The Impact of the Massachusetts Health Care Reform on Health Care Use Among Children

By Sarah Miller∗

In 2006 Massachusetts enacted a major health care reform aimed at achieving near-universal coverage in the state. While other studies have found that this reform substantially affected the use of health services in general, the impact of the reform on children is largely unexplored.1 Children are of special interest to policymakers because it is widely believed that better health in early childhood results in large payoffs to adult health and achievement (e.g., Heckman (2006), Case, Fertig and Paxson (2005)). I analyze how the reform affected the insurance coverage, health care utilization patterns, and health outcomes of children under 18 years old.

Ample evidence suggests that health insurance coverage induces consumers to use more medical services because it lowers out-of-pocket costs (Newhouse (1993), Card, Dobkin and Maestas (2007), Finkelstein et al. (2011)). Public efforts to expand insurance coverage to the uninsured may therefore damage cost-control efforts by increasing total medical expenditures. However, insurance coverage may also improve the composition of health care. For example, insurance may induce substitution away from relatively expensive hospital emergency room care and towards physician’s offices. Insurance may also encourage timely preventive care that reduces future medical costs. These offsetting changes in behavior may reduce the “per dollar” cost of health even if the total amount spent on health services increases.

Using data from a large survey, I find evidence that the Massachusetts reform improved both the composition of health services used by children and their reported health outcomes. Most children had health insurance coverage prior to the reform, and I find that the reform only modestly increased total insurance coverage among the children surveyed (by about 2.4 percentage points). However, I find that the reform had a large effect on the type of insurance that covered them, moving children off of less generous “stop-gap” public programs and on to more comprehensive plans. Relative to the children surveyed in other states in the region, I find that children in Massachusetts were less likely to visit the hospital emergency room visits after the reform. I also find some evidence that they increased their use of office visits and preventive care. Furthermore, I provide evidence that the reform reduced the number of children that had forgone care due to costs and improved reported health quality.

I. The Massachusetts Reform and Health Care Utilization

In 2006 Massachusetts mandated that all residents have health insurance meeting certain coverage standards.2 As of June 2007, failure to obtain insurance results in the loss of the personal income tax exemption ($219 for an individual) and, beginning in 2008, monthly penalties equal to half of the price of the least costly available insurance plan. To ease the burden of this mandate on low- and middle-income residents, the legislation introduced means-tested subsidies to purchase private insurance and expanded the Medicaid program (called “MassHealth”) that provides health care to families in poverty. Grubber (2008) provides an overview of the reform.3

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1Long and Masi (2009) and Miller (2011) analyze the effect of the reform on health care utilization and emergency room care in the general population. Kolstad and Kowalski (2010) examine how the reform affected inpatient hospital visits and provide some results for the under 18 population; in particular, they find that the reform reduced total hospital charges for this group and increased the probability that a hospital visit originated in the emergency room.

2Notably, non-comprehensive public programs such as the Children’s Medical Security Plan do not meet minimum coverage standards.

3Other aspects of the reform include requirements on insurance companies to cover dependents until the age of 26 and em-
Both the expansion of MassHealth and the individual mandate could affect the insurance status of children under 18 and, subsequently, their medical care consumption and health outcomes. MassHealth eligibility expanded substantially to include all children in households with incomes up to 300 percent of the federal poverty line. As a result, many children that were previously enrolled in non-comprehensive state-sponsored health programs such as the Children’s Medical Security Plan (CMSP, which covers office visits and up to $200 worth of prescription drugs but not hospitalizations or outpatient surgery) or FreeCare (which only pays for emergency room and community health clinic visits) became eligible for more generous coverage through MassHealth.\(^4\) Additionally, as their parents complied with the individual mandate, children’s enrollment in private insurance potentially increased, both by displacing enrollment in the CMSP and FreeCare and by increasing total insurance coverage in this group.

I use data from the National Health Interview Survey (NHIS) to analyze the impact of this reform on health care utilization and outcomes of children under 18. The NHIS is a nationally representative cross-sectional survey that is collected annually and includes data on health care use and health status of adults and children. An advantage of the NHIS is that it deliberately includes a large sample of children under 18 and conducts detailed interviews about their well-being and health care utilization patterns. I use data from 2002 to 2008 to compare the trends in the health care use of children in Massachusetts to those in other states before and after the 2006 reform. My identifying assumption is that in the absence of the health reform, utilization would have evolved similarly in Massachusetts as in the other states, and thus any differences can be attributed to the reform. In order to evaluate the validity of this assumption, I examine pre-reform trends in Figure 1. This figure plots the outcome variables of interest for children in Massachusetts and those in other states in the Northeast region. The horizontal lines indicate the period of the reform’s implementation.

The first panel of Figure 1 plots the fraction of children in the NHIS with insurance by year. Even prior to the reform, coverage in this group was very high: about 96 percent of children were covered by health insurance in 2006. By 2008, insurance coverage among Massachusetts children had increased modestly by 2.2 percentage points, while coverage in the comparison states fell by 1.3 percentage points. MassHealth coverage increased significantly over the period of the reform, although Medicaid enrollment also grew in the comparison states (Panel 2). Prior to the reform, a similar fraction of children were covered by private insurance in Massachusetts and the comparison states. Over the period of the reform, private insurance coverage increased substantially in Massachusetts and fell in the comparison states (Panel 3). At the same time, enrollment in “other public” (not Medicare or Medicaid) insurance fell substantially in Massachusetts but remained largely unchanged in the comparison states (Panel 4). These trends in insurance coverage suggest that children in both Massachusetts and the comparison states had similar insurance coverage prior to the reform, but that the 2006 reform increased total health insurance coverage and changed the type of insurance participation rules that fine employers that do not offer health insurance. These new requirements may affect children’s coverage indirectly by increasing premiums or expanding coverage in general.

\(^4\)See, e.g., Bigby (2007), who reports that over 15,600 members of the Children’s Medical Security Plan were enrolled in MassHealth as of July 1, 2007.

\(^5\)I find similar results when limiting the comparison group to only residents of states in the New England census division (Vermont, New Hampshire, Maine, Connecticut, and Rhode Island) and when using residents of all other states as comparison.
The impact of health reform on children

Figure 1. Outcomes for Children in MA (Black) and Comparison States (Gray), 2002-2008

1. Any Coverage
2. MassHealth/Medicaid
3. Private Insurance
4. Other Public Insurance
5. ER Visit
6. Excellent Health
7. Office Visit
8. Check Up
9. Forgone Care due to Cost

Note: Author’s own calculations from the NHIS, 2002-2008. Dotted lines indicate 95% point-wise confidence intervals. Comparison states are New Jersey, New York, Pennsylvania, Connecticut, Maine, New Hampshire, Rhode Island and Vermont.

I formalize this analysis by estimating

\[ Y_i = \beta_0 + \beta_s + \beta_1 X_i + \beta_2 IMP_i + \beta_3 POST_i + \beta_4 MA_i + \beta_5 IMP_i \ast MA_i + \beta_6 POST_i \ast MA_i + \epsilon_i \]
Table 1—Regression Estimates

<table>
<thead>
<tr>
<th>MA*Post</th>
<th>Any Insurance</th>
<th>Private Insurance</th>
<th>Other Public Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA Pre-Reform Mean:</td>
<td>0.024 (0.004)***</td>
<td>0.022 (0.004)***</td>
<td>0.104 (0.019)***</td>
</tr>
<tr>
<td>Controls?:1</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>N:</td>
<td>26504</td>
<td>22116</td>
<td>26504</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medicaid Visited ER Visited Dr’s Office</th>
<th>MA*Post</th>
<th>MA Pre-Reform Mean:</th>
<th>Controls?:1</th>
<th>N:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA*Post</td>
<td>0.000 (0.025)</td>
<td>0.015 (0.021)</td>
<td>No</td>
<td>26504</td>
</tr>
<tr>
<td>MA Pre-Reform Mean:</td>
<td>0.238</td>
<td>0.238</td>
<td>No</td>
<td>13056</td>
</tr>
<tr>
<td>Controls?:1</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>26677</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Check-up</th>
<th>Did not get Care due to Cost</th>
<th>Excellent Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA*Post</td>
<td>0.029 (0.012)**</td>
<td>0.012 (0.010)</td>
</tr>
<tr>
<td>MA Pre-Reform Mean:</td>
<td>0.888</td>
<td>0.888</td>
</tr>
<tr>
<td>Controls?:1</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>N:</td>
<td>13036</td>
<td>10870</td>
</tr>
</tbody>
</table>

Note: 1. Controls include age, gender, race, and ethnicity. Specifications with controls exclude 2002 because of changes to the variable denoting race. All models include state fixed effects. Asterisks indicate the coefficient differs significantly from zero. Significance levels: *=10%, **=5%, ***=1%. Sample size differs across questions because only one child per household completes full interview. Sample size also differs due to missing values in outcome variable. Standard errors clustered by state. Comparison states are New Jersey, New York, Pennsylvania, Connecticut, Maine, New Hampshire, Rhode Island and Vermont.

for each outcome variable of interest ($Y_i$), where $P O S T_i = 1$ for survey respondents in 2008 after all aspects of the reform had been implemented and $I M P_i = 1$ for survey respondents during the implementation period of 2006 and 2007. Respondents in Massachusetts have the variable $M A_i = 1$ and respondents in comparison states have $M A_i = 0$. I include state fixed effects, $\beta_{s}$, and in some specifications, controls for sex, race, age, and ethnicity, $X_i$. The parameter of interest is $\beta_6$, which captures how outcomes changed among children in Massachusetts relative to children in other states.

Table 2 presents estimates of equation (1). In specifications both with and without controls, I find a significant increase in the probability that a child had any health insurance coverage of between 2.2 and 2.4 percentage points. Although an increase in insurance coverage of over 2 percentage points is not trivial, I find a much larger change in the type of insurance reported. Enrollment in “Other Public” (not Medicaid or Medicare) insurance decreased significantly by over 7 percentage points. “Other Public” insurance includes the non-comprehensive public health programs CMSP and FreeCare. In contrast, enrollment in private insurance increased by between 8 and 10 percentage points. Although there was a large absolute growth in MassHealth enrollment (an increase of about 50% since 2002, see Figure 1), Medicaid enrollment in the comparison states also increased substantially over this period. I find little change in Medicaid enrollment relative to the other states in the specification without controls. In the specification with controls, I find a small increase in Medicaid coverage of 1.5 percentage points, although it is not statistically significant.

I find that the reform significantly altered health care utilization patterns and reported health outcomes. The reform substantially reduced the probability that the surveyed child had an emergency room visit by 8.7 percentage points, or 30 percent. The probability that the surveyed child had an office visit increased by 1.3 percentage points and the probability of a check-up increased by 2.9 percentage points, although these effects are only significant in the models that do not include controls. The reform significantly increased the probability that a child’s health was described as “excellent” by between 5.5 and 6 percentage points, although it is not statistically significant.

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One limitation of this analysis is that it is not

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6 Here, the word “insurance” is used liberally: the CMSP and FreeCare are not generally considered to be insurance coverage because they do not cover typical medical care such as doctor’s visits (in the case of FreeCare) or hospitalizations (in the case of CMSP). Furthermore, Massachusetts law considers enrollees in CMSP and FreeCare to be uninsured.
It is widely believed that health in childhood has a strong impact on future productivity, educational attainment, and well-being, making the effect of health care reform on children of special interest to policy-makers. This paper is the first to examine the impact of the 2006 Massachusetts health care reform on the health care utilization patterns and health status of children.

I find that the Massachusetts reform had a substantial effect on children’s insurance coverage. In particular, the reform reduced enrollment in non-comprehensive public health programs and increased private insurance coverage. Office visits and check-ups increased while emergency room use fell, consistent with the hypothesis that insurance induces substitution away from hospital emergency rooms and towards primary care. After the reform, the fraction of children reported to have forgone medical care because of costs fell to almost zero and reported health quality increased. Overall, these results suggest that the reform improved both the composition of health services used and health outcomes for children.

**REFERENCES**


