Massachusetts Health Care Reform:
Effects on Employer-Sponsored Insurance Coverage and Health

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Abstract

This study examines the effect of the Chapter 58 health care reform in Massachusetts four years after implementation on rates of coverage through employer-sponsored plans (ESI) and self-reported health status. It documents whether the relative increase in ESI coverage rates found in Massachusetts one and two years after the reform have persisted. A difference-in-difference model is used to examine effects on coverage rates and health status after the reform. Non-elderly adults living in Massachusetts make up the treatment group and the control group is comprised of individuals living in other Northeastern states. The study uses data from the Current Population Survey from the pre-reform years 2001 to 2006 and post-reform years 2007 to 2010. Results show that for the non-elderly adult population coverage through ESI plans increased 3.4 percentage points in the four years since the reform, slightly more than indicated in earlier studies. Gains were especially large among the young adult, near elderly, less educated, and lower income populations. The Massachusetts population also showed a significant improvement in self-reported health status.

1. Introduction

In 2006, Governor Romney of Massachusetts signed into law a health care reform that formed the basis for the national Affordable Care Act of 2010. The reform targeted expansion of insurance coverage to low and middle-income adults. This paper studies the effect of the reform on the rates of coverage by employer-sponsored insurance (ESI) plans. The effect of the reform on ESI is of particular interest, because, like the Affordable Care Act, the Massachusetts law adjusted multiple incentives in the health insurance market at the same time. Among other provisions, the law included a mandate that certain employers provide insurance to their employees and also provided subsidized plans for low and moderate-income workers (Gruber 2008). Therefore, while the employer mandate may have increased the rate of ESI coverage, subsidized plans available to low and moderate income workers may have led some employers (particularly employers with a large percentage of low and moderate income workers) to

drop their employee coverage, with the knowledge that their employees would have other coverage options. There has been substantial debate about the effects of similar changes included in the Affordable Care Act, with some researchers projecting a decline in ESI due to the Affordable Care Act.

In Massachusetts, coverage through ESI plans, rose 0.6 percent in the three years after the reform, while the rest of the nation experienced a decline in ESI coverage rates of four percent (Gruber 2011). This increase is likely a combination of factors. Some of the effect may have been due to some employees who had previously declined insurance now accepting insurance in order to comply with the requirement that individuals hold insurance. However, there also appears to have been an increase in rates of ESI offers (Long and Stockley, 2009). In 2005 the offer rate in Massachusetts was 70 percent, and by 2009 it was 76 percent. The rest of the US remained stable at roughly 60 percent (Gruber 2011). This increase in offer rates may also be due to several factors. It is possible that the employer mandate led some employers who were not offering coverage to extend the offer. Additionally, employees in firms that did not offer coverage may have demanded coverage from their employers.

This paper uses Current Population Survey data from a larger post-reform window than previous studies to estimate longer-term effects of the health reform. Long, et al. (2009) examined the change in overall rates of insurance and rates of insurance through ESI in Massachusetts from 2004-2007, both for the entire adult population and those below the poverty line. This paper extends to 2010 and also estimates effects separately for four different age groups, and several other subpopulations.

Like Long et al. (2009) a difference-in-difference method is used to compare the difference in overall and ESI coverage rates between Massachusetts before and after the 2006 reform to the change in ESI coverage rates for the comparison area. This comparison area is comprised of states belonging to the Northeast census group that did not undergo similar reforms between 2001 and 2010.

The difference-in-differences is also estimated separately for different age groups. Of particular interest are those close to the age of 65, the age at which one can become eligible for Medicare. By requiring everyone to obtain health insurance, it is possible that individuals approaching the age of 65 were more likely to have insurance after the reform, whereas before the reform, they may have been more likely to go without insurance for a period of time, waiting until they became eligible for Medicare. If this were the case, the burden on the federal and state budgets might decrease, due to an increased utilization of cost-effective preventative care among near elderly individuals.

1.1 Background on Chapter 58

Chapter 58, officially titled "An Act Providing Access to Affordable, Quality, Accountable Health Care" established a process of "incremental universalism", as described by Gruber (2008), of filling in the gaps of the current system rather than starting over. Gruber describes the reform as a three legged stool: insurance market reforms, mandates and subsidies. The national reform, the Affordable Care Act, signed into law in 2010, closely follows this "three legged stool" model; therefore, results from Massachusetts are reasonable projections for national outcomes.

The Massachusetts law included several insurance market reforms that build off of existing state rules in Massachusetts. Since 1996, Massachusetts has stipulated that premiums in the individual market can vary by age and smoking status only. The 1996 law established that no one could be dropped or denied coverage based on a pre-existing health condition (such as cancer, diabetes, or pregnancy). The law also established a new minimum standard for policies and created the "Commonwealth Health Insurance Connector" as a place for licensed health insurance companies to compete to offer coverage to small employers and individuals. The law also mandated that young adults must be allowed coverage on their parents' plans for two years after they are no longer dependents or until the reached the age of 26.

The most important leg of the stool for the purposes of this study is the second, individual and employer mandates. The law established that individuals in Massachusetts are required to have health insurance, with exceptions for religious reasons and income level, if the lowest level of insurance is deemed unaffordable. Beginning in 2008, those individuals who did not obtain coverage and did not meet the exceptions, were required to pay a penalty of no more than 50% of the insurance premium for the cheapest plan they are eligible for. The law also established an employer mandate, requiring companies with more than ten full-time employees to offer a reasonable contribution towards health plans. Failure to do so results in a penalty of up to $295 annually for each full-time employee. In contrast, the Affordable Care Act (ACA) will have a penalty that ranges from two to three thousand dollars per full-time employee, an indication of the political concern over a potential decline in ESI. However, the ACA only has an employer mandate for companies with over 50 employees.

The third leg of the Massachusetts reform, subsidies for coverage and an expansion of the safety-net programs was more pronounced than the coming changes under the ACA. All children with household incomes up to 300% of the federal poverty line (FPL), the long-term unemployed up to 100% FPL, and people with HIV up to 200% FPL remained or became eligible for Medicaid. For non-elderly adults below 150% FPL coverage is free, and for those up to 300% FPL there is a sliding scale of subsidies (under the ACA, these subsidies will go up to 400% FPL). These subsidized plans are private plans delivered by licensed health insurance companies and purchased through the Connector.

1.2 Literature Review

Economists have studied many of the effects of the reform in Massachusetts, in order to predict the impact of the Affordable Care Act[1]. All previous research indicates that the reform decreased the percentage of uninsured citizens in Massachusetts. However, there was a concern that the Massachusetts reform may have led to a decline in ESI, and similar concerns have been raised with respect to the ACA (Courtmanche and Zapata 2012). The argument is that some employers (especially those with a large population of low and moderate income employees) may drop their offer of coverage, knowing that their employees have the option of public coverage or subsidies for private

[1] See for example: (Long et al. 2009)
[2] The poor qualify for public insurance such as Medicaid or Medicare.
[3] While it has remained relatively stable in MA there has been a steady decrease in

coverage[2]. However, studies, focused on the change in composition of insurance plans, in the years following the Massachusetts reform, have found stability in ESI plans[3].

This paper contributes to the current research by using more recent data, and rates of ESI among, subgroups of ages and demographics, and examining the impact of the reforms on self-reported health status. Particular interest will be paid to the young adult population and the near elderly population. The reform includes measures to increase coverage rates of young adults ages 18 to 26, a typically healthy group. The near elderly is a group that often goes uninsured for reasons such as early retirement, since only the very poor qualify for Medicaid before the age of 65. Because Medicare eligibility starts at 65, often the near elderly will forgo acquiring health insurance. A difference-in-differences (DD) model finds that utilization of health care services increases around the time of Medicare are larger for those who were uninsured prior to the age of 65 compared to their insured counterparts (Card et al. 2004).

This study uses data from the Current Population Survey (CPS). Many papers have used this data because it is nationally representative, publically available, and includes information on demographics, income, health, and insurance. Long et al. (2009) uses CPS data from 2004 to 2007 to look at rates of insurance, overall and employer-sponsored plans, before and after the reform among the nonelderly adult population. Kolstad and Kowalski (2010) use the CPS data for preliminary analysis of insurance coverage rates, before using hospital discharge data to look at more specific changes in preventative care utilization. The CPS data also includes information on health coverage

[2] The poor qualify for public insurance such as Medicaid or Medicare.
[3] While it has remained relatively stable in MA there has been a steady decrease in coverage through ESI in the rest of the United States.

of children and the elderly. Kenney et al. 2010 examines changes in insurance coverage rates among children.

A common approach to policy evaluation is a difference-in-differences (DD) model. Long et al. (2009) uses a double difference model to compare insurance coverage rates before and after the reform in Massachusetts to a comparison group comprised of multiple other states. They define the before period as the years 2004 to 2006 and the after period as 2007. Although parts of the reform were implemented in October of 2006, the CPS provides the appropriate data for these tests in the March supplement. Therefore March 2006 is considered pre-reform. Following Long et al. (2009) this study will use a DD model, but will expand both the pre-reform and post-reform time periods and use a slightly different comparison group.

One of the biggest challenges in studying Massachusetts is isolating the best control group. Most studies use states from the Northeast census region as the comparison group, although other groups have been used. Kenney et al. (2010) use Minnesota and Washington, in addition to the Northeast census region, as a comparison group because they have demographics similar to Massachusetts. Long and Stockley (2009) compare Massachusetts to the 23 largest states in the US that did not experience their own health care reforms, but ultimately report findings based on a comparison to the Northeast. For estimating insurance premium growth, Cogan et al. (2010), compare the Boston metropolitan statistical area to 19 other large MSAs in the US. This helps to control for demographics relating to living in an urban area that may have more of an impact when examining premiums. Following other papers analyzing coverage rates, this

study will use states from the Northeast census region excluding those that differ most demographically[4].

In Massachusetts the percent of the nonelderly population with insurance increased from 88.2 to 93.8 between 2003 and 2008 (Kolstad and Kolwaski 2010). Rates in the rest of the United States stayed relatively stable decreasing only slightly from 82.7 to 82.5 percent. Long et al. (2009), using CPS data from 2004 to 2007 find slightly larger gains in coverage in Massachusetts, 6.6 percentage points for the overall adult population. The percent of low-income adults without insurance dropped from 25 to 7.7 percent.

Crowding out of private insurance under the expansion is a main concern; therefore the composition of coverage before and after the reform is also important. Of the 6.6 percentage point increase in covered nonelderly adults, 3.1 percentage points are in the form of ESI plans (Long et al. 2009). The remaining 3.5 percentage points is gained in the "other" category, which is mostly public insurance, Medicaid, or subsidized insurance (CommCare), but includes non-group insurance as well. As expected, among the lower income population, a majority gained insurance through public plans, but one third of the increase in insurance coverage in Massachusetts was through ESI plans (Long et al. 2009).

The strongest evidence of crowding out of private insurance is among the hospitalized population. Using the discharge data, Kolstad and Kowalski (2010) find that Medicaid coverage increased 4.7 percentage points and private coverage decreased 3.54 points percent. Using CPS data, they too find no evidence of crowding out among the

[4] The states in the control group are: Connecticut, Maine, New Jersey, Pennsylvania, and Rhode Island.

general adult population. Unfortunately the impact crowding out of private insurance among the hospitalized population increases state costs more than crowding out in the general population.

One major motivation behind universal health insurance is that coverage improves health. The CPS also collects data on self-reported health status each March. With self-reported health status, subjectivity is a problem. A study using the 2008 Oregon Medicaid expansion through a lottery system finds evidence that being covered improves self-reported physical and mental health (Finkelstein et al. 2011). This points to a "peace of mind" effect coverage has, since in the Oregon study the survey is conducted before time allows for utilization of health care services. The alternative is that access to health care can increase awareness of medical conditions causing one to report a lower health status (Strauss and Thomas, 2007). For these reasons self-reported health may not be the best measurement; however previous studies repeatedly show self-assessed health as being correlated with objective measures such as mortality (Idler and Benymani, 1997). The same paper also finds that a health index is a global measure of health and captures the full range of diseases and limitations a person may have.

Courtemanche and Zapata (2012) use a survey similar to the one in the CPS to analyze the impact of the Massachusetts reform on health. An ordered probit model shows an increase in the probability of reporting excellent or very good heath, and a decrease in the probability of reporting good, fair or poor health. They also find low income, women, near elderly, and minorities report largest increases in health. Another study on Massachusetts using the CPS data for the years 2005 to 2008 find mixed results on self-reported health. Among all income levels nonelderly adults were more likely to

report good or better health, and less likely to report excellent health or very good health (Yelowitz and Cannon 2010). Expanding on these papers, this study uses the CPS data from 2001 to 2010, and a DD model like Yelowitz and Cannon (2010), to look at self-reported health for the entire population, different sub-populations, and those with employer-sponsored insurance.

2. Data

The data used in this study comes from the Current Population Survey (CPS), which is a nationally representative household survey. These data, collected by the U.S. Census Bureau and the Bureau of Labor Statistics, are publically available[5]. Labor market characteristics are collected each month, while supplemental inquiries on special topics are collected every March, for the March Annual Demographic File and Income Supplement. Since a majority of the variables used in this study are collected only once a year, information on insurance coverage is more of a point-in-time estimate than a full year estimate (Long et. al 2009). This study analyzes data from 2001 to 2010. Years after 2010 are not analyzed because this is when pieces of the Affordable Care Act were enacted nationally. The data provides individual level data on health insurance, income, education level, employment status, and demographics.

This study measures ESI coverage rates with a binary variable reflecting whether an individual has coverage through an ESI plan. With any household survey there is a risk of inaccurate reporting. Because many of the insurance plans in Massachusetts have

[5] https://cps.ipums.org/cps/

similar names, reporting error is minimized by grouping all insurance plans, private and public, which are not employer-sponsored into one category.

The other outcome variable examined is self-reported health status. The CPS has this variable broken down into five groups from *1* corresponding to "excellent" health and *5* corresponding to "poor" health. Following Yelowitz and Cannon (2010) I generate a binary, dependent variable assuming *0* if health is reported as "poor" or "fair", and *1* if health is reported as "good", "very good", or "excellent"[6].

3. Methods

A double difference method is used to capture the effect of the reform in Massachusetts on coverage through employer-sponsored plans and health status. This method looks at a difference in means between the treatment and control group before and after the reform. The treatment group in this study is Massachusetts since the reform occurred there. The control group is states in the Northeast with similar demographics. The before period (pre-reform) goes through 2006 and the after period begins in 2007. The first difference is the difference in means of the outcome variable between Massachusetts (Y_{TB}) and the control group (Y_{CB}) before the reform to account for any differences in baseline characteristics. The second difference is the difference in the means between the treatment (Y_{TA}) and control group (Y_{CA}) after the reform. By subtracting the two differences the model measures the effect the intervention had on the treatment group.

$$DD = (Y_{TA}-Y_{CA}) - (Y_{TB}-Y_{CB}) \quad (1)$$

[6] I also run the same regressions with a binary variable that is *1* if health is reported as "very good" or "excellent" and *0* if health is reported as "poor", "fair", or "good".

A valid comparison group is a group that would have the same trend as the treatment group after the intervention had the treatment group never been treated. This assumption cannot be tested since by definition the treatment group receives the treatment. However if the comparison group has the same trend in the outcome variable, before the intervention as the treatment group, the hope is that the trends would remain the same for both groups after the treatment had the treatment group not received the treatment. The DD only works on this assumption because it suggests that any difference in trends between the two groups after the treatment is a result of the intervention, not other environmental factors. Table 2 shows that the treatment and control group are statistically equivalent at the 5 percent level before the reform for employer sponsored insurance coverage rates as well as a number of other variables. The two differ significantly only in percent of the non-elderly adult population with at least a college degree.

The population targeted by the reform is non-elderly adults. This is because children and elderly individuals were more likely to have access to public insurance, Medicaid and Medicare, before the reform. For this study I will first test the effect on all non-elderly adults, ages 18 to 64. Because aspects of the reform were targeted at specific populations, such as allowing children to stay on their parents' health insurance plans until the age of 26, I will then analyze subpopulations based on age, race, education, and income.

3.1 Comparison Group

Following past literature on the health care reform in Massachusetts (i.e. Long and Stockley 2009) the comparison group is made up of states from the Northeast census region. For this study I narrowed the comparison group further based on different demographics and trends in coverage by employer-sponsored insurance plans pre-reform. Summary statistics of New York show that insurance rates and insurance through ESI are lower than the other states in the region. Demographically New York also has a smaller white population, smaller percentage of adults with a high school degree, and the highest level of unemployment in the region. New Hampshire and Vermont also differ in observable ways from Massachusetts, with lower levels of unemployment and a more highly educated population. Figure 1 shows raw data of ESI trends when comparing Massachusetts to the entire Northeast region and figure 2 shows ESI trends when comparing Massachusetts to the Northeast region excluding New York, New Hampshire, and Vermont. Although both show clear trends similar to those in Massachusetts figure 1b illustrates that by excluding those three states the baselines are more alike. For that reason the comparison group of states for the test in this paper are: Connecticut, Maine, New Jersey, Pennsylvania, and Rhode Island.

3.2 Empirical Specifications

The preliminary equation for the study is:

$$Outcome_{ist} = \beta_0 + \beta_1 Mass_s + \beta_2 After_t + \beta_3 Mass_s \times After_t + X\beta_{4+}\varepsilon_{ist} \quad (2)$$

Where:

$Outcome_{ist}$ = outcome variable of interest for individual *i* in state *s* at time *t*
Mass = (1) if in treatment group Massachusetts (0) else
After = (1) if before reform (0) else
X=control variables

The primary coefficient of interest for this study is β_3. This is the difference-in-differences estimate of the effect of the Massachusetts health reform. I compare results from the equation above to results obtained when state and time fixed effects are used.

$$Outcome_{ist} = \beta_0 + \beta_3 Mass_s \times After_t + \sigma_{is} + \varphi_{it} + X\beta_{4+}\varepsilon_{ist} \quad (3)$$

Where:

σ_{is} = state fixed effect
φ_{it} = year fixed effect

Using state and time fixed effects reduces the risk that the results are biased due to differences in unobservable characteristics that vary from state to state or year to year respectively. The standard errors are robust and clustered by state.

Because the effect of the reform could be different depending on age, I then analyze ESI coverage for four different age groups between 18 and 64. I also examine the effect of the reform separately for the following subpopulations: blacks, whites, those with high school diplomas, those without high school diplomas, those in the lower 30 percent of total family income, and those in the upper 70% of total family income. In order to test whether the point estimates obtained by testing these subpopulations differ significantly from their counterparts, I interact every variable in equation 3 by the characteristic of interest (e.g. comparing blacks to all other groups.) This mimics running the results separately by sub-group but now the coefficient on the variable, Mass*After*black gives the difference in the effect of the Massachusetts health care reform between blacks and all other groups, so I can determine if the differences between the two groups are significantly different.

4. Results

Table 1 presents the difference in mean between the treatment and control groups before and after the reform and tests if these differences are significantly different from each other. This table highlights that ESI coverage did not experience statistically significant change for the non-elderly adult population in Massachusetts, dropping one percent. For the control group there is a four percent decline in ESI coverage among the entire adult population after the reform, which is significant at the five percent level.

The 18 to 26 years old population in Massachusetts saw a four percent increase in coverage compared to a five percent decrease in the control group, both of which are statistically significant changes. Those aged 27 to 53 in the control group saw significant decreases; while the treatment group also saw decreases in coverage, they were insignificant for those between the ages of 40 and 53. Those aged 54 to 64 in the control group saw a significant decrease of about two percent while the near elderly in Massachusetts saw an increase in coverage through ESI of about one percent, although it is not statistically significant.

Blacks and those without a high school diploma in the control group had decreases of two and five percentage points respectively. The treatment groups for these populations had statistically insignificant changes in coverage. The lower income group, defined as those in the lowest 30% of total family income, saw statistically significant decreases in coverage through ESI of five and nine percentage points in the treatment and control groups respectively.

4.1 The Double Difference Model

The three columns under each age group in table 3 represent three different runs of the model: the first column is the basic regression from equation (2) without controls, the second column is equation (2) with controls, and the third column includes both controls and time and state fixed effects, equation (3). The results across the three columns are typically stable, except for the 18 to 26 year olds age group, indicating that observable characteristics are not biasing the results. Among the entire non-elderly population in Massachusetts there was 3.4-percentage point increase (from the fixed effects model) in coverage through ESI after the reform (significant at the 1 percent level). This is a statistical significant increase. Looking at table 3 the only age group that is not significant at the five percent level is the group with individuals ages 27-39. The group with the largest increase in ESI is the 18 to 26 year olds with a 7.1 percentage point increase, or dividing by the pre-reform mean (5.8 percent) a 12 percent increase. The results from table 3 are in line with those found in previous studies.

In table 4, I examine if the health reform has different effects by subpopulation by restricting the sample to the following groups: black individuals, those without high school diplomas, and those in the lower 30 percent of total family income. As in table 3, I present three specifications to see if the results are robust to the inclusion of the various controls. With the exception of the Blacks subgroup, the inclusion of controls does not greatly affect the magnitude of the results. For blacks, without controls the results indicate a 5.6 percentage point increase in coverage through ESI in Massachusetts after the reform. After controlling for demographics including income, education, and employment this number drops to 2.1 percentage points, which is still significant at the

five percent level. The results in table 4 for the white population are very close to those found by Kolstad and Kowalski (2010); however, they found an insignificant decrease among the black population in Massachusetts. The subpopulation with the largest increase in ESI coverage after the reform was the population without high school diplomas in Massachusetts. This group experienced a statistically significant increase of 6.8 percentage points.

To test whether the results for three of the subpopulations differ significantly from their counterparts, I add to equation 3 the interaction between after*mass*characteristic. The two columns for each population in table 5 represent whether the test was done among that entire population or isolated to just those who were employed. Among the entire population coverage rates through ESI were significantly different in Massachusetts after the reform for those without a high school diploma compared to those with at least a high school diploma; the population without high school diplomas experienced a greater increase in ESI coverage by 3.8 percentage points. Coverage was not significantly different between blacks and non-blacks or lower income and higher income groups. When the analysis was isolated to just those in the population who were employed there is a significant difference for all three subpopulations.

As a robustness check, in table 6, I examine if the reform lead to an increase or was correlated with an increase in employment. If employment grew the effects may be a result of more people being employed rather than more people receiving employer based due to a change in the mandate. To do this I use equation 3 with a binary employment outcome variable. The results of this regression show that employment levels are not significantly different at the 5 percent level for the entire non-elderly adult population,

the black population, or the lower income group. However, there is a significant increase in employment levels of about 2.1 percentage points for the population in Massachusetts without a high school diploma. This increase in employment means that the increase in coverage through ESI for this population might not be a result of the health reform alone, but an increase in employment for this group.

4.2 Health Status

Table 7 presents the double difference estimates of the effect of the health reform on self-reported health status. These results indicate that the health reform led to a statistically significant increase in health of 2.3 percentage points for those ages 27 to 39 and 1.3 percentage points for those ages 54-64. The black population and those without a high school diploma experienced a statistically significant reduction in self-reported health status but no significant change in reporting good or better health. The entire adult population saw an improvement in health, and individuals between the ages of 54 and 64 saw an increase in health of 3.6 percentage points.

To see if health status differed among those with insurance in Massachusetts, depending on whether that coverage type was employer-sponsored or other I interact Massachusetts*Post Reform*ESI. For the non-elderly adult population coverage with an ESI plan is associated to a 3.6 percentage point decrease in good or better health than coverage with a non-ESI plan. The negative result of 10.4 percentage points, in health status for those ages 54 to 64, indicate this age group might be better off with public or private insurance plans not ESI.

5. Discussion

The results of this study agree with past literature on this subject. Among the non-elderly adult population ESI coverage increased 3.4 percentage points in Massachusetts after the reform. The largest gains occurred in the young adult population aged 18 to 26. This group saw a 12 percent increase in the coverage through ESI plans. This could be the result of a couple of different aspects of the reform. Companies that previously did not have to offer insurance, and had a high percentage of young adult workers, were now required to because of the mandate. Young adults tend to have fewer medical conditions and therefore may have opted out of ESI in the past, until the mandate required them to be covered. The reform has also made it possible for young adults to stay on their parents' plans for longer, which may account for some of this increase. Smaller gains of about 0.3 percent in ESI coverage are seen among those aged, 27 to 53, however this group had higher ESI coverage prior to the health reform. The 54 to 64 age group experienced a four percent increase in coverage through employer-sponsored insurance[7].

The largest gains in coverage through employer-sponsored plans occurred among the population without a high school diploma. This group experienced an increase of 6.8 percentage points or 15 percent. Part of this increase is explained by a four percent increase in employment for this population in the period after the reform. ESI coverage in the lower income group and black population increased by 11 percent and 4 percent respectively. The large increases among those with lower incomes indicates that the employer mandate likely caused employers of firms with lower paid employees to begin offering health insurance plans. Another explanation is that before the mandate low wage

[7] There is not an increase in employment for this group; in fact there is a significant decrease in rates of employment for the near elderly in Massachusetts after the reform.

employees chose to forgo coverage that would cost them part of their income. Among the employed population in Massachusetts blacks, those without high school diplomas, and those in the lower income group all experienced a significant increase in coverage through ESI than their respective counterparts.

The impact of the reform on health is less concrete than its effect on coverage through employer-sponsored health plans. Among the non-elderly adult population, there is 1.2-percentage point increase in health reported as good or better. The two subpopulations with improved health at the five percent level are those between the ages of 54 and 64 and the lower income group. Those between the ages of 54 and 64 experienced an increase in 3.4 percentage points and the lower income group saw an increase in self-reported health of 3.2 percentage points.

Based off the results of this study, the health care reform in Massachusetts did not result in loss of coverage through employer-sponsored plans. In fact for most groups there was a statistically significant increase in coverage, compared to what we expect would have been the case in Massachusetts had the reform not occurred. In addition the reform increased health in Massachusetts. Gruber (2011) points out that while the results from Massachusetts indicate that the mandate increased ESI, notable differences in Massachusetts' baseline compared to the rest of the US should be taken into account when predicting the effects of the ACA. Massachusetts had considerably higher rates of ESI coverage to begin with and lower rates of uninsured. Still the results from this study and past studies are promising for the future of employer-sponsored plans under the new national reform.

Figure 1

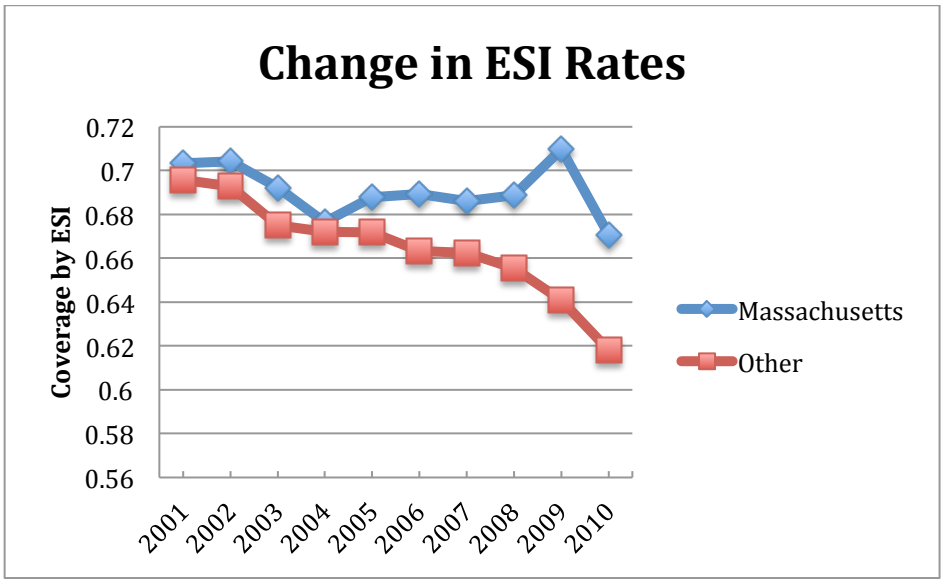

Figure 2

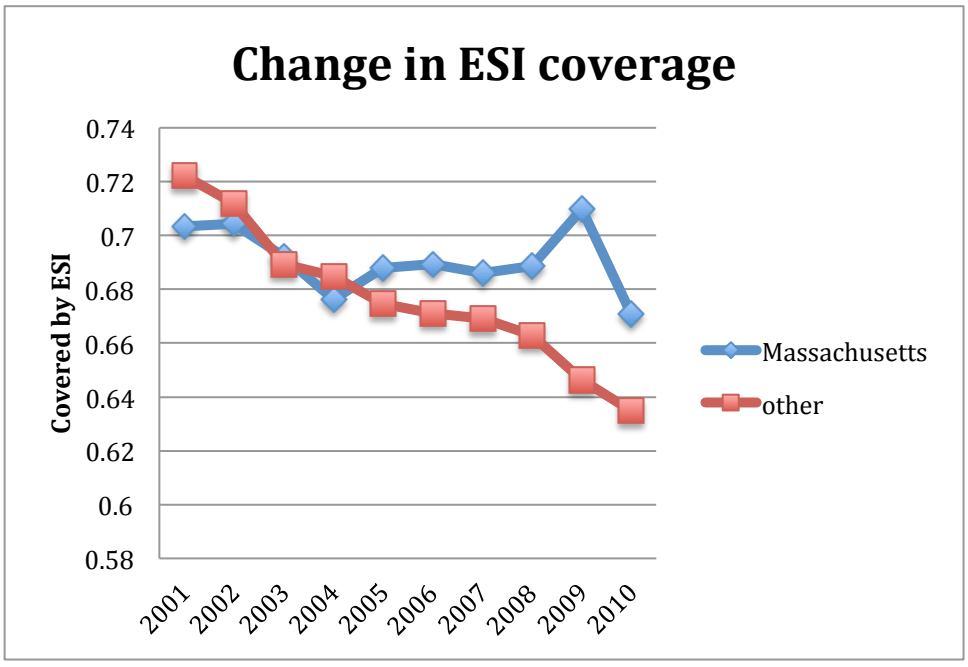

Table 1: Outcomes ESI coverage rates for different sub populations

Population		Before	After	Difference	p value
All 18-64	Treatment	0.74	0.73	-0.01	0.45
		(0.00)	(0.01)	(0.01)	
	Control	0.74	0.70	-0.04	0.00***
		(0.00)	(0.00)	(0.00)	
Ages 18-26	Treatment	0.58	0.62	0.04	0.01**
		(0.01)	(0.01)	(0.02)	
	Control	0.61	0.56	-0.05	0.00***
		(0.00)	(0.01)	(0.01)	
Ages 27-39	Treatment	0.74	0.71	-0.03	0.02**
		(0.01)	(0.01)	(0.01)	
	Control	0.75	0.70	-0.05	0.00***
		(0.00)	(0.00)	(0.01)	
Ages 40-53	Treatment	0.79	0.78	-0.01	0.14
		(0.01)	(0.01)	(0.01)	
	Control	0.79	0.76	-0.04	0.00***
		(0.00)	(0.00)	(0.00)	
Ages 54-64	Treatment	0.76	0.77	0.01	0.50
		(0.01)	(0.01)	(0.02)	
	Control	0.74	0.72	-0.02	0.00**
		(0.00)	(0.01)	(0.01)	
Black	Treatment	0.58	0.63	0.05	0.06**
		(0.02)	(0.02)	(0.03)	
	Control	0.61	0.59	-0.02	0.04**
		(0.01)	(0.01)	(0.01)	
No High School	Treatment	0.45	0.43	-0.02	0.47
		(0.01)	(0.02)	(0.02)	
	Control	0.45	0.39	-0.05	0.00***
		(0.01)	(0.01)	(0.01)	
Lower Income	Treatment	0.35	0.30	-0.05	0.00***
		(0.01)	(0.01)	(0.02)	
	Control	0.37	0.28	-0.09	0.00***
		(0.00)	(0.00)	(0.01)	

Note: Robust standard errors in parentheses. No controls.

Table 2: Baseline statistics for treatment and comparison group

	Massachusetts		Comparison			
Variable	Mean	SD	Mean	SD	Difference	P-Value
ESI (=1)	0.73	(0.44)	0.74	(0.44)	0.00	0.74
Insured (=1)	0.89	(0.31)	0.87	(0.33)	0.02	0.07
Female(=1)	0.52	(0.50)	0.52	(0.50)	0.00	0.08
Employed (=1)	0.75	(0.43)	0.75	(0.43)	0.01	0.30
White (=1)	0.87	(0.33)	0.86	(0.34)	0.01	0.72
High School Diploma or more (=1)	0.89	(0.32)	0.89	(0.32)	0.00	0.96
Bachelors or more (=1)	0.36	(0.48)	0.29	(0.46)	0.06	0.02
Below Poverty (=1)	0.08	(0.28)	0.09	(0.28)	0.00	0.86
Family Income	82509.12	(80538.44)	77198.23	(75567.22)	5310.90	0.28

Table 3: Age Results Comparing the DD Estimator using Controls and Fixed Effects

	Ages 18-64			Ages 18-26			Ages 27-39		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment*Post Reform	0.039***	0.034***	0.034***	0.100***	0.069***	0.071***	0.023*	0.020*	0.021*
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Treatment	-0.015**	-0.026		-0.034***	-0.035**		-0.017**	-0.033*	
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Post Reform	-0.037***	-0.058***		-0.041***	-0.063***		-0.045***	-0.070***	
	(0.00)	(0.00)		(0.01)	(0.01)		(0.01)	(0.01)	
DD Estimator with Controls	N	Y	Y	N	Y	Y	N	Y	Y
DD Estimator with Fixed Effects	N	N	Y	N	N	Y	N	N	Y
Constant	0.311***	0.748***	0.031	0.052***	0.618***	-0.139***	-0.115***	0.753***	-0.086**
	(0.03)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.03)
Observations	109,877	140,929	140,929	140,929	23,484	23,484	23,484	40,815	40,815
R-squared	0.110	0.001	0.294	0.298	0.002	0.254	0.256	0.002	0.311

	Ages 40-53			Ages 54-64		
	(10)	(11)	(12)	(13)	(14)	(15)
Treatment*Post Reform	0.029***	0.027***	0.026***	0.021*	0.031**	0.031**
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Treatment	-0.014**	-0.023		0.005	-0.010	
	(0.00)	(0.01)		(0.01)	(0.01)	
Post Reform	-0.041***	-0.054***		-0.011	-0.050***	
	(0.00)	(0.00)		(0.01)	(0.01)	
DD Estimator with Controls	N	Y	Y	N	Y	Y
DD Estimator with Fixed Effects	N	N	Y	N	N	Y
Constant	-0.041**	0.802***	0.081***	0.085***	0.765***	0.217***
	(0.01)	(0.00)	(0.02)	(0.02)	(0.01)	(0.03)
Observations	40,815	52,736	52,736	52,736	23,894	23,894
R-squared	0.317	0.002	0.315	0.319	0.000	0.272

Note: Robust standard errors in parentheses. No controls.

Table 4: Demographic Results Comparing the DD Estimator using Controls and Fixed Effects

	Black			White			No High School Diploma			High School Diploma		
	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
Treatment*Post Reform	0.056***	0.018*	0.021**	0.043***	0.041***	0.041***	0.051***	0.065***	0.068***	0.032***	0.032***	0.032***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Treatment	-0.030	-0.016*		-0.018**	-0.028		0.011	0.011		-0.017**	-0.027*	
	(0.02)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Post Reform	-0.018	-0.025**		-0.039***	-0.063***		-0.057***	-0.085***		-0.038***	-0.055***	
	(0.01)	(0.01)		(0.00)	(0.00)		(0.01)	(0.01)		(0.00)	(0.00)	
DD Estimator with Controls	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
DD Estimator with Fixed Effects	N	N	Y	N	N	Y	N	N	Y	N	N	Y
Constant	0.587***	-0.110***	-0.075**	0.769***	0.047***	0.087***	0.428***	-0.164***	-0.096***	0.786***	0.143***	0.161***
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
Observations	11,270	11,270	11,270	121,869	121,869	121,869	15,216	15,216	15,216	125,713	125,713	125,713
R-squared	0.001	0.330	0.333	0.002	0.278	0.281	0.003	0.268	0.272	0.002	0.256	0.259

	Lower Income Group			Higher Income Group		
	(28)	(29)	(30)	(31)	(32)	(33)
Treatment*Post Reform	0.035***	0.039***	0.039***	0.038***	0.034***	0.034***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Treatment	-0.024	-0.021		-0.009	-0.022*	
	(0.01)	(0.01)		(0.00)	(0.01)	
Post Reform	-0.090***	-0.074***		-0.041***	-0.048***	
	(0.00)	(0.00)		(0.00)	(0.00)	
DD Estimator with Controls	N	Y	Y	N	Y	Y
DD Estimator with Fixed Effects	N	N	Y	N	N	Y
Constant	0.383***	-0.267***	-0.231***	0.858***	0.294***	0.311***
	(0.01)	(0.02)	(0.04)	(0.00)	(0.04)	(0.03)
Observations	31,052	31,052	31,052	109,877	109,877	109,877
R-squared	0.007	0.196	0.201	0.003	0.107	0.110

Robust standard errors in parentheses. Clustered at the state level.
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Further Interactions

	Black		No High School Diploma		Lower Income Group	
Population	All	Employed	All	Employed	All	Employed
Treatment*Post Reform	0.036***	0.035***	0.031***	0.034***	0.034***	0.031***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Treatment*Post Reform	-0.017	0.041***	0.038***	0.047***	0.004	0.041***
*Charactersitc	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Constant	0.085***	0.207***	0.186***	0.290***	0.333***	0.417***
	(0.01)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Observations	140,929	105,069	140,929	105,069	140,929	105,069
R-squared	0.294	0.196	0.299	0.205	0.321	0.226

Robust standard errors in parentheses. Clustered at the state level.
*** p<0.01, ** p<0.05, * p<0.1

Table 6: DD Estimator with Employed as Outcome Variable

	Fixed Effects	Black	No High School Diploma	Lower Income
	(40)	(41)	(42)	(03)
Treatment*Post Reform	-0.002	-0.013*	0.021**	-0.003
	(0.00)	(0.01)	(0.01)	(0.00)
Constant	0.239***	0.148***	0.180***	0.082**
	(0.01)	(0.02)	(0.02)	(0.03)
Observations	140,929	11,270	15,216	31,052
R-squared	0.336	0.412	0.354	0.333

Robust standard errors in parentheses. Clustered at the state level.
*** p<0.01, ** p<0.05, * p<0.1

Table 7: DD Estimator of Self-Reported Health Status

	Ages 18-64	Ages 18-26	Ages 27-39	Ages 40-53	Ages 54-64	Black	No High School Diploma	Lower Income
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Excellent or Very Good (=1) and Good, Fair, or Poor (=0)							
Treatment*Post Reform	0.006	-0.012*	0.023***	-0.002	0.013**	-0.039**	-0.050**	-0.023
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
	Excellent, Very Good, or Good (=1) and Fair or Poor (=0)							
Treatment*Post Reform	0.012**	0.016*	0.007	0.006	0.036***	0.000	-0.038	0.032**
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)
Treatment*Post Reform if Insured with ESI	0.008***	0.009***	0.001	0.007**	0.016***	-0.017*	-0.040***	0.045***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)

Robust standard errors in parentheses. Clustered at the state level.
*** p<0.01, ** p<0.05, * p<0.1

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