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USING STATE-LEVEL EVIDENCE TO INFORM NATIONAL POLICY: RESEARCH FROM THE STATE HEALTH ACCESS REFORM EVALUATION (SHARE) PROGRAM

# The Impacts of State Health Reform Initiatives on Adults in New York and Massachusetts

*Sharon K. Long and Karen Stockley*

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**Objective.** To analyze the effects of health reform efforts in two large states—New York and Massachusetts.

**Data Sources/Study Setting.** National Health Interview Survey (NHIS) data from 1999 to 2008.

**Study Design.** We take advantage of the “natural experiments” that occurred in New York and Massachusetts to compare health insurance coverage and health care access and use for adults before and after the implementation of the health policy changes. To control for underlying trends not related to the reform initiatives, we subtract changes in the outcomes over the same time period for comparison groups of adults who were not affected by the policy changes using a differences-in-differences framework. The analyses are conducted using multiple comparison groups and different time periods as a check on the robustness of the findings.

**Data Collection/Extraction Methods.** Nonelderly adults ages 19–64 in the NHIS.

**Principal Findings.** We find evidence of the success of the initiatives in New York and Massachusetts at expanding insurance coverage, with the greatest gains reported by the initiative that was broadest in scope—the Massachusetts push toward universal coverage. There is no evidence of improvements in access to care in New York, reflecting the small gains in coverage under that state’s reform effort and the narrow focus of the initiative. In contrast, there were significant gains in access to care in Massachusetts, where the impact on insurance coverage was greater and a more comprehensive set of reforms were implemented to improve access to a full array of health care services. The estimated gains in coverage and access to care reported here for Massachusetts were achieved in the early period under health reform, before the state’s reform initiative was fully implemented.

**Conclusions.** Comprehensive reform initiatives are more successful at addressing gaps in coverage and access to care than are narrower efforts, highlighting the potential gains under national health reform. Tracking the implications of national health reform will be challenging, as sample sizes and content in existing national surveys are not currently sufficient for in-depth evaluations of the impacts of reform within many states.

**Key Words.** Health reform, uninsurance, public coverage, employer-sponsored insurance coverage, crowd-out, health care access and use

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The 2010 national health reform legislation—The Patient Protection and Affordable Care Act (PPACA)—builds on state coverage initiatives, most notably on Massachusetts' 2006 landmark reform effort. PPACA includes expansions of existing public programs, efforts to make private insurance more affordable, and individual and employer mandates. This study looks at the impacts of state health reform initiatives in New York and Massachusetts on insurance coverage and health care access and use to expand our understanding of the likely impacts of national reform. Understanding the impacts of coverage expansions on both insurance coverage and access to health care is critical to designing initiatives that lead to improvements in the health care available to the population and, thereby, population health—which is the ultimate goal of coverage expansion efforts (Hadley 2003; Institute of Medicine 2009; McWilliams 2009).

Prior studies of individual state health reform initiatives have seldom considered impacts on access to and use of health care, largely because of a lack of data. This study takes advantage of the availability of state-level data in the National Health Interview Survey (NHIS) to examine the impacts of the health reform initiatives in New York and Massachusetts on coverage and access to and use of health care. To our knowledge, this represents the first use of the NHIS, which is the nation's most comprehensive health survey, to study the effects of an individual state's health reform initiative on health care access and use.

## THE STATE HEALTH REFORM INITIATIVES

While the principal goal of the reform efforts in New York and Massachusetts was the same—to expand coverage—the approaches are distinct. The New York initiative was an incremental reform effort, while Massachusetts implemented a comprehensive reform package with the goal of near universal insurance coverage in the state. Table SA1 provides a detailed summary of the policy changes in the two states and the timetable for their implementation.

*New York.* In 2000, New York created two new programs, one of which expanded eligibility for Medicaid coverage (Family Health Plus) and one that made private coverage more affordable for low-income uninsured workers by reducing premiums through a reinsurance mechanism (Healthy New York).

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Address correspondence to Sharon K. Long, Ph.D., University of Minnesota, SHADAC, 2221 University Ave SE, Suite 345, Minneapolis, MN 55414; e-mail: slong@umn.edu. Karen Stockley, B.A., is with the Urban Institute, Washington, DC.

Family Health Plus (FHPlus) expanded Medicaid eligibility up to 150 percent of the federal poverty level (FPL) for parents and up to 100 percent of the FPL for childless adults. Healthy New York (HealthyNY) was made available to qualifying small employers and their employees as well as sole business proprietors and working adults with incomes <250 percent of FPL who are not offered coverage by their employer. Before this reform effort, parents with incomes up to 100 percent of FPL and childless adults up to about 50 percent of the FPL were eligible for Medicaid coverage in New York.

In the aftermath of the September 11, 2001, terrorist attacks on the World Trade Center, New York created a new, time-limited program that temporarily replaced FHPlus in New York City—Disaster Relief Medicaid. In order to focus on impacts of the FHPlus and HealthyNY programs, this study examines the period after enrollees in Disaster Relief Medicaid had transitioned into FHPlus.<sup>1</sup>

*Massachusetts.* In 2006, Massachusetts began an ambitious effort to achieve near universal coverage for all adults in the state through a combination of Medicaid expansions (MassHealth), subsidized health insurance coverage (Commonwealth Care), private coverage through an insurance purchasing pool (Commonwealth Choice), an individual mandate to obtain coverage, requirements for employers, and insurance market reforms, among other changes. As a result of the reform initiative, coverage under MassHealth, Commonwealth Care, or employer-sponsored insurance (ESI) is available to nearly all adults with family income <300 percent of the FPL in the state. Before these changes, Massachusetts made coverage available to parents with family income up to 133 percent of the FPL under MassHealth and made a premium assistance program available to both parents and childless adults with family income up to 200 percent of the FPL. In addition, MassHealth coverage or premium support was available at higher income levels for severely disabled adults and for some unemployed adults.

Beyond those efforts at coverage expansions, Massachusetts also implemented new standards, called minimum creditable coverage, which define the key elements required for an insurance plan in the state to satisfy the individual mandate. Among other things, those include coverage for a comprehensive set of services (including prescription drugs); doctor visits for preventive care, without a deductible; limits on out-of-pocket spending; and no caps on total benefits for a particular illness or for a single year.<sup>2</sup> The minimum creditable coverage standards potentially affect access to health care for all adults with insurance coverage in the state, as they apply to both those obtaining coverage under health reform and those with existing coverage.

## RESEARCH DESIGN, DATA, AND METHODS

### *Research Design*

The goal of this study is to estimate the effects of the states' health reform initiatives on health insurance coverage and health care access and use for nonelderly adults. We take advantage of the "natural experiments" that occurred in the states, comparing changes in insurance coverage, access, and use for adults in the study states under health reform to changes for comparison groups of adults who were not affected by the policy changes using a differences-in-differences (DD) framework (Wooldridge 2002). Subtracting changes in the outcomes for comparison groups of adults over the same time period allows us to isolate the effects of the coverage initiatives from underlying trends not related to the reforms. The assumption underlying this analytic approach is that the trends over time for the comparison groups provide the counterfactual for what would have happened in the absence of health reform in New York and Massachusetts. We discuss this issue further below.

*Defining the Treatment Groups.* We define the "treatment" group for reform in each state as the population targeted by that state's health reform initiative. For New York, this is adults with family income <250 percent of the FPL. In Massachusetts, the entire population was subject to some of the reform elements; however, we estimate models that treat lower-income adults (defined as those with family income <300 percent of the FPL) as the target population because many of the state's reform efforts are directed toward that population, including the new Commonwealth Care program. As some members of the target populations in New York and Massachusetts were eligible for programs that existed before health reform, the focus here is on estimating the impacts of adding the new programs and policies under health reform on top of the systems that existed in the states before reform.<sup>3</sup>

To provide an assessment of the effects of the states' health reform strategies on reducing the overall level of uninsurance, we also estimate models that include all adults in each state. We would expect a broad initiative, like that in Massachusetts, to have a greater impact on the overall level of uninsurance and health care access and use than a narrower initiative, like that in New York.

*Defining the Comparison Groups.* As noted above, the comparison groups provide the estimates of what would have happened in the study states in the

absence of health reform, capturing, for example, the effects of economic, political, regulatory, or social changes occurring over the same time period. Because there is no perfect comparison group in the absence of random assignment, we used several different comparison groups, assessing the sensitivity of our findings across alternate models. We relied on higher-income adults and “income-eligible” childless adults (i.e., childless adults who had family income below the thresholds set for the target populations) in other large states as our comparison groups.<sup>4</sup> In addition to varying the population of adults for the comparison groups, we also varied the group of comparison states. For one set of comparisons, we used the 24 largest states. Another set of comparisons was limited to other large states in the same region as the study states (the Northeast), with the expectation that states in the same geographic area would have underlying trends that were more similar to those in the study states. In both cases, we limit the comparison states to those that did not make changes over the relevant study period in their Medicaid or other public programs that affected coverage for higher-income adults or “income-eligible” childless adults, respectively.

#### *Data Source*

The principal data source for the study is the 1999–2008 NHIS.<sup>5</sup> The NHIS provides detailed information on health, health insurance coverage, and health care access and use as reported by a representative sample of the civilian, noninstitutionalized population of the United States.<sup>6</sup> While the survey is not designed to produce state-specific estimates, the sample design provides representative samples for larger states. Currently, the National Center for Health Statistics (NCHS), the sponsor for the NHIS, publishes estimates of insurance coverage from the NHIS for the 20 largest states every year (Cohen and Martinez 2010).

We examine the impact of the state reform efforts on health insurance coverage and on access to and use of health care. Although most people accurately report whether they have insurance coverage in surveys, there is evidence of misreporting of coverage type (Cantor, Monheit, and Brownlee 2007; Call et al. 2008/2009). This is likely to be more of an issue in states with multiple program names and/or with public/private coverage initiatives, as in New York and Massachusetts. Given the likely measurement error in type of insurance coverage, we limit the analysis of coverage type to ESI and all other types of insurance (referred to as public and other coverage). We assign individuals to a single coverage type, with individuals reporting both ESI and

another type of coverage assigned to ESI coverage.<sup>7</sup> Given the misreporting of coverage type, we are more confident of the estimates of the impact of health reform on *any* insurance coverage than we are of the estimates of the impact of reform on *type* of insurance coverage. This caution in examining the impacts of health reform on type of insurance coverage extends to the interpretation of estimates of the extent any expansions in public and other coverage are crowding-out ESI coverage, as those estimates will also reflect the likely misreporting of coverage type.

Our access measures include having a usual source of care, unmet need over the last 12 months for various types of care because of cost, and delayed care over the last 12 months for a number of reasons—because of cost, could not get an appointment, and the hours of care were not convenient.<sup>8</sup> We also examine use of health care over the previous 12 months, including any office visit, care from a general doctor or specialist, a nurse practitioner/physician assistant/midwife, or a dentist, and emergency room visits. As we are relying on self-reported data, we cannot assess the extent to which the health care use and unmet need for care that is reported by the survey respondents represents appropriate medical care.

For this study, the analysis sample is nonelderly adults, ages 19–64 years.<sup>9</sup> Within the NHIS, questions on insurance coverage are asked about all individuals in the household, while detailed access and use questions are only asked of one randomly selected adult within each household (called the “sample adult”). Thus, we focus on all adults for the analysis of the impacts of health reform on insurance coverage and the sample adult for the analysis of health care access and use.

Because our study requires access to the individual’s state of residence (which is classified as confidential data by NCHS), the analysis work for this study was conducted at an NCHS Research Data Center.

*Defining the Pre- and Postreform Periods.* We explored alternative pre- and postreform time periods for both New York and Massachusetts. For much of the analysis, we rely on a 24-month prereform period for New York (January 1999–December 2000) and a 36-month prereform period for Massachusetts (October 2003–September 2006). We define the postreform period as the 24 months following the full implementation of the reform initiatives in New York, which is January 2003–December 2004. In Massachusetts, where several key elements of health reform were still being implemented during the follow-up period for this study, the 24-month postreform period of January 2007–December 2008<sup>10</sup> is a transition period. Thus, the estimates reported here represent early estimates of the impacts of health reform in Massachusetts.

Given the design of the survey questions, the analysis samples for the pre- and postreform periods for insurance status and the access and use measures differ. The insurance questions ask about coverage as of the month of the interview, while the access and use questions refer to experiences over the 12 months before the interview. In order to focus on access and use outcomes following the implementation of health reform, the samples for the pre- and postreform periods for the access and use measures are selected based on the reference period for the access and use questions rather than the month of interview.<sup>11</sup>

### *Estimation Methods*

In estimating the effects of health reform in each state, we estimate multivariate regression models. The regression models for the insurance outcomes include age, race/ethnicity, sex, citizenship, educational attainment, marital status, family size, family income, homeownership, health (own and other family member's, if present) and disability status, and employment (own and spouse, if present). In the access and use models, where additional information is available from the survey for the sample adult, we also control for firm size, government employment, job tenure, smoking status, the presence of chronic conditions, whether the individual was pregnant in the past year, and depression/anxiety status.<sup>12</sup> Tables SA2 and SA3 provide summaries of the specific explanatory variables included in the insurance coverage and access and use models, respectively.

Because the NHIS relies on a complex survey design, all of the analyses reported here are based on weighted data, with the standard errors adjusted to reflect the complex design of the survey using the *svy* procedure in *Stata* 10 (StataCorp 2007).<sup>13</sup> In addition, we use the imputed income files developed by NCHS, and so further adjust the standard errors of our estimates to account for the multiply imputed data (Schenker and Raghunathan 2006). For ease of presentation and comparisons across models, we estimate linear probability models.

*Limitations of Our Methods.* Although we use a strong quasi-experimental design and control for an array of individual and family characteristics in the regression analysis, it is always possible with quasi-experimental methods that unmeasured differences between the treatment and comparison samples may confound the impact estimates. As noted above, we estimated a number of variations of the model to test the sensitivity of our findings to alternative specifications and found the results were generally robust, particularly with respect to the findings for insurance coverage.

Further, as with all analyses based on survey data, our ability to detect small changes will be constrained by the sample sizes in the surveys. For the analyses of insurance coverage, the sample sizes are 12,746 for New York (with 4,978 in the lower-income sample) and 4,477 in Massachusetts (with 1,697 in the lower-income sample). For the analyses of access to and use of care, we are limited to a sample of 2,880 for New York (with 1,191 in the lower-income group) and 1,130 in Massachusetts (with just 452 in the lower-income group). The smaller sample size for Massachusetts reflects the fact that it has a smaller population than New York as well as the effect of budgetary shortfalls that forced reductions of about 13 percent in the NHIS survey samples in 2006, 2007, and 2008, key years in the pre- and postreform periods for Massachusetts. The sample size for Massachusetts, in particular, implies that we will only be able to detect relatively large changes in access to and use of care in that state with confidence.

The limitations related to small sample sizes are compounded in the access and use analyses because we are estimating the effects on the overall population of changes that affected only a subset of the population. For example, if health reform in New York was successful at improving access to care, we would expect to see changes in access for those adults who gained insurance coverage as a result of health reform. The same issue arises in Massachusetts, although the broader scope of that state's initiative suggests that a greater share of the population was affected by health reform than in New York. In Massachusetts, health reform included both initiatives to expand health insurance coverage and to improve access to care for some who currently had insurance coverage, primarily through the minimum creditable coverage standards. Thus, if health reform in Massachusetts was successful at improving access to care, we would expect to see increases both for those who gained insurance coverage and for some of those who had coverage before health reform.

## RESULTS

### *The Impacts of Health Reform on Lower-Income Adults*

*New York.* Table 1 reports the prereform values for the insurance coverage, access, and use outcomes for lower-income adults in New York, along with regression-adjusted difference-in-differences estimates of the impacts of health reform based on alternate comparison groups (three models) and alternate pre- and postreform time periods (two models).<sup>14</sup> Looking first at the impacts of



Table 1: Impacts of Health Reform on Health Insurance Coverage and Health Care Access and Use for Lower-Income Adults (under 250% of the FPL) in New York

	Regression-Adjusted Difference-in-Differences Estimates				
	Alternate Comparison Groups <sup>‡</sup>			Alternate Time Periods <sup>‡</sup>	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
	Higher-Income Adults in Large States in Same Region <sup>§</sup>	Higher-Income Adults in Large States <sup>§</sup>	"Income-Eligible" Childless Adults in Large States <sup>  </sup>	Alternate Prereform Period <sup>††</sup>	Alternate Postreform Period <sup>‡‡</sup>
	Prereform (%)				
Insurance coverage at the time of the survey (N)	2,649	86,684	14,574	9,738	16,868
Any insurance coverage	68.1	2.8*	4.3***	4.9**	4.6***
Employer-sponsored coverage	44.0	-3.4**	-2.3	-3.4	-2.3
Public/other coverage	24.1	6.2***	6.5***	7.7***	6.9***
Access to care in the past 12 months (N)	657	18,830	3,419	4,456	4,426
Had a usual source of care	74.2	-0.7	3.2	-1.2	-0.7
Any unmet need because of costs	21.0	2.2	-2.0	1.9	0.8
Medical care	8.4	3.6***	0.9	2.9*	2.1
Dental care	14.7	0.8	-2.5	0.1	-1.3
Prescription drugs	7.1	2.5	-1.0	2.6	4.0**
Any delayed care	15.7	6.2**	1.7	1.9	2.2
Because of costs	11.4	3.2*	1.5	3.3	1.1
Could not get an appointment	3.3	2.8**	0.3	-0.3	-0.6
Could not go when open	1.7	2.4*	1.0	0.6	0.9
Health care use in the past 12 months (N)	657	18,830	3,419	4,456	4,426
Any office visit	85.6	-2.2	0.5	-0.5	-3.4
Any doctor visit	75.9	-5.3	-4.7	-5.5*	-5.6*

continued

Table 1. Continued

	Regression-Adjusted Difference-in-Differences Estimates				
	Alternate Comparison Groups <sup>‡</sup>			Alternate Time Periods <sup>‡</sup>	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
	Higher-Income Adults in Large States in Same Region <sup>§</sup>	Higher-Income Adults in Large States <sup>§</sup>	"Income-Eligible" Childless Adults in Large States <sup>  </sup>	Alternate Prereform Period <sup>†</sup>	Alternate Postreform Period <sup>‡</sup>
Prereform (%)					
Any visit with nurse practitioner, physician assistant, or midwife	13.2	-2.3	-1.6	-2.4	-3.2
Any dental visit	60.6	-1.4	-0.6	1.3	-4.2
Any emergency room visit	28.8	-3.9	1.1	-1.0	-5.9*

Notes: The regression models control for demographic and socio-economic characteristics and health and disability status. The sample sizes reported here are the number of observations with complete data for all of the covariates in the regression models. Actual sample sizes vary somewhat across models due to variation in item nonresponse in the survey questions used to construct the outcome measures.

\*-t-statistic significantly different from zero at the .10, .05, .01 level, two-tailed test.

<sup>†</sup>The time periods used in these specifications are as follows: Prereform, January 1999–December 2000; postreform, January 2003–December 2004.

<sup>‡</sup>The comparison group used in these specifications is higher-income adults in large states in the Northeast.

<sup>§</sup>The states included in this comparison group were New Jersey and Pennsylvania.

<sup>||</sup>The states included in this comparison group were Illinois, Indiana, Michigan, Minnesota, Missouri, Ohio, Wisconsin, New Jersey, Pennsylvania, Alabama, Florida, Georgia, Louisiana, Maryland, North Carolina, South Carolina, Tennessee, Texas, Virginia, Arizona, California, Colorado, and Washington.

<sup>||</sup> The states included in this comparison group were Illinois, Missouri, Wisconsin, Alabama, North Carolina, South Carolina, and Texas.

<sup>††</sup> The alternate prereform time periods are based on data from the following months: Insurance outcomes, January 1999–December 1999; access and use outcomes, January 1998–December 2000.

<sup>‡‡</sup> The alternate postreform time periods are based on data for January 2003–December 2005.

FPL, Federal poverty level.

Source: 1999–2008 National Health Interview Survey.

health reform on health insurance coverage, we find consistent evidence of a gain in insurance coverage among lower-income adults in New York under health reform. The estimated gain in coverage ranged from 3 to 5 percentage points across the five models, up from 68.1 percent in the prereform period.

The increased insurance coverage under health reform reflects strong gains in public/other coverage across all of the models, with the estimated increase ranging from 6 to 8 percentage points over the follow-up period. At the same time, we estimate a reduction in ESI coverage under health reform of 2–4 percentage points, suggesting that roughly one-third to one-half of the expansion in public and other coverage was crowding out ESI coverage.<sup>15</sup> However, the estimated reduction in ESI coverage was only statistically significant in two of the five models estimated.

Reflecting the relatively small gain in health insurance coverage under health reform in New York, we find no evidence of improvements in access to or use of care across the overall target population for that state's reform initiative.<sup>16</sup> As shown in Table 1, the estimates of the impacts of health reform on access and use vary across the five alternate models, with little consistency in the particular measures that are statistically significant across the alternate models. Further, the measures that are statistically significant across the different models are suggestive of worse access to care and lower health care use following health reform. The latter may reflect increased difficulty obtaining care as the health care demands of the newly insured put more stress on provider capacity, particularly within the networks of providers serving those with public coverage.

*Massachusetts.* In Massachusetts, where many of the key elements of health reform were targeted at adults with family income below 300 percent of the FPL, we find a significant increase in insurance coverage for that population (Table 2). Based on the five alternate models, we estimate insurance coverage increased by between 4 and 6 percentage points for lower-income adults over the first 2 years after health reform was implemented, up from 82.1 percent in the prereform period. That gain in coverage reflects a strong increase in public/other coverage, with estimates of the increase ranging from 6 to 10 percentage points across the models. The estimated change in ESI coverage is negative across all the models, but it is never statistically significant.

In contrast to the findings for New York, we find some significant gains in access to and use of health care under health reform for lower-income adults in Massachusetts, despite the short follow-up period in that state and the small sample size for the analysis. Looking across the five alternate

Table 2: Impacts of Health Reform on Health Insurance Coverage and Health Care Access and Use for Lower-Income Adults (under 300% of the FPL) in Massachusetts

	Prereform (%)	Regression-Adjusted Difference-in-Differences Estimates				
		Alternate Comparison Groups <sup>‡</sup>			Alternate Time Periods <sup>†</sup>	
		Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
		Higher-Income Adults in Large States	Higher-Income Adults in Large States <sup>  </sup>	"Income-Eligible" Childless Adults in Large States <sup>  </sup>	Alternate Prereform Period <sup>††</sup>	Alternate Postreform Period <sup>‡‡</sup>
Insurance coverage at the time of the survey (N)	1,089	17,832	99,219	14,672	13,924	18,778
Any insurance coverage	82.1	5.0*	5.1**	5.9**	4.8*	4.4*
Employer-sponsored coverage	52.9	-3.2	-2.4	-2.1	-4.8	-2.0
Public/other coverage	29.2	8.2**	7.5**	8.1**	9.6***	6.4**
Access to care in the past 12 months (N)	334	4,113	23,738	3,989	2,349	4,467
Had a usual source of care	87.8	3.6	4.3	1.8	4.8	2.5
Any unmet need because of costs	26.3	-8.3*	-9.7**	-10.3**	-6.7	-7.4
Medical care	10.1	-0.5	-1.2	-2.7	0.1	-0.9
Dental care	17.5	-2.6	-4.5	-5.8	-0.4	-1.3
Prescription drugs	15.0	-9.7***	-10.4***	-11.3***	-12.5***	-9.3***
Any delayed care	25.2	-10.2**	-11.4***	-16.4***	-7.3	-9.9***
Because of costs	13.3	-6.6	-6.5	-8.0*	-5.2	-5.8
Could not get an appointment	9.1	1.2	-1.1	-2.5	3.2	0.4
Could not go when open	2.9	4.2*	4.3**	3.9*	3.8	3.5*

Health care use in the past 12 months (N)	334	4,113	23,738	3,989	2,349	4,467
Any office visit	87.4	5.5	5.7	4.1	4.5	5.4
Any doctor visit	76.8	0.3	1.5	0.9	- 1.4	0.2
Any visit with nurse practitioner, physician assistant, or midwife	15.5	19.2**	14.7*	13.1	17.9*	17.0**
Any dental visit	55.0	7.6	9.8	6.4	2.1	8.3
Any emergency room visit	32.1	7.4	6.4	3.3	3.8	8.1

*Notes.* Massachusetts' health reform initiative included policy and programmatic changes that affected all adults in the state. The focus here is on the population targeted for the expansions in MassHealth and public subsidies. The regression models control for demographic and socio-economic characteristics and health and disability status. The sample sizes reported here are the number of observations with complete data for all of the covariates in the regression models. Actual sample sizes vary somewhat across models due to variation in item non-response in the survey questions used to construct the outcome measures.

\*\*\*Significantly different from zero at the .10, .05, .01 level, two-tailed test.

\*The time periods used in these specifications are as follows: Prereform, October 2003–September 2006; Postreform, January 2007–December 2008.

†The comparison group used in these specifications is higher-income adults in large states in the Northeast.

§The states included in this comparison group were New Jersey, Pennsylvania, and New York.

\*The states included in this comparison group were Illinois, Indiana, Michigan, Minnesota, Missouri, Ohio, Wisconsin, New Jersey, Pennsylvania, Alabama, Florida, Georgia, Louisiana, Maryland, North Carolina, South Carolina, Tennessee, Texas, Virginia, Arizona, California, Colorado, Washington, and New York.

|| The states included in this comparison group were Illinois, Missouri, Wisconsin, Alabama, North Carolina, South Carolina, and Texas.

††The alternate prereform time periods are based on data for October 2004–September 2006.

†††The alternate postreform time periods are based on data for October 2006–December 2008.

*Source.* 1999–2008 National Health Interview Survey.

models, in many of the models there were reductions in unmet need for care because of cost and reductions in delays in obtaining care over the past 12 months. We also found positive gains in the use of health care under reform, although only the increase in the use of mid-level providers (such as nurse practitioners, physician assistants, and midwives) was statistically significant. The latter suggests a strong gain in those visits in the early period under health reform in Massachusetts. As noted above, given the small sample size for lower-income adults in Massachusetts in the survey, we are only able to detect relatively large differences under health reform with confidence.

While the findings are generally positive for Massachusetts, we do see some suggestion of some increased barriers to care as the share of lower-income adults who delayed care because they could not get to a provider during office hours increased. However, that increase did not offset the overall gain in access to care, as the overall share of the population that delayed care in the past 12 months was significantly lower under health reform.

### *The Impacts of Health Reform on All Adults*

*New York.* Not surprisingly given the limited effects of health reform on lower-income adults in New York, we find very little effect of the state's health reform effort on the overall uninsurance rate in the state and, consistent with that, little impact on access to and use of health care among all adults (Table 3).

*Massachusetts.* In Massachusetts, where components of health reform (including the individual mandate) were targeted at adults at all income levels, the overall uninsurance rate in the state fell by about 3 percentage points over the early period under health reform (Table 4). That gain reflects a significant increase in public/other coverage in the state, with no significant change in ESI coverage in any of the alternate models estimated. Thus, we find no evidence of the crowding-out of ESI coverage among adults in Massachusetts over the study period.

There is also some evidence of improvements in access to care and increases in health care use for all adults in Massachusetts across the alternate models. However, as with the findings for lower-income adults, there is also a suggestion of increases in some types of problems gaining access to care. Although only significant in a subset of the models, we find that more adults in the state reported delaying care because they could not get an appointment in the early period under reform. Perhaps reflecting those increased barriers to care, we see an increase in emergency room visits under reform in



Table 3. Continued

	Regression-Adjusted Difference-in-Differences Estimates					
	Alternate Comparison Groups <sup>‡</sup>			Alternate Time Periods <sup>‡</sup>		
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	
	Higher-Income Adults in Large States in Same Region <sup>§</sup>	Higher-Income Adults in Large States <sup>  </sup>	"Income-Eligible" Childless Adults in Large States <sup>  </sup>	Alternate Prereform Period <sup>††</sup>	Alternate Postreform Period <sup>‡‡</sup>	
Any visit with nurse practitioner, physician assistant, or midwife	10.8	3.3	3.7	2.6	1.5	
Any dental visit	70.9	-1.9	-0.9	-1.5	-1.8	
Any emergency room visit	20.1	-1.2	2.5	1.0	-2.2	

Notes: The regression models control for demographic and socio-economic characteristics and health and disability status. The sample sizes reported here are the number of observations with complete data for all of the covariates in the regression models. Actual sample sizes vary somewhat across models due to variation in item nonresponse in the survey questions used to construct the outcome measures.

\*\*\*Significantly different from zero at the .10, .05, .01 level, two-tailed test.

<sup>†</sup>The time periods used in these specifications are as follows: Prereform, January 1999–December 2000; postreform, January 2003–December 2004.

<sup>‡</sup>The comparison group used in these specifications is higher-income adults in large states in the Northeast.

<sup>§</sup>The states included in this comparison group were New Jersey and Pennsylvania.

<sup>||</sup>The states included in this comparison group were Illinois, Indiana, Michigan, Minnesota, Missouri, Ohio, Wisconsin, New Jersey, Pennsylvania, Alabama, Florida, Georgia, Louisiana, Maryland, North Carolina, South Carolina, Tennessee, Texas, Virginia, Arizona, California, Colorado, and Washington.

<sup>||</sup>The states included in this comparison group were Illinois, Missouri, Wisconsin, Alabama, North Carolina, South Carolina, and Texas.

<sup>††</sup>The alternate prereform time periods are based on data from the following months: Insurance outcomes, January 1999–December 1999; access and use outcomes, January 1998–December 2000.

<sup>‡‡</sup>The alternate postreform time periods are based on data for January 2003–December 2005.

Source: 1999–2008 National Health Interview Survey.



Table 4: Impacts of Health Reform on Health Insurance Coverage and Health Care Access and Use for Adults in Massachusetts

	Regression-Adjusted Difference-in-Differences Estimates				
	Alternate Comparison Groups <sup>‡</sup>			Alternate Time Periods <sup>‡</sup>	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
	Higher-Income Adults in Large States in Same Region <sup>§</sup>	Higher-Income Adults in Large States <sup>¶</sup>	"Income-Eligible" Childless Adults in Large States <sup>  </sup>	Alternate Prereform Period <sup>††</sup>	Alternate Postreform Period <sup>‡‡</sup>
Prereform (%)					
Insurance coverage at the time of the survey (N)	2,810	101,999	31,975	16,102	21,706
Any insurance coverage	90.6	2.9**	2.7	3.0**	2.4**
Employer-sponsored coverage	77.4	0.7	0.2	-0.5	0.3
Public/other coverage	13.3	2.2*	2.4**	3.6***	2.1**
Access to care in the past 12 months (N)	817	24,417	8,532	2,747	5,204
Had a usual source of care	91.1	0.5	0.9	0.6	0.7
Any unmet need because of costs	12.7	-3.5	-5.4*	-1.2	-2.1
Medical care	4.6	-2.1	-4.1***	-0.6	-1.8
Dental care	8.9	-2.4	-4.1*	-0.5	-0.2
Prescription drugs	6.2	-3.0**	-4.0**	-2.5	-2.2
Any delayed care	14.0	-2.1	-7.6***	-1.2	-2.5
Because of costs	6.4	-4.2*	-6.1***	-3.6	-3.5*
Could not get an appointment	5.3	1.4	0.6	4.6**	3.0*
Could not go when open	1.9	1.4	1.4	1.1	1.3
Health care use in the past 12 months (N)	817	24,417	8,532	2,747	5,204
Any office visit	89.9	-2.3	-3.5	-3.6	-2.3
Any doctor visit	81.9	-4.9	-4.8	-7.7	-5.8

continued

Table 4. Continued

	Regression-Adjusted Difference-in-Differences Estimates				
	Alternate Comparison Groups <sup>‡</sup>			Alternate Time Periods <sup>‡</sup>	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
	Higher-Income Adults in Large States in Same Region <sup>§</sup>	Higher-Income Adults in Large States <sup>¶</sup>	"Income-Eligible" Childless Adults in Large States <sup>  </sup>	Alternate Prereform Period <sup>††</sup>	Alternate Postreform Period <sup>‡‡</sup>
Prereform (%)					
Any visit with nurse practitioner, physician assistant, or midwife	17.6	10.3**	5.8	4.4	12.5**
Any dental visit	73.4	2.5	4.3	3.7	0.3
Any emergency room visit	22.1	4.6	4.0	1.5	6.2*

Notes: The regression models control for demographic and socio-economic characteristics and health and disability status. The sample sizes reported here are the number of observations with complete data for all of the covariates in the regression models. Actual sample sizes vary somewhat across models due to variation in item nonresponse in the survey questions used to construct the outcome measures.

\*.05 level, two-tailed test.

<sup>†</sup>The time periods used in these specifications are as follows: Prereform, October 2003–September 2006; Postreform, January 2007–December 2008.

<sup>‡</sup>The comparison group used in these specifications is higher-income adults in large states in the Northeast.

<sup>§</sup>The states included in this comparison group were New Jersey, Pennsylvania, and New York.

<sup>¶</sup>The states included in this comparison group were Illinois, Indiana, Michigan, Minnesota, Missouri, Ohio, Wisconsin, New Jersey, Pennsylvania, Alabama, Florida, Georgia, Louisiana, Maryland, North Carolina, South Carolina, Tennessee, Texas, Virginia, Arizona, California, Colorado, Washington, and New York.

<sup>||</sup> The states included in this comparison group were Illinois, Missouri, Wisconsin, Alabama, North Carolina, South Carolina, and Texas.

<sup>††</sup>The alternate prereform time periods are based on data for October 2004–September 2006.

<sup>‡‡</sup>The alternate postreform time periods are based on data for October 2006–December 2008.

Source: 1999–2008 National Health Interview Survey.

Massachusetts in some models as well. Unfortunately, with the NHIS we are not able to assess the share of those emergency room visits that were for conditions that could have been treated in other, nonemergency settings.

## DISCUSSION

These findings provide evidence of the success of the reform initiatives in New York and Massachusetts at expanding insurance coverage, with the greatest gains reported by the initiative that was broadest in scope—Massachusetts' push toward universal coverage. This is despite the fact that the estimates for Massachusetts are based on a short follow-up period that does not capture the full implementation of the state's health reform initiative.

Unlike studies of earlier state reform efforts that focused primarily on Medicaid expansions, we find only limited evidence that the coverage expansions in New York and Massachusetts were crowding out ESI coverage. We would expect the crowding out of ESI coverage to be less of an issue here since the New York and, especially, Massachusetts expansion efforts included support for private coverage—HealthyNY in New York and Commonwealth Care, Commonwealth Choice, and insurance market reforms (among other changes) in Massachusetts, and strong anti-crowd-out provisions: HealthyNY requires individuals applying for coverage to have been uninsured for 12 months, while Commonwealth Care and Commonwealth Choice programs are not available to individuals who have access to ESI. However, we acknowledge that our measure of crowd-out for these two states is subject to some error given there is uncertainty as to how survey respondents are reporting some types of coverage.

We find no evidence of improvements in access to health care in New York among the population targeted for that state's reform effort, likely reflecting the small share of the target population directly affected by a gain in coverage under that state's incremental reform initiative. In contrast, we find evidence of significant gains in access to health care in Massachusetts, where elements of reform were intended to improve access to care among those who gained coverage as well as among those who had insurance coverage before reform.

In both Massachusetts and New York, we find some evidence of increases in some types of barriers to obtaining care. These problems, which may reflect issues related to provider capacity in the two states, are a reminder that insurance coverage does not always guarantee access to health care.

While there are differences in the measures considered and the postreform time periods covered, the findings for Massachusetts are generally consistent with prior work on the early impacts of health reform in

Massachusetts that found significant increases in insurance coverage and improvements in access to care, accompanied by some evidence of increased barriers to care (Long 2008; Long and Masi 2009). Those studies, which included a more comprehensive set of outcomes and a much larger sample size for Massachusetts than is available in the NHIS, were limited to survey data for a single state and, therefore, pre-post estimates of the impacts of health reform. Nonetheless, the basic conclusion that there were improvements in access to care with some evidence of increased difficulties obtaining care is consistent with the findings reported here. These findings are also generally consistent with a study that used the Current Population Survey to estimate difference-in-differences models of the early impacts of health reform on insurance coverage in Massachusetts (Long, Stockley, and Yemane 2009).

Given that the national health reform legislation incorporates many of the elements of Massachusetts's 2006 health reform initiative, these findings for Massachusetts highlight the potential for significant gains in insurance coverage and access to and use of health care over the next few years as the elements of PPACA are implemented. Unfortunately, assessing the impacts of that national reform effort across the states will be challenging since sample sizes in existing national surveys (including the NHIS) are not sufficient to track changes at the state level overall, much less for key population groups (such as children, lower-income adults, and disabled individuals). Because states have great flexibility in designing and implementing the various components of PPACA, assessing state-specific impacts will be especially important in the early years under national reform to determine which states' strategies are most successful. Expanding state sample sizes for the NHIS would be quite valuable, as would including a few questions on access to care in the American Community Survey, which, with its very large sample size, offers the potential for vastly improved tracking of the implications of health reform across states and high-need populations. Moving quickly to add those questions to the survey now, before the implementation of key provisions of national reform, would provide a much stronger base for analyzing health reform and comparing the impacts of health reform across states than is possible with existing data sources.

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## NOTES

1. See Long, Graves, and Zuckerman (2007) for estimates of the impact of New York's health reform initiative on insurance coverage over the period that Disaster Relief Medicaid was in place.
2. For a more detailed listing of the minimum creditable coverage standards, see <http://www.maconnector.org>
3. Given the limitations of the available data, we do not attempt to isolate the effects of the different components of health reform on different subsets of the target populations in the two states.
4. We rely on higher-income adults because many states were making changes to their Medicaid programs over the period of this study (either expanding coverage, contracting coverage or, in some cases, undertaking both expansions and contractions).
5. For more information on the NHIS, see <http://www.cdc.gov/nchs/nhis.htm>
6. One potential limitation of the NHIS is its income measure. The NHIS asks about individual earnings and a single question about total family income. Work by Czajka and Denmead (2008) found that the NHIS captured 95 percent as much total income as the Current Population Survey, which asks a series of questions about earned and unearned income for each individual in the household. Further, the NHIS tends to find less income for lower-income households than does the CPS, leading to more households defined as "lower-income" in the NHIS. This may arise, in part, because of the underreporting of total income in the NHIS. In the NHIS, a family income estimate constructed as the sum of the earnings of the individuals in the family exceeds reported total family income for a substantial share of cases. For this study, we assign family income in the NHIS as the highest of reported family income or the sum of total earnings across family members.
7. We also estimated models with insurance outcomes defined using a hierarchy where individuals reporting both ESI and other coverage were assigned to public and other coverage, as well as models of any reported ESI and any reported public and other coverage, where individuals were not restricted to a single coverage type. The basic findings are the same.
8. The specific question is: "Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS? . . . The (clinic/doctor's) office wasn't open when you could get there."

9. We exclude those reporting Medicare coverage from our analysis.
10. Because of the way interviews were scheduled, this includes some individuals who were interviewed in January 2009 as part of the 2008 survey.
11. Thus, the pre- and postreform periods for the access and use outcomes are based on surveys conducted in October 2004–September 2006 (which provides access and use data for October 2003–September 2006) and January 2008–December 2008 (which provides data for January 2007–December 2008), respectively, for Massachusetts. For New York, we rely on surveys in January 2000–December 2000 (which provides data for January 1999–December 2000) and January 2004–December 2004 (which provides data for January 2003–December 2004) for the pre- and postreform periods, respectively.
12. We vary the specifications somewhat depending on the comparison group being used in the models (e.g., we exclude income from models in which the comparison group is higher-income adults).
13. Consistent with the approach that NCHS uses in generating state-level estimates based on the NHIS and with recommendations from NCHS staff, we rely on the existing NHIS weights for this work.
14. See Table SA4 for an example of the output from the difference-in-differences regression models.
15. Because of likely confusion in the reporting of type of insurance coverage in the survey, particularly related to HealthyNY, this measure of ESI crowd-out is likely subject to some error.
16. As noted above, we are not able to examine the impact of reform on access and use among the subset of the target population who gained coverage under reform.

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## SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix.

Table SA1: Summary of Timetable for Key Changes under the State Health Reform Initiatives in New York and Massachusetts.

Table SA2: Summary of Explanatory Variables Included in the Regression Models for Health Insurance Coverage Outcomes, Pre-Reform Periods.

Table SA3: Summary of Explanatory Variables Included in the Regression Models for Health Care Access and Use Outcomes, Pre-Reform Periods.

Table SA4: Example of Estimation Results from the Differences-in-Differences Models for Health Insurance Coverage Outcomes: Model of Probability of Being Insured in New York for All Adults.

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