How Did the Massachusetts Health Reform Affect the SSI-disabled Program?*

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Abstract

This paper analyzes the impact of the Medicaid expansion, part of the 2006 Massachusetts health reform, on Supplemental Security Income (SSI) participation decisions. I exploit the variation across SSI-disabled applicants to identify the causal effect of the reform on the SSI claim rate. My estimates imply that the reform reduces SSI-disabled claims by 0.098% (i.e., the 11.66% of total claims in 2008 in Massachusetts) and is associated with a lower initial SSI claim. These estimates also imply Medicaid-disabled expenditure can save around 1% by attending to small inefficiencies in the current program. However, spending $1 on the Medicaid-disabled expenditure could save between $2.05 and $3.92 in SSI program spending. The calculations suggest that the health reform was not as expensive as it might first appear because of reductions in SSI expenditure.

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1. Introduction

Public health insurance is a valued benefit for many working-age individuals with disabilities who would otherwise have difficulty obtaining health insurance in the private market. Current public policies often tie eligibility for public health insurance to eligibility for an income replacement program: Supplemental Security Income (SSI) beneficiaries receive Medicaid. SSI requires that individuals undergo a rigorous disability determination process and demonstrate an inability to work; hence for working-age adults with disabilities, eligibility for public health insurance typically requires that recipients withdraw from the labor force (Goodman et al., 2007). Such policies create potential employment disincentives for working-age people with disabilities. Evidence suggests that for many beneficiaries, public health insurance is more valuable than the monthly income received from SSI; thus, eligibility for public health insurance creates more significant employment disincentives than income replacement programs do (Mashaw, 1997).

However, after the 2006 Massachusetts health reform, the public health insurance expansion creates significant employment incentives for potential SSI applicants. Several observations support the idea that expanding insurance coverage will reduce welfare program participation. First, the fully phased-in Medicaid reforms increased the probability of working in the labor force by 0.9 percentage points and Medicaid expansion reduced the probability of Aid to Families with Dependent Children (AFDC) program participation by 1.2 percentage points (Yelowitz, 1995). Second, the Qualified Medicare Beneficiary (QMB) program reduced SSI participation for the elderly (Yelowitz, 2000). Third, the Medicaid buy-in can break or weaken the link between health insurance and SSI eligibility for people with disabilities (Goodman et al., 2007) and, particularly in Massachusetts where the percentage of buy-in program enrollees working above substantial gainful activity is more than 60 percent (Hanes and Folkman, 2003).

Expanding insurance coverage could reduce SSI-disabled applicants' incentive by providing Medicaid and by maintaining their current jobs without withdrawing from the labor force.

There is a voluminous amount of literature to support the argument that expanding publicly subsidized health insurance leads to reduced welfare participation. However, there is little evidence about how insurance influences the SSI-disabled program participation and, more specifically, whether initial SSI-disability claims are affected. This is an important shortcoming in the literature because part of the support for expanding publicly subsidized health insurance comes from the belief that it will be de-linking health insurance and SSI eligibility.

I estimate the causal effect of the reform on SSI application decisions using three administrative data sources (Social Security Administration, Centers for Medicare & Medicaid Services and U.S. Cancer Statistics) and one national survey database, March Current Population Survey. Collecting data from these sources allow me to investigate the change before and after the implementation of health reform on the caseload of initial claims of SSI-disabled claimants, Medicaid recipients, cancer incidence counts and SSI-disabled beneficiaries.

I evaluate the effect of the Medicaid expansion on the change of initial SSI claim rate using the near-universal expansion of health insurance coverage in Massachusetts. In 2006, Massachusetts simultaneously mandated that all state residents must have insurance (or lose a personal income tax exemption with additional monthly penalties) and dramatically increased free and subsidized insurance for low- and middle-income residents. I perform a behavioral analysis that exploits the variation in the intensity of the impact of the reform across SSI-disabled applicants.

Potential SSI-disabled applicants who are affected by the Medicaid expansion will have much less incentive to move onto SSI rolls than their counterparts who are not affected by the

Medicaid expansion. Additionally, I compare potential SSI-disabled applicants in Massachusetts to similar counterparts in the neighboring states that do not implement health reform. Exploiting the variation in treatment intensity allows me to identify how expanding public insurance coverage affected the initial SSI claim rate in a way that is robust to Massachusetts-specific time trends.

I have several findings. I find that the health reform reduced the initial SSI claim rate by 0.098 percent (equivalent to 11.66 percent of total claims in 2008 Massachusetts). The result suggests that the initial SSI claim rate is quite sensitive to insurance status. These results also show that Medicaid-disabled expenditure can be saved around 1 percent and suggest inefficiencies in Medicaid-disabled expenditure in Massachusetts. On the other hand, spending $1 on Medicaid-disabled could save up to between $2.05 and $3.92 in SSI program spending.

These findings have consequences for the cost of health care reform. Expanding eligibility for Medicaid could result in reduced expenditures for the current SSI program by giving potential disabled applicants less incentive to apply for SSI. Reducing caseloads could reduce current SSI expenditures and increase taxable revenue due to an increase in work hours. If Medicaid is an important determinant of the volume of SSI applications, then offering health insurance without participating in SSI may reduce total cost. This could happen when disabled adults are willing to forgo the cash benefits from SSI.

The rest of the paper is laid out in five sections. Section 2 gives an overview of the SSI program in the US and the Medicaid expansion in Massachusetts. This is followed by Section 3, which discusses the data and empirical strategy. Section 4 presents the results for the impact of health reform on public insurance coverage, while Section 5 shows the results for the impact of health reform on SSI participation decisions. Section 6 concludes.

2. Supplemental security income, Medicaid expansion, and the 2006 Massachusetts reform

For the purposes of SSI eligibility, disabled individuals are those 'unable to engage in any substantial gainful activity (SGA) because of a medically determined physical or mental impairment expected to result in death or that has lasted, or can be expected to last, for a continuous period of at least 12 months.' Eligibility for benefits is determined on a monthly basis. SSI recipients are required to have their nonmedical eligibility factors reviewed periodically (e.g. every 1 to 6 years), depending on their situation. In addition to the nonmedical reviews, medical reviews are conducted on disabled recipients to determine whether or not they continue to be disabled, and are performed most frequently on disabled recipients whose medical conditions are considered likely to improve. Medical reviews are required for disabled recipients when earnings of recipients exceed the SGA level.

As for Medicaid eligibility, certain qualifications must be met regarding age, whether applicants are pregnant or disabled; applicants' income and resources; and whether applicants are U.S. citizens or lawfully admitted immigrants. The rules for calculating applicants' income and resources vary from state to state and from group to group. Assets and resources are also tested against established thresholds. Categorically needy persons who are eligible for Medicaid may or may not also receive cash assistance from the SSI program. Because of excessive medical expenses, medically needy persons who would be categorically eligible except for income or assets may become eligible for Medicaid.

Due to health reform in Massachusetts, individuals eligible under the Medicaid Demonstration program can have access to health care services through several pathways. The mandatory and optional Medicaid State plan populations determine their eligibility by reviewing

the applicable Medicaid laws and regulations. State plan eligibilities are included in the Medicaid Demonstration program in order to generate savings to provide benefits to expansion populations. Table 1 lists all SSI potential qualifiers for applicants ages 19 to 64 who might get Medicaid via MassHealth without applying for SSI under the pre- and post-reform guidelines (the MassHealth Medicaid Demonstration defines 18-year-olds as children). These groups in Table 1 can increase their earning level without losing public insurance and avoid the wait involved in a SSI application if they value Medicaid more than cash assistance.

3. Data and empirical strategy

3.1 Data

First, Social Security Administration (SSA) refers to the first filing as an "initial claim" when a state agency first reviews a claim for disability benefits. For the initial claim rate of SSI from SSA, this dataset only includes disability claims sent to a state agency for determining disability criteria. Disability claims that do not meet the non-disability criteria are normally denied without being sent to a state agency. If SSA determines that non-disability criteria were not met while a claim is pending in a state agency, then claims pending in a state agency will be returned to SSA without a determination.

Second, SSA refers to simultaneous as a "concurrent claim" filing when the same person files a SSI claim and a Social Security Disability Insurance (SSDI) disability claim. When an applicant applies for both SSI and SSDI benefits, that claim is normally counted only once because both types of claims are processed together. The division of claims between SSI and concurrent claims can provide the socioeconomic backgrounds of applicants. SSI applicants do not have a recent work history, and have little or no income and resources. Concurrent applicants

have a recent work history, but also have scant income and resources. Claims filing analysis can be accomplished by comparing concurrent cases, SSI cases, and aggregate SSI cases.

Third, U.S. Cancer Statistics (USCS) is the official federal collection of statistics on cancer incidence from registries with high-quality data for the United States. Incidence data are provided by The Centers for Disease Control and Prevention National Program of Cancer Registries. Cancer incidence data are available for the United States and individual states by age group, race, gender, childhood cancer classifications, and cancer site for the years 1999 to 2008.

Fourth, Current Population Survey (CPS) is a nationally representative household survey of the US civilian, noninstitutionalized population, collecting monthly information on labor market characteristics. In addition to those data, the CPS includes an Annual Social and Economic Supplement (ASEC), conducted mostly in March, which collects detailed information on income and health insurance coverage. With an annual sample size of about 60,000 households, the CPS ASEC provides relatively large samples for many states, including Massachusetts. However, given the focus on a small group of the population, the sample size for this analysis is relatively small.

3.2 Empirical strategy

This analysis takes advantage of the "natural experiment" that occurred in Massachusetts to compare the change in the initial claim rate of SSI-disabled applicants ages 18 to 64 before and after the state implemented its health reform initiative, while using Difference-in-Difference (DD) and Difference-in-Difference-in-Difference (DDD) methods. The estimation approach exploits variation over time (comparing pre-and post-reform time periods), across population groups (comparing SSI-disabled applicants who are affected by Medicaid expansion to SSI-disabled

applicants who are not affected by Medicaid expansion), and across states (comparing Massachusetts to comparison states in the Northeast that did not implement health reform).

This paper relies on three administrative data sets from 2003 to 2008 for the caseload of initial claims of SSI-disabled claimants from SSA, Medicaid recipients from Centers for Medicare & Medicaid Services (CMS), and cancer incidence counts from USCS combined with population data from the Census Bureau (CB) to construct panel data and one national survey database, March CPS. I rely on data for 2004-2008 from 2005-2009 CPS.

Defining the SSI Beneficiaries-Disabled Status[1]—CPS respondents are asked in March to report the reason why they received SSI benefits over the prior calendar year. In the CPS, individuals are classified as SSI-disabled beneficiaries only if they report having SSI benefits at any point over the prior calendar year because they were disabled. However, the SSI-disabled beneficiary rate in the CPS aligns more closely to point-in-time estimates than full-year estimates.

Defining the Pre-and Post-Reform Periods—Since these datasets were calculated based on "Calendar year," I am limited in my ability to align the pre-and post-reform periods with the exact timing of reform implementation. Therefore, I define the pre-and post-reform periods based on the year, rather than the month, that Massachusetts implemented reform. Even though some of the initial reform efforts went into effect in October 2006, my post-reform period using the SSA, USCS, CMS, and CPS begins in 2007. After defining the pre-and post-reform periods, I then compared the initial claim rate of SSI-disabled applicants, incidence rate of cancer patients, percentage of Medicaid recipients, and SSI-disabled beneficiaries in the post-reform period of

[1] The question reads, "What were the reasons (you/name) (Was/were) getting supplemental security income last year?" The five coded responses are: "Disabled (adult or child)," "Blind (adult or child)," "On behalf of a disabled child," "On behalf of a blind child," "Other (adult or child)," For disabled beneficiaries, I restrict the attention on Disabled (adult or child).

2007–2008 to those applicants, patients, recipients, and beneficiaries in the pre-reform period of 2003–2004.

Defining the Comparison States—The comparison states provide an estimate of what would have happened in Massachusetts in the absence of health reform. Identifying an appropriate comparison state is difficult given the wide variation in state policies, programs and populations, and the frequency with which other states were also implementing program and policy changes that affected SSI-disabled applicants over the study period. In this paper, I rely on four states in the New England division (1.New Hampshire, 2.Vermont, 3.Rhode Island, 4.Connecticut) and two states in the Middle Atlantic division (5.New Jersey, 6.Pennsylvania) in the Northeast region as the comparison states.

Defining the Comparison Group—The comparison group provides an estimate of what would have happened in the absence of the Medicaid expansion within Massachusetts. Potential control groups include SSI-Disabled Children (SSI-DC) and people who have been diagnosed with cancer. Due to comprehensive Medicaid expansion for children in Massachusetts, I will not use SSI-DC as the control group because SSI-DC might be affected significantly. To focus more on adults instead, I decide to use cancer patients ages 20 to 64 (USCS divides age categories into 5-year blocks, so 20-24 is the youngest data block which only covers adults). Since the age range between the control group and the treatment group is similar, these two groups should be more comparable. The control group includes all genders, all ethnicities, all races, and all types of cancer.

To estimate the overall impact of health reform on SSI-disabled applicants, using a DD framework I compared the change in the initial claim rate of SSI-disabled claimants in Massachusetts to the change in the initial claim rate for a similar group in a comparison state

before and after the reform. The comparison states control for underlying trends in the initial claim rate of SSI-disabled unrelated to health reform. Furthermore, I extend the analysis by comparing the DD estimate on the potential SSI-disabled applicants who are affected by Medicaid expansion to an analogous DD estimate on the potential SSI-disabled applicants who are not affected by the Medicaid expansion using a DDD framework.

3.2.1 DDD estimate

I will label the two time periods as one and two, let *MA* represent the state implementing the policy, and let *Medicaid* denote the potential SSI-disabled applicants who are affected by Medicaid expansion. The coefficient of interest is now $\pi_{3,}$ the coefficient on the triple interaction term, *T2 MA Medicaid.*

$$y = \alpha_0 + \alpha_1 MA + \alpha_2 Medicaid + \alpha_3 MA \cdot Medicaid + \pi_0 T2 + \pi_1 T2 \cdot MA + \pi_2 T2\ Medicaid + \pi_3 T2\ MA\ Medicaid + u \quad (1)$$

where y is the outcome of interest. The dummy variable, *Medicaid*, captures possible differences between the treatment and control group. The time period dummy, *T2*, captures aggregate factors that would cause changes in y even in the absence of a policy change. The dummy variable, *MA*, captures possible differences between the treatment and control state, which is non-policy state.

3.2.2 DD estimate across states

If I drop the *Medicaid* terms from Eq. (1), I will obtain the DD estimate described in the following:

$$y = \beta_0 + \beta_1 MA + \beta_2 T2 + \beta_3 MA \cdot T2 + u \quad (2)$$

The coefficient of interest is now β_3, the coefficient on the interaction term, *T2 MA*, which is the same as a dummy variable equal to one for those observations in the treatment state in the second period.

3.2.3 DD estimate within Massachusetts

On the other hand, if I drop the *MA* terms from Eq. (1), I will get another DD estimate displayed in the following:

$$y = \delta_0 + \delta_1 Medicaid + \delta_2 T2 + \delta_3 Medicaid \cdot T2 + u \quad (3)$$

The coefficient of interest is now δ_3, the coefficient on the interaction term, *Medicaid T2*, which is the same as a dummy variable equal to one for those observations in the treatment group in the second period.

4. The impact of the 2006 health reform on public insurance coverage

Table 2 presents the percentage of Medicaid recipients across states and years. The percentages of all states rise gradually by year, except Massachusetts, which increase by 7.82 percent from 2003 to 2008. By constructing panel data with this information and running regression analysis, I further investigate the percentage change of Medicaid recipients in the treatment state in a regression framework using Eq. (2), and expect to see positive significant coefficients because more intensive health reform can be anticipated to raise incentives to get Medicaid since state governments are expanding eligibility and providing premium subsidies to potential applicants.

Table 4 demonstrates estimates of the interaction term between the "treatment state" and "after health reform" for the percentage of Medicaid recipients for all adults. As expected, in column 2, the coefficients of interest are positive and significantly different from zero.

5. The impact of the 2006 health reform on initial SSI claim rate

5.1 The effect of Medicaid expansion on SSI-disabled claimants

Table 3 lists the caseload of initial claims for SSI-disabled and resident populations ages 18 to 64. Then I calculate the initial claim rate by dividing the caseloads by the corresponding population. In Table 3, only the percentage for Massachusetts decreases by 0.13 percent from 2003 to 2008. One potential explanation is that from 2005 to 2008, the economy was booming which might make the potential SSI-disabled applicants not apply due to higher opportunity cost. Therefore, I use the DD estimate across states to eliminate the business cycle factor between states and reveal the effect of health reform on SSI-disabled applicants.

Next, with the initial claim rate across states and years, I can construct panel data and proceed to assess the behavior of SSI-disabled applicants in the treatment state in a regression framework using Eq. (2). Table 4 shows estimates of the interaction term between the "treatment state" and "after health reform" for the initial claim rate of SSI-disabled applicants ages 18 to 64. In column 1, surprisingly, for initial claim rate of SSI-disabled applicants, the coefficient of interest is negative and significantly different from zero. These findings suggest that potential SSI-disabled applicants ages 18 to 64 might have significantly less incentive to apply for SSI after health reform.

In the SSI program, reasons for applying for SSI might be to gain access to cash assistance and Medicaid. Therefore, scenarios explaining the significant caseload decline include

the following possibilities. First, if potential disabled applicants have relatively higher incomes, they may not have enough incentive to apply because the cash assistance does not attract them. Second, these applicants may only need Medicaid without cash benefits because they value health insurance more. During the reform, Massachusetts expanded Medicaid income eligibility comprehensively and provided premium subsidies to both qualifying small employers and their low-income employees for the purchase of private health insurance. Thus, these applicants might have less incentive to apply for SSI because they can get Medicaid easily without participating in SSI.

5.2 March Current Population Survey results

After using DD and DDD estimators to confirm the hypotheses via information from the administrative database, I apply CPS-ASEC to assess the behavior of SSI-disabled beneficiaries ages 18 to 64 in the treatment state in a regression framework using Eq. (2). I expect to see that the coefficients should be negative because the caseload of initial claims of SSI-disabled applicants dropped significantly, which might make the number of SSI-disabled beneficiaries decrease. These results suggest that more intensive health reform might have led individuals to have less incentive to apply for SSI. Table 4 presents estimates of the interaction term between the "treatment state" and "after health reform" for the SSI-disabled beneficiaries. As expected, in column 3, SSI-disabled beneficiaries, the coefficients of interest are negative and significantly different from zero.

5.3 Labor force participation for low skill workers

Since Massachusetts implemented near-universal health reform, especially the expansion of Medicaid income eligibility, I expected to see that the rate of labor force participation for low skill workers increase, and potential SSI-disabled applicants have less incentive to apply for SSI, which was confirmed by the results in Table 4. Next, Table 5 confirms that the labor force participation of low skill workers in Massachusetts increased.

For example, in the Northeast region, Massachusetts is the only state in which both the number of Temporary Assistance for Needy Families (TANF) participants with work requirements and the number of TANF participants who met work requirements increased significantly from 19 percent in FY2007 to 45.1 percent in FY2008, which is much higher than the national average (29.8 percent in FY 2008). Moreover, the results indicate that the Deficit Reduction Act (DRA)'s reauthorized TANF with changes in the work requirement in 2007 may not be the main reason for the increased labor force participation of low-income families. Both the number of TANF participants with work requirements and the number of TANF participants who met work requirements in other neighboring states decreased significantly except in Rhode Island, where the number of TANF participants with work requirements increased slightly.

5.4 Within Massachusetts analysis

Next, I want to further investigate the effect of Medicaid expansion on SSI-disabled applicants by using the control group to see if the Medicaid expansion made the caseload of SSI-disabled applicants drop. This group could be the potential SSI-disabled applicants and this group is not affected by the Medicaid expansion, which means that the percentage of this group should not grow significantly.

In Table 6, I use the incidence counts divided by the approximate population ages 18 to 64 to get the incidence rate across states and years. Due to a lack of data in USCS, I was unable to get the data for Vermont for ages between 25-29 in 2005 and 2006, and 20-24 in 2004. Connecticut was not included in the national data.

Therefore, in order to estimate the impact of the Medicaid expansion in Massachusetts, I investigate the behavior of SSI-disabled applicants in the treatment group in a regression framework using Eq. (3). Thus, I compare changes over time in initial claim rates of SSI-disabled applicants ages 18 to 64 to changes over time in incidence rate of cancer in patients ages 20 to 64. I expect to see negative significant coefficients because a more intensive Medicaid expansion might have led potential SSI-disabled applicants who are affected by Medicaid to have much less incentive to move onto SSI rolls. Table 7 presents estimates of the interaction term between the "treatment group" and "after health reform" for the initial claim rate of SSI-disabled applicants ages 18 to 64. As expected, the coefficients of interest are negative and significantly different from zero. This coefficient shows that the total claims were reduced by 11.66 percent.[2] This table also shows that Medicaid-disabled expenditure can be saved up to $37.45 million, which is 0.82 percent and suggests inefficiencies in the Medicaid-disabled expenditure in Massachusetts.[3] However, spending $1 on the Medicaid-disabled could save between $2.05 and $3.92 in SSI program spending (See appendix A for calculation).[4]

Furthermore, I want to confirm the results of Table 7 by looking at what happens to SSI-disabled applicants who are affected by the Medicaid expansion in the treatment state after health reform via a regression framework using Eq. (1). I expect to see that the coefficients should be

[2] (0.00098/0.0084)*100%=11.66%

[3] $9,100*0.098%*4.2M=37.45M; Medicaid Payments per Enrollee-Disabled in Massachusetts:9,100, FY 2008 available online at http://www.statehealthfacts.org/profileind.jsp?ind=183&cat=4&rgn=23&cmprgn=1; $37.45M/$4,571M=0.82%; Medicaid Payments of Disabled group in Massachusetts: $4,571 Million, FY 2008 available online at http://www.statehealthfacts.org/profileind.jsp?cmprgn=1&cat=4&rgn=23&ind=858&sub=47

[4] $7,528*0.098%*45.15%*5.5*4.2M=76.94M; 76.94/37.45=2.054; $7,528*0.098%*45.15%*10.5*4.2M=146.89M; 146.89/37.45=3.922

negative. These results will confirm that following the health reform in the treatment state and in the treatment group, potential SSI-disabled applicants ages 18 to 64 might have less incentive to apply for SSI. Column 2 of Table 7 presents estimates of the triple interaction term among "treatment state", "treatment group", and "after health reform" for the initial claim rate of SSI-disabled applicants ages 18 to 64. As expected, the coefficient of interest is negative.

5.5 Robustness checks

As a placebo test, I estimate the effect of the reform as if it had occurred in other states. This test allows me to evaluate how likely it is to find a "false positive" when studying the Massachusetts reform. If I were to find a significant effect even in states that had not enacted a major health care reform, it would signal that the effects estimated in Massachusetts might be spurious. I perform these placebo tests using the SSA and CMS from the comparison states of New Hampshire, Vermont, Rhode Island, Connecticut, New Jersey, and Pennsylvania. Specifically, I estimate

$$y = \gamma_0 + \gamma_1 STATE + \gamma_2 T2 + \gamma_3 STATE \cdot T2 + u \qquad (4)$$

The dummy variable, *STATE,* captures possible differences between the treatment and control states prior to the policy change. The coefficient of interest is now γ_3, the coefficient on the interaction term, *T2 · STATE.*

Table 8 presents the results. I find a significant reduction in initial SSI claim rate as a result of the reform in Massachusetts. However, in all other states I do not find a negative statistically significant effect. The absence of an effect in the placebo states provides some

evidence that the results presented in the main text are due to the law in Massachusetts rather than a random fluctuation in initial SSI claim rate.

6. Discussion and Conclusion

This paper is among the first to analyze how insurance induces people to substitute between Medicaid and SSI-disabled program. I study the 2006 Massachusetts health insurance reform to evaluate the impact of insurance on the initial SSI claim rate. In 2006, Massachusetts introduced legislation requiring that all state residents have health insurance coverage. I compare changes in the initial SSI claim rate both across potential SSI-disabled applicants in Massachusetts and between Massachusetts and other states to identify the causal effect of the law. The effect of the law on insurance coverage makes the initial SSI claim rate decreases significantly.

A one-percentage point increase in the public health insurance predicts a 0.028 percentage point reduction in initial SSI claim rate.[5] My estimate implies that the law reduced the initial SSI claim rate by 0.098 percent. The result suggests that initial SSI claim rate is quite sensitive to insurance status. Furthermore, I find that the reform could result in reduced expenditure for the current SSI program by encouraging potential disabled applicants not to move onto SSI rolls. The reduction in caseload could reduce current SSI expenditures and means that low skill workers are increasing hours of work. However, the Medicaid-only program might provide another incentive for some disabled adults who were not previously participating in SSI because of the stigma associated with the program. In this scenario, it could increase costs (Yelowitz, 1998). This might already be happening through the Medically Needy (MN) program, which in Massachusetts does not have an income limit for noninstitutionalized people with

[5] From column 1 of Table 4, 0.157/5.62=0.028

disabilities (Kaiser Family Foundation, 2003). Since the MN program has fewer covered services under Medicaid than for categorically needy recipients, it may not provide enough incentive for the disabled not to apply for SSI.

Finally, these results also show on one hand, that Medicaid-disabled expenditure can be saved up to $37.45 million, which is 0.82 percent and suggest inefficiencies in Medicaid-disabled expenditure in Massachusetts. On the other hand, spending $1 on the Medicaid-disabled could save up to between $2.05 and $3.92 in SSI program spending. Under current budget pressures, the Medicaid expansions and subsidies to purchase coverage mandated by the new Patient Protection and Affordable Care Act, the federal government might consider increasing the Medicaid-disabled expenditure to reduce SSI spending.

This project also speaks to the larger issue of the impact of insurance on welfare program participation. While much literature has shown that insurance coverage decreases the participation of welfare program (e.g., AFDC; SSI-aged) generally, this study provides direct evidence that public insurance expansion may also lead potential SSI-disabled applicants to increase their earning level without losing Medicaid and saving the waiting time involved in a SSI application process.

Measuring the causal impact of insurance is notoriously difficult because it requires finding exogenous sources of variation in insurance status. The natural experiment in this paper is a particularly relevant source of credible exogenous variation to study because it represents the same type of insurance expansion program that recently occurred at the federal level with the Patient Protection and Affordable Care Act. By analyzing the impact of the Massachusetts health reform on the initial SSI claim rate, this research contributes to the ongoing debate about the role of health insurance subsidies and individual mandates in public policy.

Appendix

A. Saving on SSI expenditure calculation

Saving on SSI expenditure for considering only first spell = (Reduced initial claim rate)*(Average allowance rate)*(Average SSI payment)*(Mean length of all first spell)*(Massachusetts resident population). Furthermore, Saving on SSI expenditure for considering all spells = (Reduced initial claim rate)*(Average Allowance rate)*(Average SSI payment)*(Mean length of all spells) *(Massachusetts resident population). Rupp and Scott (1995) show that mean length of all first SSI spells is 5.5 years; while multiple spells are accounted for, the projected mean total pre-retirement age SSI disability stay almost doubles to 10.5 years for all awardees. SSI Annual Statistical Report (2008) shows that total SSI payment for the disabled in 2008 is 37,245,543,000 and total recipients for ages 18-64 in 2008 are 4,947,475. Thus, I calculate average SSI payment per awardee is (37,245,543,000/4,947,475) = 7,528. As for the allowance rate of SSI initial claim, it is 45.15 percent after taking average on all seven states.

B. Data source

B.1. Population data ages 18-64

Calendar year	Source
2003	Annual Statistical Report on the Social Security Disability Insurance Program, 2003 pp. 144-145.
2004	Annual Statistical Report on the Social Security Disability Insurance Program, 2004 pp. 139-140.
2005	Annual Statistical Report on the Social Security Disability Insurance Program, 2005 pp. 149-150.
2006	Annual Statistical Report on the Social Security Disability Insurance Program, 2006 pp. 153-154.
2007	Annual Statistical Report on the Social Security Disability Insurance Program, 2007 pp. 155-156.
2008	Annual Statistical Report on the Social Security Disability Insurance Program, 2008 pp. 155-156.

B.2. Population data

U.S. Census Bureau, Population Division. 2011. Table 1. Preliminary Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2010 (NST-PEST2010-01). Available at www.census.gov/popest/**states**/**tables**/**NST**-PE**ST2010**-01.xls

B.3. SSI-disabled caseload data

Social Security Administration (SSA), Office of Retirement and Disability Policy (ORDP), Office of Disability Programs (ODP), "SSA State Agency Monthly Workload Data." Baltimore, Maryland. Available at http://www.socialsecurity.gov/disability/data/SSA-SA-MOWL.xls

B.4. Medicaid data

Annual Statistical Supplement, various years. Available at http://www.ssa.gov/policy/docs/statcomps/supplement/

Massachusetts Medicaid Statistics, various years. Available at http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-State/Massachusetts.html

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U.S. Census Bureau, Population Division. 2011. Table 1. Preliminary annual estimates of the resident population for the United States, regions, states, and Puerto Rico: April 1, 2000 to July 1, 2010 (NST-PEST2010-01)

U.S. Government Accountability Office. 2010. TANF: implications of recent legislative and economic changes for state programs and work participation rates. Report GAO-10-525.

Table 1 Medicaid covered population ages 19 to 64 under MassHealth

Before health reform		After health reform	
Base population	FPL	Expanded populations	FPL
Pregnant women ages 19 and older considered presumptively eligible	0-200%	Pregnant women ages 19 and older considered presumptively eligible	0-300%
Parents or adult caretaker relative living with their children under age 19	0-133%	Parents and caretaker relatives	0-300%
Disabled adults	0-133%	Disabled adults	0-133%
Parents and disabled nonworking adults	0-133%	Non-working disabled adults	Above 133%
		Higher income adults with disabilities working 40 hours a month or more	Above 133%
Long term unemployed individuals	0-100%	Long-term unemployed individuals or members of a couple and a client of Department of Mental Health (DMH) and/or receiving Emergency Aid to the Elderly, Disabled and Children (EAEDC)**	0-100%
		Long-term unemployed individuals or members of a couple, and **neither** a client of DMH or receiving EAEDC**	0-100%
		Families receiving unemployment benefits**	0-400%

Note: Presumptive eligibility is offered to certain children enrolled in MassHealth Standard and Family Assistance as well as pregnant women receiving services through the MassHealth Pre-Natal program. FPL=Federal Poverty Level.
Source: MassHealth Medicaid Section 1115 Demonstration, 2008. **Not otherwise eligible for medical assistance

Before health Reform		After health Reform	
Base population	FPL	Expanded populations	FPL
Individuals living with HIV positive	0-133%	Individuals living with HIV positive**	0-300%
Woman under age 65 with breast or cervical cancer	0-250%	Women eligible under the Breast and Cervical Cancer Treatment Program (BCCTP)	0-250%
		Individuals ages 19 and older with no access to ESI, Medicare, or other subsidized health insurance programs, including the following groups: (1) Low-income adults; (2) Adults working for an employer with 50 or fewer employees who offers no insurance or who contributes < 33% (or < 20% for family coverage) towards insurance costs	(1) 0-300%; (2) 0-300%
		Adults under the age of 65 who work for a qualified small employer and purchase ESI**	0-300%
		19 and 20 years olds	0-300%

Table 2 Summary of Medicaid recipients

	2003	2004	2005	2006	2007	2008
Treatment State						
Massachusetts	1,042,123	1,074,050	1,110,475	1,267,776	1,448,115	1,568,182
Residents	6,455,028	6,452,636	6,453,694	6,466,399	6,499,275	6,543,595
%	16.14%	16.65%	17.21%	19.6%	22.28%	23.97%
Control States						
Connecticut	496,680	500,952	520,660	517,529	518,675	524,210
Residents	3,468,319	3,474,379	3,477,185	3,484,531	3,488,084	3,502,664
%	14.32%	14.42%	14.97%	14.85%	14.87%	14.97%
Rhode Island	201,875	207,621	209,371	212,491	208,429	203,731
Residents	1,072,453	1,075,835	1,069,226	1,064,193	1,059,706	1,058,368
%	18.82%	19.30%	19.58%	19.97%	19.67%	19.25%
New Hampshire	112,044	119,207	120,760	126,458	126,074	131,056
Residents	1,282,146	1,292,566	1,301,050	1,311,184	1,316,496	1,320,981
%	8.74%	9.22%	9.28%	9.64%	9.58%	9.92%
Vermont	154,664	148,921	150,836	149,808	157,240	162,143
Residents	616,700	618,120	618,797	619,916	620,438	620,967
%	25.08%	24.09%	24.38%	24.17%	25.34%	26.11%
New Jersey	949,741	959,843	965,768	1,004,370	1,019,936	1,065,155
Residents	8,585,567	8,610,474	8,619,564	8,619,354	8,630,810	8,657,319
%	11.06%	11.15%	11.20%	11.65%	11.82%	12.30%
Pennsylvania	1,721,707	1,834,651	1,990,466	2,064,061	2,181,821	2,134,331
Residents	12,360,988	12,387,357	12,415,908	12,466,485	12,517,701	12,562,536
%	13.93%	14.81%	16.03%	16.56%	17.43%	16.99%

Sources: U.S. Census Bureau, Population Division. 2011. Table 1. Preliminary Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2010 (NST-PEST2010-01); Medicaid data are from Annual Statistical Supplement, 2003 to 2008, Medicaid: State Data; Massachusetts Medicaid Statistics, 2006 to 2008. The original sources are Medicaid Statistical Information System State Summary Data and Center for Medicare & Medicaid Services.

Table 3 Summary of initial claims of SSI ages 18 to 64

	2003	2004	2005	2006	2007	2008
Treatment State						
Massachusetts	39,645	35,032	35,169	35,630	34,935	35,461
Residents	4,089,322	4,097,973	4,087,881	4,132,347	4,157,960	4,199,836
%	0.97%	0.85%	0.86%	0.86%	0.84%	0.84%
Control States						
Connecticut	14,535	14,106	14,278	15,187	15,258	15,745
Residents	2,177,308	2,191,123	2,201,141	2,216,080	2,209,809	2,211,032
%	0.67%	0.64%	0.65%	0.69%	0.69%	0.71%
Rhode Island	4,285	4,251	4,921	6,126	5,992	6,552
Residents	681,318	686,232	681,060	682,193	677,870	674,602
%	0.63%	0.62%	0.72%	0.90%	0.88%	0.97%
New Hampshire	4,602	4,330	4,516	4,754	4,812	5,568
Residents	827,282	837,834	843,684	854,641	851,900	852,473
%	0.56%	0.52%	0.54%	0.56%	0.56%	0.65%
Vermont	3001	2765	2873	3073	3089	3125
Residents	401529	405,738	408,449	407,553	405,476	405,691
%	0.75%	0.68%	0.70%	0.75%	0.76%	0.77%
New Jersey	33,129	31,579	29,204	31,849	33,114	34,171
Residents	5,382,937	5,416,679	5,426,768	5,507,480	5,487,495	5,484,138
%	0.62%	0.58%	0.54%	0.58%	0.60%	0.62%
Pennsylvania	86,447	82,024	84,783	89,153	87,284	89,054
Residents	7,632,997	7,672,780	7,720,030	7,750,425	7,756,413	7,775,704
%	1.13%	1.07%	1.10%	1.15%	1.13%	1.15%

Notes: Author's calculations based on SSA and CB data.

Source: Caseload data are from SSA State Agency Monthly Workload Data; Population ages 18 to 64 data are from Annual Statistical Report on the Social Security Disability Insurance Program, 2003 to 2008; the original sources are Census Bureau, 2003 to 2008 resident population.

Table 4 DD estimates on initial claims rate of SSI, percentage of Medicaid recipients, and SSI-disabled beneficiaries

Before	After	DD					
		(1) SSA		(2) CMS		(3) CPS	
03-04	07-08	SSI		Medicaid		SSI-disabled	
6 control states		n=28		n=28		n=85,308	
		-0.00157***	(0.0005)	0.0562***	(0.0066)	-0.0075***	(0.002)
4 control states		n=20		n=20		n=52,436	
		-0.00188***	(0.0006)	0.06015***	(0.005)	-0.007***	(0.003)
2 control states		n=12		n=12		n=42,573	
		-0.00094**	(0.0004)	0.04832***	(0.009)	-0.0082***	(0.003)

Notes: 1. Standard errors are in parentheses. 2. Author's calculations are based on SSA, CB data and Annual Statistical Supplement, 2003 to 2008.

*** Significant at the 1 percent level, two-tail test.

** Significant at the 5 percent level, two-tail test.

* Significant at the 10 percent level, two-tail test.

Source: (1) SSA State Agency Monthly Workload Data; (2) Annual Statistical Supplement, 2003 to 2008, Medicaid: State Data. The original sources are Medicaid Statistical Information System State Summary Data and Center for Medicare & Medicaid Services; (3) 2005 to 2009 March Current Population Survey[6]

[6] Since the main matching variable, Household identification number (H_IDNUM) was renamed H_IDNUM1, and H_IDNUM2 beginning at 2004, I only use 2004 as pre-reform period for data matching consistency.

Table 5 Number of TANF families meeting work requirements in recent years

	TANF families			
	Before Deficit Reduction Act		After Deficit Reduction Act	
	FY 2005	FY 2006	FY 2007	FY 2008
USA				
Meet work requirements	295,294	269,679	263,092	243,026
With work requirements	874,798	807,710	870,140	815,877
%	33.80	33.4	30.2	29.8
Treatment State				
Massachusetts				
Meet work requirements	6,624	3,818	4,110	14,326
With work requirements	11,061	23,699	21,616	31,740
%	59.9	16.1	19	45.1
Control States				
Connecticut				
Meet work requirements	3,154	2,446	3,014	2,187
With work requirements	9,262	7,913	10,443	8,667
%	34.1	30.9	28.9	25.2
Rhode Island				
Meet work requirements	1,589	1,438	1,289	845
With work requirements	6,564	5,748	4,708	4,809
%	24.2	25	27.4	17.6

Note: TANF=Temporary Assistance for Needy Families. Numbers are average monthly numbers for families receiving TANF cash assistance. The percentages were calculated by Author.
Source: GAO-10-525 Report. The original source was from Department of Health and Human Services (HHS).

	TANF families			
	Before Deficit Reduction Act		After Deficit Reduction Act	
	FY 2005	FY 2006	FY 2007	FY 2008
Control States				
New Hampshire				
Meet work requirements	839	787	947	780
With work requirements	3,407	3,269	2,292	1,662
%	24.6	24.1	41.3	46.9
Vermont				
Meet work requirements	683	631	628	419
With work requirements	3,047	2,837	2,806	1,947
%	22.4	22.2	22.4	21.5
New Jersey				
Meet work requirements	7,460	7,150	6,766	3,702
With work requirements	25,427	24,440	20,486	19,625
%	29.3	29.3	33	18.9
Pennsylvania				
Meet work requirements	10,003	17,258	13,286	8,897
With work requirements	65,832	62,396	26,388	21,550
%	15.2	27.4	50.3	41.3

Table 6 Summary of cancer patients ages 20 to 64

	2003	2004	2005	2006	2007	2008
Treatment State						
Massachusetts	16,186	16,476	16,736	17,522	17,741	17,913
Residents	4,089,322	4,097,973	4,087,881	4,132,347	4,157,960	4,199,836
%	0.40%	0.40%	0.41%	0.42%	0.43%	0.43%
Control States						
Rhode Island	2,528	2,741	2,661	2,779	2,868	2,831
Residents	681,318	686,232	681,060	682,193	677,870	674,602
%	0.37%	0.40%	0.39%	0.41%	0.42%	0.42%
New Hampshire	3,305	3,329	3,434	3,634	3,519	3,639
Residents	827,282	837,834	843,684	854,641	851,900	852,473
%	0.40%	0.40%	0.41%	0.43%	0.41%	0.43%
New Jersey	20,689	20,966	21,214	22,361	22,832	22,438
Residents	5,382,937	5,416,679	5,426,768	5,507,480	5,487,495	5,484,138
%	0.38%	0.39%	0.39%	0.41%	0.42%	0.41%
Pennsylvania	29,865	30,613	31,001	32,294	33,233	33,567
Residents	7,632,997	7,672,780	7,720,030	7,750,425	7,756,413	7,775,704
%	0.39%	0.40%	0.40%	0.42%	0.43%	0.43%

Source: National Program of Cancer Registries: 1999 - 2008 Incidence, WONDER On-line Database. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2011. Accessed at http://wonder.cdc.gov/cancernpcr-v2008.html on Aug 16, 2011 9:35:24 PM; Population ages 18 to 64 data are from Annual Statistical Report on the Social Security Disability Insurance Program, 2003 to 2008; the original sources are Census Bureau, 2003 to 2008 resident population.

Table 7 Medicaid expansion effect

Before	After	SSI			
03-04	07-08	(1) DD		(2) DDD	
Within Massachusetts		n=8		n=40	
		-0.00098***	(0.0003)	-0.00174	(0.001)

Notes: 1. Standard errors are in parentheses. 2. Author's calculations are based on SSA and USCS data.
*** Significant at the 0.1 percent level, two-tail test.
Source: National Program of Cancer Registries: 1999 - 2008 Incidence, WONDER On-line Database. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2011. Accessed at http://wonder.cdc.gov/cancernpcr-v2008.html on Aug 16, 2011 9:35:24 PM

Table 8 Placebo tests

Dependent Vars.	(1) SSI	(2) Medicaid
Treatment State, (Six Control States)		
(1) Massachusetts, (CT,RI,NH,VT,NJ,PA)	-0.00157***	0.0562***
	(0.0005)	(0.0066)
(2) Connecticut, (MA,RI,NH,VT,NJ,PA)	-0.00023	-0.0158
	(0.0007)	(0.014)
(3) Rhode Island, (CT,MA,NH,VT,NJ,PA)	0.00278***	-0.0176
	(0.0004)	(0.0139)
(4) New Hampshire, (CT,RI,MA,VT,NJ,PA)	0.0000942	-0.0133
	(0.0007)	(0.014)
(5) Vermont, (CT,RI,NH,MA,NJ,PA)	-0.000145	-0.009
	(0.0007)	(0.0143)
(6) New Jersey, (CT,RI,NH,VT,MA,PA)	-0.00058	-0.0111
	(0.0007)	(0.014)
(7) Pennsylvania, (CT,RI,NH,VT,NJ,MA)	-0.00035	0.01082
	(0.0007)	(0.014)
Observations	28	28

Notes: 1. Standard errors are in parentheses. 2. Author's calculations are based on SSA data and Annual Statistical Supplement from 2003 to 2008.

*** Significant at the 0.1 percent level, two-tail test.

** Significant at the 1 percent level, two-tail test.

* Significant at the 5 percent level, two-tail test.

MA=Massachusetts; CT= Connecticut; NH= New Hampshire; NJ= New Jersey; PA= Pennsylvania; RI= Rhode Island; VT= Vermont.