<td>[-0.0427,-0.0012]**</td>
</tr>
<tr>
<td>R Squared</td>
<td>0.3801</td>
<td>0.4098</td>
<td>0.2907</td>
</tr>
</tbody>
</table>

- Inpatient admissions from the ER decrease significantly
  - 2 percentage points less likely to be admitted from the ER
  - 5% decline in admissions originating in the ER relative to baseline
- Lowest income quartile ER admissions declined by 12% relative to baseline
- Reduction is 5x larger in lowest income zip code relative to third income quartile
- No significant effect in the highest income zip
Impact on Preventive Care

• Cannot measure outpatient preventive care with inpatient data
• Can use measures developed by AHRQ to measure frequency of diagnoses that should not appear in inpatient setting if adequate preventive care has been obtained
  – Ex: perforated appendix, adult asthma, lower-extremity amputation
• We expect improvements in prevention quality since newly insured should be able to access outpatient care
Impact on Preventive Care

- Significant improvements in 3 of 13 measures without risk adjustment
- Little decline in overall measure
- Overall PQI corrects for multiple hypothesis testing
- Including risk adjusters significantly increases estimated impact
- Reduction in overall volume of preventable admissions and 6 of 13 specific measures
Impact on Costs

• Cost is a major issue in any reform
• Focus on the impact of insurance on hospital cost but there are additional issues w.r.t cost in any health policy proposal
  – Cost of subsidizing plans
  – Impact of reform on dynamic incentives to innovate
• Alternate predictions for the cost impact of increases in coverage:

Cost Increases
• More care is provided after reform (moral hazard effects dominate)
• Hospitals make capital investments to attract patients (“Medical Arms Race” model)

Cost Decreases
• Less care is provided after reform (LOS findings)
• Outside factors (insurer bargaining position) lead to lower prices and/or quantities
• Insurance changes production in the hospital to lower cost
Hospital Cost Results

Table 4: Cost and Charges After Discounts: Regressions on the Hospital-Year Level, Excluding Q3

<table>
<thead>
<tr>
<th></th>
<th>Total Costs, $Mill</th>
<th>Log Total Costs</th>
<th>Total Costs/LOS</th>
<th>Total Costs/Disch.</th>
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</thead>
<tbody>
<tr>
<td>MA* After 2006</td>
<td>9.541</td>
<td>-0.003</td>
<td>16.123</td>
<td>154.602</td>
</tr>
<tr>
<td></td>
<td>(1.669, 7.758)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>N (All Ages)</td>
<td>3,869</td>
<td>3,869</td>
<td>3,869</td>
<td>3,869</td>
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<tr>
<td>Mean MA Before 2006</td>
<td>152.292</td>
<td>18.451</td>
<td>1,329.481</td>
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<tr>
<td>Mean Non-MA Before 2006</td>
<td>121.030</td>
<td>18.178</td>
<td>1,318.436</td>
<td>7,451.341</td>
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<tr>
<td>Mean MA After 2006</td>
<td>230.174</td>
<td>18.798</td>
<td>1,629.457</td>
<td>9,576.684</td>
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<tr>
<td>Mean Non-MA After 2006</td>
<td>152.690</td>
<td>18.381</td>
<td>1,557.693</td>
<td>8,728.628</td>
</tr>
</tbody>
</table>

MA* After 2006 Divided by Year to Investigate Dynamics

<table>
<thead>
<tr>
<th>MA* 2008</th>
<th></th>
<th></th>
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<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>22.411</td>
<td>-0.006</td>
<td>19.677</td>
<td>231.422</td>
</tr>
<tr>
<td></td>
<td>[3.310, 41.572]</td>
<td>[-0.043, 0.032]</td>
<td>[-41.922, 81.276]</td>
<td>[-199.535, 562.380]</td>
</tr>
<tr>
<td>MA* 2007</td>
<td>1.869</td>
<td>-0.001</td>
<td>14.008</td>
<td>108.884</td>
</tr>
<tr>
<td></td>
<td>[-10.152, 13.890]</td>
<td>[-0.052, 0.058]</td>
<td>[-36.777, 64.793]</td>
<td>[-231.317, 449.085]</td>
</tr>
</tbody>
</table>

- No evidence that hospital costs increased overall in levels, logs, per day or per discharge
- Log takes into account MA cost trends relative to control states before the reform
- Disaggregating by year we find similar effects though the level of cost appears to be rising by 2008
- The Massachusetts Reform did not increase cost though it also did not change the rate of growth in MA relative to other states
Outline of Today’s Talk

• Empirical Strategy and Predictions
• Impact on Coverage
• Overall Impact on Hospital Outcomes
• Incidence
  – Age
  – Gender
  – Income
  – Race
• Robustness
• Conclusions
Incidence – Summary of Results

• See tables in paper for estimates within every age, gender, income, and race group
  – Largest gains in insurance among age 19-54, males, lowest income, black and Hispanic
  – Gains in outcomes may occur through spillovers
    • One group’s change in coverage is not necessarily proportional to that group’s change in outcomes
    • Can’t rule out heterogeneous effects of coverage across demographic groups
Outline of Today’s Talk

• Empirical Strategy and Predictions
• Impact on Coverage
• Overall Impact on Hospital Outcomes
• Incidence
• Robustness

• Conclusions
  – Key findings
  – Implications for national reform
  – Preview of next paper
What happened in MA?

Key Findings

• Overall Impact
  – Coverage
    • Uninsurance among nonelderly decreased by 50% relative to initial level
    • Among the hospitalized population the decline was smaller (40%)
  – Hospital Care and Preventive Care
    • Declines in length of stay
    • Declines in admissions for the ER – particularly among the poor
    • Some evidence for improved health from increased outpatient preventive care
    • No evidence that hospital costs increased

• Incidence
  – Age, gender, income, race
    • Largest gains in insurance among age 19-54, males, lowest income, black and Hispanic
    • Gains in outcomes appear to occur through spillovers
What does this suggest about national reform?

• Expansions to near universal coverage
  – Likely to reduce admissions from ER and may improve preventive care
  – Unlikely to raise hospital costs substantially

• Presence of some benefits is a precursor to the reform satisfying a cost-benefit analysis
Preview of Next Paper

• Labor Market Impact of an Individual Health Insurance Mandate
Extra Slides
IV Strategy to Estimate Impact of Coverage

- To obtain IV effect of coverage on any outcome, divide outcome diff-in-diff coefficient by diff-in-diff coverage coefficient
  - Differentiate impact of impact of hospital vs. population coverage using first stage from NIS (hospital) or CPS (population)
- For example, a one percentage point increase in hospital insurance coverage
  - Decreases length of stay by .022 days (=.050/2.31)
    - Population coverage: .009 days (=.050/5.71)
  - Decreases emergency admissions by .87 percentage points (=2.02/2.31)
    - Population coverage: .37 pct. points (=2.02/5.71)
- However, IV strategy relies on exclusion restriction that reform only affected outcome through changes in coverage
  - Changes in type of coverage could violate exclusion restriction
  - Spillovers from one groups gains in coverage to another group’s outcomes could violate exclusion restriction
Nonelderly Coverage by State Before Reform

<table>
<thead>
<tr>
<th>State</th>
<th>Mean Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>0.72418128545</td>
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<tr>
<td>Rhode Island</td>
<td>0.7521927762</td>
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<tr>
<td>Florida</td>
<td>0.7128235523</td>
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<tr>
<td>Nebraska</td>
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<tr>
<td>Louisiana</td>
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<tr>
<td>Maryland</td>
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<tr>
<td>Pennsylvania</td>
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<td>Wisconsin</td>
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<td>Hawaii</td>
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<td>Minnesota</td>
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<td>Ohio</td>
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<td>New Jersey</td>
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<tr>
<td>Oregon</td>
<td>0.5496514724</td>
</tr>
<tr>
<td>Montana</td>
<td>0.5496514724</td>
</tr>
</tbody>
</table>

Total: 0.642831853
CPS Strengths

- Official source for estimates of health insurance coverage
- Nationally representative sample of individuals
- Includes a detailed set of questions on health insurance coverage
- 1,253,145 individuals within households
CPS Limitations

• Survey data
  – Difficult to verify accuracy
  – Response: Also Use NIS hospital discharge data with payer

• Labeling Chapter 58 public plans
  – The Census Bureau coded any respondent who had CommCare or CommChoice coverage as “Medicaid”
  – Response: Use income level to separate the impact of these different mechanisms

• March survey about past year of coverage
  – 2007 CPS was during the implementation of Chapter 58
  – Response: code as “during” time period in estimation