

**MASSACHUSETTS HEALTH CARE REFORM: THE EFFECT
OF CHAPTER 58 ON UNINSURANCE AND ON THE
DETERMINANTS OF UNINSURANCE**

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DEDICATION

This dissertation is dedicated to my wife Victoria. Thank you for giving me the motivation to finish this undertaking. This work is as much a result of your efforts as it is mine.

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by

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In this research I describe the impact of the health care reform legislation enacted in Massachusetts in 2006 (Chapter 58) on uninsurance and the determinates of uninsurance. I use logistic regression to determine whether Chapter 58 significantly reduced the odds of being uninsured. I also examine the hypothesis that uninsurance rates may have dropped because Chapter 58 caused the behavior of survey respondents to change. Chapter 58 made being uninsured illegal which may have led respondents to lie about the coverage status, refuse to participate in a survey or refuse to answer questions about insurance coverage. The use of any of these strategies could lead to uninsurance estimates that are biased downward. Finally, my research evaluates how Chapter 58 altered the relationships between uninsurance and its various determinants.

The analysis shows that Chapter 58 did significantly reduce the probability of being uninsured in Massachusetts via the health insurance exchange. The effect of the individual mandate was insignificant though limitations of the analysis may be partially responsible for this. The analysis also indicated that Chapter 58 significantly altered the relationships of occupation, low income, health status and citizenship with uninsurance. The impact of occupation, low income and health became insignificant in the post implementation model while the importance of being a non-citizen significantly increased.

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CHAPTER ONE: INTRODUCTION

The Problem

In the “Insuring Health” series of reports, the Institute of Medicine (IOM) (2002; 2003) concluded that uninsured adults had poorer health on average than those with any type of coverage and that about 18,000 excess deaths a year could be attributed to the lack of health insurance. The importance of health insurance has grown over the years as improvements in life expectancy have become more associated with medical care in later life rather than improvements in the odds of surviving the first years of life (White and Preston 1996). Despite these facts, a significant and increasing proportion of Americans are not covered by health insurance.

In 2006, the State of Massachusetts enacted legislation known as Chapter 58 (The General Court of the State of Massachusetts 2006). The main purpose of this law was to reduce the number of uninsured by creating more opportunities for individuals to acquire a plan and by requiring individuals 18 years and older to acquire and maintain health insurance coverage. It creates more opportunities for coverage by increasing the Medicaid income eligibility limits for children, increasing the program participation caps on some Medicaid programs, by subsidizing private plan premiums for people making between 100 and 300 percent of the FPG and by creating a health insurance exchange in which people can purchase plans directly from insurance companies at premiums similar to those enjoyed by those participating in large group plans. Chapter 58 also created a new public entity called the Commonwealth Health Insurance Connector or Connector to manage the subsidized premium program and the insurance exchange. The political success of this plan encouraged U.S. lawmakers to enact similar legislation proposed by President Obama in 2010.

The United States legislation, known as the Patient Protection and Affordable Care Act was enacted in March of 2010 and was designed to reduce the number of uninsured in the country. It is to be implemented gradually and will not be fully implemented until 2019, although the primary aspects affecting insurance coverage should be in place by 2014. Like the Massachusetts plan, it is to reduce uninsurance by requiring individuals to maintain health insurance coverage (the individual mandate) and by increasing access to qualifying plans. The individual mandate will be enforced by penalizing those without coverage on their federal income tax returns. The penalty will be phased in over three years starting at 1.0 percent of taxable income in 2014 and going up to the full amount of 2.5 percent in 2016. Exemptions from the mandate will be granted to people experiencing financial hardships, those not covered based on religious objections, American Indians, periods of uninsurance lasting less than three months, undocumented immigrants, incarcerated individuals, and those for whom the premium of the lowest cost plan exceeds 8 percent of their income or who are below the tax filing threshold (The Henry J. Kaiser Family Foundation 2010).

The Patient Protection and Affordable Care Act increases access to health insurance by broadening eligibility limits for Medicaid, offering premium tax credits to those making up to 400 percent of the Federal Poverty Guidelines (FPG), requiring employers with 50 or more employees to offer coverage, and creating health insurance exchanges. Eligibility for Medicaid has been expanded to include all non-Medicare eligible individuals up to age 65 with incomes up to 133 percent of the FPG. People making up to 400 percent of the FPG may receive tax credits to help them purchase health insurance. The amount of the credit varies according to income. Employers with 50 or more employees who do not offer coverage and have at least one employee who receives a premium tax credit will be assessed a penalty of \$2,000 per employee

for each employee beyond the first 30. Those who offer insurance and have at least one employee receiving a premium tax credit will pay the lesser of \$3,000 for each employee receiving a credit or \$2,000 per employee beyond the first 30. Health insurance exchanges increase access to coverage by creating a central market where plans can be compete side-by-side and where individual risks can be pooled to reduce the cost of premiums (The Henry J. Kaiser Family Foundation 2010).

Though the Patient Protection and Affordable Care Act (PPACA) is not identical to Chapter 58, it is similar enough that understanding the effects of Chapter 58 could ease the implementation and improve the effectiveness of PPACA. To this end, my analysis seeks to evaluate whether Chapter 58 significantly reduced uninsurance in Massachusetts and, if so, what determinants of uninsurance were changed to affect the reduction. The following sections will describe aspects of Chapter 58 designed to reduce uninsurance.

It should also be noted that Massachusetts is not an average state in many ways and this may affect its ability to inform us as to how this type reform will work in the United States as a whole. For example, Massachusetts had the third highest per capita income in 2008 at \$51,254 (U.S. Bureau of the Census 2010b). It also has a political and business culture that is more amenable to the idea of using government to solve problems like uninsurance than many other states. No doubt these and other factors contributed to the fact that Massachusetts already had one of the lowest uninsurance rates in the country. These characteristics make Massachusetts an ideal candidate for eliminating uninsurance. If Massachusetts cannot eliminate uninsurance using this approach then there is little hope that other states will be able to.

Medicaid Expansions

The health care financing system in Massachusetts has many different sources from which an individual can obtain health insurance coverage. There are several public programs that manage Medicaid and state Children's Health Insurance Program (sCHIP) funds and there are also the usual group and individual plans in the private market. This allowed the state to improve insurance coverage from many different angles in an attempt to cover as many people as possible while limiting the role of government. Part of the plan was to increase access to health insurance by expanding eligibility and increasing the participation caps for several of Massachusetts' public plans. For example, income eligibility limits for children were increased from 200 percent of the Federal Poverty Guidelines (FPG) to 300 percent for the state's standard Medicaid program, MassHealth Standard (Blue Cross/Blue Shield of Massachusetts Foundation 2006; The General Court of the State of Massachusetts 2006).

Another public plan that was significantly affected by Chapter 58 was MassHealth Essential. MassHealth Essential was for U.S. citizen adults (19 to 64 years old) who were unemployed or underemployed for more than a year, did not qualify for MassHealth Basic and were not eligible for unemployment compensation. Chapter 58 expanded eligibility for this program to include legal immigrants who were 65 or older and disabled and who would qualify for MassHealth Standard except for their immigration status. The caseload cap for MassHealth Essential was also increased from 44,000 to 60,000. The caseload cap for CommonHealth¹ was also increased from 14,000 to 15,600 (Blue Cross/Blue Shield of Massachusetts Foundation 2006; The General Court of the State of Massachusetts 2006).

¹ CommonHealth provides comprehensive benefits similar to MassHealth Standard for disabled children under 19, disabled adults under 65 who work 40 or more hours per month, and for disabled adults 65 and older.

Part of the Massachusetts public system in 2006 included a program that provided coverage to people with HIV who were under 65 and did not qualify for MassHealth Standard or CommonHealth. Chapter 58 codified income eligibility for this program at 200 percent of the FPL and increased the participation cap from 1,050 to 1,300 (Blue Cross/Blue Shield of Massachusetts Foundation 2006). The federal waiver for this program expired in 2009 and it has now been merged with another program called MassHealth Family Assistance.

The Connector

Besides expanding eligibility and increasing caseload caps for these public plans to increase the opportunities for public, Chapter 58 also created a new independent public entity called the Commonwealth Health Insurance Connector, referred to simply as the Connector. The Connector's board is made up of 10 people representing content experts, constituency representatives and public officials. It was tasked with defining various aspects of the reform that were not specified by the legislature and with managing two new programs: Commonwealth Care and Commonwealth Choice. Central to the success of these plans was the creation of a health insurance exchange (McDonough, Rosman, Butt, Tucker, and Howe 2008).

The Exchange

The health insurance exchange serves as a market place where individuals can shop among various health insurance plans offered by several health insurance companies. Besides the advantages of being able to compare plans side by side, the exchange also serves as a risk pool so that the premiums for its individual plans compare favorably with the premiums charged for large group plans. The ability to compare plans 'side by side' also serves to increase competition between insurance companies which should contribute to further reducing premiums and improving the coverage offered. Insurance companies that participate in the exchange must also

make the exchange plans available for purchase by individuals outside the exchange (Gruber 2008).

Commonwealth Care is a program that provides access to the insurance exchange and premium subsidies for adults who are uninsured or who are paying full premiums for employer sponsored or directly purchased coverage and who make less than 300 percent of the FPL. In addition, they cannot be eligible for other public or private plans (e.g., a spouse's employer sponsored plan or MassHealth) and they must not have been offered coverage through their employer or a spouses employer for which the employer pays at least 20 percent of the premium for family plans and 33 percent for individual plans during the last six months (Community Resources Information 2010). Individuals making less than 100 percent of the federal poverty guidelines (FPG) qualify for a subsidy of 100 percent of the premium and are responsible for a small co-pay for prescriptions. Those making between 100 percent and 150 percent of the FPG will qualify for a subsidy of 100 percent if they choose the lowest priced plan in their region and are responsible for co-pays on prescriptions and some other services. Residents making between 150 percent and 200 percent of the FPG are partially subsidized for premiums that vary by health region and plan. People making between 200 and 300 percent of the FPG are also partially subsidized on premiums that vary by income, health region and plan. Those who make between 200 and 250 percent of FPG are more heavily subsidized than those between 250 and 300 percent FPG. Children in families where the adults qualify for Commonwealth Care are covered by MassHealth (Community Resources Information 2010).

Commonwealth Choice is a program designed to make health insurance 'affordable' for people who do not qualify for public or subsidized plans and who do not have access to a plan through an employer. Health insurance plans are able to offer lower cost plans to Commonwealth

Choice because they are dealing with a large group represented by the Connector rather than with individuals who come into their office to purchase individual or family plans. This organization vastly reduces the risk faced by insurance companies from adverse selection and other problems, allowing them to charge lower premiums.

Not having access to an employer plan was emphasized in both Commonwealth Care and Commonwealth Choice because the state was concerned about the effect known as *crowding out*. This occurs when people switch from their private plans to government plans to take advantage of lower cost or better benefits. Massachusetts was concerned that this could overburden the government and hurt the insurance industry's profitability.

Individual Mandate

The individual mandate required all adults to acquire and maintain health insurance coverage starting July 1, 2007. People were required to report on their state tax returns that they were covered by a plan with 'minimum creditable coverage' during the year with no lapse in coverage of more than 63 days (The General Court of the State of Massachusetts 2006). Failure to comply with this mandate in 2007 would result in the loss of the individual exemption on the state tax return. The average amount of this penalty was estimated to be about \$219 for the 2007 tax year (McDonough et al. 2008). For the 2008 tax year, the penalty increased to 50 percent of the cost of the least expensive plan provided by the Connector for each month that the person failed to comply with the mandate (Cooke, Berndt, and McPherson 2007). The full effect of the mandate would probably not be noticed until 2008 when people began to be penalized for 2007 non-compliance. It was hoped that the mandate would increase people's motivation to secure health insurance coverage.

To make the individual mandate viable, the Connector was charged with defining two concepts: *minimum creditable coverage* and *affordability*. Establishing a minimum creditable coverage criteria ensured that people were not purchasing something that was a health insurance plan in name only and establishing an affordability criteria allowed state to exempt people from the mandate due to economic circumstances (Gruber 2008).

Defining ‘minimum creditable coverage’ was one of the first items the Connector had to deal with. It decided to restrict plans that provided only ‘indemnity coverage’ (e.g., just a reimbursement of \$500/day toward hospital costs), set maximum deductibles of \$2,000/individual or \$4,000/family and to have maximum out of pocket limits of \$5,000/individual and \$10,000/family. It also required that three office visits be covered before the deductible goes into effect and that plans had to include prescription drug coverage. The prescription drug coverage standard was not implemented until 2009 to allow employers and insurance companies time to bring their plans into compliance. These levels are much less generous than those typically available in the market, but plans based on these values could be offered at much lower prices (Gruber 2008).

Because Chapter 58 could not ensure that everyone would be covered by or be able to afford a health insurance plan, exemptions to the individual mandate had to be defined. Two valid exemptions were identified in the law. The first exempted people whose “...sincerely held religious beliefs...” (The General Court of the State of Massachusetts 2006) prevented them from participating in health insurance programs. The second exemption allowed for the possibility that despite the state’s efforts, there would be people who did not qualify for public programs and for whom no available insurance plan would be affordable. The Connector was charged with defining affordability which it did by relating premiums to income. Gruber (2008)

reports that “The effect of these exemptions was essentially to mandate coverage for almost all young single persons in the state, while exempting many older individuals and families between 300 percent of the poverty line and median income.” This emphasizes the focus of the mandate on motivating people who have little reason to be covered.

Significance

The Obama administration denied that their legislation was modeled on Chapter 58. This is technically true because it seeks to improve not only health insurance coverage, but the quality of care that Americans receive and to reduce inflation in the health care sector. However, the central features regarding health insurance coverage are similar enough that understanding what happened in Massachusetts may provide insight that will aid in implementing and improving the U.S. legislation. Because Massachusetts had such a small uninsurance problem compared to the United States as a whole, any shortcomings found in Chapter 58 should be magnified considerably when the federal reform is implemented in states with relative large and difficult uninsurance problems like Texas or California.

So far, evaluations of Chapter 58 seem to indicate that it was effective in reducing the number of uninsured in Massachusetts. Data from the Massachusetts Health Insurance Survey (MHIS) indicates that the proportion uninsured in Massachusetts dropped from 6.4 percent in 2006 to 2.7 percent in 2009 (Long and Phadera 2009). Part of this decline can be attributed to methodological changes in the way the survey was conducted between 2007 and 2008, but it unclear how large this effect was. The Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS) indicates that the proportion dropped from 10.4 percent in 2006 to 4.4 percent in 2009 (U.S. Bureau of the Census 2010a). Both of these data sources are cross-sectional and cannot provide the data necessary to statistically test the effect of Chapter 58.

Also, the MHIS asks people what their current coverage status is which should result in the highest estimate of uninsurance. The ASEC, on the other hand, asks respondents if they were without coverage for the entire previous calendar year which should produce the lowest estimate of uninsurance. The ASEC methodology has been criticized extensively because of the recall burden it places on respondents; research has concluded that this estimate is closer to a point in time estimate than to the period estimate that it claims to be (Call and State Health Access Data Assistance Center 2003; Lewis, Ellwood, and Czajka 1998). Despite this, it must be acknowledged that some portion of respondents are capable of understanding and answering the question correctly meaning that while this estimate may approach a point in time estimate it should always be lower. These facts indicate that there may be a problem with the MHIS insurance coverage measure since it is lower than the ASEC estimate and the reliability and validity of the ASEC measure has been thoroughly evaluated and established.

Another possible explanation for declining uninsurance rates in Massachusetts that has received little consideration is the possibility that changes in survey respondent behavior may be responsible for at least some of the changes. In fact, Yelowitz and Cannon (2010) argue that because being uninsured became illegal as of January 1, 2008, the sensitivity of questions about insurance coverage on surveys may have increased dramatically. That is, uninsured people may have become motivated to conceal their status from surveys where they would not have been in the past. Respondents could do this in three ways. One would be to refuse to participate in a survey. Another strategy would be to lie about their status and indicate that they were covered. A third method would be to participate in the survey, but skip the questions on insurance status. Yelowitz and Cannon argue that if a significant proportion of a survey sample employed these strategies, the estimates of uninsurance would be significantly biased downward. While the first

two strategies cannot be observed with the data available, the third can be through imputation flags on the health insurance status questions. Using ASEC data from 2005 and 2008 they generated a differences in differences estimate of the percentage of health insurance status questions that were imputed. They found that imputation rates were significantly higher in 2008 compared to 2005 and that the effect was greatest among those making between 150 and 300 percent of the FPG (i.e., those least capable of purchasing their own coverage and who benefitted relatively little from Chapter 58).

All of these evaluations have considered the effect of Chapter 58 on the percentage uninsured in Massachusetts. While this is informative and helpful, it also fails to enlighten us about how Chapter 58 has achieved its reduction in uninsurance. My analysis seeks to address that short coming by analyzing the effectiveness of Chapter 58 at the individual level and by identifying the determinants of uninsurance that it effected to accomplish this reduction. To do this, I will use data from the 2004 and 2008 panels of the Survey of Income and Program Participation (SIPP). This survey is longitudinal and follows participants over a period of four years. The longitudinal nature of the SIPP will allow me to isolate the effects of Chapter 58 and to observe changes in the effects of the determinants of uninsurance from the period prior to implementation of Chapter 58 to the period after implementation.

CHAPTER 2: REVIEW OF LITERATURE

Uninsurance

America's health insurance system is not the product of careful thought and planning. It is an accidental system centered around employer sponsored plans. Employer sponsored plans can only cover people who work for an employer that offers coverage or have a spouse or parent who works and is offered a plan. Another issue that reduces access to employer plans is that not all employers offer plans. Public plans, like Medicaid and Medicare fill in some of the gaps left by employer plans. Medicare covers virtually all of the people over 65 and Medicaid covers a significant portion of low income children and pregnant women. Employer sponsored plans became central to the U.S. health insurance system not because it was a good way to do things but because it was an easy way for employers to get around wage control laws enacted during World War II² (Gabel 1999; Hoffman 2001). Before the war only 1.4 million persons were covered by a plan from Blue Cross/Blue Shield³ while about 60 million were so covered by 1951. The ASEC reported that almost 170 million were covered by an employer plan in 2009 (U.S. Bureau of the Census 2010a). The 170 million are the vast majority of people covered by a private plan. About 27 million Americans reported being covered by plans purchased directly

² The U.S. government set limits on how wages could be used to entice employees away from other companies during the tight labor market resulting from the war. However, they were allowed to use "fringe benefits" like health insurance to lure in valuable employees. Employers also used health insurance as a way to leverage power back from the unions during this time.

³ At this time, Blue Cross/Blue Shield was the only company that had developed a large health insurance program. Other companies were still waiting to see how the experiment turned out (Hoffman, Beatrix. 2001. *The Wages of Sickness: The Politics of Health Insurance in Progressive America*. Chapel Hill, NC: The University of North Carolina Press, Law, Sylvia A. 1974. *Blue Cross: What Went Wrong?* New Haven, CT: Yale University Press.) so the Blue Cross/Blue Shield numbers represent a fairly good estimate of what happened in America overall during this time period.

from an insurance company in 2009⁴ (U.S. Bureau of the Census 2010a). These plans are prohibitively expensive for most people and very difficult to get for those with pre-existing conditions.⁵

Despite the fact that the majority of Americans were covered by an employer sponsored plan by the 1960s, two vulnerable groups were disproportionately left out: those with low incomes and the elderly. Medicaid and Medicare were enacted in 1965 to help poor children and the elderly gain access to the medical care that they needed. Virtually all U.S. residents qualify for Medicare coverage at age 65 making this the most unlikely group to be uninsured. Eligibility for Medicaid varies by state, but typically it is limited to low income children, pregnant women and the disabled.

To be covered by a plan, a person must have access to one, the means to acquire it and the motivation to do so. Uninsurance is the result of the exclusive nature of America's private and public plans and because participation in a plan has not been guaranteed or required. Public plans exclude people who do not meet eligibility criteria. To participate in Medicaid one must be poor enough and/or have a disability. To participate in Medicare one must be old enough or have a qualifying disability. Participation in an employer sponsored plan requires that one or one's spouse be offered a plan by an employer and that one can afford one's share of the premium. Directly purchased plans exclude those who cannot afford them and those with pre-existing conditions. Some people with pre-existing conditions are allowed to participate in directly purchased plans, but medical costs for the condition are excluded from coverage. People who are

⁴ Some people may be covered by more than one type of plan during a given year.

⁵ Pre-existing conditions refer to physical or mental health problems that intense or protracted medical or psychological treatment that developed prior to applying for or enrolling in a health plan.

excluded from all plans or who choose not to participate in an available plan make up ‘the uninsured.’

Prior Evaluations of Chapter 58

Sharon Long (2008) reported that uninsurance dropped from 13.0 percent in the fall of 2006 to 7.1 percent in the fall of 2007. This was based on data from the Massachusetts Health Reform Survey. She calculated a probit regression model for the 2006 sample which she then applied to the 2007 sample to calculate the percentage uninsured in 2006. This served to control for changes in the population and state characteristics that might also have caused the change in uninsurance. The difference between this adjusted value and 2007 value was assumed to be due to the effects of Chapter 58. To support this assumption, she reports that seven percent of adults reported that the individual mandate influenced their decision to acquire insurance coverage. She also reports that the percentage of adults reporting being uninsured at any time during the year dropped by four percent while the share of low income adults reporting this dropped by 10 percent. This method is an indirect way of evaluating the effectiveness of Chapter 58 and only addresses the level of aggregate change.

Long, Stockley and Yemane (2009) also found that Chapter 58 significantly reduced uninsurance in Massachusetts. They used Current Population Survey (CPS) data from 2004, 2005, 2006 and 2007. They used a differences in differences (DID) model and a pre-post estimation of uninsurance similar to that used by Long in the report described above. The DID model used information from other states to control for underlying trends in health insurance. Both methods indicated that Chapter 58 reduced uninsurance among adults by about 6.5 percent. They reported that uninsurance among low income adults dropped from an average of 25 percent across 2004, 2005 and 2006 to 7.7 percent in 7.7, accounting for much of the observed change in

the total level. Unlike the pre-post method employed here, the DID model is a direct measure of Chapter 58's effect on uninsurance at the state level.

Long and Stockley (2010) updated Long's 2008 report indicating that 4.5 percent of non-elderly adults were uninsured in 2009. They reported that the recession experienced through 2008 and 2009 had not significantly increased the level of uninsurance in Massachusetts. This was despite the fact that unemployment increased from 4.4 percent in December of 2006 to 9.1 percent in December of 2009. However, employer sponsored coverage dropped 2.1 percent and other types of coverage increased 1.4 percent. The same pre-post method was employed to estimate the difference between the percent uninsured in 2006 and the percent uninsured in 2009.

Yelowitz and Cannon (2010) offer the only other quantitative evaluation of Chapter 58 that I could find. They employ a DID model similar to the one used by Long, Stockley and Yemane (2009) using CPS data from 2003 through 2008. Their model indicates that Chapter 58 reduced uninsurance among adults by about 6.7 percent. Their model included only people whose insurance status was not imputed and they estimated that this result produced about 297,000 newly insured people. They argue that this is an optimistic number because some respondents may have lied about their status to avoid admitting to breaking the law. They conclude that the Massachusetts' official estimate of newly insured, 432,000 may be inflated by as much as 45 percent.

Chapter 58 Effects

Two aspects of Chapter 58 should produce effects that can be isolated using a longitudinal data set like the Survey of Income and Program Participation (SIPP). One is the Health Insurance Connector which began operating in October of 2006. This is the most significant factor in Chapter 58 regarding increased access to health insurance coverage for the

working age population. It provided a source of health insurance to people who previously did not have access to a plan. These plans were also much less expensive than those traditionally offered in the individual market. The effect of the individual mandate can also be isolated in longitudinal data because it did not take effect until more than a year after the Connector began operating.

H₁ Introduction of the Health Insurance Connector will significantly reduce the probability of being uninsured for working age adults.

H₂ The Individual Mandate will significantly reduce the probability of being uninsured for working age adults.

Change in Respondent Behavior

Yellowitz and Cannon (2010) postulated that the behavior of survey respondents in regards to health insurance status might change as a result of the individual mandate. The mandate makes being uninsured illegal, so asking respondents about their insurance status become similar to asking them if they are breaking the law. To avoid revealing their actual status respondents can either lie about the insurance status, refuse to participate in the survey or refuse to answer the health insurance questions. While the first two strategies cannot be evaluated with current data, Yelowitz and Cannon explored the third strategy using imputation flags in CPS data and found that rates of imputation on health insurance coverage questions for Massachusetts residents increased significantly between the period prior to the implementation of Chapter 58 and the period after. Imputation of status is only a problem if the process is biased. Davern et.al. (2004) found that imputation of insurance status in the CPS was biased and tends to over state uninsurance in states with low rates of uninsurance and that this distortion may be greatest in Massachusetts.

H₃ Imputation of health insurance status will significantly increase the probability of being uninsured.

H₄ The effect of imputation on insurance status will be larger in the period following implementation of Chapter 58 than in the period prior.

Employment Status

Employment related variables should be among the strongest predictors of health insurance coverage because such a large proportion of Massachusetts residents are covered by employer plans. Employment status has a strong effect on the probability of being insured. The Institute of Medicine (2001) reported that members of families that had a full-time worker were twice as likely to have health coverage as members of families without such a worker (including the full-time self-employed). One reason for this is that employers are far less likely to offer coverage to part-time workers and are less likely to contribute toward the premium when they do. Being unemployed limits access to employer plans and typically means that income will be reduced, limiting the ability to purchase plans from the private market. Of course, being unemployed may also make one more likely to be eligible to participate in a Medicaid program. For example, Massachusetts has a program, called MassHealth Essential, setup for people who have been unemployed for a year or more and have incomes less than 100 percent of the Federal Poverty Guidelines (FPG). Being self-employed also decreases the likelihood of being insured (Hoffman, Rowland, and Carbaugh 2004; Institute of Medicine 2001). This is because they tend to work in small firms (less than ten people) which means that premiums will be much higher (Wellington 2001) and because the self employed may be less risk averse.

H₅ Being employed full-time will significantly reduce the probability of being uninsured.

H₆ The effect of being employed full-time will be reduced in the period following the implementation of Chapter 58 compared to the period before.

H₇ Being self-employed full-time will significantly increase the probability of being uninsured.

H₈ The effect of being self-employed full-time will be reduced in the period following the implementation of Chapter 58 compared to the prior period.

H₉ Being unemployed will significantly increase the probability of being uninsured.

H₁₀ The effect of being uninsured will be reduced in the period following the implementation of Chapter 58 compared the period before.

H₁₁ Being in some other employment status will not affect the probability of being uninsured.

H₁₂ The effect of being in some other employment status will be insignificant both before and after implementation of Chapter 58.

Occupation

The occupation one works in also influences whether one has insurance. Timmerman (2005) reported that railway workers, law enforcement officers, pilots and engineers were among the occupations most likely to offer health insurance while waiter/waitress, entertainers, masons, fishers and barbers were among the occupations least likely to offer insurance. Hoffman Rowland and Carbaugh (2004) reported that less than 10 percent of workers who are managers or professionals lacked health coverage in 2003 while about 23 percent of workers in other occupation went without coverage. The Texas State Department of Insurance (2005) reported that the occupational mix of workers in Texas contributed to its high rate of uninsurance. In general people working in, service, sales, construction and farming/fishing and similar occupations are far less likely to be offered health insurance than those in public service, engineering and manufacturing occupations.

H₁₃ Working in a high risk occupation (in the sense of being uninsured) will increase the probability of being uninsured.

H₁₄ The effect of working in a high risk occupation will be reduced in the period following implementation of Chapter 58 compared to the prior period.

Employer Size

Structural aspects of one's employer also play a role. There is general consensus in the literature that employer size strongly influences whether they will offer insurance benefits or not (Gabel 1999; Hoffman, Rowland, and Carbaugh 2004; Institute of Medicine 2001; Sutton-Bell and Fields 1991). Premiums are higher for small businesses (less than 25 employees) because their risk pools are small and they have weak purchasing power. This makes small firms less likely to offer their employees health plans and makes it more difficult for employees to take them up when they do.

H₁₅ Working in a small firm will increase the probability of being uninsured.

H₁₆ The effect of working in a small firm will be reduced after implementation of Chapter 58 compared to the period prior to implementation.

Income

Income is another factor influencing the likelihood of being covered by a health plan that enjoys broad consensus in the literature. Abdel-Ghany and Wang (2001) found that families with incomes under the poverty level were significantly more likely to have uninsured members than families with higher incomes. The Henry J. Kaiser Family Foundation (2006) concluded that the poor and near-poor had the highest risk of uninsurance because of the high cost of health insurance. Income strongly affects the ability of people to purchase individual plans when a public or group plan is not available to them. Hoffman, Rowland, and Carbaugh (2004) found that while people from low income families make up only about one third of the non-elderly population they make up almost two thirds of the uninsured population. Income also influences whether one 'takes up' an offer of insurance from an employer (Dushi and Honig 2003; Monheit and Vistnes 2008). People with relatively low incomes may be unable to take up an employer's

offer and even people with moderate incomes may be hard pressed to afford the premiums that accompany privately purchased plans.

Massachusetts residents in general have very high incomes compared to the residents of most other states. Massachusetts was ranked third in per capita income in 2008 with a value of \$51,254 while it ranked 40th in the percentage of people living in poverty (10 percent). In contrast, Mississippi ranked 50th in per capita income during 2008 at \$30,399 and first in the percentage of people living in poverty (21.2 percent) (U.S. Bureau of the Census 2010b). The per capita income for the United States was \$40,208 and 13.2 percent of its population lived in poverty during 2008. The relatively high income that Massachusetts residents enjoy may be a major reason that uninsurance was already low prior to Chapter 58. Therefore, efforts to reduce uninsurance among low income residents may not be as effective in Massachusetts at reducing the overall level of uninsurance as they would be in a state like Mississippi.

H₁₇ Making 150 percent of the Federal Poverty Guidelines (FPG) or less will increase the probability of being uninsured.

H₁₈ The effect of making 150 percent or less of the FPG will be reduced in the period following implementation of Chapter 58 compared to the prior period.

H₁₉ Making more than 150 percent to 300 percent of FPG will increase the probability of being uninsured.

H₂₀ The effect of making more than 150 percent to 300 percent of FPG will be reduced in the period following implementation of Chapter 58 compared to the prior period.

H₂₁ Making more than 300 percent to less than 500 percent of FPG will not affect the probability of being uninsured.

H₂₂ The effect of making more than 300 percent to less than 500 percent will not be different in the period following implementation of Chapter 58.

H₂₃ Making 500 percent of FPG or more will decrease the probability of being uninsured.

H₂₄ The effect of making 500 percent of FPG or more will be reduced in the period following implementation of Chapter 58.

Education

Education also plays a role in insurance coverage (Gabel 1999; Institute of Medicine 2001). Much of the felt effect may be indirectly through factors that limit the opportunity to acquire coverage like the occupations that one qualifies for and the level of income that one can achieve. But, it may also have a direct effect on one's motivation to obtain coverage (Institute of Medicine 2002). Higher levels of education may also be beneficial when seeking public plan coverage. The process of applying for Medicaid and other public programs can be complex and confusing. Experience developed in education settings can help with these issues.

H₂₅ Having less than a high school diploma will increase the probability of being uninsured.

H₂₆ The effect of having less than a high school diploma on the probability of being uninsured will be reduced in the period following implementation of Chapter 58.

H₂₇ Having a high school diploma will increase the probability of being uninsured.

H₂₈ The effect of having a high school diploma on the probability of being uninsured will be reduced in the period following implementation of Chapter 58.

H₂₉ Having some college or an Associate's Degree will not affect the probability of being uninsured.

H₃₀ The effect of having some college or an Associate's Degree will be insignificant in the period prior to and the period following implementation of Chapter 58.

H₃₁ Having a Bachelor's Degree or higher will reduce the probability of being uninsured.

H₃₂ The effect of having a Bachelor's Degree or higher will be reduced by the implementation of Chapter 58.

Family Structure

People living with a spouse and/or children may be more able or more motivated to acquire insurance coverage than a single/childless person. The Institute of Medicine (2001) explains that this may stem from the fact that married people may have access to an employer plan through their spouse while single people have no such option. Another possibility raised by the IOM is that premiums for family plans have increased slower than individual plans, making it easier to continue purchasing them. Abdel-Ghany and Wang (2001) found that families with children were more likely to have all members covered by health insurance than families without children. The presence of a spouse and/or children may also make one more risk averse, increasing the likelihood of taking up an employer offer or of seeking out a privately purchased plan.

H₃₃ Being married will reduce the probability of being uninsured.

H₃₄ The effect of being married will be unchanged by implementation of Chapter 58.

H₃₅ Living with one's children under age 18 will reduce the probability of being uninsured.

H₃₆ The effect of living with one's children under age 18 will be unchanged by implementation of Chapter 58.

Health Status

Health status has an ambiguous effect on the probability of being insured. On one hand, if one qualifies as disabled, the probability of being eligible for a public program increase. People with health problems may also be more motivated to acquire insurance than those without health problems (Darr 2003). On the other hand, many people are not sick enough to qualify for those programs, but their health is poor enough to affect their ability to work and/or reduce their income. Pre-existing conditions can make people ineligible to participate in private plans. Pre-

existing conditions may also be excluded from coverage which makes no sense because the pre-existing condition is precisely the reason they need coverage at all!

H₃₇ Having poor health will increase the probability of being uninsured.

H₃₈ The effect of having poor health on uninsurance will be unaffected by the implementation of Chapter 58.

Demographic Variables

Unfortunately, demographic characteristics also play a role in determining if one is covered by health insurance or not. Disparities in coverage based on age, sex, citizenship and race/ethnicity have been noted in all major reports on the subject (Families USA 2004; Institute of Medicine 2001; Kaiser Commission on Medicaid and the Uninsured 2006; Task Force on Access to Health Care in Texas 2006). For example, DeNavas-Walt, Proctor and Smith (2010) found that in 2009, about 30 percent of those aged 18 to 34 years were uninsured compared to only about 10 percent of children and less than 2 percent of the elderly. They also reported that 32.4 percent of Hispanics and 21.0 percent of Blacks were uninsured in 2009 while only 12.0 percent of Non-Hispanic Whites were. This report also indicated that the foreign-born were far more likely to be uninsured. Over 34 percent of the foreign-born were uninsured compared to 14.1 percent of the native-born. Further breakdown shows that 46 percent of the foreign-born who were non-citizens were uninsured while only 19 percent of foreign-born citizens were. The Institute of Medicine (2001) reported that males were more likely to be uninsured than females, probably because pregnant females have better access to public programs. These disparities are consistent across reports and often remain significant in multivariate analyses despite controlling for other variables associated with being uninsured.

H₃₉ Being 18 to 24 years old will increase the probability of being uninsured.

- H₄₀ The effect of being 18 to 24 years old on the probability of being uninsured will be reduced in the period following implementation of Chapter 58.
- H₄₁ Being 25 to 39 years old will increase the probability of being uninsured.
- H₄₂ The effect of being 25 to 39 years old on the probability of being uninsured will be reduced in the period following implementation of Chapter 58.
- H₄₃ Being 40 to 54 years old will not affect the probability of being uninsured.
- H₄₄ The effect of being 40 to 54 years old will be insignificant in both the pre and post implementation periods.
- H₄₅ Being 55 to 64 years old will reduce the probability of being uninsured.
- H₄₆ The effect of being 55 to 64 years old on the probability of being uninsured will be consistent across the pre and post implementation periods.
- H₄₇ Being male will increase the probability of being uninsured.
- H₄₈ The effect of being male on the probability of being uninsured will be reduced in the post implementation period compared to the prior period.
- H₄₉ Being a Non-Hispanic White will reduce the probability of being uninsured.
- H₅₀ The effect of being a Non-Hispanic White will be reduced in the post implementation period compared to the prior period.
- H₅₁ Being Hispanic will increase the probability of being uninsured.
- H₅₂ The effect of being Hispanic will be reduced in the post implementation period compared to the prior period.
- H₅₃ Being in some other race/ethnicity category will increase the probability of being uninsured.
- H₅₄ The effect of being in some other race/ethnicity category will be reduced in the period after implementation of Chapter 58 compared to the prior period.
- H₅₅ Being a non-citizen will increase the probability of being uninsured.
- H₅₆ The effect of being a non-citizen on the probability of being uninsured will be increased in the period following implementation of Chapter 58 compared to the prior period.

CHAPTER III: DATA AND METHODS

Method of Analysis

My study seeks to validate the findings of uninsurance reductions in Massachusetts, determine if Chapter 58 significantly contributed to observed changes, evaluate how Chapter 58 affected the relationships between uninsurance and its explanatory variables and determine if changes in respondent behavior significantly contributed to the changes. It will focus on working age adults (18 to 64 year olds) because virtually everyone 65 and over is covered by Medicare and because the problem of uninsurance among children is quite different conceptually. I will use longitudinal data from the Survey of Income and Program Participation (SIPP) in logistic regressions to evaluate how Chapter 58 affected the probability of being uninsured in Massachusetts. To my knowledge, SIPP data have not yet been used to analyze the impact of Chapter 58 and its longitudinal nature should offer unique insights into the forces influencing insurance coverage. Drawing the same conclusions using different data and methodologies is important to establishing evidence supporting an argument, in this case, the idea that Chapter 58 was effective at reducing uninsurance. If the alternative data and methods produce contrary results reconsideration of the policy may be indicated.

I will have three logistic regression models in my analysis. The first, Model 1, will use the 2004 panel and the first five waves of data from the 2008 panel of the SIPP to cover the time period before implementation of Chapter 58 to a period after it was fully implemented. It will model the probability of being uninsured on various explanatory variables, including; two variables representing the effects of Chapter 58, a variable indicating whether health insurance status was imputed or not, employment status, occupation, employer size, income, education level, family structure, health status, age, sex, race/ethnicity and citizenship. By using data that

covers both pre and post implementation periods, this regression will allow me to directly assess the impact of the Connector and the individual mandate on the probability of being uninsured while controlling for other explanatory variables. Statistically significant negative regression coefficients on these variables would lend support to the idea that Chapter 58 significantly reduced the probability of being uninsured in Massachusetts.

The regression coefficients from the second and third regressions, Models 2 and 3 respectively, will be compared to determine how Chapter 58 influenced the relationship of uninsurance with its determinants. These models will not include the Chapter 58 variables. Significant change will be identified by comparing the 95 percent confidence intervals of the coefficients from each model. The difference between the Model 2 and Model 3 coefficients will be considered significant if the confidence intervals do not overlap. Data for Model 2 will be months 4 through 15 of the 2004 SIPP panel. Data for Model 3 will be months 4 through 15 of the 2008 panel. Using data from the same months of each panel should control for sample degradation as both samples will be the same 'age' at the times being analyzed. Comparing the results of identical regressions on data from before implementation and after implementation creates a sort of pre-test/post-test situation in which the effects of Chapter 58 on the factors related to uninsurance can be evaluated. For example, if Yelowitz and Cannon are correct, then imputed health insurance status should have a significantly stronger impact after implementation than prior to implementation. One of Chapter 58's goals was to make health insurance plans more accessible to those with lower incomes. Therefore, the effect of income on the probability of being uninsured should be reduced in 2008 compared to 2004, indicating that Chapter 58 was effective in regards to income.

Data

I intend to analyze the impact of Chapter 58 and other identified variables on the probability of being insured using data from the Survey of Income and Program Participation (SIPP). The SIPP is a longitudinal study that collects data on the U.S. resident population, excluding those living in institutions and military barracks. It collects core data that included information on income, government transfer program participation, employment and health insurance coverage. The SIPP was redesigned in 1996 so that it follows the sampled households for four years. The sample is divided into four rotation groups that are interviewed every four months to collect data on the previous four months. Data from each round of interviews are combined across the rotation groups into waves. For example, wave 1 of the 2004 sample consists of data collected about the previous four months from rotation group 1 in January, group 2 in February, group 3 in March and group 4 in April of 2004. Rotation group 1 was again interviewed in May of 2004 and the process was replicated through August to create wave 2. The 2004 panel consisted of 12 waves altogether. Because of budget problems, the 2004 survey was almost canceled in 2006. Instead of canceling it, however, congress agreed to continue the survey with half the sample (U.S. Bureau of the Census 2009).

The SIPP sample is selected using a complex 2 stage design. In the first stage, counties and independent cities are grouped into Primary Sampling Units (PSUs). PSUs are randomly selected and addresses that are not institutions or military barracks within the PSUs are grouped into clusters. Clusters are randomly selected and all eligible addresses within a selected cluster are included in the survey sample. The unit of interest to the SIPP is the individual, therefore, SIPP makes every effort to follow respondents identified in the first round throughout the life of the survey. It also adds respondents to the sample when they move into a sample address. Another characteristic of the SIPP sample is that it oversamples for low income groups. This

dramatically impacted the representation of Hispanics and Blacks in the SIPP (U.S. Bureau of the Census 2009). This complex sampling process effects the calculation of standard errors and it will be taken into account in the analysis that I perform.

A primary advantage that SIPP has over other sources of data on health insurance coverage is that it supplies longitudinal data in a person/month format rather than an annual cross section. This greatly improves my ability to capture variation in the explanatory variables that lead to changes in health insurance status and allows for the creation of dummy variables representing the effects of Chapter 58. Cross sectional data makes it difficult to evaluate the effects of Chapter 58 directly so the indirect, differences in differences approach has been the primary method employed to date. One weakness of this data set is that it does not contain adequate measures of respondents attitude toward and motivation to obtain health insurance. It only asks attitudinal question of those whom it finds to be uninsured in a given month. This makes them unsuitable for inclusion in my analysis. The SIPP data would be improved if attitudinal questions regarding health insurance were asked of all respondents. Another weakness of SIPP is sample attrition. As time goes by, people drop out of the sample for various reasons. This leads to standard errors that increase as the sample ages.

Adjustments must be made to account for autocorrelation resulting from using multiple observations of the same person. Luckily, the SAS procedure 'SURVEYLOGISTIC' has the ability to deal with this and with the complex sample design of SIPP. Bias in the coefficients and the standard errors should be minimized using the appropriate cluster and strata variables (Allison 2010; SAS Institute Inc. 2004).

Measurement

Table 1 displays the variables constructed for this analysis, the SIPP variables used to construct them and the logic used to construct the model variables from the SIPP variables. The first column contains the name of the constructed variable in italics and the name/s of the SIPP variable/s used to create it. The second column lists the logic used to create the model variable from the SIPP variables in italics and the definition of the SIPP variable/s. The third column displays the values of the model variables in italics and the values of the SIPP variable/s.

Table 1: Definitions of Variables Used in the Analysis and Descriptions of the SIPP Variables Used

<i>Analysis Variables</i>	<i>Definition of variable used in analysis</i>	<i>Values</i>
SIPP Variables	Description of variables from the SIPP data	
<i>Uninsured</i>	<i>if ECDMTH, ECRMTH, and EHIMTH = NO then</i>	<i>uninsured = 1</i>
ECDMTH	Was [respondent] covered by Medicaid in this month?	yes = 1
ECRMTH	Was [respondent] covered by Medicare in this month?	yes = 1
EHIMTH	Was [respondent] covered by a health insurance plan other than Medicaid or Medicare in this month?	yes = 1
<i>Change in respondent behavior (insurance status imputed)</i>	<i>If ACDMTH, ACRMTH, or AHIMTH = 0 then</i>	<i>imputed = 0</i>
	<i>else</i>	<i>imputed = 1</i>
ACDMTH	Allocation flag for ECDMTH	not imputed = 0
ACRMTH	Allocation flag for ECRMTH	not imputed = 0
AHIMTH	Allocation flag for EHIMTH	not imputed = 0
<i>Employment Status</i>	<i>if EJBHRS1 ≥ 35 then (full-time job)</i>	<i>empstat = 1</i>
	<i>else if EHRBS1 ≥ 35 then (self-employed full-time)</i>	<i>empstat = 2</i>
	<i>else if RMESR in (6,7,8) then (unemployed)</i>	<i>empstat = 3</i>
	<i>else (residual)</i>	<i>empstat = 4</i>
EJBHRS1	How many hours per week did [respondent] usually work at all activities at this	1 to 99 hrs/week
EHRBS1	How many hours per week did [respondent] usually work at all activities at this business?	1 to 99 hrs/week
RMESR	Employment status recode for month.	
<i>Occupation</i>	<i>Create percentage distribution of uninsured by (TJBOCC1 and TBSOCC1)</i>	
	<i>High risk' occupation = top 35 percent of distribution</i>	<i>high risk occ = 1</i>
TJBOCC1	Standard Occupational Code for 1st job	
TBSOCC1	Standard Occupational Code for 1st business	
<i>Employer/Firm Size</i>	<i>First, I have to decide if I need to use the hours from a job or business:</i>	
	<i>if EJBHRS1 > EHRBS1 then use TEMPALL1 else use TEMPB1</i>	
	<i>if TEMPALL1 or TEMPB1 = 1 then</i>	<i>small business = 1</i>
TEMPALL1	About how many persons were employed by [respondent's] employer at all	
TEMPB1	What was the maximum number of employees, including [respondent], working for this business at any one time? < 25 = 1, 25 to 99 = 2, 100+ = 3	

(continued)

Table 1: Definitions of Variables Used in the Analysis and Descriptions of the SIPP Variables Used (continued)

<i>Analysis Variables</i>	<i>Definition of variable used in analysis</i>	<i>Values</i>
SIPP Variables	Description of variables from the SIPP data	
<i>Income</i>	<i>If</i> $TFTOTINC/RFPOV*100 \leq 150$ <i>then</i> <i>else if</i> $TFTOTINC/RFPOV*100 > 150$ <i>and</i> ≤ 300 <i>then</i> <i>else if</i> $TFTOTINC/RFPOV*100 > 300$ <i>and</i> < 500 <i>then</i> <i>else</i>	<i>income</i> = 1 <i>income</i> = 2 <i>income</i> = 3 <i>income</i> = 4
TFTOTINC	Total family income for this month	in dollars
RFPOV	Poverty Threshold for this family in this month	in dollars
<i>Education</i>	<i>if</i> $EEDUCATE < 39$ <i>then</i> (less than high school diploma) <i>else if</i> $EEDUCATE = 39$ <i>then</i> (high school graduate) <i>else if</i> $EEDUCATE > 39$ <i>and</i> < 44 <i>then</i> (some college, vo-tech certificate or Associate's Degree) <i>else</i> (Bachelor's Degree or higher)	<i>educate</i> = 1 <i>educate</i> = 2 <i>educate</i> = 3 <i>educate</i> = 4
EEDUCATE	Highest degree received or grade completed	
<i>Marital Status</i>	<i>if</i> EMS <i>in</i> (1,2) <i>then</i>	<i>married</i> = 1
EMS	marital status	
<i>Living with One's Children</i>	<i>if</i> $RFOKLT18 > 0$ <i>then</i>	<i>kids</i> = 1
RFOKLT18	Number of own children under 18 in family.	0 to 30
<i>Health Status</i>	<i>if</i> $EDISABL$ <i>or</i> $EDISPREV = 1$ <i>then</i>	<i>health problem</i> = 1
EDISABL	Does [respondent] have a physical, mental or other health condition that limits	yes = 1
EDISPREV	Does [respondent's] health or condition prevent he/she from working at a job or business?	yes = 1
<i>Age</i>	<i>if</i> $TAGE \geq 18$ <i>and</i> $TAGE < 25$ <i>then</i> <i>else if</i> $TAGE \geq 25$ <i>and</i> $TAGE < 40$ <i>then</i> <i>else if</i> $TAGE \geq 40$ <i>and</i> $TAGE < 50$ <i>then</i> <i>else if</i> $TAGE \geq 50$ <i>and</i> $TAGE < 65$ <i>then</i>	<i>age</i> = 1 <i>age</i> = 2 <i>age</i> = 3 <i>age</i> = 4
TAGE	Age as of last birthday	0 to 88
<i>Sex</i>	<i>if</i> $ESEX = 1$ <i>then</i>	<i>male</i> = 1
ESEX	Sex of this person	
<i>Race/Ethnicity</i>	<i>if</i> $ERACE = \text{white alone (1)}$ <i>and</i> $EORIGIN = \text{non-Hispanic (2)}$ <i>then</i> <i>else if</i> $EORIGIN = \text{Hispanic (1)}$ <i>then</i> <i>else</i>	<i>raceth</i> = 1 <i>raceth</i> = 2 <i>raceth</i> = 3
ERACE	What race(s) does [respondent] consider herself/himself to be?	White alone = 1 Black alone = 2 Asian alone = 3 residual = 4
EORIGIN	Is [respondent] Spanish, Hispanic or Latino?	yes = 1
<i>Citizenship</i>	<i>if</i> $ECITIZEN = 2$ <i>then</i>	<i>non-citizen</i> = 1
ECITIZEN	Is [respondent] a citizen of the United States?	yes = 1

Uninsurance

The dependent variable for this analysis will represent the respondent's insurance status during the reference month as a dichotomous variable: not covered by an insurance plan or covered by an insurance plan. Respondents indicating coverage through Medicaid, Medicare or other health insurance plan will be classified as insured. Uninsured will be the category that will be analyzed.

Chapter 58 Effects

The effects of Chapter 58 will be represented by two dummy variables representing the implementation of the Commonwealth Health Insurance Connector in October of 2006 and the full implementation of the individual mandate in January 2008. Though the legislation sets July 1, 2007 as the date for implementing the individual mandate, penalties for not having insurance in 2007 were based off of one's status on December 31, 2007 (Gruber 2008; Long 2008) and the higher penalties were implemented as of January 2008. The dummy variables will be coded '0' for pre-implementation times and '1' for post-implementation times. The differing implementation times should allow the primary effects of Chapter 58 on working age adult's probability of being uninsured to be evaluated separately.

Changes in Respondent Behavior

Changes in response patterns regarding health insurance questions will be captured using imputation flag variables. Values are imputed for the three health insurance status questions discussed above when a respondent fails to answer them. This variable will be represented by a dummy variable with a value of '1' if responses to all three questions are flagged as imputed and a value of '0' otherwise.

Employment Status

Employment status will be represented in the analyses by a categorical variable with four categories, including; 1) having a full-time job during the month, 2) being self-employed full-time during the month, 3) being unemployed during the month and 4) a residual category of those not in the labor force and other employment statuses. Respondents will be classified as working full-time during the month if they usually worked 35 hours or more a week at their first job. This group will serve as the reference group. This category will be defined by responses to the question, “How many hours per week did [the respondent] usually work at all activities at this job?” Those who did not work at a job full-time during the month, but indicated that they usually worked 35 hours or more a week at their own business will be classified as full-time self-employed. This group should be significantly more likely to be uninsured than those employed full-time, though the effect should be significantly less in 2008 than in 2004. This group will be defined by responses to the question, “How many hours per week did [the respondent] usually work at all activities at this business?” Respondents will be categorized as unemployed during the month if they had no job or business during the month and spent at least one week on layoff or looking for work. This group should be more likely to be uninsured than those employed full-time. The effect of unemployment on uninsurance should be significantly less in 2008 than in 2004 if Chapter 58 was effective. The residual group should also be significantly more likely to be uninsured than those employed full-time and this effect should weaken significantly between 2004 and 2008.

Occupation

Occupation will be represented in the analysis by a dichotomous variable classifying occupations as ‘high risk’ or not. ‘High risk’ will refer to occupations with the largest percentage

of uninsured who indicate that they are uninsured because their employer did not offer them health insurance. A percentage distribution of this indicator will be created and the highest 35 percent of occupations will be classified as 'high risk.' The distribution will be calculated using national level data for the working age population from the 2004 SIPP panel. A dichotomous variable indicating whether a person was uninsured because their employer did not offer a plan or not will be summarized by occupation. This number will be divided by the total number in the occupation and multiplied by 100 to generate the percentage distribution. Respondents working in a high risk occupation should be more likely to be uninsured than others. This effect should be significantly weaker in 2008 than in 2004.

Employer Size

Firm size will be represented in the analysis as a dichotomous variable indicating whether the firm had less than 25 employees or not. This will be evaluated for both the employed and the self-employed. For people who are self-employed and have a job, the value of this variable will be determined by the firm with the highest usual hours worked. The variable will be defined by responses to the question, "About how many persons were employed by [the respondent's] employer at all locations together?" People working in a firm with less than 25 employees will be more likely to be uninsured than others. The effect of this variable should be weaker in 2008 than in 2004.

Income

Income will be represented in the regression by a categorical variable with four categories defined by the respondent's income in relation to the appropriate Federal Poverty Guidelines (FPG). Those making more than 300 percent of the FPG up to 500 percent of the FPG will be the reference group. Another category will consist of people with incomes of up to 150

percent of FPG. I suspect that this category will not be significantly more likely to be uninsured than the reference group in the regression covering the entire period. However, they should be significantly less likely to be uninsured in 2008 than in 2004 compared to the reference group as Chapter 58 extended 100 percent premium subsidies via Commonwealth Care to them. Those making more than 150 percent of FPG to 300 percent of FPG will make up a third group. As with the previous group, this group should not be significantly different from the reference group in the regression spanning the entire period, but it should be significantly less likely to be uninsured in 2008 than in 2004 because Chapter 58 extended partial premium subsidies to this group. The final group will consist of people making over 500 percent of FPG. This group should be significantly less likely to be uninsured than the reference group across all regressions. This effect should be reduced in 2008 compared to 2004 as Chapter 58 expands access to plans and increases the motivation to acquire a plan among those in the reference group. These categories will be defined using a variable that indicates total family income for the month and another variable that indicates the poverty threshold for the family in the month.

Education

Education will also be represented in this analysis by a categorical variable with four categories. The categories will be defined by the highest degree received. Those with a Bachelor's Degree or higher will comprise the reference group. The first category will represent those with less than a high school diploma. Those with a high school diploma will be grouped under the second category. Respondents who have earned an Associate's Degree, a degree or certificate from a vocational, technical, or business school, or who have completed some college will make up the final group. All three categories should be significantly more likely to be

uninsured than the reference group. The effect should be significantly weaker in 2008 than in 2004.

Family Structure

Marital status will be represented by a dummy variable indicating whether the respondent is married or not. Married people should be significantly less likely to be uninsured than others. Family structure will also be represented by a variable indicating whether a respondent lives with his/her own child/children. People living with their own children should be significantly less likely to be uninsured than others. It is unclear to me what kind of effect that Chapter 58 will have on these variables.

Health Status

Health status will be represented in the analysis by a dummy variable indicating whether the respondent had a physical, mental or other health condition that prevented them from working or limited their ability to work during the month. This group should be more likely to be uninsured than others. The effect should be reduced somewhat in 2008 compared to 2004 as Chapter 58 increases the participation caps of Medicaid programs serving the disabled.

Age

Age will be represented by age at last birthday and respondents will be grouped into four categories. Fifty to 64 year olds will comprise the reference group. The other three groups will be 18 to 24 year olds, 25 to 34 year olds and 35 to 49 year olds. All three groups should have significantly higher odds of being uninsured than the reference group. The effect should be much weaker in 2008 compared to 2004.

Sex

Sex will be defined as a dichotomous variable indicating whether the respondent is male or not. Males are slightly more likely to be uninsured, but it may not be significant in this analysis. The individual mandate should act to make sex insignificant in 2008 if it is not in 2004.

Race/Ethnicity

Respondents will be joined into three race/ethnicity groups for this analysis: 1) non-Hispanic White, 2) Hispanics and a residual group consisting of 3) non-Hispanic Blacks, Asians and other non-Hispanics. Non-Hispanic Whites will serve as the reference group. Both groups are typically more likely to be uninsured than non-Hispanic Whites, but I hope that the design of this analysis and Chapter 58 will render the effect of this characteristic insignificant.

Citizenship

Citizenship will be represented by a dichotomous variable indicating whether the respondent is a non-citizen or not. Non-citizens should be significantly more likely to be uninsured than citizens because public programs are much more restrictive of non-citizen participation. Non-qualified citizens may only receive public funds for emergency medical care. Qualified non-citizens may participate in any program. This group includes pregnant women who are legal permanent residents (LPR), parolees or conditional entrants; adults who are LPRs, parolees, or conditional entrants and who have resided in the United States for more than five years; and asylees, refugees, non-citizens whose deportation has been withheld, veterans and active duty personnel, certain battered non-citizens, Cuban or Haitian entrants, Native Americans born in Canada, Amerasians, victims of severe forms of trafficking, and some non-citizens that were grandfathered in. Non-citizens are not prevented from participating in the unsubsidized

health insurance exchange. The impact of citizenship should become more important because Chapter 58 fails to improve non-citizens access to public programs.

CHAPTER IV: RESULTS

This section provides descriptive statistics of uninsurance rates by various population characteristics and by year and month. The tables report the information gleaned from the SIPP data and the figures present it visually in a way that makes it easy to observe how uninsurance has changed in Massachusetts over the course of the 2004 and 2008 SIPP panels. This information lends support to the findings in the regression models and shows in detail how the changes observed in uninsurance developed. The figures represent all data points currently available for the 2004 and 2008 SIPP panels. There is a four month gap between the end of the 2004 panel and beginning of the 2008 panel. The first three months and the last three months of a panel represent only part of the sample due to the monthly rotation design of the survey which may increase the level of uncertainty in the estimates for these months.

Table 2 reports the percentage uninsured in Massachusetts compared to the percentage uninsured in Connecticut, and the United States (excluding Massachusetts) by year and month as derived from data in the 2004 and 2008 SIPP panels. I chose to include Connecticut because it is quite similar to Massachusetts demographically and socioeconomically and should be subject to very similar macroeconomic forces which would lead Massachusetts and Connecticut to have very similar trends in uninsurance. A divergence in uninsurance patterns corresponding to implementation of Chapter 58 would support for the idea that Chapter 58 reduced uninsurance in Massachusetts. The United states values are included to demonstrate how low the Massachusetts values are compared to the rest of the Unites States. Table 3 shows the percentage uninsured and its standard error for Massachusetts in the 2004 and 2008 SIPP panels by characteristic and by year and month. Table 4 summarizes the Massachusetts information in Table 2.

Table 2. Percentage Uninsured in Massachusetts, Connecticut and the United States by Year and Month: 2004 and 2008 SIPP Panels

Year	Month	Massachusetts		Connecticut		United States (Excluding Massachusetts)	
		Percentage	Standard Error	Percentage	Standard Error	Percentage	Standard Error
2003	October	11.0	1.8	10.1	2.2	20.1	0.5
	November	12.5	1.5	10.9	1.5	19.5	0.3
	December	13.2	1.5	11.3	0.9	19.5	0.3
2004	January	11.9	1.1	10.1	0.5	19.7	0.2
	February	11.5	1.2	10.1	0.7	19.2	0.2
	March	11.2	1.2	10.1	0.7	18.7	0.2
	April	10.3	1.0	11.1	0.8	18.3	0.2
	May	9.9	0.9	10.6	1.0	17.9	0.3
	June	9.3	1.0	9.9	1.2	17.8	0.2
	July	9.7	1.1	10.2	1.0	17.8	0.3
	August	9.1	0.9	9.8	0.9	17.7	0.3
	September	8.9	1.0	9.3	0.8	17.6	0.2
	October	8.8	0.8	9.5	0.7	17.5	0.2
	November	8.7	1.0	9.5	0.7	17.5	0.2
	December	9.1	1.0	9.8	0.9	17.6	0.2
2005	January	9.4	1.1	9.9	0.8	17.5	0.2
	February	10.0	1.0	9.5	0.8	17.6	0.2
	March	9.7	1.1	8.8	0.7	17.7	0.2
	April	9.6	1.0	9.3	0.6	17.6	0.2
	May	9.0	1.0	8.9	0.8	17.5	0.2
	June	8.8	1.2	8.9	0.8	17.5	0.3
	July	9.2	1.2	9.2	0.9	17.6	0.3
	August	9.1	1.1	9.1	1.1	17.6	0.3
	September	9.4	1.1	9.8	1.2	17.7	0.3
	October	9.1	1.1	9.5	1.2	17.6	0.3
	November	9.2	1.2	10.1	1.0	17.5	0.3
	December	9.1	1.3	10.6	0.8	17.5	0.3
2006	January	9.5	1.3	10.6	1.0	17.3	0.3
	February	9.7	1.4	10.9	1.3	17.3	0.2
	March	10.0	1.6	10.5	1.5	17.3	0.2
	April	10.1	1.4	10.4	1.4	17.2	0.2
	May	10.8	1.2	10.6	1.5	17.1	0.2
	June	11.2	1.5	9.6	1.3	17.3	0.3
	July	9.9	1.6	8.9	1.6	17.2	0.3
	August	9.3	1.8	9.8	1.5	17.4	0.3
	September	8.5	1.5	8.8	1.6	17.3	0.4

(continued)

Table 2. Percentage Uninsured in Massachusetts, Connecticut and the United States by Year and Month: 2004 and 2008 SIPP Panels (continued)

Year	Month	Massachusetts		Connecticut		United States (Excluding Massachusetts)	
		Percentage	Standard Error	Percentage	Standard Error	Percentage	Standard Error
2007	October	8.3	1.5	8.7	1.5	17.4	0.4
	November	9.1	2.0	7.2	1.5	17.2	0.4
	December	8.1	1.9	7.0	1.4	17.5	0.4
	January	7.5	1.6	8.5	1.4	17.5	0.4
	February	7.2	1.6	8.6	1.3	17.4	0.4
	March	6.9	1.3	8.8	1.4	17.1	0.4
	April	6.5	1.1	9.5	1.6	17.0	0.4
	May	6.0	1.0	8.2	2.0	16.9	0.4
	June	5.8	1.1	10.1	2.6	16.9	0.4
	July	6.3	1.5	11.0	2.1	17.1	0.4
	August	5.5	1.5	9.9	2.4	17.0	0.4
	September	5.4	1.3	11.0	2.6	17.0	0.4
2008	October	3.8	1.2	11.9	2.7	17.1	0.4
	November	3.2	1.2	12.7	4.6	17.4	0.5
	December	5.0	2.4	11.8	7.8	17.5	0.6
	May	6.8	1.3	16.0	2.6	22.0	0.5
	June	7.9	1.1	13.7	1.7	22.2	0.3
	July	8.9	1.2	11.5	1.6	22.0	0.2
	August	8.4	1.0	11.6	1.7	21.8	0.2
	September	8.5	0.9	11.5	1.7	21.7	0.2
	October	8.2	1.0	12.3	1.5	21.7	0.2
	November	7.7	0.7	12.3	1.4	21.8	0.2
	December	7.7	0.7	12.1	1.3	22.1	0.2
	2009	January	7.6	0.8	12.6	1.7	22.2
February	7.4	0.7	13.0	1.6	22.3	0.2	
March	7.0	0.6	13.7	1.5	22.3	0.2	
April	6.3	0.7	14.4	1.9	22.4	0.2	
May	6.2	0.6	14.5	1.6	22.4	0.2	
June	6.9	0.7	14.6	1.9	22.6	0.2	
July	7.2	0.8	15.5	1.9	22.5	0.2	
August	8.4	0.6	15.1	1.5	22.4	0.2	
September	8.1	0.6	15.5	1.5	22.4	0.3	
October	7.9	0.7	15.6	1.2	22.5	0.3	
November	7.3	0.5	14.8	1.3	22.6	0.3	
December	6.8	0.4	14.9	1.5	22.8	0.3	
2010	January	7.2	0.4	13.5	1.1	22.9	0.3
February	7.3	0.8	10.6	1.6	22.8	0.3	
March	7.1	1.9	11.8	4.1	23.1	0.5	

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008 SIPP Panels

Year	Month	Total		Imputation of Coverage				Employment Status								Race/Ethnicity					
				Imputed		Not Imputed		Employed Full-time		Self-Employed		Unemployed		Other		Non-Hispanic White		Hispanic		Residual	
		%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
2003	October	11.0	1.8	0.0	*	11.0	1.8	6.5	2.2	5.5	4.0	57.0	22.1	13.0	2.0	9.9	2.4	14.3	8.5	16.2	6.4
	November	12.5	1.5	0.0	*	12.5	1.5	8.4	1.6	17.2	6.1	47.8	15.0	14.0	1.6	11.3	1.9	18.1	4.5	19.6	5.1
	December	13.2	1.5	0.0	*	13.2	1.5	8.7	1.1	21.6	7.4	42.3	8.1	15.7	2.0	12.1	1.6	19.9	6.3	18.8	3.6
2004	January	11.9	1.1	0.0	*	11.9	1.1	7.1	0.8	20.7	5.9	35.3	5.6	15.4	1.5	11.0	1.0	17.3	4.2	16.8	4.5
	February	11.5	1.2	0.0	*	11.5	1.2	7.2	1.1	21.2	6.3	31.6	5.6	14.4	1.8	10.5	1.1	19.4	5.3	16.1	4.5
	March	11.2	1.2	10.6	10.5	11.2	1.2	7.2	1.2	17.7	4.7	32.6	7.2	14.3	1.8	10.2	1.1	17.7	5.9	16.2	4.6
	April	10.3	1.0	0.0	*	10.4	1.0	7.0	1.3	19.2	5.9	34.9	10.3	12.3	1.6	9.4	1.0	18.4	5.4	14.3	4.4
	May	9.9	0.9	0.0	*	10.0	0.9	6.9	1.2	20.1	5.6	23.6	8.7	12.0	1.2	9.1	1.0	14.3	3.2	14.1	3.2
	June	9.3	1.0	0.0	*	9.3	1.0	6.0	1.1	19.0	5.4	12.5	6.5	12.2	1.2	8.7	0.9	13.4	5.3	12.2	3.6
	July	9.7	1.1	0.0	*	9.8	1.1	6.7	1.2	20.4	5.6	21.8	7.7	12.0	1.2	9.5	1.3	11.7	5.0	10.8	2.9
	August	9.1	0.9	0.0	*	9.2	0.9	6.8	1.3	15.4	5.6	14.4	7.8	11.4	1.0	9.0	1.0	7.8	3.5	10.5	2.7
	September	8.9	1.0	0.0	*	8.9	1.0	7.0	1.5	16.4	6.2	16.2	8.0	10.2	1.1	8.7	0.9	8.7	5.1	10.6	3.5
	October	8.8	0.8	0.0	*	8.9	0.8	7.0	1.2	16.1	6.1	24.5	11.1	9.5	1.0	8.4	0.8	11.9	4.7	11.0	3.5
	November	8.7	1.0	0.0	*	8.7	1.0	7.1	1.3	16.1	6.1	21.4	10.0	9.2	1.1	8.4	1.0	10.4	3.6	10.2	3.1
	December	9.1	1.0	0.0	*	9.2	1.0	6.7	1.1	17.0	5.5	26.5	9.5	10.2	1.5	8.6	0.9	13.5	4.7	11.7	2.8
2005	January	9.4	1.1	0.0	*	9.4	1.1	5.7	1.0	16.9	4.6	38.0	13.4	11.3	1.5	8.7	1.0	15.0	4.9	12.4	3.5
	February	10.0	1.0	0.0	*	10.1	1.0	6.2	1.0	19.4	4.2	33.8	14.7	12.2	1.5	9.2	1.1	15.4	3.3	13.8	3.4
	March	9.7	1.1	0.0	*	9.7	1.1	5.7	1.0	18.5	4.6	40.9	16.5	12.1	1.3	8.8	1.1	13.3	3.4	14.6	3.1
	April	9.6	1.0	0.0	*	9.6	1.0	6.4	1.2	13.7	3.7	40.1	16.9	11.6	1.4	8.6	1.1	11.2	2.7	16.0	3.4
	May	9.0	1.0	0.0	*	9.1	1.0	6.5	1.4	11.9	4.2	32.0	13.5	11.0	1.7	8.4	1.2	11.6	1.6	12.6	2.5
	June	8.8	1.2	0.0	*	8.9	1.2	6.3	1.6	8.5	3.8	26.8	15.3	11.3	2.0	8.6	1.2	10.9	2.3	9.9	2.5
	July	9.2	1.2	0.0	*	9.2	1.2	6.6	1.5	9.7	3.7	32.4	16.8	11.4	1.8	8.9	1.3	10.5	2.2	11.0	4.1
	August	9.1	1.1	0.0	*	9.1	1.1	6.4	1.3	12.0	2.7	20.9	8.3	11.7	1.8	8.5	1.2	12.6	1.8	11.2	3.6
	September	9.4	1.1	0.0	*	9.4	1.1	6.9	1.5	15.5	3.9	19.0	8.0	11.4	1.6	9.0	1.2	11.4	1.9	11.7	3.4
	October	9.1	1.1	0.0	*	9.1	1.1	7.2	1.4	16.9	3.9	15.6	5.6	10.2	1.6	8.6	1.3	12.8	2.8	10.3	2.6
	November	9.2	1.2	0.0	*	9.2	1.2	7.0	1.0	13.9	4.3	22.9	9.4	10.8	1.9	8.5	1.5	12.9	2.8	12.6	3.3
	December	9.1	1.3	0.0	*	9.2	1.3	6.8	1.4	16.3	4.9	28.8	10.6	10.5	1.8	8.5	1.5	10.1	2.7	13.4	3.3
2006	January	9.5	1.3	0.0	*	9.5	1.3	6.9	1.7	16.6	3.2	40.4	11.7	10.5	1.8	8.8	1.6	15.1	2.1	12.0	3.0
	February	9.7	1.4	0.0	*	9.8	1.5	6.3	1.7	17.4	3.1	32.5	11.7	12.1	2.1	9.1	1.6	14.1	3.1	12.8	2.7
	March	10.0	1.6	12.6	12.1	10.0	1.6	7.3	1.9	19.1	3.0	31.4	10.8	11.6	1.8	9.4	1.8	13.9	3.2	13.1	2.8
	April	10.1	1.4	13.7	13.2	10.1	1.4	8.4	1.6	17.4	3.0	24.3	10.1	10.8	1.9	9.4	1.6	14.7	3.4	13.6	3.2
	May	10.8	1.2	10.2	9.9	10.8	1.2	8.5	1.1	15.9	4.0	27.6	12.2	12.6	1.8	10.0	1.1	16.6	5.5	14.3	2.9
	June	11.2	1.5	0.0	*	11.2	1.5	9.7	1.7	15.2	5.6	25.3	9.4	11.9	2.1	9.9	1.3	20.5	5.3	15.1	5.0
	July	9.9	1.6	0.0	*	9.9	1.6	8.3	1.5	16.2	7.5	24.3	11.8	10.2	2.1	8.6	1.4	22.1	7.4	11.3	4.9
	August	9.3	1.8	0.0	*	9.3	1.8	8.5	2.2	15.5	7.3	18.1	11.5	8.9	2.1	8.6	1.6	19.3	7.8	8.3	4.8
	September	8.5	1.5	0.0	*	8.5	1.5	8.7	1.8	11.2	6.3	13.9	9.6	7.5	2.2	6.9	1.3	27.0	9.6	6.3	4.8

(continued)

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008
SIPP Panels (continued)

Year	Month	Total		Imputation of Coverage				Employment Status								Race/Ethnicity						
		%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE			
2006	October	8.3	1.5	0.0	*	8.3	1.5	8.3	1.4	8.6	6.2	7.5	7.4	8.3	2.1	6.7	1.3	25.7	11.4	6.9	3.9	
	November	9.1	2.0	0.0	*	9.1	2.0	7.8	1.7	4.0	4.1	14.8	10.4	11.4	3.0	7.4	1.7	25.3	13.1	10.2	5.3	
	December	8.1	1.9	0.0	*	8.1	1.9	6.2	1.5	3.8	3.9	24.9	18.1	10.4	2.9	6.1	1.5	24.9	12.9	10.7	5.1	
2007	January	7.5	1.6	0.0	*	7.5	1.6	5.8	1.3	4.0	4.1	11.4	11.1	9.9	2.2	6.1	1.4	16.9	10.2	10.8	5.2	
	February	7.2	1.6	0.0	*	7.2	1.6	6.6	1.6	3.8	3.9	24.1	14.5	7.2	2.0	6.8	1.5	10.3	6.0	7.3	4.7	
	March	6.9	1.3	56.4	58.9	6.7	1.3	6.7	1.4	3.7	3.8	12.0	8.2	7.3	1.7	6.7	1.2	14.8	5.3	3.5	2.8	
	April	6.5	1.1	38.7	40.3	6.3	1.1	6.5	1.5	4.2	4.3	7.7	7.5	6.6	1.5	6.2	1.1	14.0	5.1	3.5	2.8	
	May	6.0	1.0	0.0	*	6.0	1.1	5.7	1.4	4.4	4.6	16.3	16.4	6.0	1.7	6.3	1.1	6.0	4.3	3.6	2.9	
	June	5.8	1.1	0.0	*	5.8	1.1	5.2	1.5	4.5	4.8	15.4	15.6	6.3	1.9	5.8	1.1	6.5	4.7	5.0	4.1	
	July	6.3	1.5	0.0	*	6.3	1.5	6.0	1.6	11.6	8.5	16.3	9.1	5.5	2.0	6.4	1.7	6.0	4.3	5.3	4.3	
	August	5.5	1.5	0.0	*	5.6	1.5	5.8	1.7	7.2	7.7	4.7	4.6	4.9	1.8	5.6	1.8	5.7	4.2	5.0	4.2	
	September	5.4	1.3	0.0	*	5.4	1.3	3.7	1.2	6.6	6.9	11.5	8.1	7.3	1.5	4.9	1.6	5.5	4.0	9.2	5.1	
	October	3.8	1.2	0.0	*	3.8	1.2	2.2	1.1	0.0	*	0.0	*	6.6	2.4	3.5	1.4	3.0	2.9	7.5	5.0	
	November	3.2	1.2	0.0	*	3.2	1.2	0.7	0.7	0.0	*	0.0	*	7.3	3.0	2.8	1.5	0.0	*	10.7	7.1	
	December	5.0	2.4	0.0	*	5.0	2.4	0.0	*	0.0	*	44.1	46.8	10.4	5.5	4.5	2.8	0.0	*	14.6	13.2	
2008	May	6.8	1.3	0.0	*	6.8	1.3	4.7	1.3	12.3	7.3	19.8	10.1	7.4	2.0	6.2	1.3	12.2	7.2	7.5	4.3	
	June	7.9	1.1	0.0	*	7.9	1.1	6.1	1.2	6.8	4.1	21.0	10.9	9.3	1.6	6.9	1.1	22.7	8.5	7.3	3.2	
	July	8.9	1.2	0.0	*	8.9	1.2	7.2	1.4	10.5	4.5	28.6	8.5	9.1	1.4	8.0	1.2	22.1	8.1	9.7	2.8	
	August	8.4	1.0	0.0	*	8.4	1.0	6.6	1.0	13.5	4.3	23.4	6.4	8.6	0.8	7.2	1.0	19.9	5.3	12.4	1.9	
	September	8.5	0.9	0.0	*	8.6	0.9	6.2	1.1	16.4	3.5	13.5	3.9	10.0	0.9	7.9	1.0	14.5	3.2	10.9	2.0	
	October	8.2	1.0	0.0	*	8.2	1.0	6.6	1.2	15.3	4.3	12.7	3.4	8.8	1.0	7.5	1.0	15.9	5.4	10.2	1.3	
	November	7.7	0.7	0.0	*	7.8	0.7	5.9	0.9	16.0	4.9	8.4	2.6	9.0	1.6	7.2	0.8	13.2	4.4	9.2	1.0	
	December	7.7	0.7	4.3	4.4	7.7	0.7	5.7	0.9	17.9	5.8	10.4	2.7	8.8	1.7	7.0	0.7	13.3	4.7	10.2	2.4	
	2009	January	7.6	0.8	0.0	*	7.7	0.8	5.5	0.5	16.7	5.4	22.3	5.3	7.5	1.3	6.7	0.9	13.1	4.1	11.3	1.5
		February	7.4	0.7	0.0	*	7.5	0.7	4.4	0.5	17.0	4.9	22.9	5.6	8.1	1.1	6.5	0.8	15.6	3.6	10.8	1.3
		March	7.0	0.6	3.1	3.1	7.1	0.6	3.9	0.5	16.3	5.2	17.4	3.2	8.5	1.0	6.1	0.6	16.1	3.6	9.4	1.9
		April	6.3	0.7	0.0	*	6.4	0.7	3.5	0.5	14.3	5.3	14.3	3.7	7.9	1.3	5.5	0.7	12.8	2.2	9.0	2.8
May		6.2	0.6	0.0	*	6.3	0.6	3.3	0.6	15.1	4.7	13.3	3.4	7.8	1.1	5.5	0.5	9.3	4.0	10.3	3.6	
June		6.9	0.7	0.0	*	7.0	0.7	3.0	0.7	17.1	4.2	15.6	4.1	9.3	1.6	6.4	0.7	6.8	3.3	10.8	2.6	
July		7.2	0.8	0.0	*	7.3	0.8	3.4	0.8	15.0	3.6	15.2	4.0	9.7	1.8	6.5	0.8	7.0	3.2	12.6	2.6	
August		8.4	0.6	0.0	*	8.5	0.6	4.9	0.8	11.5	4.1	16.5	3.7	11.0	1.9	7.8	0.7	8.7	3.6	13.0	2.4	
September		8.1	0.6	0.0	*	8.3	0.6	4.0	0.4	12.5	3.9	16.0	3.4	11.7	1.7	7.8	0.8	14.0	6.4	8.5	1.5	
October		7.9	0.7	0.0	*	8.0	0.7	4.5	0.4	11.9	3.6	22.1	3.7	9.8	1.7	7.6	0.9	14.3	6.5	8.1	1.4	
November		7.3	0.5	0.0	*	7.4	0.5	4.0	0.5	10.7	3.3	15.8	3.6	9.6	1.2	6.8	0.6	16.0	5.7	7.1	1.3	
December		6.8	0.4	0.0	*	6.9	0.5	3.6	0.6	7.8	2.3	17.3	4.0	8.9	0.9	6.3	0.6	15.2	5.3	6.8	2.0	
2010	January	7.2	0.4	0.0	*	7.3	0.4	4.0	0.8	7.1	2.9	20.0	6.3	8.7	1.1	6.6	0.6	14.1	3.2	8.8	3.0	
	February	7.3	0.8	0.0	*	7.4	0.8	4.2	1.1	3.9	2.7	20.6	8.0	8.9	1.2	6.5	0.9	14.5	5.1	11.8	4.1	
	March	7.1	1.9	0.0	*	7.2	2.0	4.1	2.0	4.3	4.3	24.3	9.4	8.4	2.4	6.2	2.1	14.5	10.2	11.9	7.6	

(continued)

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008
SIPP Panels (continued)

Year	Month	Occupation				Employer Size				Income								Marital Status			
		High Risk		Not High Risk		< 25 Employees		25 or more Employees		0 to 150 % of FPG		151 to 300 % of FPG		301 to 500 % of FPG		> 500 % of FPG		Married		Not Married	
		%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
2003	October	33.0	8.3	7.5	1.1	20.5	5.1	8.3	1.6	24.4	6.0	16.7	5.0	10.4	3.6	2.0	1.1	4.6	1.4	19.1	2.8
	November	32.8	4.6	9.0	1.1	25.2	3.9	9.3	1.4	29.8	4.8	15.7	3.2	12.5	2.0	2.6	1.0	5.6	1.1	21.3	2.3
	December	32.8	4.8	9.7	1.1	24.2	4.2	10.5	1.4	29.5	4.1	18.9	2.5	12.8	3.0	3.8	1.0	6.9	1.1	21.1	2.2
2004	January	29.1	3.8	8.9	0.8	20.3	2.6	9.8	1.0	30.4	3.9	15.1	2.4	10.0	2.6	4.1	1.0	6.1	0.5	19.4	2.0
	February	26.4	4.9	8.9	0.7	17.4	3.0	10.0	1.1	30.0	4.5	17.4	2.8	9.0	1.5	3.3	0.7	6.3	0.9	18.1	2.1
	March	26.5	5.0	8.5	0.7	17.0	2.8	9.8	1.2	27.6	3.9	18.9	1.4	7.2	2.2	4.5	0.8	6.8	0.9	16.8	2.1
	April	26.0	4.9	7.5	0.6	16.6	2.9	8.8	1.0	26.2	2.8	16.2	2.3	7.8	2.2	3.8	0.8	5.9	0.8	15.9	1.8
	May	25.4	4.4	7.0	0.5	16.5	3.0	8.3	0.9	22.0	2.4	17.1	1.9	6.2	1.8	5.0	0.9	5.8	0.8	15.3	1.6
	June	25.2	4.0	6.2	0.6	16.3	2.8	7.5	1.2	19.0	1.3	19.2	2.6	5.6	2.2	4.2	1.0	5.2	1.0	14.6	1.7
	July	25.0	4.3	6.7	0.8	17.6	2.7	7.7	1.3	21.2	2.2	17.5	3.3	6.8	2.0	4.3	1.1	5.2	0.9	15.5	2.0
	August	23.3	3.3	6.5	0.7	16.6	2.2	7.3	1.1	20.1	2.5	15.7	2.5	8.1	2.1	2.9	0.6	4.8	1.0	14.6	1.9
	September	23.6	3.7	6.2	0.6	17.5	2.1	6.7	1.1	22.2	2.6	12.1	1.5	7.2	1.9	4.4	0.8	4.7	1.1	14.2	1.8
	October	23.2	3.5	6.3	0.5	16.4	2.0	6.9	0.9	19.8	2.1	12.3	1.7	8.1	2.0	4.0	0.8	4.6	1.0	14.1	1.5
	November	22.2	3.8	6.4	0.7	15.1	2.4	7.1	1.0	18.3	2.1	11.8	1.8	9.0	2.0	3.8	0.8	4.7	1.2	13.7	1.8
	December	22.4	3.9	6.9	0.6	14.7	2.1	7.8	1.1	20.9	3.6	14.1	1.7	7.5	1.3	4.3	0.8	4.4	1.0	14.9	1.7
2005	January	21.9	4.1	7.3	0.8	14.4	2.3	8.2	1.3	21.9	3.6	14.5	2.2	7.8	1.6	4.3	0.9	4.0	1.0	15.8	2.0
	February	23.3	3.8	7.7	0.8	14.6	2.4	8.9	1.1	19.6	3.3	18.3	1.9	7.5	1.4	4.7	0.6	4.3	1.0	16.7	1.9
	March	22.9	3.1	7.3	0.9	14.8	2.1	8.3	1.2	20.8	3.5	16.8	2.2	8.3	1.1	3.3	0.8	4.6	1.0	15.5	1.7
	April	22.2	3.9	7.3	0.7	13.6	1.8	8.5	1.1	19.8	2.9	17.4	2.6	7.1	0.9	3.9	0.8	5.0	1.3	14.8	1.5
	May	21.6	3.4	6.7	0.7	13.5	2.0	7.8	1.0	20.3	3.0	16.1	2.8	7.3	1.0	3.0	0.5	4.5	1.1	14.1	1.4
	June	18.7	3.8	7.0	0.9	14.8	2.4	7.2	1.2	22.3	4.4	15.4	2.5	7.4	1.6	2.6	0.6	4.1	1.1	14.1	1.9
	July	18.7	4.0	7.4	0.9	12.7	2.1	8.2	1.3	24.1	5.0	14.4	1.8	8.6	2.3	2.0	0.5	4.0	0.9	14.9	2.1
	August	19.3	3.5	7.1	0.9	12.9	1.9	8.0	1.2	22.2	4.1	13.2	1.8	9.9	2.2	2.1	0.6	3.6	0.8	15.4	2.0
	September	19.4	3.3	7.5	0.9	13.0	1.9	8.5	1.3	20.3	3.5	15.6	2.5	8.2	2.2	3.0	0.9	3.6	0.8	16.0	1.9
	October	21.8	3.7	6.7	0.9	13.1	1.7	8.0	1.2	21.0	3.6	13.8	1.5	8.3	2.5	3.2	0.8	3.5	0.9	15.6	1.7
	November	20.1	3.9	7.1	1.0	13.5	2.2	8.0	1.3	22.4	4.4	16.8	2.0	6.8	2.2	3.0	0.7	3.3	1.0	16.0	1.9
	December	20.1	4.2	7.2	1.0	15.2	2.9	7.6	1.1	20.4	4.6	16.1	2.3	7.5	2.5	3.6	0.9	3.6	1.0	15.6	2.1
2006	January	21.4	4.6	7.4	1.0	15.6	2.8	7.8	1.1	22.1	5.0	18.7	3.0	6.5	2.3	2.6	0.4	4.1	1.4	15.8	1.9
	February	20.9	5.1	7.7	1.1	16.3	3.4	8.0	1.2	23.4	4.2	17.6	3.2	7.0	2.3	2.8	0.5	4.3	1.4	16.0	1.9
	March	22.6	6.7	7.8	1.0	17.3	3.5	8.2	1.3	21.7	3.9	18.6	4.4	7.3	2.3	3.6	0.4	4.3	1.3	17.0	2.3
	April	23.9	5.6	7.5	0.9	19.2	2.7	7.8	1.4	21.5	3.8	19.2	3.6	6.9	1.6	3.6	0.8	4.5	1.4	16.8	2.1
	May	24.5	4.5	8.2	0.8	19.9	2.5	8.5	1.2	23.5	3.4	18.3	4.0	8.8	1.8	4.3	1.1	5.1	1.2	17.7	1.9
	June	25.9	5.3	8.3	0.9	21.4	3.7	8.5	1.2	18.8	3.7	23.2	5.2	8.0	2.3	5.0	1.0	5.9	1.6	17.1	2.5
	July	24.3	5.6	7.1	1.3	17.5	3.7	7.8	1.2	17.4	4.5	17.6	4.0	8.2	2.8	4.4	0.9	5.5	1.7	14.6	2.2
	August	22.7	6.6	6.8	1.4	15.3	4.6	7.6	1.5	16.1	4.9	16.1	4.6	8.9	2.8	3.7	1.1	6.5	2.8	12.3	1.8
	September	23.4	4.6	5.8	1.5	13.1	4.5	7.3	1.1	13.8	5.4	17.1	5.2	7.1	2.7	3.4	1.4	5.0	2.7	12.1	2.8

(continued)

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008
SIPP Panels (continued)

Year	Month	Occupation				Employer Size				Income								Marital Status			
		High Risk		Not High Risk		< 25 Employees		25 or more Employees		0 to 150 % of FPG		151 to 300 % of FPG		301 to 500 % of FPG		> 500 % of FPG		Married		Not Married	
		%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
2006	October	22.0	5.5	5.8	1.5	12.7	4.4	7.2	1.0	8.6	3.0	19.5	4.7	7.2	2.9	3.7	1.2	4.3	2.4	12.4	3.1
	November	22.7	5.5	6.9	1.8	12.7	4.5	8.3	1.6	16.1	5.8	17.2	5.2	9.1	3.4	3.6	1.1	4.9	2.4	13.1	3.6
	December	17.8	5.7	6.6	1.6	12.0	4.5	7.3	1.4	14.1	6.3	16.1	5.3	7.8	2.8	2.8	0.9	3.6	1.6	12.4	3.3
2007	January	17.6	5.4	5.9	1.3	12.2	4.4	6.4	1.2	12.4	5.2	12.6	4.1	8.7	3.0	2.9	0.9	3.3	1.6	11.7	2.6
	February	20.0	5.5	5.2	1.2	11.1	3.6	6.3	1.4	14.0	6.2	13.5	4.6	7.7	2.3	2.2	1.1	3.3	1.5	11.3	2.6
	March	19.8	4.9	4.8	1.0	12.8	3.6	5.5	1.0	9.4	5.1	15.8	4.4	6.7	2.6	2.3	1.0	3.8	1.6	10.3	2.1
	April	15.4	5.1	4.9	0.8	10.9	2.8	5.3	1.0	9.5	2.5	13.0	4.5	5.9	2.2	2.9	1.2	2.9	0.7	10.1	2.1
	May	11.2	4.2	5.0	0.9	9.6	2.5	5.1	1.0	10.6	5.2	11.9	4.3	6.8	2.3	1.2	0.7	2.3	0.7	9.9	1.9
	June	11.2	4.8	4.8	0.9	11.1	3.4	4.5	0.9	6.6	4.1	10.9	3.9	7.6	2.9	1.5	0.8	2.0	0.7	9.7	2.0
	July	14.9	6.1	4.8	1.2	10.6	4.5	5.2	1.1	12.0	5.9	10.6	4.7	6.6	2.3	1.6	0.9	2.3	1.3	10.4	2.5
	August	14.3	5.8	4.0	1.5	11.6	4.2	3.8	1.2	8.9	6.0	9.1	3.3	7.5	3.3	1.0	0.7	2.0	1.3	9.1	2.4
	September	15.4	5.8	3.6	1.4	8.1	3.4	4.6	1.0	15.4	6.6	7.0	2.2	5.4	2.4	1.6	0.8	2.4	1.4	8.4	1.8
	October	10.8	4.1	2.5	1.4	2.8	2.0	4.1	1.5	9.0	7.3	5.5	2.7	4.7	2.1	0.9	0.8	0.7	0.6	6.9	2.3
	November	9.1	4.5	2.0	1.7	3.1	2.2	3.2	1.6	14.3	13.8	4.1	1.7	1.3	1.3	1.2	1.0	0.6	0.6	5.9	2.5
	December	10.7	7.4	4.0	3.2	0.0	*	6.3	3.1	19.9	19.3	2.4	2.6	3.2	3.4	2.4	2.2	1.3	1.4	8.4	4.5
2008	May	15.9	4.7	4.9	1.3	8.8	4.0	6.3	1.1	19.5	4.6	6.4	3.1	4.4	3.3	2.3	1.4	3.0	1.0	11.7	2.8
	June	16.6	3.1	6.0	0.9	11.1	3.6	7.1	0.8	16.7	3.6	13.2	2.8	4.3	2.2	2.5	0.9	3.7	0.9	12.9	2.2
	July	21.3	4.5	6.2	0.8	16.1	3.9	7.2	0.8	19.7	2.8	13.1	2.6	6.3	2.1	2.4	0.8	3.7	0.6	14.8	2.4
	August	19.4	3.5	6.1	0.7	14.8	2.8	6.8	0.7	17.0	2.2	13.2	1.9	6.3	1.6	2.5	0.8	4.2	0.8	12.7	1.8
	September	19.9	4.0	6.1	0.5	15.5	3.1	6.8	0.5	15.6	2.1	15.4	2.0	5.2	1.4	3.3	0.7	4.5	0.7	12.6	1.6
	October	18.9	3.9	6.0	0.6	14.8	2.8	6.6	0.7	16.0	2.6	15.9	2.1	5.0	1.6	2.2	0.7	4.6	0.7	11.8	1.7
	November	16.7	3.7	5.9	0.5	13.7	2.5	6.3	0.5	11.3	1.7	16.1	1.3	5.8	1.8	2.6	0.5	4.3	0.6	11.1	1.2
	December	17.7	3.6	5.7	0.5	14.3	2.4	6.2	0.5	13.4	1.9	14.5	2.1	7.2	2.3	2.0	0.4	4.2	0.9	11.2	1.2
2009	January	18.0	4.1	5.6	0.5	13.7	3.2	6.2	0.6	15.7	3.3	10.6	1.7	7.8	1.8	1.8	0.5	3.7	0.8	11.5	1.4
	February	15.8	4.3	5.8	0.5	13.8	3.4	6.0	0.6	16.4	3.0	10.7	1.9	6.0	1.5	1.8	0.7	4.0	0.9	10.8	1.1
	March	14.1	2.7	5.7	0.6	13.1	3.2	5.6	0.7	15.6	2.5	9.9	1.8	5.8	1.7	1.5	0.7	4.0	0.9	9.9	1.1
	April	14.0	2.2	4.8	0.7	12.9	2.5	4.7	0.7	12.1	2.2	10.7	2.5	5.0	1.6	1.9	0.6	3.7	0.8	8.9	0.9
	May	12.0	2.0	5.1	0.6	12.7	2.1	4.7	0.6	12.0	2.3	13.0	1.6	3.9	1.3	1.6	0.6	3.5	0.7	9.0	1.0
	June	14.2	2.8	5.5	0.7	15.4	2.5	4.8	0.6	12.2	2.6	15.6	2.0	3.4	1.1	2.5	0.8	4.3	0.8	9.6	1.0
	July	13.7	2.3	5.8	0.7	14.4	2.7	5.3	0.6	13.6	2.4	12.9	2.2	5.1	1.2	2.4	0.8	4.3	0.9	10.0	1.2
	August	14.6	3.1	7.0	0.6	15.3	2.5	6.5	0.5	16.4	1.8	13.4	2.7	5.5	1.4	3.5	0.9	5.4	0.8	11.3	0.9
	September	16.1	2.9	6.4	0.7	16.5	2.3	5.9	0.6	18.1	2.3	13.4	2.7	5.0	1.3	2.6	0.7	4.9	1.0	11.2	1.2
	October	13.5	2.7	6.8	0.8	13.2	2.2	6.5	0.6	18.2	2.9	11.0	2.7	5.9	1.5	2.7	0.7	5.1	1.3	10.6	1.2
	November	13.7	2.7	6.0	0.6	13.3	1.9	5.7	0.5	14.1	1.4	13.0	2.8	4.3	0.8	3.1	0.7	5.1	1.3	9.4	1.3
	December	12.2	1.9	5.7	0.5	11.5	1.6	5.7	0.4	12.9	2.3	11.5	1.9	6.2	1.1	2.2	0.7	4.1	1.1	9.4	1.3
2010	January	12.9	2.5	6.1	0.5	11.3	2.2	6.2	0.4	13.4	2.3	11.6	1.7	8.0	1.6	1.7	0.9	4.2	1.3	10.0	1.2
	February	14.9	2.9	5.9	1.0	11.9	2.2	6.2	0.9	14.8	4.6	12.3	2.7	8.7	2.4	1.0	0.5	3.5	1.3	10.8	1.7
	March	13.2	6.1	6.1	2.0	11.4	5.1	6.0	1.6	17.9	7.4	8.7	4.1	6.7	4.3	1.6	0.9	4.2	2.0	9.6	2.8

(continued)

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008
SIPP Panels (continued)

Year	Month	Education Level								Living with Own Kids < 18				Health Status				Sex			
		< High School		High School Diploma		Some College,		Bachelor's or Higher		Yes		No		Problem Working		No Problem Working		Male		Female	
		%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
2003	October	22.0	8.3	21.2	7.8	10.9	2.0	3.4	1.1	9.1	1.3	12.4	2.9	8.2	4.3	11.3	2.1	13.9	2.9	8.1	1.4
	November	26.1	5.9	20.8	4.9	12.0	1.5	5.7	1.1	8.9	1.6	15.0	2.0	13.5	3.9	12.4	1.4	16.3	1.9	9.0	1.5
	December	28.6	5.3	22.2	3.8	12.8	1.5	5.4	0.9	10.4	1.2	15.1	2.2	12.4	3.6	13.3	1.4	16.3	2.1	10.3	1.3
2004	January	27.2	5.1	18.7	2.4	10.8	1.0	5.7	0.8	8.9	1.1	14.0	1.7	9.1	2.5	12.2	1.0	14.6	1.5	9.3	1.1
	February	25.5	5.2	17.4	2.2	11.4	1.3	5.3	0.9	8.5	1.0	13.5	2.0	7.5	2.8	11.9	1.2	14.0	1.9	9.2	1.0
	March	25.7	5.3	15.9	2.7	11.9	1.3	5.3	0.8	8.3	1.0	13.3	1.9	6.1	1.7	11.8	1.3	13.3	1.9	9.3	1.1
	April	25.4	4.3	14.8	2.4	10.7	1.3	4.7	0.8	7.5	1.0	12.3	1.6	6.4	2.1	10.8	1.1	12.7	1.9	8.2	1.1
	May	24.2	5.5	15.1	2.3	10.5	1.2	4.0	0.7	6.3	1.0	12.4	1.6	4.5	1.7	10.5	0.9	12.6	1.9	7.4	0.6
	June	21.6	6.2	14.6	2.5	9.9	1.3	3.4	0.6	5.7	0.9	11.8	2.0	4.4	1.4	9.8	1.1	12.0	1.9	6.7	0.5
	July	20.4	6.6	14.9	2.7	10.4	1.1	4.1	0.9	6.4	0.9	12.1	2.0	4.2	1.7	10.4	1.1	12.4	2.1	7.2	0.5
	August	14.5	4.7	14.9	2.3	10.3	1.1	3.7	0.7	5.6	0.9	11.7	1.9	4.0	1.6	9.7	0.9	11.6	1.7	6.8	0.6
	September	9.6	3.6	15.8	2.8	9.9	1.3	3.5	0.6	4.6	0.8	11.9	1.9	3.9	1.4	9.5	1.0	11.3	1.6	6.6	0.9
	October	11.4	3.5	15.0	2.2	10.0	1.3	3.6	0.9	4.9	0.7	11.7	1.6	3.9	1.4	9.5	0.9	10.6	1.4	7.1	1.0
	November	8.4	2.8	14.1	2.4	11.5	1.8	3.1	0.8	4.6	1.0	11.7	1.9	4.6	1.3	9.2	1.1	10.9	1.7	6.6	1.1
	December	13.7	4.7	14.9	2.2	11.1	1.7	3.1	0.9	5.6	1.0	11.7	1.5	6.3	1.7	9.5	1.1	11.7	1.6	6.7	1.1
2005	January	13.5	4.7	15.7	2.3	11.1	1.7	3.3	0.8	5.5	0.9	12.3	1.8	6.8	2.0	9.8	1.2	12.0	1.7	6.9	1.1
	February	16.3	5.5	16.7	2.2	11.2	1.5	3.7	0.9	5.9	0.9	13.1	1.8	6.6	1.8	10.5	1.2	12.3	1.5	7.9	1.2
	March	16.3	5.5	16.0	2.0	10.3	1.3	4.0	1.0	5.5	1.1	12.7	1.9	7.4	2.1	10.0	1.1	11.8	1.5	7.6	1.3
	April	14.2	4.9	16.0	2.3	9.7	1.3	4.6	0.8	5.7	1.1	12.3	1.5	6.5	1.8	10.0	1.2	11.7	1.3	7.5	1.2
	May	16.3	4.2	13.8	2.0	9.4	1.4	4.3	1.1	5.7	1.0	11.4	1.6	4.9	1.4	9.6	1.1	10.8	1.4	7.3	1.2
	June	12.9	2.7	13.8	2.9	8.9	1.3	4.8	1.0	4.9	1.0	11.7	1.9	7.7	2.3	9.0	1.4	10.4	1.5	7.4	1.3
	July	13.9	2.8	15.4	2.7	8.5	1.5	4.8	1.2	5.0	1.0	12.2	2.0	7.8	2.1	9.4	1.3	10.5	1.7	8.0	1.2
	August	14.1	2.7	14.8	2.5	8.5	1.3	4.9	1.2	5.4	0.9	11.8	1.9	6.3	1.7	9.5	1.3	10.6	1.5	7.7	1.0
	September	14.0	2.9	16.4	2.6	8.0	1.0	5.2	1.2	5.0	0.8	12.6	2.0	8.7	1.9	9.5	1.3	11.6	1.6	7.3	1.0
	October	13.6	2.8	16.5	2.4	8.1	1.1	4.3	1.4	4.7	0.8	12.3	1.8	8.1	2.1	9.2	1.2	11.5	1.4	6.8	1.1
	November	13.1	2.7	15.5	2.7	8.0	1.2	5.5	1.6	5.2	0.9	12.0	2.1	7.0	1.9	9.5	1.3	12.0	1.6	6.5	1.1
	December	11.4	3.1	15.5	2.4	8.0	1.3	5.7	1.7	4.9	1.0	12.2	2.2	6.4	2.3	9.5	1.4	12.2	1.7	6.3	1.2
2006	January	13.0	2.6	16.9	2.9	7.8	1.1	5.6	1.6	5.1	1.0	12.6	2.1	6.6	2.8	9.9	1.5	12.2	1.7	6.9	1.4
	February	13.8	2.7	16.8	2.9	8.1	1.5	5.8	1.7	5.1	1.3	12.9	2.1	6.7	2.4	10.1	1.6	12.3	1.8	7.3	1.4
	March	16.8	3.5	17.3	3.1	9.0	1.7	5.0	1.4	5.4	1.3	13.3	2.2	8.5	2.8	10.3	1.8	12.4	1.9	7.8	1.6
	April	16.9	4.3	17.0	2.7	9.2	1.5	5.1	1.5	6.4	1.2	12.7	1.9	7.0	2.3	10.5	1.5	12.5	1.8	7.9	1.4
	May	21.6	5.3	17.3	2.9	10.4	1.4	5.2	1.3	7.6	1.2	13.0	1.9	6.8	1.8	11.3	1.3	13.4	1.3	8.3	1.5
	June	25.0	8.8	19.9	3.5	7.7	1.2	5.7	1.5	8.5	1.7	13.0	2.1	6.0	2.3	11.9	1.6	13.9	2.3	8.6	1.4
	July	21.8	8.6	19.0	4.4	6.4	1.3	4.9	1.4	7.3	2.1	11.6	2.1	3.9	2.1	10.7	1.8	13.2	2.6	6.7	1.3
	August	19.6	9.1	17.2	4.3	7.0	1.8	4.4	1.1	5.8	1.9	11.5	2.0	5.4	2.7	9.8	2.1	11.6	2.3	7.1	1.9
	September	14.5	8.1	17.5	3.3	7.0	2.0	2.7	1.0	6.0	1.9	9.9	1.7	4.1	2.4	9.1	1.8	10.5	2.3	6.7	1.8

(continued)

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008
SIPP Panels (continued)

Year	Month	Education Level								Living with Own Kids < 18				Health Status				Sex			
		< High School		High School Diploma		Some College,		Bachelor's or Higher		Yes		No		Problem Working		No Problem Working		Male		Female	
		%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
2006	October	18.1	11.0	14.7	2.4	8.3	2.3	2.3	0.8	5.6	1.6	9.8	1.9	3.6	2.1	9.0	1.7	9.8	2.2	7.0	1.9
	November	21.7	12.3	14.3	2.8	10.1	3.1	3.0	1.0	6.2	2.0	10.7	2.5	4.0	1.8	9.9	2.4	10.8	2.7	7.7	2.0
	December	22.1	12.0	12.2	3.1	8.5	2.9	2.9	1.0	5.5	1.7	9.6	2.2	3.6	1.6	8.8	2.1	9.6	2.9	6.8	1.8
2007	January	21.1	11.1	10.3	2.5	8.0	2.8	2.8	1.0	3.4	1.8	9.7	2.0	4.9	2.2	7.8	1.8	8.4	2.1	6.6	1.8
	February	14.4	7.3	11.9	3.4	7.4	3.0	2.9	0.9	4.9	2.2	8.4	1.9	5.0	2.3	7.5	1.8	7.4	2.3	7.0	2.0
	March	14.5	7.2	12.3	3.6	5.8	1.6	3.6	1.1	5.0	1.6	8.1	1.6	2.4	1.3	7.6	1.5	7.2	1.9	6.7	1.7
	April	7.4	5.4	11.4	3.3	6.1	1.3	3.8	1.5	4.7	1.1	7.5	1.6	2.0	1.5	7.1	1.3	7.9	2.1	5.2	1.4
	May	7.4	5.5	11.9	2.8	4.2	1.2	3.8	1.4	4.6	1.1	6.8	1.5	0.8	0.8	6.8	1.3	8.0	2.2	4.2	1.5
	June	8.7	6.0	10.8	2.5	5.4	1.7	2.8	1.2	4.9	1.2	6.4	1.5	1.0	1.0	6.5	1.3	7.3	1.9	4.5	1.5
	July	7.5	6.0	11.7	3.6	6.4	1.8	2.6	1.2	5.8	2.2	6.6	1.6	0.0	*	7.2	1.7	8.0	2.3	4.7	1.7
	August	7.4	5.9	10.0	3.8	4.3	1.8	3.4	1.8	4.4	2.4	6.2	2.0	0.0	*	6.3	1.7	7.8	2.3	3.4	1.3
	September	10.6	6.0	10.6	3.9	3.0	1.3	3.3	1.9	4.6	2.4	5.9	1.6	1.1	1.2	6.0	1.5	7.3	2.2	3.6	1.2
	October	3.8	3.8	6.2	3.1	2.0	1.2	3.8	2.6	1.0	1.0	5.7	1.8	1.5	1.6	4.2	1.4	6.0	2.5	1.7	0.9
	November	5.2	5.2	5.8	3.3	0.7	0.7	3.4	3.3	0.0	*	5.3	2.0	2.5	2.7	3.3	1.4	4.8	2.6	1.7	1.1
	December	0.0	*	7.3	4.9	1.4	1.5	7.3	7.1	0.0	*	7.8	3.8	4.6	4.9	5.0	2.7	7.4	4.6	2.3	2.1
2008	May	8.1	5.7	14.8	3.5	6.0	2.2	2.9	1.3	3.0	1.2	9.1	2.1	10.0	3.1	6.3	1.4	10.2	2.6	3.5	1.1
	June	15.7	4.9	15.4	3.1	5.9	1.3	3.9	1.2	3.7	0.8	10.4	1.7	10.8	3.3	7.5	1.0	12.0	1.6	3.9	1.0
	July	18.1	5.1	17.5	3.3	7.3	1.4	3.2	0.9	4.9	0.7	11.3	1.8	10.6	2.4	8.7	1.2	12.3	2.0	5.5	0.9
	August	19.9	4.5	14.8	2.2	7.9	1.5	2.5	0.7	6.1	0.9	9.7	1.4	9.1	1.9	8.3	1.0	11.1	1.3	5.7	0.9
	September	19.2	4.5	14.3	2.2	8.1	1.3	3.2	0.8	6.0	1.1	10.0	1.2	8.0	1.5	8.6	0.9	11.4	1.2	5.6	0.7
	October	20.4	4.9	13.2	2.2	7.9	1.2	2.8	0.6	5.0	0.9	10.0	1.3	8.8	1.9	8.1	1.0	10.8	1.3	5.5	0.9
	November	19.6	3.8	11.3	1.6	7.8	1.0	3.2	0.6	4.6	0.9	9.5	1.0	7.3	1.9	7.7	0.9	11.0	1.1	4.4	0.6
	December	19.1	4.3	12.3	1.7	8.1	1.0	2.2	0.5	5.0	1.0	9.3	1.1	7.5	1.8	7.7	0.8	11.1	1.3	4.3	0.5
2009	January	20.4	4.5	11.5	2.0	8.2	1.2	2.1	0.6	4.5	0.9	9.3	1.3	6.2	1.8	7.8	0.9	10.1	1.3	5.1	0.5
	February	21.0	4.7	10.2	2.0	8.7	1.0	2.1	0.5	5.0	0.9	8.7	1.1	7.5	2.4	7.4	0.8	9.8	1.2	5.1	0.5
	March	19.0	4.1	10.2	1.6	7.8	1.3	2.2	0.5	5.0	1.0	8.1	1.1	5.9	1.7	7.1	0.7	9.1	1.0	4.9	0.7
	April	20.7	6.2	8.4	1.5	6.8	1.3	2.1	0.5	4.5	1.1	7.2	0.9	4.2	1.6	6.5	0.8	8.6	1.1	4.0	0.6
	May	20.8	6.6	7.5	0.9	7.2	1.5	2.3	0.5	4.9	1.0	6.9	0.6	4.6	2.1	6.4	0.6	8.1	1.1	4.3	0.6
	June	21.2	6.2	9.1	1.3	6.8	1.6	3.4	0.8	5.4	0.8	7.7	1.0	5.5	2.1	7.1	0.8	8.6	1.0	5.2	0.8
	July	20.9	5.5	10.8	1.5	7.2	1.8	2.7	0.7	5.9	1.2	7.8	1.2	7.6	2.1	7.1	0.9	8.7	1.0	5.6	0.8
	August	21.1	5.6	12.0	1.4	8.7	1.9	3.9	0.8	6.9	1.4	9.2	1.0	7.6	2.3	8.5	0.6	10.1	0.8	6.6	0.8
	September	20.2	5.5	12.0	1.6	8.1	1.9	3.7	0.5	7.2	1.3	8.6	0.9	7.3	2.4	8.2	0.7	10.4	1.1	5.9	0.6
	October	20.5	7.0	11.7	1.9	8.3	1.6	3.2	0.9	8.0	1.4	7.8	1.0	7.6	2.2	7.9	0.8	10.2	0.9	5.7	0.9
	November	20.3	7.8	10.3	1.8	7.6	1.3	3.1	0.7	7.0	1.4	7.4	0.7	7.8	2.2	7.2	0.5	9.1	1.0	5.5	0.8
	December	16.7	7.2	9.3	1.3	7.3	1.1	3.3	0.8	7.1	0.9	6.6	0.6	7.1	2.0	6.7	0.6	8.2	0.8	5.4	0.8
2010	January	17.7	5.8	9.8	1.6	7.6	1.2	3.6	1.1	8.2	1.1	6.6	0.5	7.2	2.0	7.2	0.6	8.4	1.0	6.0	1.2
	February	13.3	9.4	11.1	2.1	7.6	1.9	3.6	1.5	7.3	1.9	7.3	0.8	7.7	2.4	7.3	0.9	8.0	1.1	6.7	1.5
	March	6.1	6.1	8.9	2.9	7.4	2.6	5.6	2.7	9.0	3.7	6.0	1.6	3.8	1.0	7.5	2.2	7.5	1.8	6.7	2.5

(continued)

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008 SIPP Panels (*continued*)

		Age								Citizenship			
		18 to 24		25 to 39		40 to 54		55 to 64		Non-citizen		Citizen	
Year	Month	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
2003	October	33.7	9.6	11.2	2.0	5.3	1.0	3.1	1.8	46.1	17.7	7.3	1.1
	November	25.0	5.1	14.0	2.2	9.7	1.4	5.9	1.5	33.3	10.1	10.2	1.3
	December	25.3	4.7	14.3	2.5	10.2	1.0	6.9	1.3	30.3	7.7	11.4	1.3
2004	January	21.1	4.1	12.8	2.0	9.7	1.0	7.1	1.7	30.2	6.3	10.0	1.1
	February	19.7	4.9	12.0	2.2	10.3	1.4	6.5	1.7	22.9	4.4	10.4	1.2
	March	19.9	5.1	11.3	2.1	10.3	1.4	6.0	1.7	22.4	4.2	10.2	1.1
	April	18.5	4.2	10.5	1.9	9.5	1.3	5.4	1.6	20.9	3.9	9.3	1.0
	May	20.3	3.6	10.0	1.5	8.6	1.2	4.5	1.3	19.6	3.8	9.0	0.9
	June	19.5	4.5	9.2	1.2	8.0	1.6	4.2	1.3	18.2	3.6	8.4	0.9
	July	19.4	4.2	10.3	1.3	8.0	1.7	4.3	1.2	17.4	3.1	9.0	1.0
	August	17.6	3.5	9.1	0.9	8.2	1.5	4.2	1.1	18.6	2.5	8.2	0.8
	September	16.5	4.0	9.0	1.0	8.1	1.4	4.2	1.2	15.6	3.0	8.3	0.9
	October	17.0	4.1	8.1	0.9	8.6	1.4	4.0	1.1	13.4	2.5	8.4	0.8
	November	17.9	4.3	8.3	1.1	7.8	1.5	3.6	1.1	12.8	2.2	8.3	1.1
	December	18.2	3.9	8.3	1.2	8.4	1.3	4.4	1.2	14.4	4.1	8.7	1.1
2005	January	18.4	4.2	8.8	1.6	8.3	1.2	5.3	1.5	16.9	5.9	8.7	1.1
	February	18.9	3.6	9.2	1.6	9.1	1.1	5.6	1.9	17.9	6.1	9.3	0.9
	March	15.3	3.4	9.5	1.6	9.3	1.1	5.5	1.9	17.4	5.4	8.9	1.0
	April	13.5	3.3	10.4	1.8	8.9	1.2	5.9	2.0	18.5	5.3	8.8	0.9
	May	12.7	2.8	10.5	2.3	8.1	1.3	5.0	1.4	17.9	4.8	8.2	0.9
	June	12.6	2.9	9.7	2.1	8.1	1.5	5.5	1.5	16.7	4.6	8.2	1.0
	July	13.6	3.2	9.7	2.4	8.6	1.6	5.4	1.4	15.8	5.4	8.6	1.0
	August	14.0	3.1	9.3	2.1	8.4	1.7	5.9	1.5	14.0	5.2	8.6	1.1
	September	14.6	3.1	8.7	2.1	8.9	1.7	7.1	1.6	14.6	5.0	9.0	1.1
	October	14.1	3.1	8.4	2.3	9.0	1.7	6.3	1.8	13.5	4.8	8.7	1.1
	November	15.9	2.6	9.0	2.4	8.3	1.6	5.8	2.0	14.9	5.8	8.7	1.1
	December	16.5	3.0	8.8	2.3	8.0	1.5	6.3	2.2	15.5	5.9	8.7	1.2
2006	January	15.0	2.9	9.9	2.1	8.6	1.6	6.5	2.2	14.2	5.2	9.1	1.2
	February	16.3	2.1	10.3	2.1	8.1	1.6	6.8	2.7	18.8	5.7	9.1	1.3
	March	18.0	3.6	10.0	2.0	8.2	1.6	7.6	2.7	21.1	6.1	9.2	1.4
	April	18.0	3.5	10.6	1.8	7.9	1.3	7.2	2.3	26.8	8.0	8.8	1.2
	May	19.3	3.4	11.7	1.8	8.2	1.0	7.5	2.0	30.0	5.0	9.3	1.1
	June	18.3	4.5	12.0	1.9	9.3	1.8	7.5	2.2	29.4	6.9	9.6	1.3
	July	16.9	4.7	10.1	1.8	7.7	2.1	7.7	2.4	29.5	7.2	8.4	1.5
	August	15.7	5.3	8.7	2.1	8.8	2.2	5.4	2.2	33.2	17.2	7.5	1.4
	September	15.9	4.2	6.7	1.9	8.0	2.6	4.9	2.5	34.0	8.9	6.5	1.5

(continued)

Table 3. Uninsurance in Massachusetts by Population Characteristic and by Year and Month: 2004 and 2008 SIPP Panels (*continued*)

Year	Month	Age								Citizenship			
		18 to 24		25 to 39		40 to 54		55 to 64		Non-citizen		Citizen	
		%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
2006	October	13.7	3.2	6.0	1.4	7.8	2.4	7.3	3.1	35.1	12.1	6.3	1.4
	November	16.9	5.4	6.2	1.6	8.6	2.7	7.0	3.6	32.1	11.8	7.3	2.0
	December	15.4	5.4	5.5	1.6	7.5	2.3	6.0	3.0	23.3	8.9	6.9	1.8
2007	January	12.0	4.7	5.8	1.6	7.6	2.3	5.4	2.7	15.4	10.2	6.8	1.6
	February	11.7	4.7	5.0	1.7	8.4	2.9	3.3	1.8	11.3	7.8	6.8	1.7
	March	10.0	4.4	6.4	2.0	7.6	2.3	3.4	1.8	11.4	8.0	6.5	1.3
	April	6.6	3.0	7.2	2.0	7.0	2.1	4.3	1.1	3.8	3.9	6.7	1.1
	May	5.9	2.9	8.2	2.1	6.0	1.9	2.7	1.4	3.8	3.9	6.2	1.0
	June	7.5	3.8	7.4	2.4	6.1	2.1	1.2	0.9	4.4	4.4	5.9	1.1
	July	6.4	3.7	9.8	4.0	6.2	2.2	1.1	0.8	8.1	5.0	6.1	1.5
	August	5.1	3.0	10.0	4.2	4.5	2.2	1.1	0.8	7.2	5.0	5.4	1.5
	September	9.2	4.2	8.7	3.8	3.4	1.4	0.6	0.6	8.7	3.9	5.1	1.3
	October	7.9	4.0	7.0	3.9	1.3	1.0	0.0	*	0.0	*	4.1	1.3
	November	9.5	4.6	5.3	4.4	0.0	*	0.0	*	0.0	*	3.5	1.4
	December	11.5	8.0	9.6	7.8	0.0	*	0.0	*	0.0	*	5.5	2.7
2008	May	12.0	3.0	10.4	3.4	3.8	1.8	2.8	1.9	11.2	6.6	6.4	1.3
	June	12.8	2.3	10.2	1.3	6.1	1.9	3.8	1.6	21.1	7.2	6.6	0.9
	July	16.3	2.5	10.4	1.8	6.9	1.4	3.9	1.2	30.5	8.7	6.6	0.9
	August	14.8	2.0	10.4	1.5	6.4	1.3	3.1	1.0	28.6	7.1	6.4	0.8
	September	14.1	2.2	10.6	1.6	6.7	1.0	3.7	1.0	28.7	7.0	6.5	0.6
	October	14.4	2.3	10.1	1.7	5.9	1.1	3.8	1.1	28.6	6.9	6.0	0.7
	November	12.7	2.0	10.3	1.8	5.7	1.0	3.1	1.0	26.3	6.1	5.8	0.5
	December	12.8	1.9	10.4	1.5	5.9	1.2	2.5	0.8	28.4	6.1	5.5	0.6
2009	January	14.1	2.0	9.8	1.8	5.6	0.8	2.2	0.6	29.3	7.1	5.3	0.6
	February	12.8	2.0	8.7	1.7	6.7	0.9	1.8	0.4	27.7	6.9	5.2	0.5
	March	12.3	1.7	8.3	1.3	6.3	1.1	1.5	0.2	24.1	5.5	5.2	0.5
	April	9.4	1.5	7.8	1.2	5.8	1.0	1.8	0.3	22.0	5.6	4.6	0.5
	May	9.9	1.5	7.6	1.4	5.6	0.9	2.0	0.6	20.9	5.0	4.8	0.4
	June	9.6	1.4	9.3	1.5	5.8	0.9	3.2	0.8	21.6	5.4	5.5	0.6
	July	9.9	1.6	9.2	1.4	5.7	0.7	4.5	1.6	24.2	6.0	5.4	0.5
	August	11.7	1.8	11.1	1.3	6.3	0.8	5.2	1.2	23.3	5.7	6.9	0.5
	September	10.7	1.8	11.3	1.6	6.1	0.8	4.8	1.4	23.1	5.1	6.6	0.8
	October	10.7	2.6	10.6	1.6	5.7	1.0	5.5	1.2	19.7	3.5	6.9	0.8
	November	8.8	2.1	9.8	1.7	5.8	1.3	4.8	1.5	16.3	3.4	6.5	0.5
	December	10.1	2.2	8.4	1.7	5.2	1.2	4.3	1.3	15.0	3.0	6.0	0.5
2010	January	11.7	2.4	7.7	1.2	6.0	1.3	4.7	1.3	14.0	2.6	6.5	0.4
	February	12.6	4.0	7.3	1.1	6.8	1.6	3.2	1.3	21.0	4.1	6.1	0.9
	March	12.8	6.5	8.4	3.1	6.9	2.7	1.0	1.0	23.3	13.6	6.3	1.8

Table 4. Average Monthly Percentage Uninsured Before Chapter 58, After Chapter 58 and the Difference)

Variable	Before Chapter 58		After Chapter 58		Difference
	Mean	Standard Error	Mean	Standard Error	
Coverage Imputation					
Imputed	1.3	0.6	2.7	1.9	1.4
Not Imputed	9.9	0.3	7.1	0.3	-2.8 *
Employment Status					
Employed Full-time	7.1	0.3	4.9	0.2	-2.2 *
Self-Employed Full-time	16.1	1.0	9.4	0.8	-6.8 *
Unemployed	28.7	2.1	16.4	1.8	-12.3 *
Other	11.6	0.4	8.5	0.4	-3.1 *
Occupation					
In 'High Risk' Occupation	23.8	1.0	15.6	0.8	-8.2 *
Not In 'High Risk' Occupation	7.4	0.3	5.4	0.2	-1.9 *
Employer Size					
Works in Small Firm (< 25 Emp.)	16.5	0.7	11.9	0.6	-4.6 *
Works in Larger Firm (25 or more Emp.)	8.2	0.3	5.8	0.2	-2.3 *
Income					
0 to 150 % FPG	22.1	0.9	14.0	1.0	-8.0 *
> 150 % to 300 % FPG	16.5	0.7	12.0	0.6	-4.5 *
> 300 % to < 500 % FPG	8.1	0.4	6.0	0.4	-2.1 *
500 % FPG or Higher	3.6	0.2	2.2	0.2	-1.4 *
Education					
< High School Diploma	17.7	1.0	15.5	1.1	-2.2
High School Diploma	16.5	0.7	11.3	0.5	-5.3 *
Some College, Associates Deg.	9.6	0.4	6.7	0.3	-2.9 *
Bachelor's Degree or Higher	4.5	0.2	3.2	0.3	-1.3 *
Marital Status					
Married	4.9	0.2	3.6	0.2	-1.3 *
Not Married	15.9	0.6	10.5	0.4	-5.4 *
Living with own kids < 18					
Yes	6.3	0.3	5.1	0.3	-1.1 *
No	12.4	0.5	8.1	0.3	-4.3 *
Work limitations due to health					
Yes	6.6	0.4	5.4	0.4	-1.2
No	10.3	0.4	7.3	0.3	-3.0 *
Age					
18 to 24	17.9	0.8	11.2	0.6	-6.7 *
25 to 39	10.0	0.4	8.6	0.5	-1.4
40 to 54	8.6	0.3	5.8	0.3	-2.8 *
55 to 64	5.7	0.3	3.2	0.2	-2.5 *
Sex					
Male	12.3	0.5	9.0	0.4	-3.3 *
Female	7.6	0.3	5.1	0.2	-2.5 *
Race/Ethnicity					
Non-Hispanic White	9.2	0.3	6.4	0.3	-2.8 *
Hispanic	14.7	0.9	12.9	1.1	-1.8
Non-Hispanic, Non-White	12.9	0.7	9.0	0.7	-3.9 *
Citizenship					
Non-citizen	21.3	1.3	18.2	1.2	-3.1
Citizen	8.9	0.3	6.0	0.2	-2.9 *

* Significant at the .05 level

It reports the average monthly percentage uninsured for the period prior to implementation of Chapter 58 and the period following implementation. It also reports the difference between the averages and whether that difference is statistically significant. The data in Tables 2, 3 and 4 will be discussed as the figures representing them are introduced.

Uninsurance

Figure 1 shows that uninsurance in Massachusetts was relatively stable between October of 2003 and September of 2006 ranging from a high of 13.2 percent in December of 2003 to a low of 8.5 percent in September of 2006 with an average rate of 9.9 percent. After September of 2006 there was a clear downward trend from a high of 9.1 percent in November of 2006 to a low

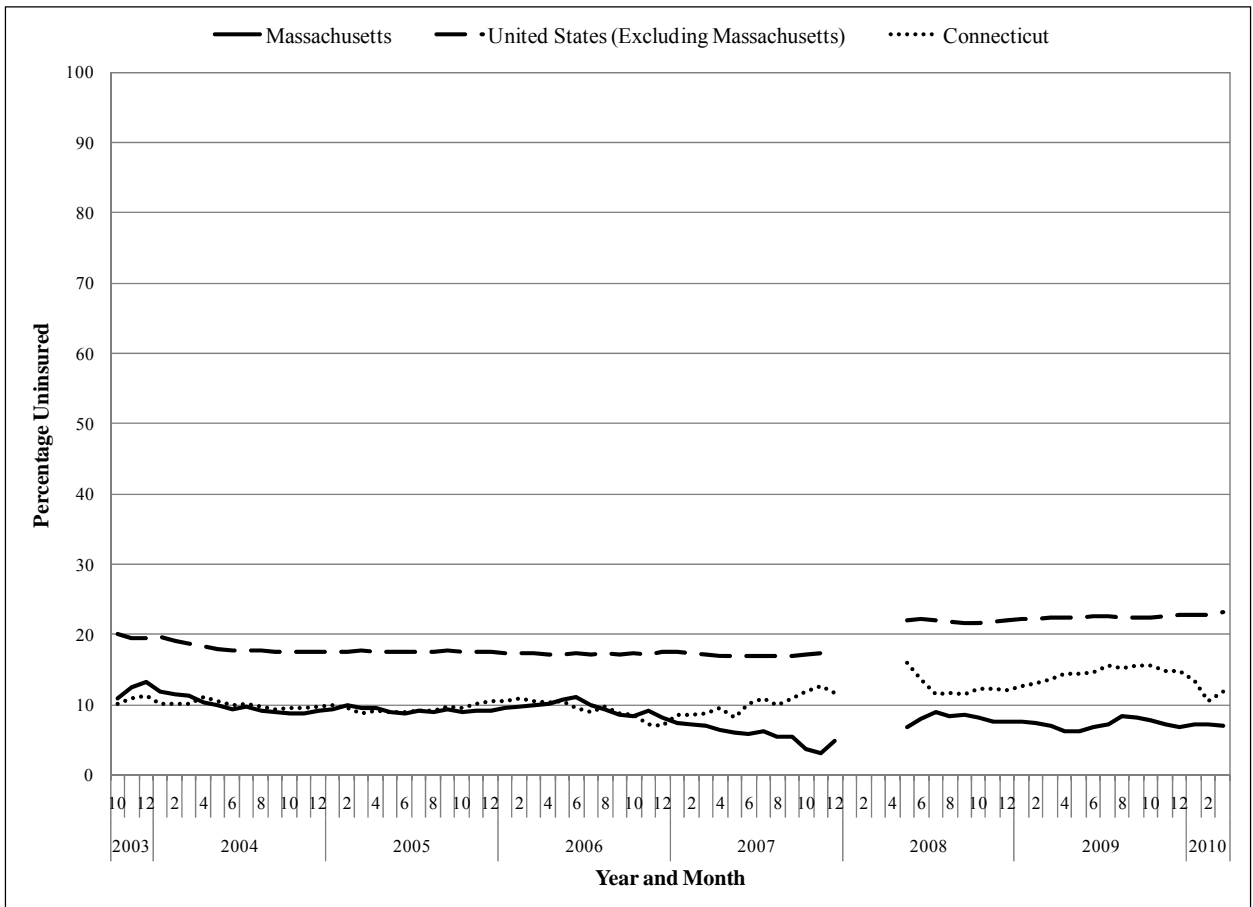


Figure 1. Percentage Uninsured in Massachusetts, the United States (Excluding Massachusetts) and Connecticut by Race/Ethnicity and by Year and Month: 2004 and 2008

of 3.2 percent in November of 2007 with an average rate of 7.0 percent. In contrast to the pattern observed in Massachusetts, the U.S. pattern (excluding Massachusetts) for the period prior to Chapter 58 ranged from a high of 20.1 percent in October of 2003 to a low of 17.1 percent in May of 2006 with an average rate of 17.8 percent. In the period following the implementation of Chapter 58, the percentage uninsured in the United States ranged from high of 23.1 percent in March of 2010 to a low of 16.9 percent in June of 2007 with an average rate of 20.3 percent. This upward shift is not surprising because the United States economy entered a severe recession in 2008 and many people lost jobs which may also mean that they lost their insurance coverage. The Connecticut pattern mimics the Massachusetts pattern very closely during the period prior to the implementation of Chapter 58. The percentage uninsured in Connecticut during this period ranged from a high of 11.3 percent in December of 2003 to a low of 8.8 in September of 2006 with an average rate of 9.9 percent. The Connecticut pattern diverges from the Massachusetts pattern in the period following implementation with values ranging from a low of 7.0 percent in December of 2006 to a high of 16.0 percent in May of 2008 with an average rate of 12.0 percent. The divergence of the Massachusetts uninsurance pattern from the U.S. and Connecticut patterns shortly after the health insurance exchange was implemented in October of 2006 suggests that Chapter 58 was effective at reducing uninsurance in Massachusetts. Though the data seem to suggest that it had only a small effect on uninsurance rates, these rates must be considered in the context of the recession. It is likely that without Chapter 58 the rates in Massachusetts would have followed an upward pattern similar to Connecticut's rather than decreasing and holding steady below 10 percent.

Imputation of Health Insurance Coverage Status

Figure 2 shows the percentage of respondents from the 2004 and 2008 SIPP panels whose health insurance coverage status was imputed. The percentage imputed (unweighted counts) during the pre-implementation period ranged from a low of 0.0 percent imputed in first months of the 2004 panel to a high of 0.7 percent in August of 2005 with an average rate of 0.5 percent. Rates ranged from 0.1 percent in June of 2008 to 2.2 percent in August of 2009 with an average of 0.9 percent for the post implementation period. This pattern lends support to Yelowitz and Cannon's (2010) argument that respondent behavior may have changed in response to the individual mandate. Figure 3 displays the percentage uninsured by imputation status and by year

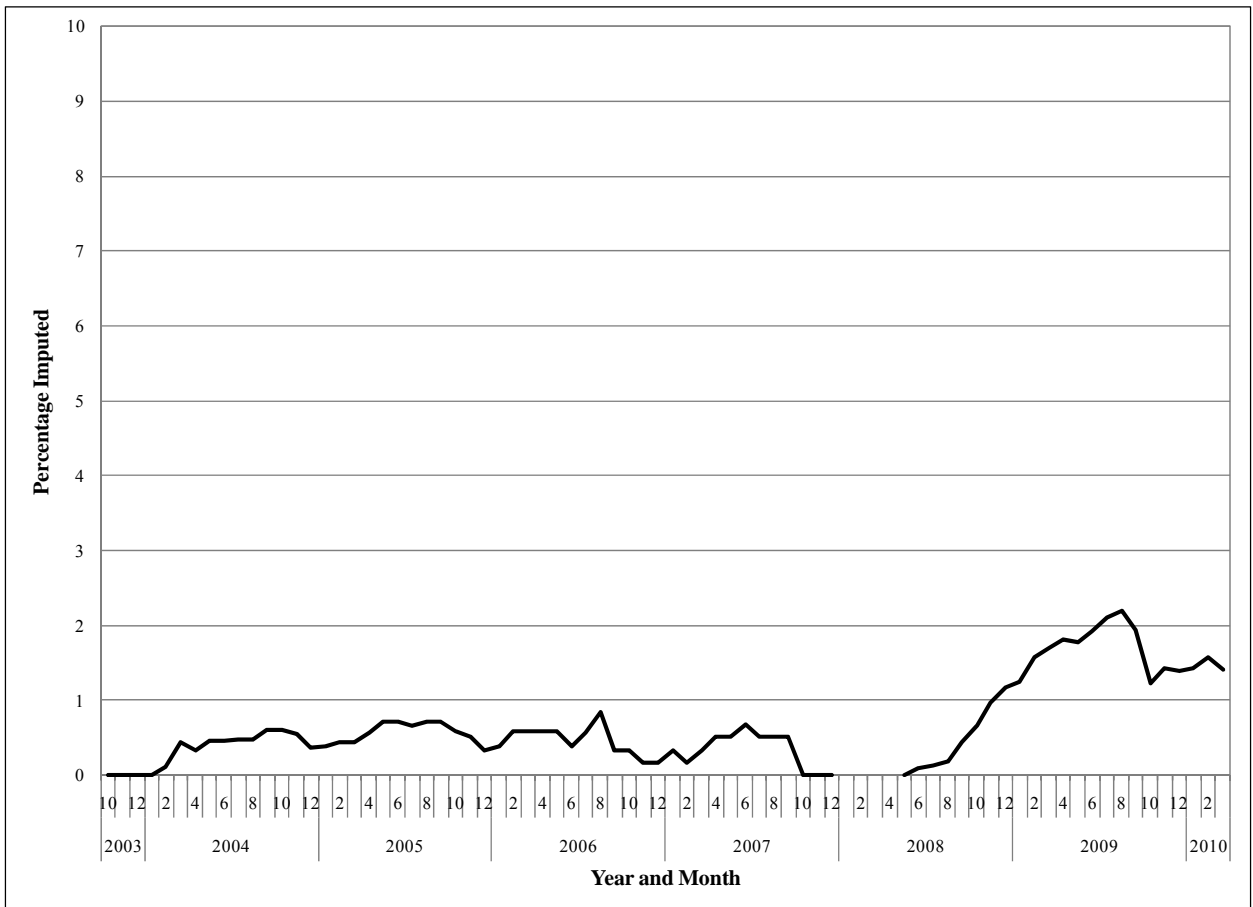


Figure 2. Percentage of SIPP Respondents in Massachusetts Whose Health Insurance Coverage Was Imputed by Year and Month

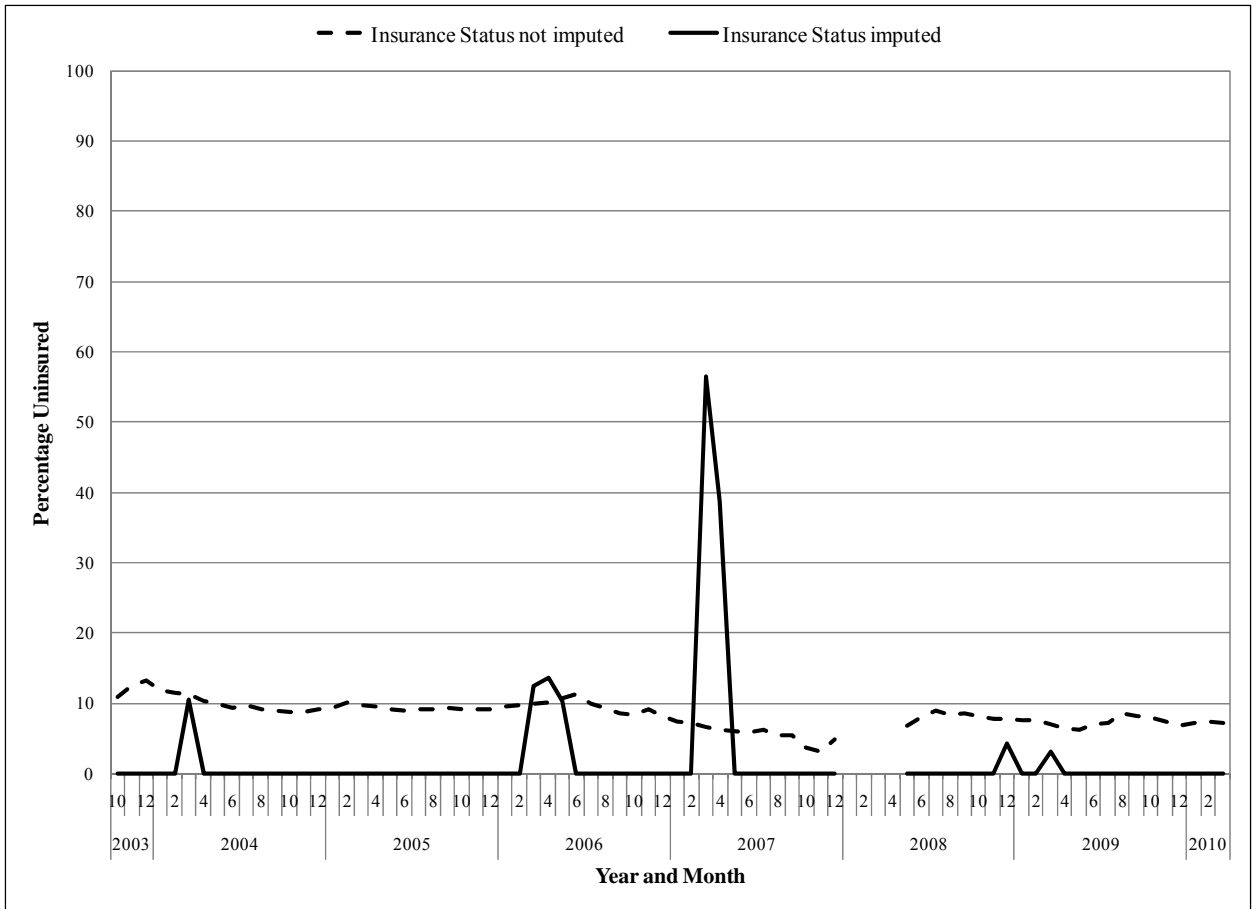


Figure 3. Percentage Uninsured by Imputation of Health Insurance Coverage and by Year and Month

and month. Most of the values for those whose insurance status was imputed were based on less than 10 respondents in the 2004 panel. These small numbers make it unlikely that the result of imputation would be uninsured considering that only about one in ten Massachusetts residents were uninsured. The large spike observed for March and April of 2007 was produced by two and three respondents with imputed health insurance status, respectively. The 2008 panel raises some interesting questions, however. Between October of 2008 and December of 2009, the number of respondents whose coverage status was imputed ranged from 13 to 36; enough that at least one should have been imputed as uninsured each month. Yet, only two months of the 2008 panel contained respondents imputed as being uninsured. It is possible that all the respondents whose

status was imputed possessed characteristics inconsistent with being uninsured. However, this seems unlikely. While this information does not conclusively answer the issue that Yelowitz and Cannon have raised it does indicate that the further research into the issue is warranted.

Employment Status

Figure 4 displays the percentage uninsured by employment status and by year and month. The percentage uninsured during the pre-implementation period for those employed full time ranged from a high of 9.7 percent in June of 2006 to a low of 6.0 percent in June of 2004 with an average rate of 7.1 percent. Values in the post-implementation period ranged from 0.0 percent December of 2007 to 7.2 percent in July of 2008 with an average value of 4.9 percent. The

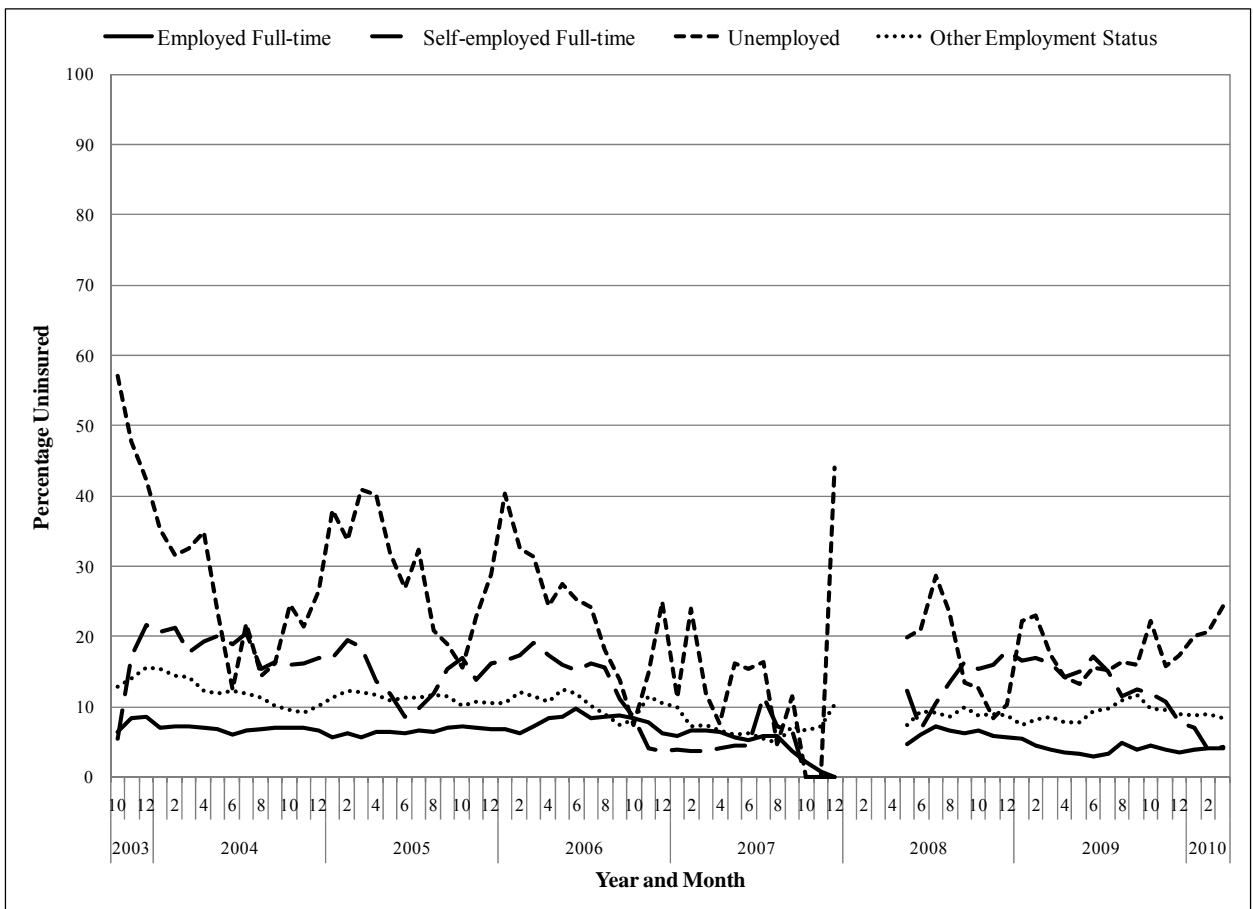


Figure 4. Percentage Uninsured by Employment Status and by Month and Year: 2004 and 2008 SIPP Panels

percentage uninsured for those self-employed full-time ranged from a high of 21.6 percent in December of 2003 to a low of 5.5 percent in October of 2003 with an average rate of 16.1 percent during the pre-implementation period. In the post-implementation period, values ranged from 17.9 percent in December of 2008 to a low of 3.9 percent in February of 2010 with an average value of 9.4 percent. The unemployed also experienced a significant drop in the percentage uninsured between the pre and post implementation periods. Values for this group during the pre implementation period ranged from a high of 57.0 percent in October of 2003 to a low of 13.9 percent in September of 2006 with an average of 28.7 percent. Values during the post implementation period ranged from a low of 0.0 percent in October and November of 2007 to a high of 44.1 percent in December of 2007 with an average of 16.4 percent. The percentage uninsured for those with other employment statuses ranged from 15.7 percent in December of 2003 to a low of 7.5 percent in September of 2006 with an average of 11.6 percent during the pre implementation period. During the post implementation period, values ranged from a low of 4.9 percent in August of 2007 to a high of 11.7 percent in September of 2009 with an average of 8.5 percent.

Occupation

Figure 5 shows the percentage uninsured by occupation and by year and month. The average monthly percentage uninsured for those working in a high risk occupation prior to implementation of Chapter 58 ranged from a high of 33.0 percent in October of 2003 to a low of 18.7 percent in June of 2005 with an average of 23.8 percent. Values during the post implementation period ranged from a high of 22.7 percent in November of 2006 to a low of 9.1 in November of 2007 with an average rate of 15.6 percent. The percentage uninsured for those working in other occupations during the pre implementation period ranged from a high of 9.7

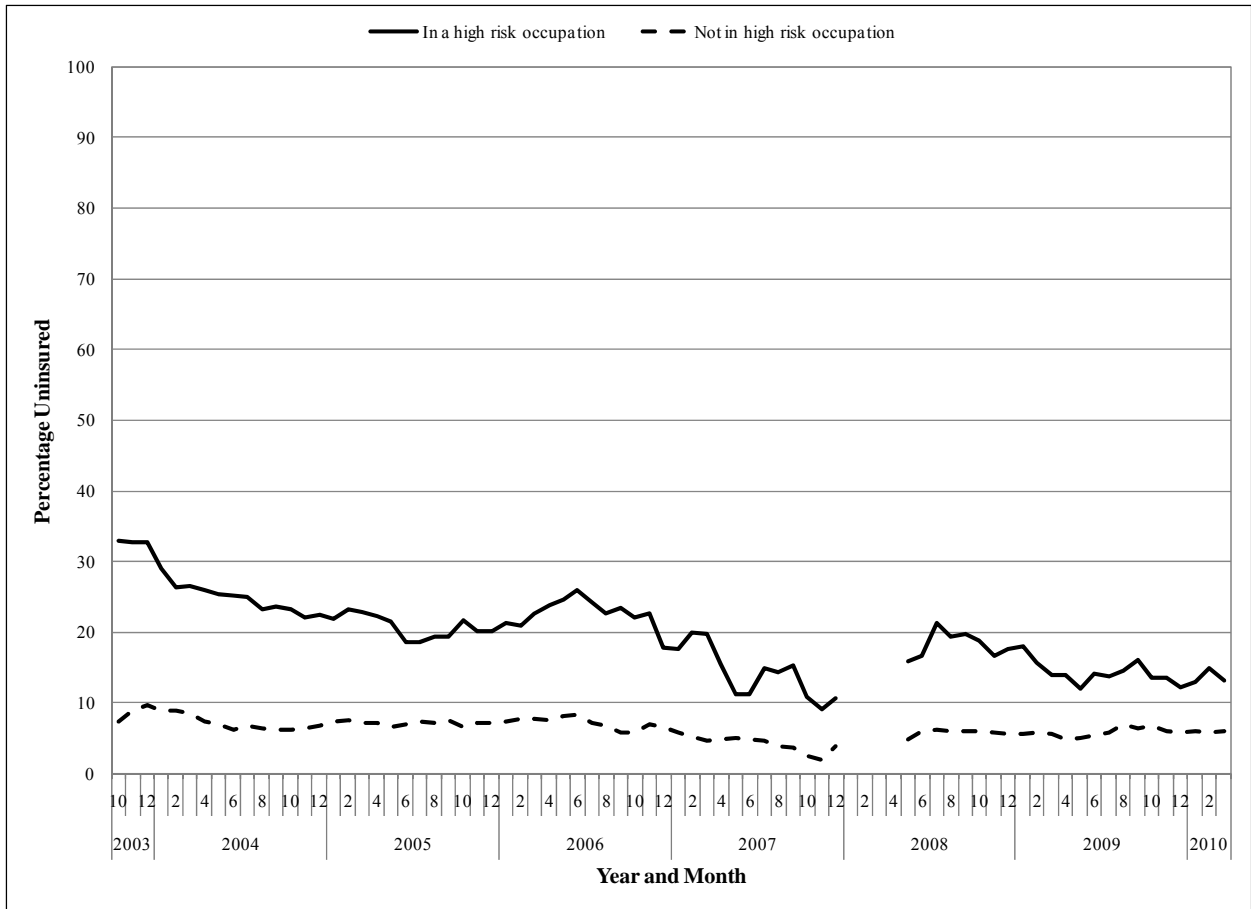


Figure 5. Percentage Uninsured by Occupation Status and by Year and Month: 2004 and 2008 SIPP Panels

percent in December of 2003 to a low of 5.8 in September of 2006 and averaged 7.4 percent.

Values for the post implementation period ranged from a high of 6.9 percent in December of 2006 to a low of 2.0 percent in November of 2007 with an average of 5.4 percent.

Size of Employer or Business

Figure 6 shows the percentage uninsured by employer size and by year and month. The percentage uninsured for those working in small firms (less than 25 employees) during the pre implementation period ranged from a high of 24.2 percent in December of 2003 to a low of 12.7 percent in July of 2005 and averaged 16.5 percent. Values for this group during the post implementation period ranged from a low of 0.0 percent in December of 2007 to a high of 16.5

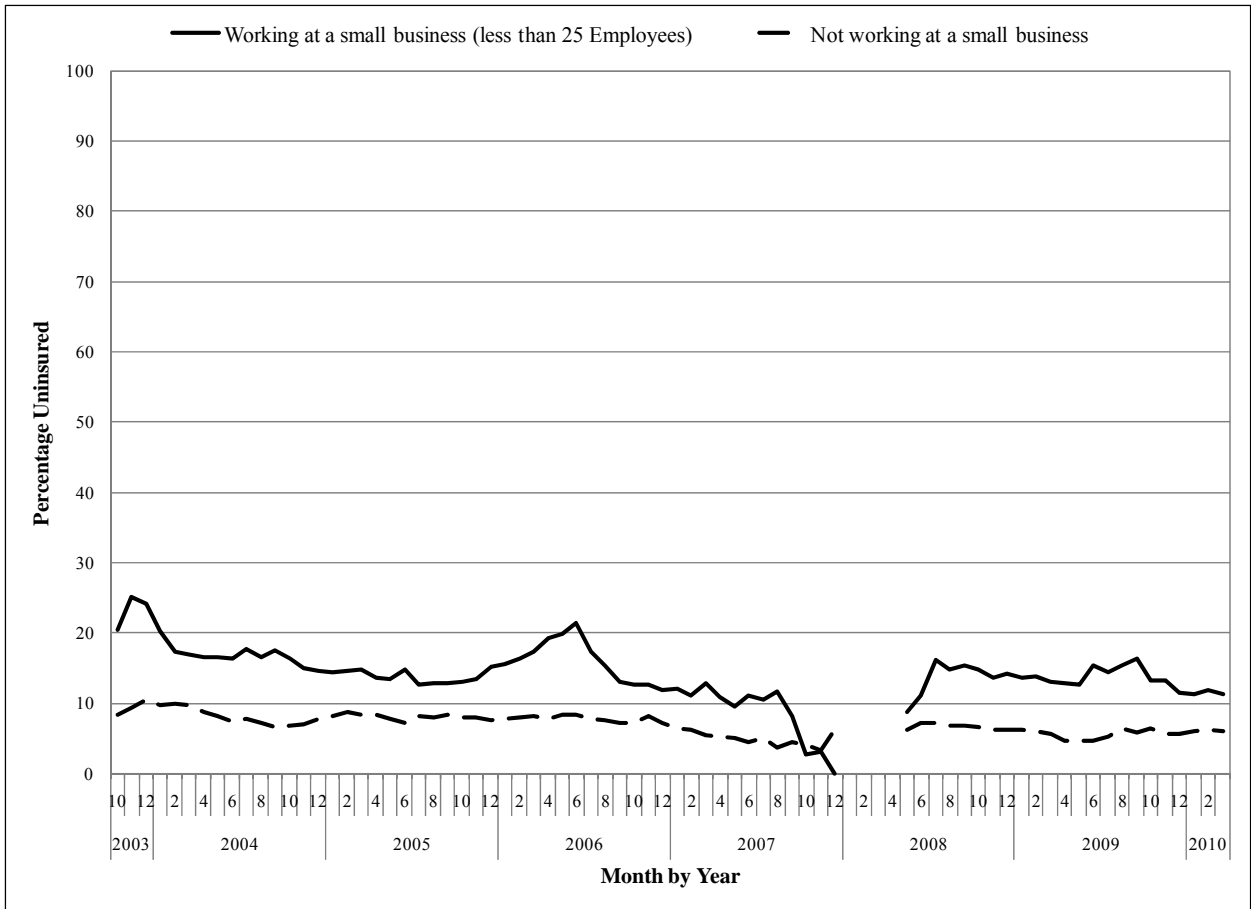


Figure 6. Percentage Uninsured by Firm Size and by Month and Year: 2004 and 2008 SIPP Panels

percent in September of 2009 with an average of 11.9 percent. For those working in larger firms, values for the pre implementation period ranged from a high of 10.0 percent in February of 2004 to a low of 6.7 percent in September of 2004 with an average of 8.2 percent. During the post implementation period, values for this group ranged from a low of 3.2 percent in November of 2007 to a high of 8.3 percent in November of 2006 and averaged 5.8 percent.

Income

Figure 7 displays the percentage uninsured by income and by year and month. The percentage uninsured for those making 150 percent of the Federal Poverty Guidelines (FPG) or less prior to Chapter 58 ranged from a high of 30.4 percent in January of 2004 to a low of 13.8

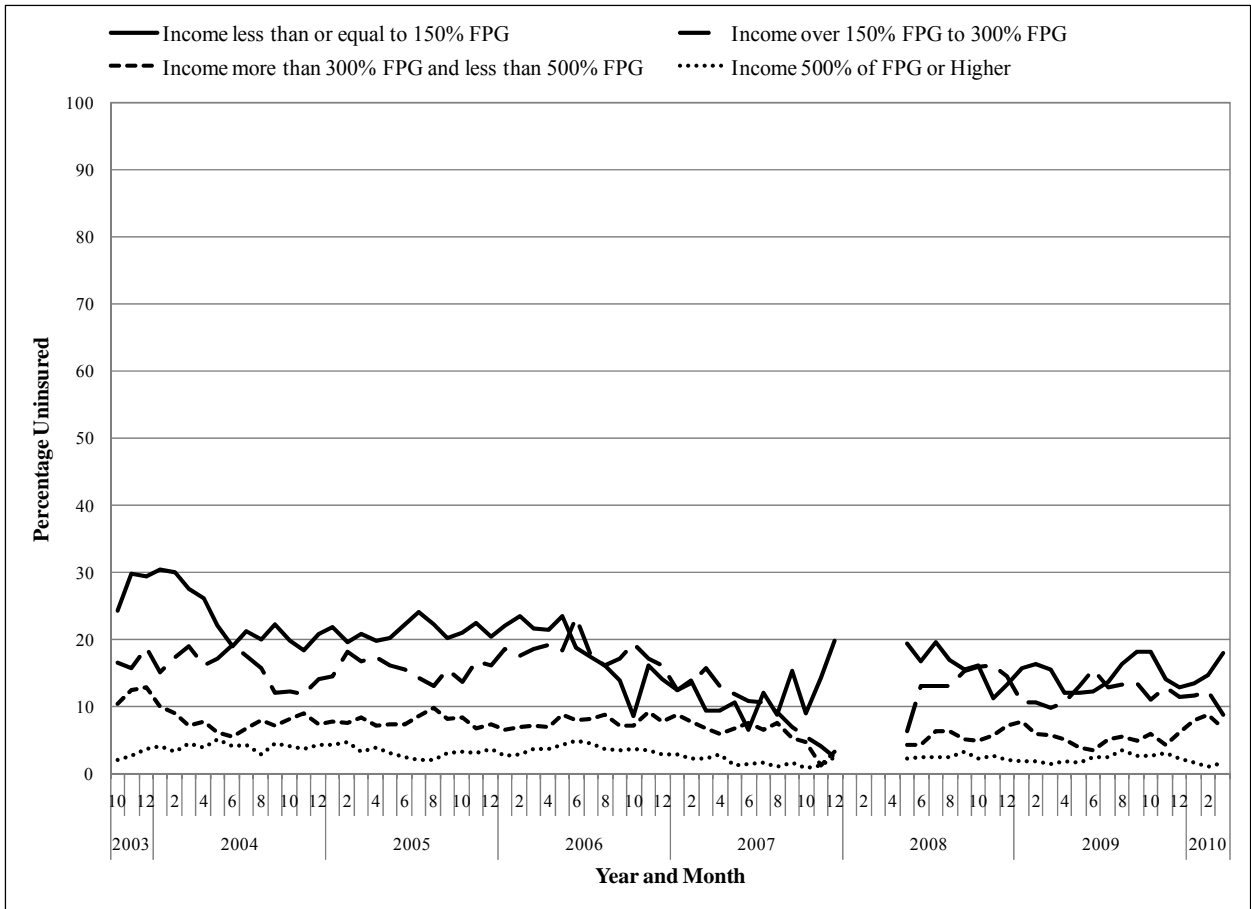


Figure 7. Percentage Uninsured by Income and by Year and Month: 2004 and 2008 SIPP Panels

percent in September of 2006 with an average of 22.1 percent. Values for the post implementation period ranged from a high of 19.9 percent in December of 2007 to a low of 6.6 percent in June of 2007 and averaged 14.0 percent. For those making more than 150 percent of FPG up to 300 percent of FPG during the pre implementation period, values ranged from a high of 23.2 percent in June of 2006 to a low of 11.8 percent in November of 2004 and averaged 16.5 percent. Values during the post implementation period ranged from a high of 19.5 percent in October of 2006 to a low of 2.4 percent in December of 2007 with an average of 12.0 percent. Values for those making more than 300 percent FPG and less than 500 percent FPG ranged from a low of 5.6 percent in June of 2004 to a high of 12.8 percent in December of 2003 and averaged

8.1 percent during the pre implementation period. Values for this group in the post implementation period ranged from a high of 9.1 percent in November of 2006 to a low of 1.3 percent in November of 2007 and averaged 6.0 percent. Those making 500 percent of FPG or more averaged just 3.6 percent uninsured during the pre implementation period with values ranging from a low of 2.0 percent in October of 2003 to a high of 5.0 percent in June of 2006. Values ranged from a high of 3.7 percent in October of 2006 to a low of 0.9 percent in October 2007 and averaged 2.2 percent in the post implementation period.

Level of Education

Figure 8 shows the percentage uninsured by education level and by year and month. The average monthly percentage uninsured for those with less than a high school diploma prior to Chapter 58 ranged from a high of 28.6 percent in December of 2003 to a low of 8.4 percent in November of 2004 and averaged 17.7 percent. Values for the post implementation period ranged from a low of 0.0 in December of 2007 to a high of 22.1 percent in December of 2006 and averaged 15.5 percent. The difference between the two period averages was not statistically significant. Those with a high school diploma averaged 16.5 percent uninsured prior to Chapter 58 with values ranging from a high of 22.2 percent in December of 2003 to a low of 13.8 percent in May of 2005. Values for this group during the post implementation period ranged from a low of 5.8 percent in November of 2007 to a high of 15.4 percent in June of 2008 and averaged 11.3 percent. The percentage uninsured for those with some college or an Associate's Degree during the pre implementation period ranged from a low of 6.4 percent in July of 2006 to a high of 12.8 percent in December of 2003 and averaged 9.6 percent. This group averaged 6.7 percent during the post implantation period with values ranging from a low of 0.7 percent in November of 2007 to a high of 10.1 percent in November of 2006. For those with a Bachelor's Degree or higher in

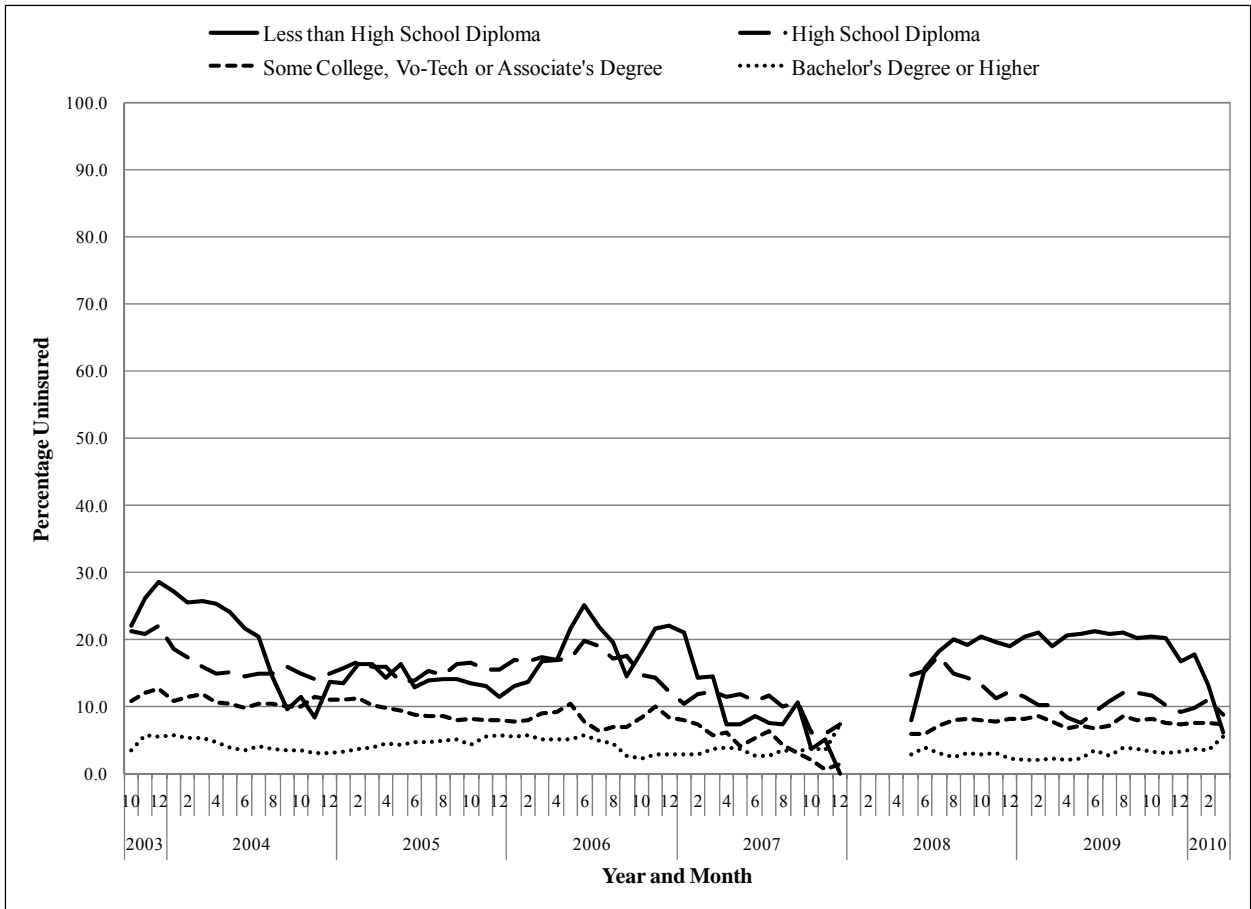


Figure 8. Percentage Uninsured by Highest Degree Obtained and by Year and Month: 2004 and 2008 SIPP Panels

the pre implementation period, the percentage uninsured ranged from a low of 2.7 percent in September of 2006 to a high of 5.8 percent in February of 2006 with an average of 4.5 percent. During the post implementation period values ranged from a low of 2.1 percent in February of 2009 to a high of 7.3 percent in December of 2007 and averaged 3.2 percent.

Marital Status

Figure 9 displays the percentage uninsured by marital status and by year and month. The percentage uninsured for those who were married during the pre implementation period ranged from a low of 3.3 percent in November of 2005 to a high of 6.9 percent in December of 2003 and averaged 4.9 percent. Values for the post implementation period ranged from 0.6 percent in

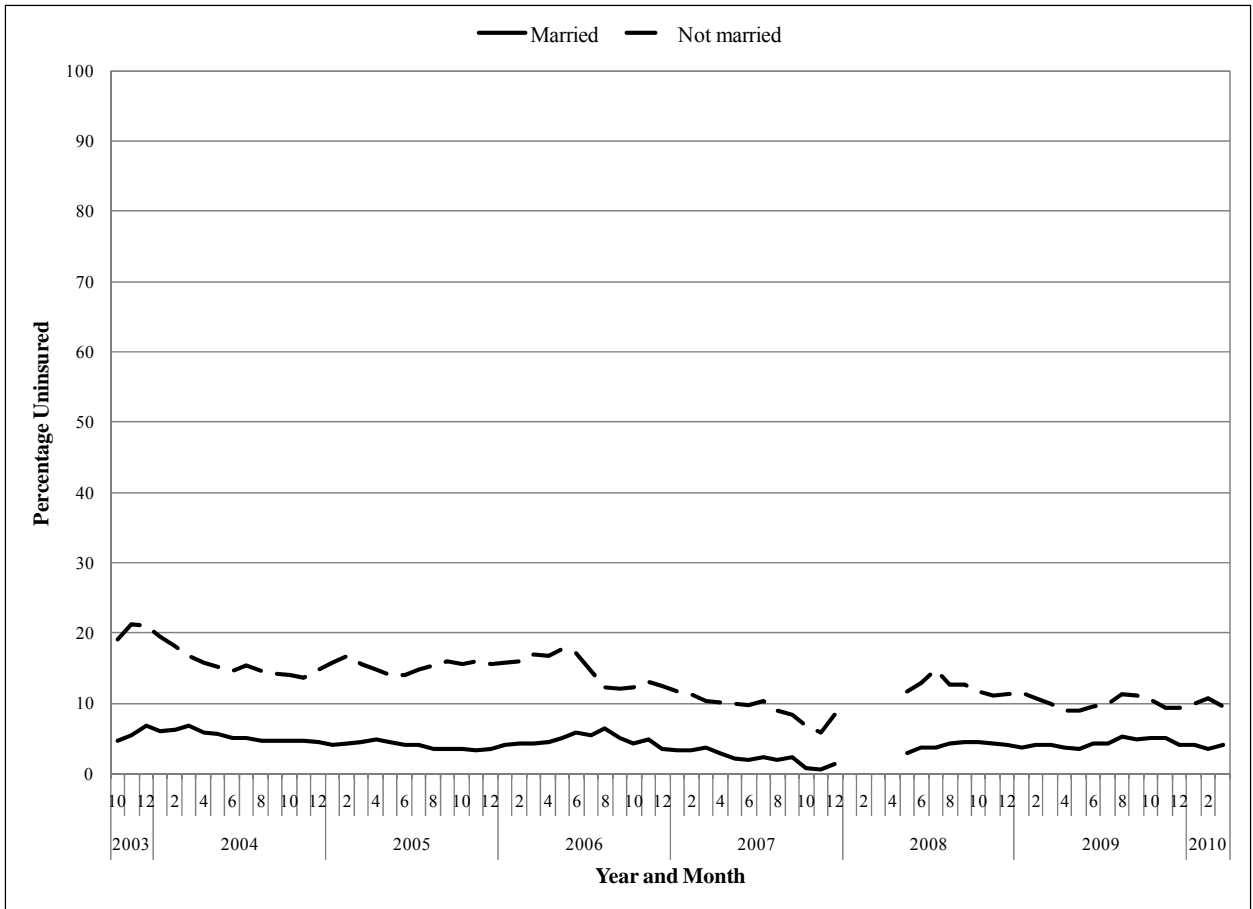


Figure 9. Percentage Uninsured by Marital Status and by Year and Month: 2004 and 2008 SIPP Panels

November of 2007 to a high of 5.4 percent in August of 2009 and averaged 3.6 percent. The average for those not married prior to Chapter 58 was 15.9 percent and the values ranged from a low of 12.1 percent in September of 2006 to a high of 21.3 percent in November of 2003. During the post implementation period, this group averaged 10.5 percent and the values ranged from a low of 5.9 percent in November of 2007 to a high of 14.8 percent in July of 2008.

Living with One’s Children Under 18

Figure 10 shows the percentage uninsured by whether people live with their own children under age 18 or not and by year and month. For those living with their own children during the pre implementation period, the percentage uninsured ranged from a low of 4.6 percent in

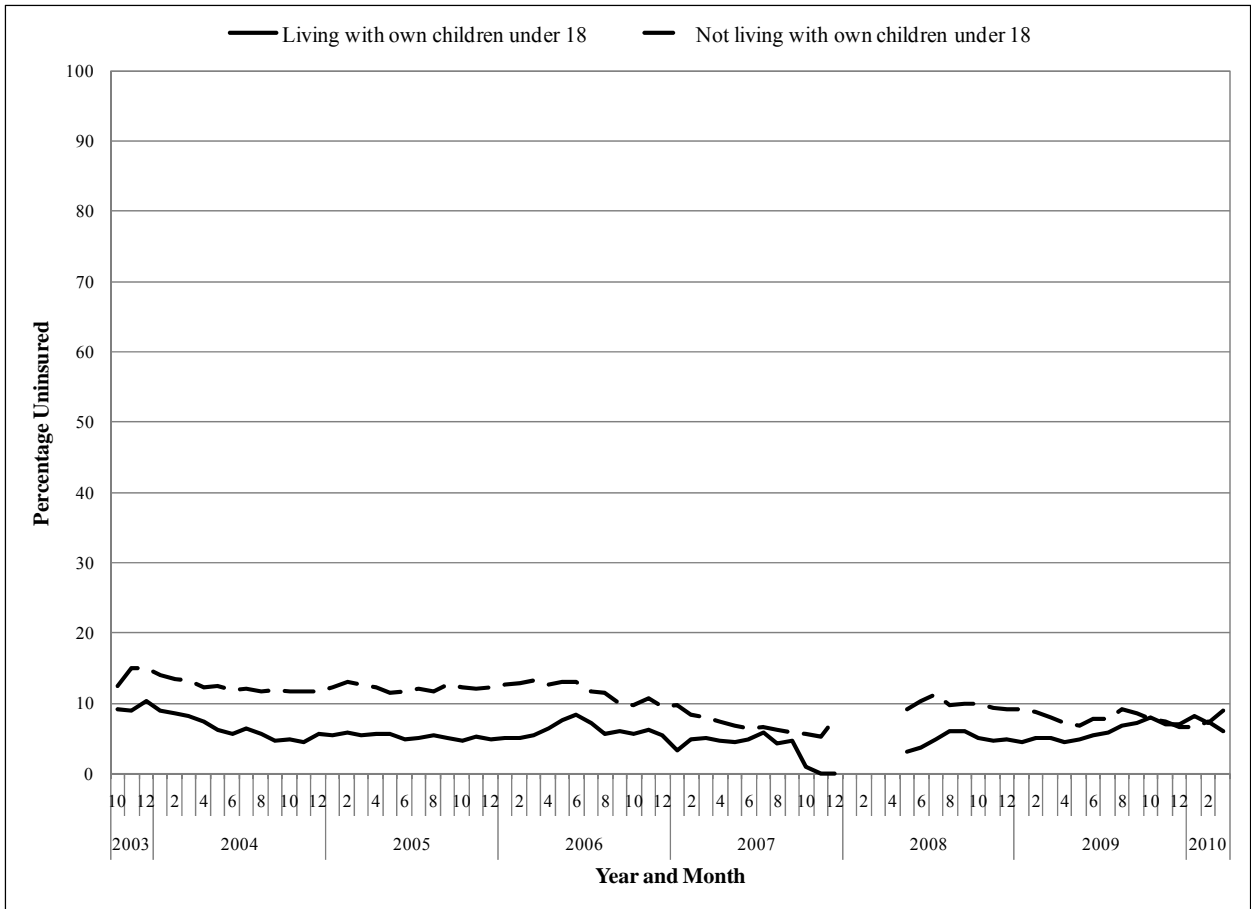


Figure 10. Percentage of Respondents Living with Own Children Less than 18 Years Old Who Were Uninsured by Year and Month:

November of 2004 to a high of 10.4 percent in December of 2003 and averaged 6.3 percent. This group averaged 5.1 percent during the post implementation period and values ranged from a low of 0.0 percent in November and December of 2007 and a high of 9.0 percent in March of 2010. Values for the group not living with their own children under age 18 during the pre implementation period ranged from a low of 9.9 percent in September of 2006 to a high of 15.1 percent in December of 2003 and averaged 12.4 percent. This group averaged 8.1 percent during the post implementation period and values ranged from a low of 5.3 percent in November of 2007 to a high of 11.3 percent in July of 2008.

Health Status

The percentage uninsured by health status and by year and month is displayed in Figure 11. Values for those whose health status interfered with their ability to work during the pre implementation period ranged from a low of 3.9 in October of 2004 to a high of 13.5 percent in November of 2003 and averaged 6.6 percent. This group averaged 5.4 percent in the post implementation period and values ranged from a low of 0.0 percent in July and August of 2007 to a high of 10.8 percent in June of 2008. The two averages were not statistically different. Values for those not reporting health problems during the pre implementation period ranged from a low of 9.0 percent in June of 2005 to a high of 13.3 percent in December of 2003 and

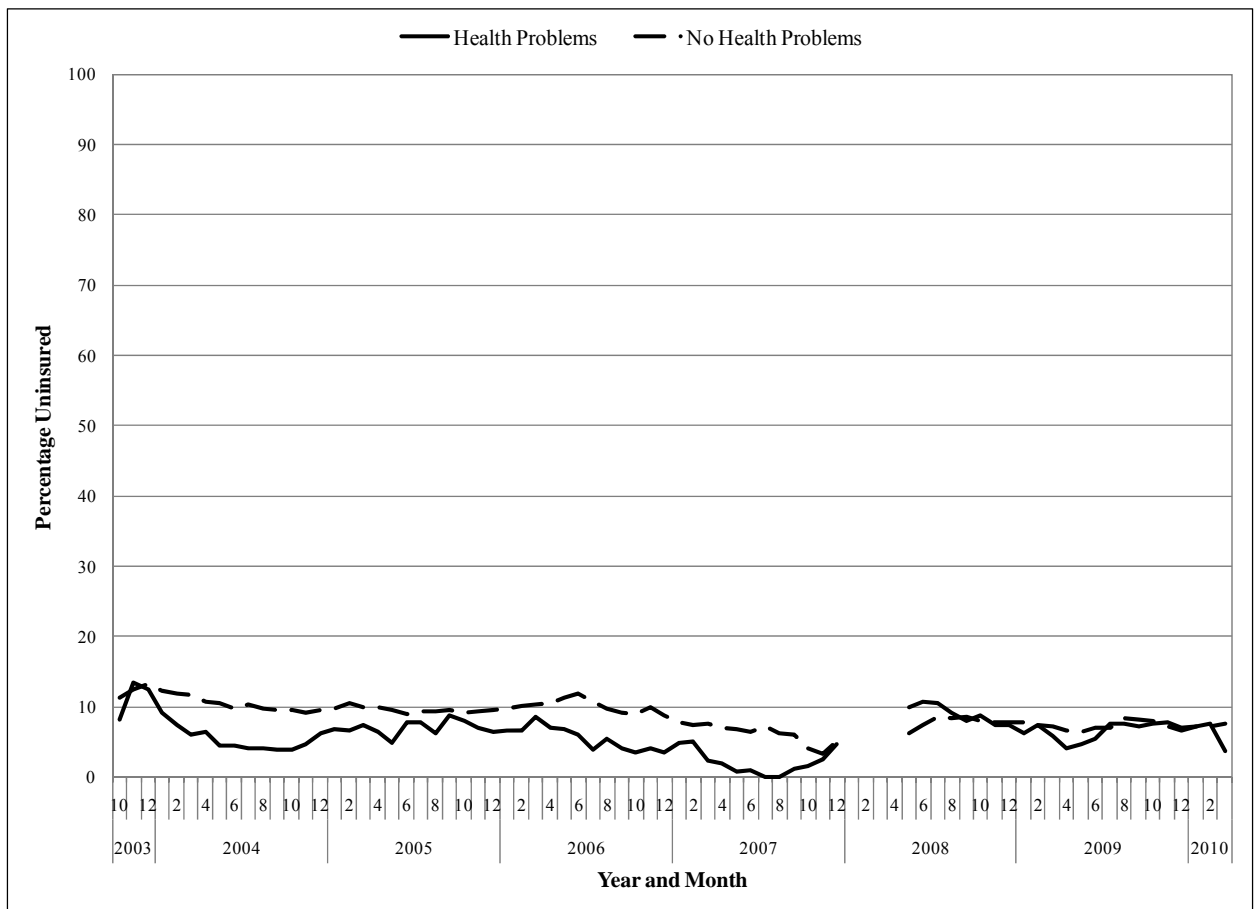


Figure 11. Percentage Uninsured by Health Status and by Year and Month: 2004 and 2008 SIPP Panels

averaged 10.3 percent. The average value for this group during the post implementation period was 7.3 percent and values ranged from a low of 3.3 percent in November of 2007 to a high of 9.9 percent in November of 2006.

Age

Figure 12 shows the percentage uninsured by age and by year and month. The percentage uninsured for people in the 18 to 24 year old group prior to Chapter 58 ranged from a low of 12.6 percent in June of 2005 to a high of 33.7 percent in October of 2003 and averaged 17.9 percent. Values during the post implementation period ranged from a low of 5.1 percent in August of 2007 to a high of 16.8 percent in November of 2006 and averaged 11.2 percent. Those aged 25 to

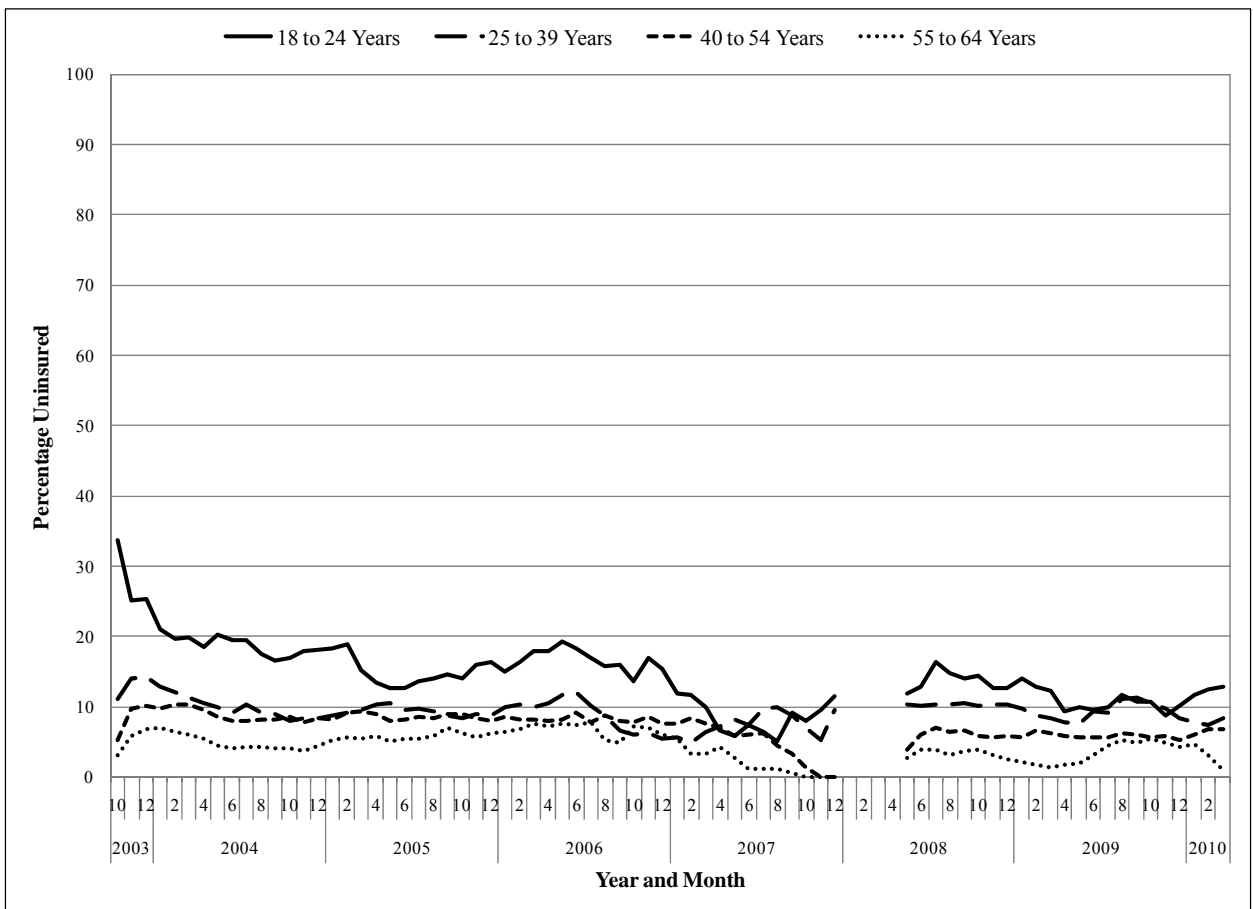


Figure 12. Percentage Uninsured by Age and by Year and Month: 2004 and 2008 SIPP Panels

39 averaged 10.0 percent during the pre implementation period and values ranged from a low of 6.7 percent in September of 2006 to a high of 14.3 percent in December of 2003. Values for this group during the post implementation period ranged from a low of 5.0 percent in February of 2007 to a high of 11.3 percent in September of 2009 and averaged 8.6 percent. The averages for this age group were not significantly different. The percentage uninsured for those aged 40 to 54 years prior to Chapter 58 ranged from a low of 5.3 percent in October of 2003 to a high of 10.3 percent in February of 2004 and averaged 8.6 percent. Values for this group during the post implementation period ranged from a low of 0.0 in November and December of 2007 to a high of 8.6 percent in November of 2006 and averaged 5.8 percent. For those aged 55 to 64 during the pre implementation period, the percentage uninsured ranged from a low of 3.1 percent in October of 2003 to a high of 7.7 percent in July of 2006 and averaged 5.7 percent. This group averaged 3.2 percent during the post implementation period and values ranged from a low of 0.0 percent in October, November and December of 2007 to a high of 7.3 percent in October of 2006.

Sex

Figure 13 displays the percentage uninsured by sex and by year and month. Values for males prior to Chapter 58 ranged from a low of 10.4 percent in June of 2005 to a high of 16.3 percent in November of 2003 and averaged 12.3 percent. In the post implementation period, the male average was 9.0 percent and values ranged from a low of 4.8 percent in November of 2007 to a high of 12.3 percent in July of 2008. Prior to the implementation of Chapter 58, females averaged 7.6 percent uninsured with values ranging from a low of 6.3 in December of 2005 to a high of 10.3 percent in December of 2003. Values for females in the post implementation period ranged from a low of 1.7 percent in November of 2007 to a high of 7.7 in November of 2006 and averaged 5.1 percent.

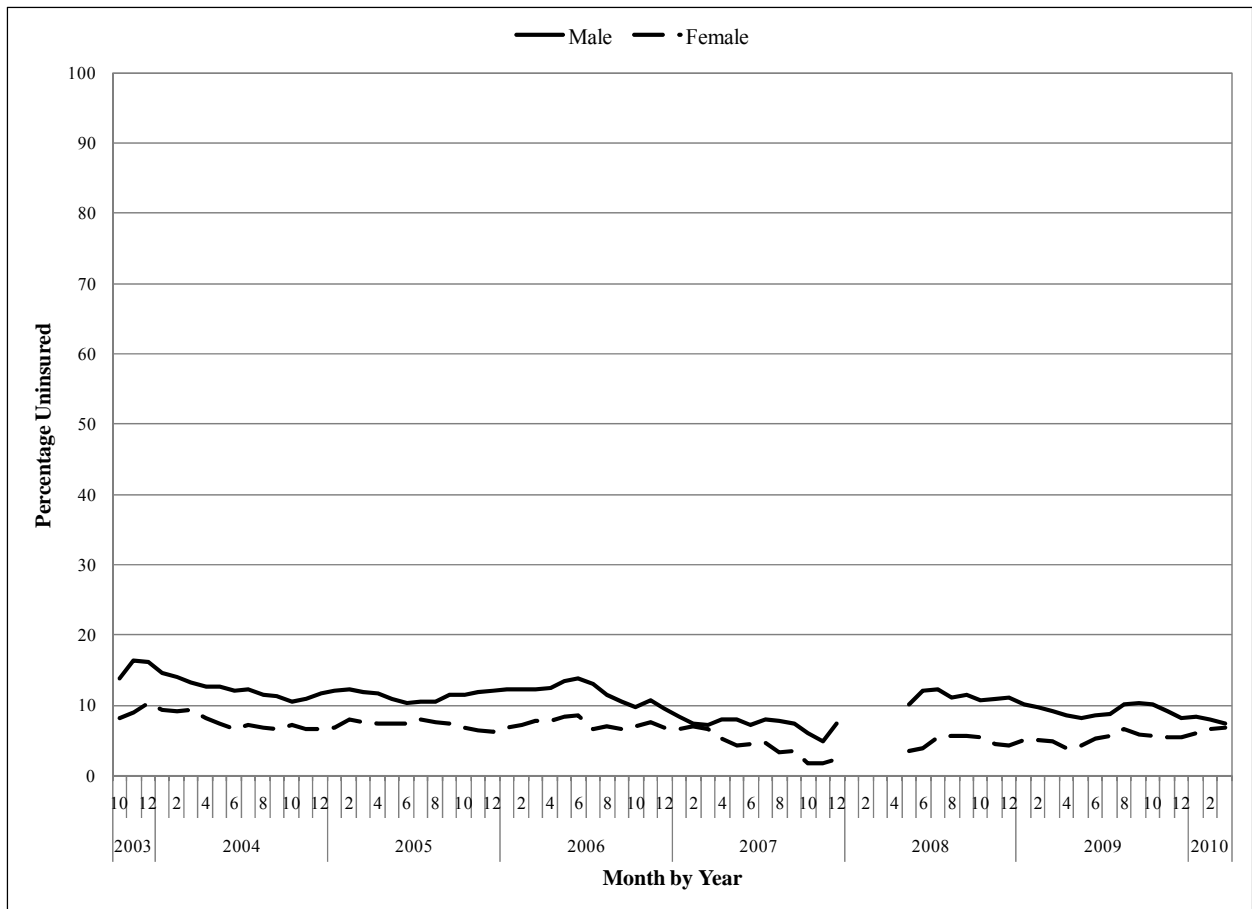


Figure 13. Percentage Uninsured by Sex and by Year and Month: 2004 and 2008 SIPP Panels

Race/Ethnicity

While analyzing the percentage uninsured by race/ethnicity, I found that the Massachusetts pattern prior to Chapter 58 already differed significantly from what research suggested it should. Figure 14 shows the percentage uninsured in the United States (excluding Massachusetts) by race/ethnicity and by year and month. This pattern illustrates the classic pattern of Black and Other races experiencing rates roughly double that of Non-Hispanic Whites while Hispanics have rates about three times that of Non-Hispanic Whites. Connecticut exhibits a similar pattern (see Figure 15), though its rates are bouncier due to the greater volatility at the state level and because of the smaller sample. In contrast to the pattern found in these areas, the

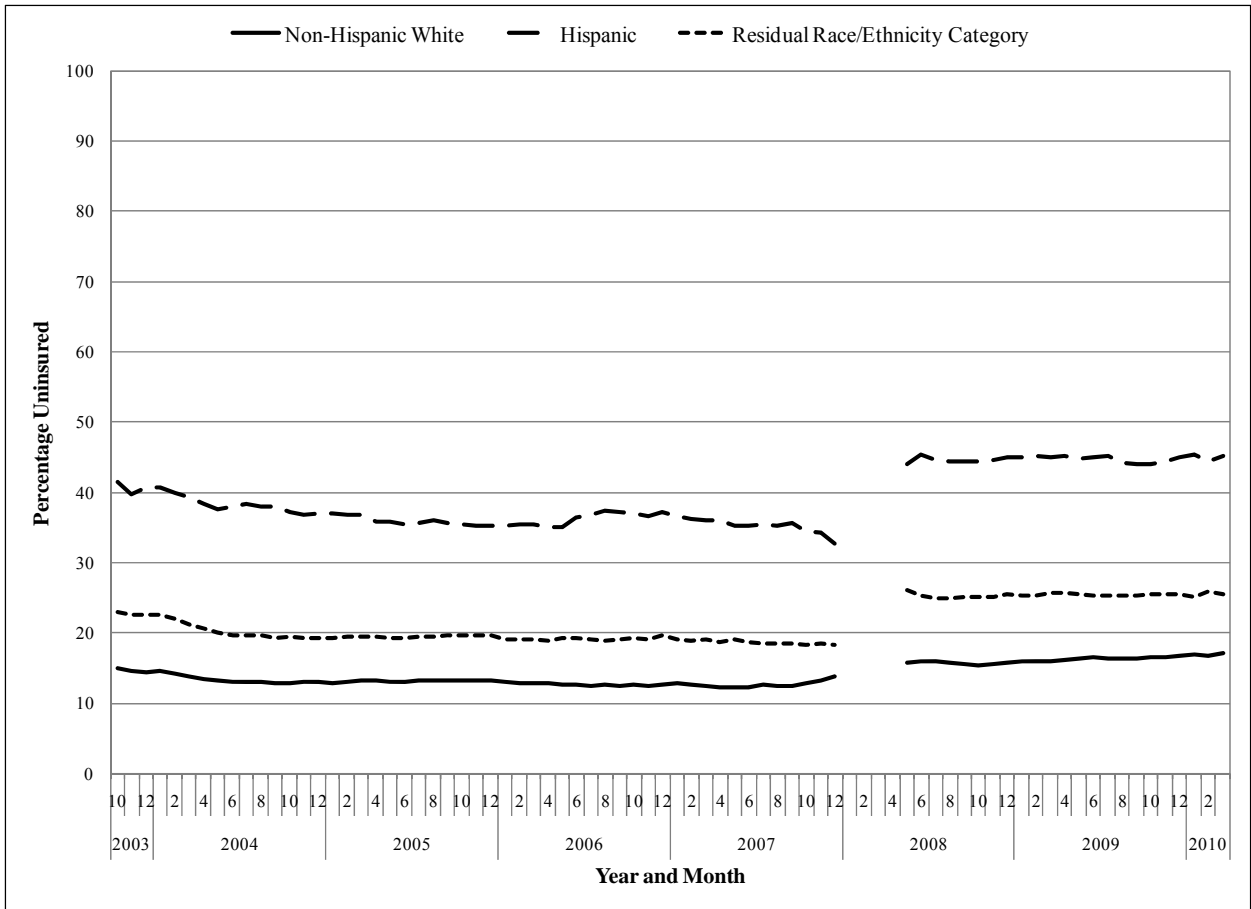


Figure 14. Percentage Uninsured in the United States (Excluding Massachusetts) by Race/Ethnicity and by Year and Month:

percentage uninsured (see Figure 16) for Hispanics and Blacks and Others in Massachusetts is quite similar until about May of 2006 and is only slightly higher on average than Non-Hispanic Whites. There is a large bump in Hispanic rates during the latter half of 2006, but otherwise, minority rates are much closer to the rates of Non-Hispanic Whites in Massachusetts than seems to be the case in the rest of the United States. What this means will require further research, but it seems to indicate that Massachusetts had effectively dealt with racial/ethnic disparities in health insurance coverage prior to implementing health care reform; most other states will have to deal with both issues simultaneously as the federal health care reform is implemented.

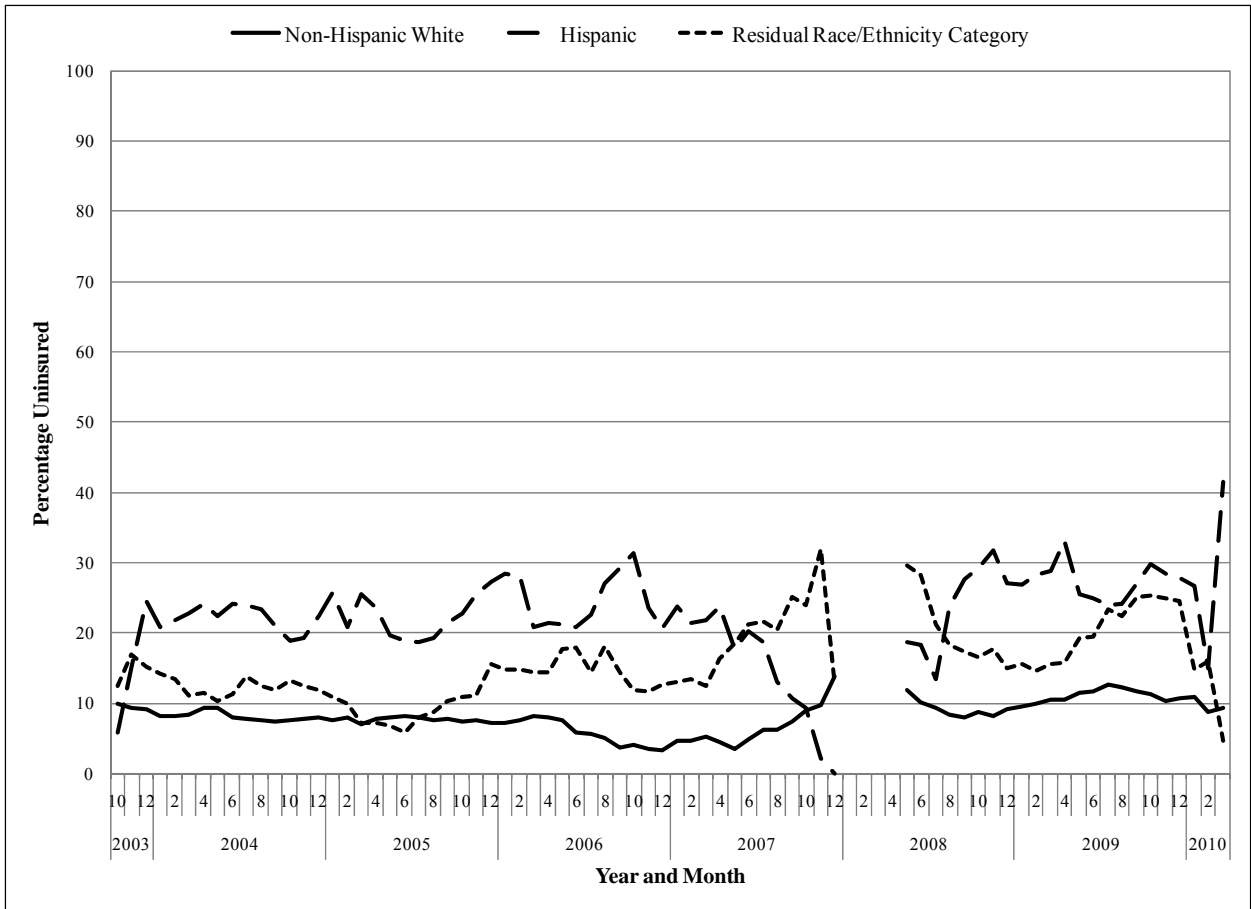


Figure 15. Percentage Uninsured in Connecticut by Race/Ethnicity and by Year and Month: 2004 and 2008 SIPP Panels

Figure 16 displays the percentage uninsured by race/ethnicity and by year and month. The percentage uninsured for Non-Hispanic Whites during the pre implementation period ranged from a low of 6.9 percent in September of 2006 to a high of 12.1 percent in December of 2003 and averaged 9.2 percent. This group averaged 6.4 percent in the period after implementation and values ranged from a low of 2.8 percent in November of 2007 to a high of 7.9 percent in September of 2008. The percentage uninsured among Hispanics during the pre implementation period ranged from a low of 7.8 percent in August of 2004 to a high of 27.0 percent in September of 2006 and averaged 14.7 percent. Hispanics averaged 12.9 percent during the post implementation period and values ranged from a low of 0.0 percent in November and December

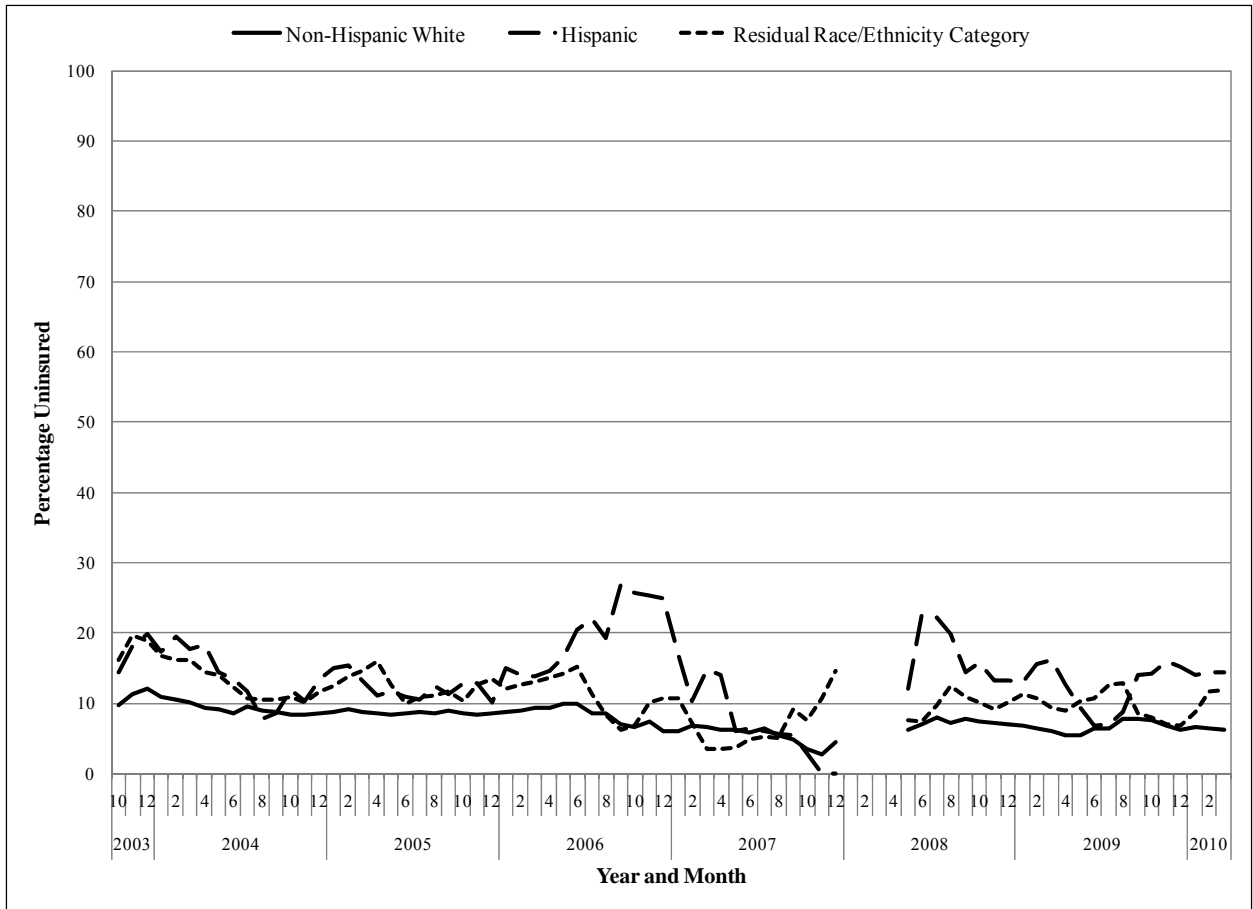


Figure 16. Percentage Uninsured in Massachusetts by Race/Ethnicity and by Year and Month: 2004 and 2008 SIPP Panels

of 2007 to a high of 25.7 percent in October of 2006. The average monthly values for Hispanics during the two periods were not significantly different. Values for those in the Non-Hispanic, Non-white category during the pre implementation period ranged from a low of 6.3 percent in September of 2003 to a high of 19.6 percent in November of 2003 and averaged 12.9 percent. The percentage uninsured for this group in the post implementation period ranged from a low of 3.5 percent in March of 2007 to a high of 14.6 percent in December of 2007 and averaged 9.0 percent.

Citizenship

Figure 17 displays the percentage uninsured by citizenship and by year and month. The percentage uninsured for non-citizens prior to the implementation of Chapter 58 ranged from a low of 12.8 percent in November of 2004 to a high of 46.1 percent in October of 2003 and averaged 21.3 percent. The average rate for non-citizens after implementation was 18.2 percent and values ranged from a low of 0.0 percent in October, November and December of 2007 to a high of 35.1 percent in October of 2006. The average monthly percentages for the two periods were not significantly different. Values for those who were citizens prior to implementation ranged from a low of 6.5 percent in September of 2006 to a high of 11.4 percent in December of

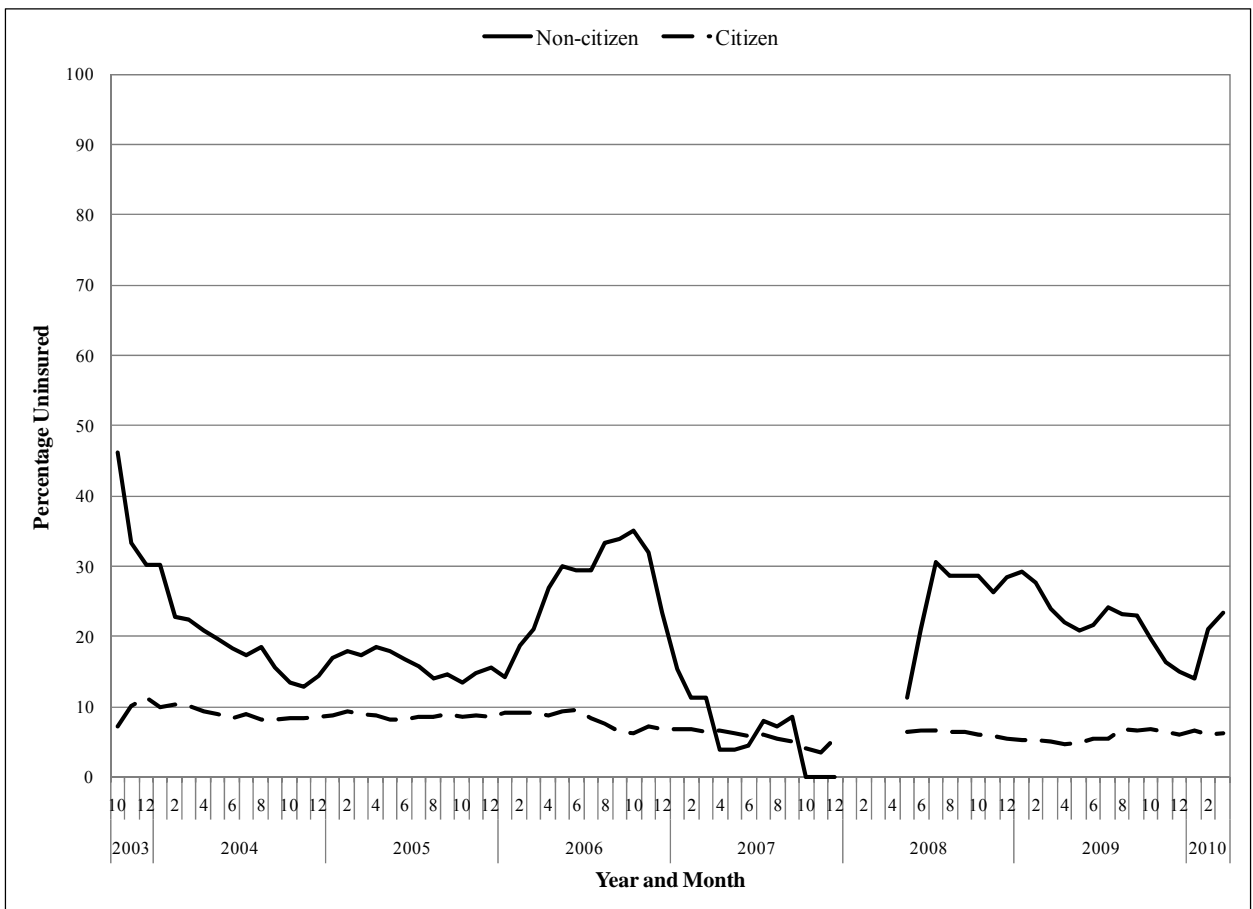


Figure 17. Percentage Uninsured by Citizenship Status and by Year and Month: 2004 and 2008 SIPP Panels

2003 and averaged 8.9 percent. The average monthly value for citizens after implementation was 6.0 percent and values ranged from a low of 3.5 percent in November of 2007 to high of 7.3 in November of 2006.

Regression Analysis

Table 5 reports results from the regression models. Model 1 is a logistic regression covering all months of data currently available from the 2004 and 2008 SIPP panels. The primary purpose of this model is to evaluate the effectiveness of Chapter 58 in reducing the probability of being uninsured for the working age population of Massachusetts. The primary purpose of Models 2 and 3 is to provide pre and post implementation estimates of coefficients that can be compared to determine which determinants of uninsurance were significantly influenced by Chapter 58. Model 1 was statistically significant with a likelihood ratio chi-square of 33,221,214 (DF = 24, $p < .0001$). Model fit was modest as indicated by a likelihood ratio R^2 (R_L^2) of .206. Model 2 was also statistically significant with a likelihood ratio chi-square of 7,420,322 (DF = 22, $p < .0001$). Model fit was modest, though slightly better than Model 1 with R_L^2 of .235. Model 3 displayed characteristics similar to the other two models with a likelihood ratio chi-square of 6097930.1 (DF = 22, $p < .0001$) and an R_L^2 of .231.

Table 5: Regression Results and the Differences between the Model 2 and Model 3 Coefficients

Variables	Model 1		Model 2		Model 3		Model 3 coef. minus Model 2 coef.
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	
Chapter 58							
Health Insurance Exchange	-0.5 **	0.1	NA	NA	NA	NA	NA
Individual Mandate	-0.1	0.2	NA	NA	NA	NA	NA
Imputation of Health Insurance Status							
Coverage Imputed	-2.2 **	0.7	-3.4 **	1.1	-3.1 **	0.7	0.3
Employment Status							
Employed Full-time	-0.6 **	0.1	-0.7 **	0.1	-0.6 **	0.1	0.1
Self-Employed Full-time	0.1	0.2	0.2	0.2	0.4	0.2	0.1
Unemployed	0.5 **	0.1	0.6 **	0.2	0.3	0.2	-0.4
Other Employment Status	-0.1	0.1	-0.2	0.1	-0.1	0.1	0.1
Occupation							
Works in 'High Risk' Occupation	0.6 **	0.1	0.8 **	0.2	0.1	0.2	-0.7 *
Employer Size							
Works in Small Firm (less than 25 employees)	0.6 **	0.1	0.6 **	0.2	0.8 **	0.2	0.2
Income							
0 to 150 % FPG	0.7 **	0.1	0.9 **	0.1	0.4 **	0.1	-0.5 *
> 150 % to 300 % FPG	0.5 **	0.1	0.3 **	0.1	0.6 **	0.1	0.2
> 300 % to < 500 % FPG	-0.2 **	0.1	-0.3 **	0.1	-0.2	0.1	0.1
500 % FPG or higher	-0.9 **	0.1	-0.9 **	0.1	-0.8 **	0.1	0.1
Education Level							
< High School Diploma	0.2	0.1	0.4 *	0.2	0.6 **	0.2	0.2
High School Diploma	0.4 **	0.1	0.4 **	0.1	0.3 *	0.1	-0.1
Some College, Associates Deg.	-0.1	0.1	0.0	0.1	0.0	0.1	-0.1
Bachelor's Degree	-0.5 **	0.1	-0.7 **	0.2	-0.8 **	0.2	-0.1
Marital Status							
Married	-0.7 **	0.1	-0.6 **	0.2	-0.5 **	0.2	0.1
Lives with own children under 18							
Lives with own children under 18	-0.8 **	0.1	-1.0 **	0.2	-0.7 **	0.2	0.3
Health Status							
Work limitations due to health	-1.2 **	0.2	-1.6 **	0.3	-0.5	0.3	1.1 *
Age							
18 to 24	0.2	0.1	0.5 **	0.2	0.2	0.1	-0.2
25 to 39	0.3 **	0.1	0.3 *	0.1	0.3 *	0.1	0.0
40 to 54	0.1	0.1	0.1	0.1	0.1	0.1	0.0
55 to 64	-0.6 **	0.1	-0.8 **	0.2	-0.7 **	0.2	0.2
Sex							
Male	0.6 **	0.1	0.5 **	0.2	0.6 **	0.1	0.1
Race/Ethnicity							
Non-Hispanic White	0.0	0.1	0.1	0.1	0.0	0.1	-0.1
Hispanic	0.0	0.2	-0.2	0.2	0.0	0.2	0.1
Non-Hispanic, Non-White	0.0	0.1	0.1	0.2	0.0	0.2	0.0
Citizenship							
Non-citizen	0.9 **	0.2	0.6 *	0.2	1.5 **	0.2	0.9 *
Intercept	-1.9 **	0.1	-1.9 **	0.2	-2.7 **	0.2	-0.8 *

Model Fit, Model 1 Chi-square = 33221214, DF = 24, p < .0001, Likelihood ratio R² = .206

Model Fit, Model 2 Chi-square = 7420322, DF = 22, p < .0001, Likelihood ratio R² = .235

Model Fit, Model 3 Chi-square = 6097930, DF = 22, p < .0001, Likelihood ratio R² = .231

* significant at the 0.05 level, ** significant at the 0.01 level

Model 1 indicates that, in general, Chapter 58 successfully reduced the probability of being uninsured for working age adults. It supports H_1 indicating that implementation of the health insurance exchange significantly reduced the probability of being uninsured for working age adults. Model 1 did not support H_2 which stated that the individual mandate would reduce the probability of being uninsured. However, this may be due to the inability of the model to control for the macro-economic forces created by the recession in 2008 and 2009 that acted to increase the probability of being uninsured. The timing of the recession coincided with implementation of the mandate and probably canceled out reductions in uninsurance that might have been produced by the mandate. If I had controlled for state level variables like the unemployment rate, inflation and median wages, it is possible that this variable may have been statistically significant.

Model 1 does not support H_3 which stated that imputation of health insurance status would increase the probability of being uninsured. Instead, Model 1 indicates that imputation of insurance status significantly reduced the probability of being uninsured. This finding contradicts Davern and colleague's (2004) finding that imputation of insurance status significantly increased the probability of being uninsured in using CPS data. It is possible that differences in imputation methods between the CPS and SIPP may account for this conflict. Also, caution should be used in interpreting this finding because the number of respondents whose status was imputed was very small (less than 10) during most months. These small numbers make it unlikely that insurance status would be imputed as uninsured when the rate of uninsurance is under 10 percent. Nevertheless, uninsured status was not imputed for a single respondent during a significant portion of months in the 2008 panel despite there being enough imputations that more than one uninsured was expected. These findings support the argument that imputation of

insurance status significantly influences the probability of being uninsured. This indicates that further research should be conducted on the imputation process to ensure that it is not biasing the uninsured estimates downward. This will be especially important as the federal Patient Protection and Affordable Care Act is implemented. The comparison of results from Models 2 and 3 did not support H₄, which stated that the effect of imputation of health status would be larger in the period following implementation of Chapter 58.

Model 1 supported H₅, which stated that being employed full-time would reduce the probability of being uninsured. Comparing the coefficients of this variable from Models 2 and 3 did not support H₆, which stated that the effect of being employed full-time would be reduced in the period following implementation of Chapter 58 compared to the prior period. Model 1 did not support H₇ which stated that being self-employed full-time would increase the probability of being uninsured. Comparing the coefficients of this variable from Models 2 and 3 did not support H₈ which stated that the effects of being self-employed full-time would be reduced in the period following the implementation of Chapter 58. In contrast, the results of Model 1 did support H₉ which stated that being unemployed would increase the probability of being uninsured. Comparing this variable's coefficients from Models 2 and 3 did not support H₁₀ which stated that the effect of being unemployed would be reduced in the period following the implementation of Chapter 58. However, it should be noted that though the difference in the coefficients did not reach statistical significance the coefficient in Model 2 was significant while the coefficient in Model 3 was not. This may indicate that there was a significant change but that my test was not sensitive enough to detect it. Model 1 supported H₁₁ which stated that being in some other employment status would not affect the probability of being uninsured. Comparing this

variable's Models 2 and 3 coefficients supported H₁₂ which stated that the effect of being in some other employment status would not be effected by implementation of Chapter 58.

The results of Model 1 supported H₁₃ which stated that working in a high risk occupation would increase the probability of being uninsured. This variable was also significant in Model 2, but was insignificant in Model 3. The difference in the coefficients was significant, supporting H₁₄ which stated that the effect of working in a high risk occupation would be reduced in the period following implementation of Chapter 58. It seems reasonable to assume that Chapter 58 is responsible for this difference until alternative explanations can be formulated and examined.

Model 1 supports H₁₅ which stated that working at a small firm (less than 25 employees) would increase the probability of being uninsured. Comparison of the coefficients of this variable from Models 2 and 3 did not support H₁₆ which stated that the effect of working at a small firm would be reduced after implementation of Chapter 58. This indicates that Chapter 58 had no measurable effect on the relationship between working at a small firm and being uninsured.

Table 1 shows that all income categories had a significant effect on uninsurance in Model 1. Model 1 supported H₁₇ which stated that having an income at 150 percent of the Federal Poverty Guidelines (FPG) or less would significantly increase the probability of being uninsured. Comparing the coefficients of this variable from Models 2 and 3 supported H₁₈ which stated that the effect of being in this income category would be reduced in the period following implementation of Chapter 58. This indicates that despite the fact that the coefficients were positive and significant in both Models 2 and 3, Chapter 58 was successful in reducing the influence of being in this income group on the probability of being uninsured. Model 1 also supported H₁₉ which stated that making more than 150 percent FPG up to 300 percent would increase the probability of being uninsured. Comparing the coefficients of this variable from

Models 2 and 3 did not support H₂₀ which stated that the effect of being in this income category would be reduced in the period following implementation of Chapter 58. Model 1 did not support H₂₁ which stated that making more than 300 percent of FPG and less than 500 percent would not affect the probability of being uninsured. Instead, Model 1 indicates that being in this income group significantly reduced the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 supported H₂₂ which stated that the effect of being in this income group would not significantly change in the period following implementation of Chapter 58. However, it should be noted that the coefficient in Model 2 was statistically significant while the coefficient in Model 3 was not. This indicates that the effect of being in this income group may be changing in the desired direction. A more sensitive test will need to be developed to confirm this. The results of Model 1 supported H₂₃ which stated that making 500 percent of the FPG or more would decrease the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H₂₄ which stated that the effect of being in this income group would be reduced in the period following the implementation of Chapter 58.

Model 1 did not support H₂₅ which stated that having less than a high school diploma would significantly increase the probability of being uninsured. Interestingly, both Models 2 and 3 indicated that being in this education category increased the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H₂₆ which stated that the effect of being in this category would be reduced in the period following implementation of Chapter 58. Model 1 did support H₂₇ which stated that having a high school diploma would increase the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H₂₈ which stated that the effect of being in this category would be reduced in the period following implementation. Model 1 did support H₂₉

which stated that having some college or an Associate's Degree would not affect the probability of being uninsured. The coefficients in Models 2 and 3 were not statistically significant, supporting H₃₀ which stated that the effect of being in this category would not be altered by implementation of Chapter 58. The results of Model 1 did support H₃₁ which stated that having a Bachelor's Degree or higher would reduce the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H₃₂ which stated that the effect of being in this category would be reduced in the period following implementation of Chapter 58.

The results of Model 1 supported H₃₃ which stated that being married would reduce the probability of being uninsured. Comparison of the coefficients of this variable from Models 2 and 3 support H₃₄ which states that the effect of being married would not be altered by Chapter 58.

H₃₅, which stated that living with one's children under age 18 would reduce the probability of being uninsured, was supported by the results from Model 1. Comparison of the coefficients of this variable from Models 2 and 3 supported H₃₆ which stated that the effect of living with one's children under age 18 would be unaltered in the period following implementation of Chapter 58.

The results of Model 1 did not support H₃₇ which states that having a health condition that limited one's ability to work would increase the probability of being uninsured. In fact, it indicates that having poor health reduces the probability of being uninsured. Model 2 also shows that being in this category reduced the odds of being uninsured. In contrast, this variable was not statistically significant in Model 3. Comparing the coefficients of this variable from Models 2 and 3 did not support H₃₈ which stated that the effect of having a health condition that limited

one's ability to work would not be altered by the implementation of Chapter 58. In fact, the effect was significantly reduced by Chapter 58.

The results of Model 1 did not support H_{39} which stated that being 18 to 24 years old would increase the probability of being uninsured. Comparison of the coefficients of this age category from Models 2 and 3 does not support H_{40} which states that the effect of being 18 to 24 years old would be reduced by implementation of Chapter 58. However, the results from Model 2 indicate that being in this age group did increase the probability of being uninsured while the results of Model 3 indicate an insignificant relationship. Model 1 did support H_{41} which stated that being in the 25 to 39 year old group increased the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H_{42} which stated that the effect of being in this age group would be reduced in the period following implementation of Chapter 58. The results of Model 1 supported H_{43} which stated that being 40 to 54 years old would not affect the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 also supported H_{44} which stated that the effect of being in this age category would not be altered by the implementation of Chapter 58. The results of Model 1 supported H_{45} which stated that being 55 to 64 years old would reduce the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 supported H_{46} which stated that the effect of being in this age category would not be altered by the implementation of Chapter 58.

The results of Model 1 support H_{47} which stated that being male would increase the probability of being uninsured. Comparison of the coefficients of this variable from Models 2 and 3 did not support H_{48} which stated that the effect of being male would be reduce in the

period following implementation of Chapter 58. This indicates that Chapter 58 failed to alter the effect of being male on the probability of being uninsured.

The results of Model 1 did not support H_{49} which stated that being a Non-Hispanic White would reduce the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H_{50} which stated that the effect of being in this race/ethnicity category would be reduced by implementation of Chapter 58. Likewise, the results of Model 1 did not support H_{51} which stated that being Hispanic would increase the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H_{52} which stated that the effect of being in this race/ethnicity category would be reduced by implementation of Chapter 58. The results of Model 1 also did not support H_{53} which stated that being Non-Hispanic and Non-White would increase the probability of being uninsured. Comparison of the coefficients of this category from Models 2 and 3 did not support H_{54} which stated that the effect of being in this race/ethnicity category would be reduced by implementation of Chapter 58.

The results of Model 1 supported H_{55} which stated that being a non-citizen would increase the probability of being uninsured. The effect was slightly weaker in Model 2 while it was stronger in Model 3. Comparing the coefficients of this category from Models 2 and 3 supported H_{56} which stated that the effect of being a non-citizen would be increase in the period following implementation of Chapter 58.

CHAPTER V: CONCLUSIONS AND DISCUSSION

Major Conclusions

My analysis shows that Chapter 58 succeeded in reducing the probability of being uninsured among the working age population of Massachusetts. The analysis indicated that implementation of the health insurance exchange contributed to this reduction while the individual mandate had no discernable impact. This analysis was performed at the individual level and corroborates other research that the state level of uninsurance was reduced by Chapter 58. Chapter 58 also altered the relationship between uninsurance and several of its determinants.

Prior to implementation of Chapter 58 working in a high risk occupation increased the probability of being uninsured. This effect was eliminated in the period following implementation. This indicates that Chapter 58 was successful at improving access to health plans for this group. It is most likely that this change resulted from the development of the health insurance exchange and Commonwealth Care premium subsidy program.

The relationship of income to uninsurance was also significantly altered by Chapter 58. Making 150 percent of the Federal Poverty Guidelines or less was associated with an increased probability of being uninsured in both the pre and post implementation periods. However, this effect was significantly reduced in the post implementation period. This indicates that Chapter 58 was successful at improving this groups access to and ability to acquire health insurance. This change was also most likely the result of increased access through the health insurance exchange and the premium subsidies offered through Commonwealth Care.

The relationship between health status and uninsurance was contrary to what was expected. This is most likely due to the fact that the measures used to indicate health status were less than ideal. Usually, self-reported health status is used. Since this was not available in the

SIPP data, I used variables that indicated that there was a health problem that interfered with one's ability to work. People indicating such a problem may also have a disability which might make them eligible for coverage through Medicare or Medicaid, thus, increasing their probability of being insured. Chapter 58 seems to have altered this relationship. Where having a health condition that interfered with one's ability to work increased the probability of being uninsured in the pre implementation period, it was insignificant in the post implementation period. This indicates that insurance coverage increased among people without such health problems. This change may be attributable to the individual mandate increasing healthy people's motivation to acquire coverage. I can see no other aspects of Chapter 58 that might have affected this relationship.

Chapter 58 also significantly altered the relationship between uninsurance and citizenship. As expected, being a non-citizen increased the probability of being uninsured and the effect was magnified by implementation of Chapter 58. This does not mean that Chapter 58 increased the level of uninsurance among non-citizens, but that it reduced the level of uninsurance among citizens.

The relationship between being self-employed full-time and uninsurance was surprising. All models indicated no significant relationship between being self-employed and being uninsured. Most literature notes a strong relationship between these variables. Indeed, one of the justifications for creating the health insurance exchange was to give self-employed people access to plans at rates similar to those enjoyed by people in large groups. This analysis indicates that being self-employed was not the reason for the relatively high levels of uninsurance of this group, but that other characteristics were responsible. One explanation could be that the self-

employed are over represented in high risk occupations and that the reductions in uninsurance achieved in this group also reduced the level of uninsurance among the self-employed.

The relationship between uninsurance and unemployment also seems to have been altered by Chapter 58, though the change was not statistically significant. The coefficient for unemployment was statistically significant in the period prior to Chapter 58 and insignificant after implementation. This difference, regardless of statistical significance, implies that Chapter 58 did affect this relationship. This was probably accomplished through small increases in the Medicaid program for the unemployed and the creation of Commonwealth Care. The failure of this change to reach statistical significance may be due a lack of sensitivity in my test.

Being in the 18 to 24 year old age group was also significant in the pre implementation period and insignificant in the post implementation period. This change was most likely due to insurance law changes that allowed dependent children to remain on their parents health plan until age 25. As with unemployment, a more sensitive test may have revealed the change as significant.

One finding was significant for its lack of significance. My analysis revealed that one's race/ethnicity did not influence the probability of being uninsured in either the pre or post implementation period. This is probably due to the fact that the disparities in uninsurance based on race/ethnicity were much smaller in Massachusetts than in the rest of the United States. This makes it impossible to say how this type of legislation will affect uninsurance disparities based on race/ethnicity in states where these disparities are substantial.

This analysis also revealed that imputation of health insurance status significantly reduced the probability of being uninsured. This is troubling and indicates that the imputation process itself is biasing uninsurance estimates for working adults in Massachusetts downward.

The analysis also showed that rates of imputation increased substantially between the period prior to implementation of Chapter 58 and the period after implementation. This supports the argument of Yelowitz and Cannon (2010) that making uninsurance illegal will motivate survey respondents to refuse to reveal their insurance status when they are uninsured. These findings indicate that further research should be conducted into the SIPP imputation methodology and into the effect of the individual mandate on survey respondents behavior. This will be very important as the Patient Protection and Affordable Care Act is implemented. Surveys taken after the individual mandate is implemented at the national level could indicate major reductions in uninsurance when much of the change is simply due to respondents concealing their failure to comply with the law.

Evaluation of Chapter 58

Some evaluations (Long and Phadera 2009; Long and Stockley 2010) of Chapter 58 used probit regressions to standardize the rates of uninsurance of two periods. Estimates from the fall of 2006, adjusted using the regression models, are compared to estimates from the fall of a later year. This is an indirect method of assessing effectiveness and significant differences between the estimates are assumed to be the result of Chapter 58. Other methods (Long, Stockley, and Yamane 2009; Yelowitz and Cannon 2010) used differences in differences models to measure reductions in uninsurance at the state level.

In contrast, my analysis includes the timing of two aspects of Chapter 58 as explanatory variables in a logistic regression model; the health insurance exchange and the individual mandate. This method evaluates the impact of Chapter 58 on uninsurance directly and at the individual level while controlling for the affects of other variables that also may have affected the probability of being uninsured. It is the first that I am aware of to evaluate Chapter 58's

effect at the individual level. This analysis supports previous findings; Chapter 58 did significantly reduce uninsurance in Massachusetts.

One question that my analysis did not address but that our society must address is whether the reduction in uninsurance was worth the cost. Yelowitz and Cannon (2010) concluded that gains due to Chapter 58 have been overstated by as much as 50 percent and that the actual cost of the reform may be considerably higher than previously thought. The law of diminishing returns seems to be applicable in this situation. What the Massachusetts reform seeks to do is increase the units of health insurance coverage produced using the existing system (with a couple of minor tweaks), inputting more money and mandating that more units be produced. The law of diminishing returns tells us that without significant changes to the production system ever increasing levels of effort (in this case, money) will be required to produce each additional unit (someone covered by insurance).

Implications

Perhaps the most important thing that this analysis can tell us about the federal health care reform is that we can expect it to effectively reduce the level of uninsurance. The size of reductions will probably vary across the states as they vary significantly in the initial size of uninsurance problem, socioeconomic characteristics and demographic characteristics. It is probably safe to conclude that, in general, states with the highest levels of uninsurance will see the largest declines. This is based on the idea that it is much easier to move from 25 percent uninsured to 15 percent uninsured than it is to move from 10 percent to 0 percent. It may also be deduced that considerable variation in uninsurance rates across the states will remain, even after full implementation. This is partly due to the fact that each state has the option to design its own health insurance exchange. Some states will design better programs than others. Another reason

for continued variation will be due to the fact that socioeconomic and demographic characteristics will continue to vary.

The regression models indicate that Chapter 58 significantly changed the relationships of income, occupation, health status and citizenship to uninsurance. States where the median income is relatively low, the occupational mix is favorable to uninsurance, and there is a relatively small proportion who are non-citizens, like Mississippi and West Virginia, should enjoy the largest reductions in uninsurance as a result of the legislation. Success of the plan may be somewhat muted in states like California and Texas. California will experience less reduction in uninsurance due to the fact that it has a relatively high median income and a large proportion of its population are non-citizens. Texas may respond better than California because its occupational mix is a strong contributor to high levels of uninsurance (Texas Department of Insurance 2005), but its success could be muted by having an average median income and non-citizens as a large proportion of its population. The elimination of health status as a predictor of health insurance coverage should apply fairly evenly across the states, assuming that health status is distributed relatively evenly. This indicates that we may expect a significant number of people who do not have insurance because they are healthy to procure coverage as the plan is implemented.

Limitations

This analysis had several shortcomings that may have affected its sensitivity. One of these problems was the fact that the SIPP sample for the 2004 was cut in half by Congress in 2006. It is not clear how this change may have affected measurements of uninsurance. It is possible that this change is at least partially responsible for the sharp drop in the percentage uninsured observed from 2006 through 2007.

Other issues that may have affected the results in an unknown way is the gap between the 2004 and 2008 panels and the partial samples associated with the first three and last three months of a panel. These problems are the unfortunate consequence of budgetary considerations and the survey design might be improved if the panels overlapped while the samples transitioned. One way to look at this in the future is to repeat the analysis without data from the months with partial samples. Results significantly different from the current analysis would indicate that using data from these months could be problematic.

Another weakness of the analysis was the failure to account for state level variables that might have influenced uninsurance, like, the unemployment rate, the rate of inflation, median wages during the month or the monthly consumer price index. Changes in these factors during the recession in 2008 and 2009 may have exerted upward pressure on uninsurance making the effects of Chapter 58 appear weaker in Model 1 than they actually were. Controlling for these factors may have allowed the variable representing the individual mandate to reach significance. This should be explored in further research.

Finally, the SIPP does not contain variables that properly address the respondent's attitude toward health insurance and its health status variables are less than desirable for this sort of analysis. SIPP does ask questions about respondent's attitude toward health insurance, but they are only asked of respondents classified as being uninsured. People who are uninsured may down play the importance of health insurance to protect their pride in the sense of 'I didn't want health insurance anyway.' Asking attitudinal questions of all respondents would vastly improve the usefulness of these variables. Health status questions are asked of all respondents, however, health status is assessed in relationship to one's ability to work. This variable could be improved by introducing a standard self-assessed health status question to the survey.

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VITA

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