

Community Rating and the Market for Private Non-Group Health Insurance

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Abstract

Recent state efforts to increase health insurance coverage have focused on encouraging individuals to purchase their own policies in community rated non-group insurance markets. We examine the impact of state community rating regulations enacted in the 1990s on non-group insurance markets. Using data from large, national surveys we find evidence of a shift to a less healthy pool of non-group enrollees as a consequence of community rating. Community rating made healthy people less likely to be insured by non-group health insurance; in addition, we found evidence that young and healthy people were more likely to be uninsured as a result of community rating. We also find evidence that individuals in poor health were more likely to be insured in the non-group market, but only limited evidence suggesting that persons in poor health were less likely to be uninsured. Our results are further supported by findings suggesting that non-group enrollees were sicker as a result of the community rating laws. Lastly, we find evidence suggesting that HMO penetration in the non-group market increased disproportionately in states that implemented community rating relative to states that did not.

1. Introduction

With the continued high level of uninsurance nationwide, a number of states have recently put forth proposals to provide universal health insurance coverage that rely at least in part on individuals purchasing non-group health insurance policies. These proposals have called for community rating in the non-group market as well as a requirement that insurers must offer a policy to anyone interested (guaranteed issue). However, the functioning of the non-group market is not well understood (Pauly and Nichols 2002). In particular, very few prior studies have examined the effect of community rating regulations on the non-group market. Our goal is to identify and understand the impact of community rating legislation enacted in the 1990s by a number of states. Specifically, we examine how state community rating regulations combined with guaranteed issue laws affected the purchase of non-group insurance by different risk groups and how the composition of the risk pool changed as a result of the regulations. We also examine the extent to which insurance products changed as a result of community rating.

The decade of the 1990s was a period of state experimentation with regulatory efforts in both the small group and non-group health insurance markets. In contrast to other state regulations that were enacted in the non-group market such as limitations on insurer ability to exclude coverage for pre-existing conditions and guaranteed policy renewal requirements, community rating has the potential to fundamentally alter health insurance markets as it prevents or greatly limits insurers' ability to charge different premiums on the basis of characteristics associated with risk such as age, gender, or health status.¹ The implementation of this policy provides a unique natural experiment to explore the precise manner in which adverse selection is manifested in health insurance markets. Our research differs from most prior work because we

¹ We will generally apply the term community rating to rating restrictions that fall short of pure community rating, but nonetheless involve strong restrictions on insurers' ability to experience rate non-group insurance policies.

estimate the impact of community rating on both ends of the risk distribution: the healthy and the sick. We examine whether the regulations served to induce some people to purchase non-group coverage and other people to drop non-group coverage, and whether we observe reciprocal effects on uninsurance.

We find that community rating was associated with a reduction in the likelihood of being covered by non-group health insurance though no significant increase in the probability of being uninsured among healthier individuals. However, we do find that among young healthy unmarried men community rating laws are associated with both a decrease in non-group coverage and an increase in uninsurance. In contrast, non-group coverage increased among unhealthier individuals, though we did not find consistent evidence that uninsurance decreased among those in poor health. The combined impact of these results are further supported by examining the impact of community rating on health status characteristics and health utilization of persons with non-group insurance before and after community rating for a subset of states, which suggests that the enrollees as a group were sicker after community rating laws were enacted. This evidence is consistent with the hypothesis that community rating worsened the extent of adverse selection in the non-group market. However, perhaps tempering the adverse selection effect, we also find evidence that HMO penetration in the non-group market increased disproportionately in states that implemented community rating relative to states that did not.

2. Community Rating in the Non-Group Health Insurance Market

During the early- and mid-1990s states were active with regulatory efforts aimed at improving the perceived inequities and inefficiencies in the small and non-group health insurance markets. While small group regulatory efforts were more common, in many cases the

small group regulations were done in tandem with similar regulations implemented in the non-group health insurance market. Excluding guaranteed renewal, which was mandated as part of the federal Health Insurance Portability and Accountability Act (HIPAA) passed in 1996, 33 states implemented some type of regulation affecting the non-group market during the 1990s (Blue Cross and Blue Shield Association 2000). The regulations included guaranteed issue requirements, limits on exclusions for pre-existing conditions, reinsurance requirements, minimum loss ratio requirements, and premium rate restrictions.

It is clear that each of these regulations is likely to have a distinct effect on the market for non-group health insurance. For example, limiting an insurer's ability to exclude coverage for certain pre-existing conditions is likely to marginally increase premiums for all non-group policies (Marsteller, et al. 1998). Our strategy is to focus on the regulatory regime that is most likely to have an unambiguously large effect on insurance markets: community rating, or so called "modified" community rating of non-group premiums, combined with guaranteed issue requirements. Pure community rating requires insurance carriers to charge the same premiums for all plan participants regardless of age, gender, health status, or other factors. Of the states implementing community rating, most enacted modified community rating laws, which still allow limited premium variation by specified demographic characteristics (typically age) or region. By restricting the ability of insurers to charge differential premiums by risk, states intended to create a market in which those in poor health would not be "discriminated" against in the form of higher premiums. However, this policy is only effective if healthy individuals remain in the non-group market to subsidize the premiums for the unhealthy individuals.

Table 1 lists the states that enacted non-group community rating laws during the 1990s. For all states community rating is combined with guaranteed issue requirements. Guaranteed

issue requirements are expected to exacerbate the effect of community rating by raising the average price of insurance because it further restricts the insurer's ability to limit coverage to those deemed a profitable risk. However, as a sensitivity analysis, we will examine results that include states that passed community rating laws without guaranteed issue.²

It is important to understand the factors that affected state decisions to implement community rating in the non-group market. If, for example, the decision to implement community rating was motivated by a state-level economic or insurance market shock, then we would be concerned that such unobserved, time varying factors would be correlated with both community rating and non-group insurance market coverage. This type of policy endogeneity is a serious concern as it could threaten the validity of our findings.

To better understand the motivation of state governments to implement community rating, we estimate a discrete-time hazard model of the rate of transition from non-community rated to community rated over the period 1991 to 2000. We model the transition to community rating as a function of state-level time-varying variables and time-invariant economic and socio-demographic characteristics. The time-varying variables include:

- lagged changes in the unemployment rate and per capita income to account for state-level economic shocks;
- dummy variables indicating Republican or Democratic control of the state legislature and governorship to account for changes in policy induced by party control of the state government;
- a measure of the lagged change in the fraction of children less than 18 years of age eligible for public insurance in the state to account for policy-related changes in public

² New Mexico (January 1995), Oregon (October 1996), North Dakota (August 1995) and Ohio (January 1993) implemented modified community rating regulations without a guaranteed issue requirement.

insurance eligibility, which were quite extensive given the Medicaid expansions in the early 1990s and the State Children's Health Insurance Program in the late 1990s;

- and lagged changes in HMO penetration as well as lagged changes in what will be our primary dependent variables in later analyses, uninsurance and non-group insurance coverage, to account for insurance market shocks.

The results of this analysis (Table 2) suggest that implementation of non-group market community rating was more likely in response to increases in per capita income, though the result is only marginally significant. Having a Democratic governor also increased the likelihood of community rating implementation, though that too was only marginally statistically significant. Increases in state-level private HMO penetration were the strongest predictor of community rating implementation among the time varying characteristics. Importantly, lagged changes in uninsurance and non-group coverage themselves were not significant predictors of community rating implementation in the non-group market. These results suggest that political factors as well as economic and insurance market factors were predictive of community rating laws. Therefore, our analyses below will control for the observable time-varying characteristics that appear to influence the decision to implement community rating. As a further check on potential policy endogeneity, as sensitivity analyses we will also estimate models including state-specific time trends.

It is not surprising that a number of the time invariant characteristics are predictive of community rating implementation. Reflecting the predominance of northeastern states implementing community rating, lower baseline uninsurance and higher baseline Medicaid eligibility were positive predictors of community rating laws. States with larger baseline fraction of workers employed at small firms were less likely to implement community rating, while states

with a larger fraction of full time workers among the employed population were more likely to implement community rating laws. State fixed effects in our regression models will control for time invariant factors related to community rating implementation.

A final important point is that all states that enacted non-group community rating laws also enacted similar policies in their small group health insurance markets around the same time. As there were a number of other states that only implemented small group community rating, we have the ability to examine to a limited extent the degree to which there were spillover effects from the small group market that affected non-group coverage. To identify the impact of non-group community rating, our regression models will include an indicator for the presence of small group community rating laws in the state. The indicator is identified because many more states implemented community rating in the small group market than the non-group market.³

3. Previous Research

Several studies have examined aspects of non-group market regulations in the 1990s. Zuckerman and Rajan (1999) used data from the CPS aggregated to the state-level to examine the impact of small and non-group regulations. The authors found that non-group market regulations, which were aggregated into “packages” of large and small regulations, resulted in higher uninsurance levels and lower levels of non-group coverage. A shortcoming of this research is that the authors do not identify whether there was a compositional change within the pool of those covered by non-group policies after implementation of the regulations.

Several studies examined the effect of non-group regulations using individual-level data. Percy (2000) used data from the CPS to examine the impact of state market regulations in the small and non-group markets. Like Zuckerman and Rajan, the author aggregates regulations into

³ We thank Kosali Simon for providing us with information on small group market regulations.

strong and weak regulation types; strong regulations are considered any state rating restriction combined with guaranteed issue provisions. Percy stratifies the sample into high and low risk by using predicted expenditures based on a regression of health care expenditures on age, gender, race, and income using the National Medical Expenditure Survey. Percy finds that strong non-group regulations were associated with less private coverage for low-income groups.

In another study, Sloan and Conover (1998) used CPS data to examine the effect of community rating and other policies in the non-group market. They found that non-group community rating did not affect uninsurance using age as a risk status proxy, though they did find that for persons over 55 years of age community rating was associated with a higher rate of group health insurance coverage. However, the authors found that community rating in the non-group market was associated with a lower rate of private coverage, which they speculate could be the result of a decreased supply of insurance.

In addition to these studies of the non-group regulations, a number of other studies have examined the small group market regulations. These studies have been summarized elsewhere (see, for example, Simon (2005) and Davidoff et al. (2005)). The prior work has generally provided a mixed portrait of the impact of the small group regulations, with results ranging from evidence of reductions in the rate of private coverage (Simon 2005 and Monheit and Schone 2003) to no impact of pure community rating in the small group market (Buchmueller and DiNardo 2002).

There are a number of shortcomings in the previous work. First, despite the significant amount of work examining the small group market, a consensus as to the effects of community rating in this market has not been achieved. Studies typically have not been able to compare small employers that were likely to benefit from small group regulations (such as firms

employing a number of older, sicker individuals) to small employers that were likely to be harmed by the regulations (such as firms employing younger, healthier individuals). Consequently the estimates might aggregate across the positive and negative effects, thus it is not surprising that the studies have uncovered modest or no effects of the regulations.

The second general concern regarding prior work is that the data used—typically the CPS—do not contain sufficient detail regarding the respondent’s health status and the timing of their insurance coverage. Our research uses the Survey of Income and Program Participation (SIPP) and the National Health Interview Survey (NHIS), both of which include measures of insurance coverage and health status thereby extending the previous literature by examining the composition of the non-group market pre- and post community rating.

4. Economics of Community Rating

Restrictions on the ability of insurers to vary premiums for insurance products based on age, gender, and health status combined with a guaranteed issue requirement will, holding non-group enrollment constant, result in an increase in premiums for younger and healthier individuals and a decrease in premiums for older and unhealthier individuals. However, non-group enrollment will almost certainly not remain constant and, if insurers anticipate potential adverse selection among those seeking non-group health insurance, insurers might increase premiums for all. Hence, the clear implication of community rating is higher premiums and less non-group coverage among younger and healthier individuals. Uninsurance is likely to increase for these individuals, but the effect could be small or zero depending on the ease with which they are able to obtain alternative coverage, such as from the group market. The effect of community rating on non-group coverage of older and unhealthier individuals is ambiguous a priori because,

although eliminating age and health status based variation in premiums would likely reduce premiums for this group, anticipation of significant adverse selection by insurers could lead to higher premiums under community rating. Similarly, effects on uninsurance for older and unhealthier individuals are theoretically ambiguous.

If insurers fail to anticipate the extent of adverse selection or if they behave adaptively in their premium setting, then one might see enrollment changes occur gradually over time. Under such a scenario it is possible that an adverse selection death spiral could manifest over time. Similarly, if existing (non-community rated) insurance policies are grandfathered after community rating is enacted then one would also expect to see enrollment responses to occur slowly over time.

The extent to which effects of community rating will vary within age group across health status or across both age and health status group is difficult to determine a priori.⁴ As a result, we will examine effects initially by looking at differential responses to community rating by health status only. Because it is likely that for most states the allowed age-based premium variation will not be sufficient to cover anticipated age-based variation in health expenditures we will also examine differential responses to community rating among the young and healthy relative to the older and unhealthy.

Another more subtle potential consequence of community rating is greater use of managed care. First, given the high premiums that are likely to result under community rating, insurance companies might seek a means of offering a less costly product that would be demanded by individuals; managed care, particularly HMOs, provide a means limiting

⁴ An imperfect but telling piece of information is revealed by a casual check of premiums in the non-group market available on the website, www.ehealthinsurance.com. In Illinois, a state presently without significant non-group rating restrictions, the typical variation in premiums for the identical health insurance plan between a hypothetical 60 year old and a hypothetical 25 year old is on the order of 5-to-1. This far exceeds the allowed age-based premium variation in every state but Kentucky that enacted community rating (See Table 1).

anticipated health expenditures. Second, insurers might attempt to use managed care to segment the community rated market by differentially marketing insurance products that could appeal to healthier individuals.⁵ HMOs may be eschewed by the unhealthy out of concerns regarding the difficulty accessing specialty care or no longer having access to an out-of-network physician. Indeed, anecdotally it has been observed that one of the impacts of community rating in the non-group market was exit of indemnity insurers (Kirk 2000, Hall 2000a), but this could have represented the continuation of a secular trend away from indemnity health insurance. Buchmueller and Liu (2005) investigated this phenomenon in the small group market and found evidence that HMO penetration was related to small group insurance regulations. We will examine this hypothesis in the non-group market using individual level data from the NHIS and methods to control for the general trend in the health care marketplace towards the use of HMOs in the early 1990s as well as the trend in the states that implemented community rating during this time period. Unlike Buchmueller and Liu, our study will measure actual take-up of HMO products in the non-group market, not just the offer rate of HMO products by firms.

5. Data

To examine the effect of community rating on take-up of non-group insurance and uninsurance, we use data from the Survey of Income and Program Participation for the years 1990-2000. Should we observe effects in the tails of the health distribution, it is likely that the impact of the shift in the risk pool had detectable implications for the overall health status and health care utilization among persons in the non-group health insurance market. Because the SIPP lacks detailed health status and utilization information as well as information on the type of

⁵ Such a strategy would be prevented in New Jersey as the state pre-defined the type of health plans that could be offered.

non-group insurance purchased (HMO versus other), we subsequently use a second data source: a special public release version of the National Health Interview Survey (NHIS) for the years 1992 and 1994 that includes state identifiers to examine a subset of the community rating laws.

Survey of Income and Program Participation Data. The SIPP data follow a nationally representative sample of individuals over a 2-and-a-half to 4 year period.⁶ Respondents are surveyed every 4 months and for many variables (such as health insurance coverage) are questioned about each of the previous 4 months since the last interview wave. Non-group premium information is not available in the SIPP data. Lacking premium information, we will infer high- and low-premium groups by risk status, which will be defined by combining information on self-reported health status and age. We will use this information to stratify the sample into “healthy” and “unhealthy” groups to examine the effect of community rating in the non-group market.

The SIPP data have several advantages relative to other data sets. First, successive panels of the data can be used to straddle the period before and after the implementation of the regulations identified in Table 1. We use data from the 1990, 1991, 1992, 1993 and 1996 SIPP panels. Second, because we believe it is essential to separate high-risk individuals from low-risk individuals by health status, the SIPP questionnaire contains a self-reported health status question that allows respondents to rate their health as excellent, very good, good, fair, or poor since the 1990 panel.⁷ Self-reported health status has been validated as a strong predictor of subsequent morbidity and mortality even controlling for other observables, such as health care utilization (Idler and Benyamini 1997).

⁶ Starting with the 1996 panel, the follow-up period for SIPP respondents is 4 years; prior panels employed a 2.5-year follow-up window and overlapping panels.

⁷ By way of comparison, the CPS data only began including self-reported health in the questionnaire in 1996.

We include data from SIPP waves when the self-reported health question appeared so that health insurance coverage could be measured contemporaneously with health status. Self-reported health was assessed twice in the 1990 panel (waves 3 and 6), once in the 1991 panel (wave 3), twice in the 1992 panel (waves 6 and 9), twice in the 1993 panel (waves 3 and 6), and six times in the 1996 panel (waves 3, 5, 6, 9, 11, and 12). All time-varying information—health status, health insurance, current employment, and family status—correspond to the current month of the reported information.

Table 3 displays the number of observations for persons between the ages of 22 and 64 not enrolled in school for the month-years corresponding to when self-reported health was included in survey. By combining SIPP panels we have roughly 375,000 person-months of data on self-reported health and health insurance coverage. Note that we have two years, 1990 and 1991, encompassing nearly 70,000 observations, of pre-regulation data. Also significant is the nearly two-year gap in self-reported health measures from the twelfth month of 1994 and the eleventh month of 1996. During this gap four of the six regulation states that are identifiable in the SIPP implemented their community rating policies. Because we have ample pre- and post-regulation data for these states, we do not anticipate that the interruption in the time series will pose a threat to our analyses.⁸

The SIPP data have a few noteworthy disadvantages. The first is the relatively small sample sizes, particularly when examining individual state effects for non-group coverage given that such policies cover relatively few individuals. However, by combining successive panels of data, we are able to construct reasonably sized samples for our analysis. Another issue is that the

⁸ Regarding the health insurance information contained in the SIPP, the earlier SIPP panels (1990-1993) non-group coverage was inferred from an “other private” category. In the redesign of the 1996 SIPP a “privately purchased” option was added, thus allowing us to directly observe non-group coverage. Despite the change in the survey, we do not anticipate that the measurement issues will pose a significant problem because there is no reason to suspect that any measurement changes would be correlated with specific states’ regulatory policies.

public use data file masks the identity of nine low-population states. Two of the low-population states are Maine and Vermont, which implemented community rating in 1993. We are forced to drop the data for these non-exclusively identified states.⁹ A final weakness of the SIPP is that the survey only inquired about firm size in the 1996 panel, which prevents us from distinguishing between small and large group coverage.

National Health Interview Survey Data. The NHIS provides data for a representative sample of households in the United States and is one of the main sources of data on the health of the civilian non-institutionalized population. Surveys are conducted in person and include general demographic information on the household and family as well as detailed individual-level information on adults in the household. The NHIS also includes information on health care utilization, health status, and health insurance, all of which are described in more detail below.

The NHIS State Data Files is a public release subset of the full NHIS data set that includes identifiers for most states. Two groups of small states were aggregated to prevent the possibility of identifying individuals. The restrictions leave 41 identifiable states (including Washington DC), as well as two aggregated groups of states. Beyond containing state identifiers, the primary difference between the publicly released full NHIS and the State Data File version is the intentional inclusion of “statistical noise” at the variable and record levels. Specifically, most continuous variables were recoded into categorical and ordinal measures and only limited information on family structure and composition was included in the files. Despite the limitations placed on the State Data Files, the supplement contains sufficient measures of health insurance¹⁰, health, and health care utilization combined with the state identifiers to allow

⁹ We dropped North Dakota, which implemented community rating without guaranteed issue. The other states dropped are: South Dakota, Wyoming, Iowa, Alaska, Idaho and Montana.

¹⁰ In general the surveys are quite similar across the two years, though there is a slight difference in how the questions on private health insurance were phrased. In 1992, respondents are asked to list any health insurance plan

us to study the impact of the early community rating laws that occurred in 1993 in Maine, Vermont, New York, and New Jersey.

We split the health measures available in the NHIS into two categories, health status during the year and utilization of health care services. In addition to self-reported health the health status measures include more objective (although still self-reported) measures of health such as activity limitation status (total, ability to work, and need of help with personal care), restricted activity days in past two weeks due to injury or sickness (total, days in bed, work loss days, and other days of restricted activity), and the number of chronic conditions. The utilization of health care services includes number of doctor visits (past 12 months, past two weeks) and days of short-term hospital stay. In addition, respondents are asked whether their insurance plan is an HMO or not.

6. Methods

To determine the impact of non-group rating restriction laws, we specify a difference-in-differences model of non-group health insurance coverage:

$$\Pr(\text{Non-Group}_i) = F(\alpha \text{NGCR}_i + \mathbf{X}_i \boldsymbol{\beta} + \sum \gamma_s \text{State}_i + \sum \gamma_t \text{Time}_i + \varepsilon_i), \quad (1)$$

where *Non-Group* represents whether the individual, *i*, is covered by a non-group health insurance policy, *NGCR* is the key policy variable of interest reflecting whether the state in which the person resides has community rating combined with guaranteed issue requirements in the non-group market. In addition the model controls for individual demographic characteristics

that pays any part of hospital or doctor bills, they are asked not to include plans that pay for only one type of services. The 1994 questionnaire first asks for any private health insurance plan and then distinguishes between “single service plans” and “non-single service plans”. In our sample we included single service plans in the definition of a private health insurance plan, but our results hold when we exclude single service plans. In addition, the definition of non-group coverage used in our analyses was based on the primary insurance policy mentioned by the respondent. That is, some respondents indicated they were covered by both group and non-group policies; we assigned people to coverage categories based on what they listed as their primary policy.

(X) including age, race, gender, education, marital status, the presence of children under 18, and urban versus rural residence. The model also includes time-varying state-level variables used in the discrete time hazard model displayed in Table 2: unemployment rate, per capita income, state government party variables, HMO penetration, and state-level average Medicaid eligibility. The model also includes state and time fixed effects. Because *Non-Group* is an indicator variable, we use a probit regression to estimate the model. We estimate a similarly specified regression for uninsurance. In addition, an alternative model includes an indicator for small group community rating, allowing us to test for possible spillover effects.

Our goal for the NHIS analysis for the years 1992 and 1994 is to perform complementary pre/post comparisons between the four states that enacted non-group community rating with guaranteed issue in 1993 and other nearby states to determine if utilization and health status measures changed differentially in states with community rating. Because the states that implemented community rating in 1993 are northeastern states our comparison states will include only northeastern non-community rating states.¹¹ The strength of the NHIS data lies in the wealth of health outcome and health care utilization information. The general structure of our analytic models will be difference-in-differences (DD): that is, we compare the changes in outcomes over time for states that implemented the community rating to changes in outcomes for nearby states that did not implement community rating for persons with non-group coverage:

$$Outcome_i = \alpha NGCR_i + \mathbf{X}_i \boldsymbol{\beta} + \gamma_t Time_i + \sum \gamma_s State_i + \varepsilon_i, \quad (2)$$

where *NGCR* takes the value of one in 1994 for states that implemented community rating and zero otherwise, **X** represents demographic controls, *Time* is a dummy variable equal to one in

¹¹ In sensitivity analyses, we found that using all states in non-community rated states as a comparison group provided qualitatively similar results. Although other states (Ohio, Minnesota and Connecticut) had some policy changes in their non-group markets in 1993 none of them were as dramatic as the regulations in the four community rated states.

1994, and *State* represents a series of state fixed effects. As before, α represents the key coefficient of interest in our regression estimates. In contrast to the previous analyses, the NHIS analyses condition on having non-group coverage and examine the change in the composition of the non-group market in states that implemented community rating relative to states that did not.

A possible limitation of the DD approach is that there may have been changes in the states that implemented community rating that affected the entire insurance market, which could lead to biases. For example, we observed earlier that increases in HMO penetration were associated with the implementation of community rating. Consequently, we will use the group market as another control on which to base conclusions about the impact of the non-group regulations. By including persons covered by private group insurance in our model¹², we derive a triple-difference (DDD) model:

$$\begin{aligned}
 Outcome_i = & \alpha NGCR_i + \theta Non-Group_i + \delta NGCR_i \times Non-Group_i + \mathbf{X}_i \boldsymbol{\beta} + \gamma_t Time_i \\
 & + \sum \gamma_s State_i + \varepsilon_i,
 \end{aligned} \tag{3}$$

where *Non-Group* is an indicator for individual *i* having non-group insurance relative to group insurance. The non-group indicator is the interacted with the non-group community rating regulation indicator, which provides us with the DDD estimate of the impact of non-group community rating. All regression models adjust for potential correlation within states over time as consistent with Bertrand, Duflo, and Mullainathan (2004).

¹² The NHIS data do not allow us to distinguish large-group from small group coverage. Because all states that implemented non-group community rating also implemented small group regulations, some of the people in the group coverage control group will have been affected by the regulations. This makes those with group coverage a less than ideal control group. However, to the extent that those with small group coverage will experience the same effects that those with non-group coverage experience, our results will be biased towards zero, yielding a more conservative estimate of the true impact of non-group community rating.

7. Results

Non-Group Coverage and Uninsurance. Descriptive statistics of the SIPP sample are presented in Appendix Table 1. The top panel of Table 4 displays summary probit non-group and uninsurance regression results for the full SIPP sample. Full regression results for the SIPP sample are available in Appendix Table 2. Note that non-group community rating has only small and statistically insignificant effects on non-group coverage and uninsurance. When we control for the presence of community rating in the small group health insurance market the effect of non-group community rating remains small and insignificant. We also observe that small group community rating has no significant effect on non-group coverage or uninsurance. Thus, from an overall non-group market perspective it appears that community rating had minimal effect.

The next panel of Table 4 displays probit non-group and uninsurance regression results for the healthy subsample of the SIPP data set, defined as individuals reporting excellent health. The results suggest that community rating in the non-group market is associated with a decrease in the probability of having non-group health insurance for those in excellent health; when we control for the presence of small group community rating the effect of non-group community rating is -1.4 percentage points and statistically significant. Relative to the mean percentage of the subsample with non-group coverage of 6.3% the marginal effect implies a decrease in non-group coverage among those in self-reported excellent health of 22%. The impact on uninsurance is small and statistically insignificant, suggesting that most of these individuals found coverage from other sources.

The next panel of Table 4 considers an alternative definition of the healthy that closely resembles the so-called “invincibles” in health insurance policy discussions: young, unmarried men in self-reported excellent health. This younger group is also likely to experience the largest

increase in premiums under community rating as allowable age-based variation in premiums are unlikely to compensate for variation in expected health expenditures. The results indicate a larger drop in non-group coverage among this group relative to all persons in excellent health. Columns 1 and 2 reveal a 3.2 to 3.5 percentage point decline in non-group coverage relative to mean non-group coverage of 5.9%, implying a 54-59% drop in the rate of non-group coverage. In columns 3 and 4 we observe large co-occurring increases in the probability of being uninsured for this subsample of healthy men, suggesting that this group is either more willing to accept the lack of health insurance or less able to find alternative coverage. Relative to the average rate of uninsurance in this subsample of 28.5% the marginal effect estimates represent a 22-34% increase in the rate of uninsurance.

The positive (though statistically insignificant) effect of the small group regulations on the non-group market would appear to be consistent with a spillover relationship between the two markets. Specifically, if community rating in the small group market resulted in small employers dropping their health insurance or otherwise making their offered health insurance unappealing to employees the result would be more potential customers for non-group health insurance, holding constant the community rating status of the non-group market. However, the negative relationship between small group community rating and uninsurance is not consistent with this story.

The fourth panel of Table 4 displays regression results for the subsample of individuals reporting poor health. These individuals are the predicted beneficiaries of community rating and indeed we observe that they are significantly more likely to have non-group coverage after community rating is implemented. Those in self-reported poor health are 2.6 to 3.8 percentage points more likely to have non-group coverage, which relative to the mean percentage of

unhealthy persons who have non-group coverage in the sample of 7.7% suggests that community rating increased coverage of the unhealthy by roughly 34-49%. The uninsurance regressions indicate a comparably sized decrease in uninsurance, though the effect is not statistically significant. Given the mean uninsurance rate for this subsample of 17%, the effect in column 3 implies a 12% reduction in uninsurance. Results in column 4 suggest that much of the effect on uninsurance operates through the small group community rating policy as opposed to the non-group community rating policy. The final panel in Table 4 displays results restricting the sample in self-reported poor health to those aged 40-64. The marginal effects on non-group coverage are roughly 1 percentage point larger for this older sample. As before uninsurance effects appear to operate through the small group policy.¹³

Health and Health Care Utilization. The demographic variables of our target population (adults ages 18-64) for the NHIS sample are presented in Appendix Table 3. For this analysis we compare health status and utilization measures for NHIS respondents with non-group coverage in order to explore whether the composition of non-group enrollees changes between the four states implementing community rating in 1993 (New York, New Jersey, Maine, and Vermont) and the northeastern states that did not (Connecticut, Massachusetts, New Hampshire, Pennsylvania, and Rhode Island).

¹³ We experimented with a number of other specifications for our regression models. For example, there a number of reasons why effects of rating restriction policies might manifest over time—older, pre-community rated policies can be grandfathered in some states and insurers might not accurately predict the demand response which might result in premiums that evolve over time. When we tested for different effect sizes at different points in time post-implementation of community rating we were unable to reject that the effect was different over time. We also tested our model for robustness to the inclusion of state-specific linear time trends and found that our results displayed in Table 4 remained qualitatively unchanged. Our findings were also qualitatively unchanged when we altered the definitions of “healthy” and “unhealthy” to include those in self-reported very good health in addition to excellent health and those in self-reported fair health in addition to poor health, respectively. Likewise, results were generally unchanged when we dropped observations from states that implemented community rating without a guaranteed issue law.

Table 5 presents descriptive statistics displaying each of the health measures available from the NHIS State Data Files. Self-reported health is acquired in the same manner that it was acquired in the SIPP: a 5-point scale reflecting excellent, very good, good, fair, or poor health. Total activity limitation is assessed as unable to perform major activity, limited in the kind or amount of major activities that can be performed, limited in other activities, or no limitations on activities. Ability to work is assessed as unable to work, limited in the kind or amount of work, limited in other activities of work, or no limits on ability to work. Total number of restricted activity days in the last two weeks is a count that is top-coded at 4. The number of days restricted to bed and the number of other restricted activity days in the last two weeks is either zero or one, reflecting a positive number of days. The number of bed days in the last 12 months is coded as a count. The number of doctor visits in the last two weeks is a count top-coded at 2 and the number of doctor visits in the last year is a count top-coded at 11. The number of hospitalizations in the last two weeks is a count top-coded at 4. For our purposes we transform hospitalizations into an indicator variable.

In most but not all cases the change between 1992 and 1994 in the non-group community rated states suggest worsening health among non-group enrollees. Also note that there are generally only small or no corresponding changes in the two control groups: the pre and post change in the non-community rating states and the pre and post changes in the group health insurance coverage persons. For example, the mean number of total restricted activity days in the past two weeks was 0.18 in the community rating states in 1992 and 0.44 in 1994 after community rating was enacted. By comparison, the non-community rating states increased a smaller amount from 0.27 to 0.37.

Table 6 displays the regression results for the health measures displayed in Table 5 with an increasing set of controls included in the specification. The regressions contain a full set of demographic control variables though we only display the key coefficients of interest for brevity. (The full regression results are available upon request of the authors.) The first column displays the simple pre/post difference in the outcome variable for the community rating state sample. The second column displays results using the difference-in-differences (DD) specification that uses persons covered by non-group insurance in states that did not implement community rating as a control. The third column displays results using the triple-difference (DDD) specification that differences the DD result by the relative change in the outcome variable for persons with group insurance across the two groups of states. As anticipated based on the descriptive statistics, there is a clear trend towards less healthy persons having non-group health insurance as a consequence of community rating. Community rating in the non-group market is associated with enrollees having significantly more restricted activity days and bed days, and a greater number of doctor visits and hospitalizations.

HMO Enrollment. Using methods similar to the above approach examining health status and utilization, we now turn to the issue of HMO penetration. As described earlier, there are reasons to expect greater use of managed care in community rated states. Because HMOs might offer a means of reducing premium costs and might appeal to healthier individuals, enrollment in HMOs may show a disproportionate increase relative to nearby non-community rated states. We test this hypothesis using the NHIS State Data Files for 1992 and 1994.

Table 7 displays means of HMO penetration in community rated states and non-community rated states in 1992 and 1994 for person covered by both non-group and group health insurance policies. In the full sample, we see that the percentage of HMO policies in the non-

group market increased from 18.6% to 26.6% while the HMO penetration remained virtually unchanged in the non-group market for northeastern states that did not implement community rating. However, in the states that implemented community rating there was an increase in HMO penetration in the group market from 30.5% to 39.6%, though that increase was in part matched in the group market for non-community rated states, which increased from 35.7% to 41.4%. This highlights the importance of estimating the DDD models, which uses the change in the group market as an additional control for the relative change in the non-group market.

We split the sample into older and younger subsamples because HMOs could be more appealing to (and more likely to be targeted at) younger individuals. We observe similar patterns in the data for the two age-based subsamples, though, as anticipated, the increases in HMO penetration are larger for the younger cohort. For the older cohort in the community rated states we observe an increase in HMO penetration from 19.7% to 23.3%, while in the younger cohort we observe an increase in HMO penetration from 17.7% to 29.2%. A drawback of this stratification, however, is the relatively small sample sizes that result.

Table 8 displays results for models similar to those displayed in Table 6. We estimated a simple pre/post difference model, a DD model using states that did not implement community rating as a control group, and a DDD model further differencing the DD model by the relative change in HMO penetration that occurred in the group health insurance market. We display full sample results and results stratified by age group to highlight differences between younger and older enrollees. In the first column the simple difference results appear consistent with the means observed in Table 7. Overall there is a 7% rise in the rate of HMO penetration in states that implemented community rating in their non-group market; the increase for the younger group is nearly twice the size of the increase for the older group. The DD and DDD results

become somewhat smaller but are generally similar to the results observed in the simple difference model. In the difference and DD models HMO enrollment increases at a much higher rate among younger individuals relative to older individuals. In the DDD model the increases are comparable, mainly because of a large increase in HMO enrollment among group enrollees in states implementing community rating in their non-group markets.

It is worth noting that because the four states that enacted non-group community rating also enacted small group community rating, we can expect that some members of the group coverage subsample were affected by the same trend in HMO penetration (which was, for example, documented by Buchmueller and Liu (2005)). Consequently, because we cannot separately identify small group enrollees from large-group enrollees in our NHIS sample, our findings should be thought of as a conservative, lower-bound estimate of the impact of community rating in the non-group market. In addition, because HMO penetration appeared to be a predictor of community rating implementation by states, some degree of care is warranted in interpreting our findings.

8. Discussion

Our results suggest that community rating of the non-group health insurance market was associated with a significant change in the risk composition of the non-group market. Using data from large, national surveys we found strong evidence that community rating made healthy people less likely to be insured by non-group health insurance; we found less consistent evidence that healthy people were more likely to be uninsured as a result of community rating, though this was certainly the case for some young and healthy individuals. At the same time, we found evidence that the unhealthy were more likely to be insured through non-group policies yet only

limited evidence suggesting that the unhealthy were less likely to be uninsured. Our non-group take-up results are further supported by examining the impact of community rating on the health status characteristics and health utilization of persons with non-group insurance before and after community rating in a subset of states, which suggests that enrollees as a group were sicker as a result of the community rating laws. We also found evidence that HMO penetration in the non-group market increased disproportionately in states that implemented community rating relative to states that did not implement community rating.

Our results are consistent with the adverse selection hypothesis regarding the non-group health insurance market. Earlier work by Browne and Doeringhaus (1993) using data that pre-date the non-group regulations suggested that the non-group health insurance market is characterized by a great deal of risk segmentation between low and high risks, thus it is not surprising that low risks would drop their coverage and prefer to be uninsured as a result of the increases in premiums that inevitably accompany community rating. Our results are also consistent with anecdotal and case-study evidence from a number of states that implemented community rating in their non-group markets in the 1990s. Massachusetts, for example, experienced a 62% drop in non-group enrollment between 1996 and 2002 (Turnbull et al. 2005). Indeed, a provision of the Massachusetts health insurance plan to be enacted July 2007 will merge the small group and non-group markets largely because of the recognition that premiums were no longer affordable in the non-group market. Similarly, recent work suggested that the New Jersey non-group market was “heading for collapse” (Monheit et al. 2004).

Our results have important implications for state efforts to improve health insurance coverage through reliance on a heavily regulated non-group health insurance market. Clearly without a means of coercing the healthy to maintain coverage affordability of non-group policies

could be problematic and the long-term viability of the non-group market itself could be in question if states attempt to dictate premiums. The coverage initiatives put forth by Massachusetts and California both incorporate individual mandates to purchase non-group policies, but their effect has never been tried in the health insurance realm, though there are examples of automotive insurance mandates that indicate mixed success (see Yu-Luen and Schmit, 2000). Our results highlight the potential unintended consequences of which state lawmakers need to be mindful in crafting policies to expand health insurance coverage.

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Table 1: Description of State Community Rating Regulations

State/Implementation	Description
New York April 1993	New York implemented pure community rating, only allowing rating differentials for geographical region (Hall 2000a).
Vermont July 1993	Vermont implemented modified community rating. The premiums for commercial indemnity plans could vary by +/- 20% for demographic factors, but not health status. HMOs and Blue Cross plans were not allowed to use any rating differentials (Hall 2000b).
New Jersey August 1993	New Jersey implemented pure community rating for 6 standardized plans: 5 indemnity plans and one HMO plan (Swartz and Garnick 2000).
Maine December 1993	Maine implemented modified community rating. Premiums could vary by +/- 50% of the community rate for age, smoking status, occupation, industry, and geographic areas (Maine Bureau of Insurance, 2001).
New Hampshire January 1995	New Hampshire implemented modified community rating. Premiums could vary by age by a 3:1 ratio (GAO 1996, Feldvebel and Sky 2000).
Washington January 1996	Washington implemented modified community rating. Age-related rating was allowed and carriers could give up to 10% premium differences for health and “wellness” related characteristics (Kirk 2000).
Kentucky July 1996	Kentucky implemented modified community rating. Rating was originally allowed to vary by a ratio of 3:1 based on age, geography, and family composition, but not by health status or claims experience (Kirk 2000). Later, premium variation was allowed to vary by a ratio of 5:1 and differential rating for gender was allowed, but the premiums could not vary for gender by greater than 50%. ¹⁴
Massachusetts August 1996	Massachusetts implemented modified community rating in the non-group market. Rating was allowed to vary by age, geographic region, and family composition, but not health status. Rating variation for age was not allowed to vary by more than +/- 33% of the base premium. Only eligible individuals who do not have access to a group policy are able to participate in this market. Insurers are obligated to offer at least one of three standardized plans in the non-group market that vary by the degree of managed care (Kirk 2000).

¹⁴ Kentucky’s experience is somewhat unique because there was a reportedly widespread exodus of health insurance carriers in the state following the implementation of the regulations (Kirk 2000). As a sensitivity check on our results, we excluded Kentucky from our regression models.

Table 2: Discrete-Time Hazard Model of the Rate of Transition to Community Rating in the Non-Group Health Insurance Market

	Mean (Standard Dev.)	Coefficient (Standard Error)
<i>Time-Varying Characteristics</i>		
Δ unemployment rate (t-1)	-0.068 (0.825)	0.056 (0.722)
Δ log per capita income (t-1)	0.041 (0.017)	145.411* (78.393)
State legislature controlled by Republicans versus mixed party (t-1)	0.319 (0.466)	1.470 (1.746)
State legislature controlled by Democrats versus mixed party (t-1)	0.448 (0.498)	-1.035 (1.746)
Governor Democrat (t-1)	0.464 (0.499)	3.449* (1.991)
Δ Medicaid eligibility (t-1)	0.026 (0.076)	3.503 (5.934)
Δ HMO penetration (t-1)	0.018 (0.038)	80.796*** (29.788)
Δ uninsurance (t-1)	0.002 (0.021)	-23.984 (29.640)
Δ non-group insurance (t-1)	-0.004 (0.018)	47.519 (41.145)
<i>Time Invariant Characteristics, 1990</i>		
Uninsurance	0.160 (0.045)	-51.191* (29.953)
Medicaid eligibility	0.267 (0.036)	99.307** (43.118)
Private non-group coverage	0.107 (0.033)	62.105 (49.799)
Unemployment rate	5.460 (1.175)	2.143 (1.337)
Fraction of working population in firms with less than 25 workers	0.575 (0.044)	-67.047* (37.053)
Fraction of population age 25-64 black	0.090 (0.083)	-22.163 (15.985)
Fraction of the population age 15 and over married	0.565 (0.027)	2.013 (31.898)
Fraction of working population employed full time	0.547 (0.032)	193.440** (81.148)
Fraction of women with children under age 6 who participate in labor force	61.850 (4.773)	-0.366 (0.277)
Per capita income	18394.560 (2815.801)	0.0002 (0.0005)
Fraction of population aged 46-64 out of the total population aged 25-64	0.342 (0.022)	-72.232 (56.395)

Notes: Full sample, n=455. Regressions also duration dependence controls, time, time squared, time cubed.
 *** indicates $p < 0.01$, ** indicates $0.05 < p < 0.01$, * indicates $0.10 < p < 0.05$

Table 3: Sample Sizes in the SIPP by Year and Month

<i>Year\Month</i>	<i>Jan</i>	<i>Feb</i>	<i>July</i>	<i>Aug</i>	<i>Sept</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Total</i>
1990	0	0	0	0	6,519	6,486	6,527	6,531	26,063
1991	0	0	0	0	10,619	10,402	10,364	10,398	41,783
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	11,547	11,370	11,488	11,580	45,985
1994	0	0	0	0	11,131	11,155	11,047	11,178	44,511
1995	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	10,111	10,223	20,334
1997	10,177	10,196	9,437	9,589	9,599	9,501	9,194	9,262	76,955
1998	9,194	9,292	0	0	0	0	8,631	8,694	35,811
1999	8,684	8,819	8,366	8,473	8,668	8,595	8,431	8,467	68,503
2000	8,640	8,590	0	0	0	0	0	0	17,230
Total									377,175

Note: data from 1990, 1991, 1992, 1993, and 1996 SIPP panels.

Table 4: Probit Regressions of Non-Group Coverage and Uninsurance from SIPP Data, 1990-2000

	<i>Non-Group</i>		<i>Uninsured</i>	
<i>Full Sample (n=377,175)</i>				
Community Rating: Non-Group	-0.022 (0.054) [-0.23%]	-0.043 (0.056) [-0.46%]	-0.025 (0.045) [-0.46%]	-0.011 (0.058) [-0.21%]
Community Rating: Small group	---	0.030 (0.032) [0.33%]	---	-0.018 (0.050) [-0.34%]
<i>Healthy Subsample 1: Persons reporting "excellent" health status (n=109,145)</i>				
Community Rating: Non-Group	-0.080 (0.050) [-0.86%]	-0.131** (0.056) [-1.37%]	-0.0001 (0.031) [-0.001%]	0.040 (0.057) [0.60%]
Community Rating: Small group	---	0.076 (0.055) [0.90%]	---	-0.056 (0.063) [-0.80%]
<i>Healthy Subsample 2: Unmarried men age 22-35 in excellent health (n=10,636)</i>				
Community Rating: Non-Group	-0.399*** (0.149) [-3.15%]	-0.463*** (0.176) [-3.51%]	0.187*** (0.072) [6.35%]	0.283*** (0.076) [9.79%]
Community Rating: Small group	---	0.099 (0.118) [1.04%]	---	-0.136* (0.081) [-4.33%]
<i>Unhealthy Subsample 1: Persons aged 22-64 reporting "poor" health status (n=12,164)</i>				
Community Rating: Non-Group	0.185** (0.085) [2.63%]	0.253*** (0.084) [3.75%]	-0.094 (0.155) [2.10%]	-0.001 (0.164) [-0.02%]
Community Rating: Small group	---	-0.090 (0.062) [-1.11%]	---	-0.113 (0.076) [-2.55%]
<i>Unhealthy Subsample 2: Persons aged 40-64 reporting "poor" health status (n=7,498)</i>				
Community Rating: Non-Group	0.236*** (0.081) [3.85%]	0.282*** (0.084) [4.73%]	-0.234 (0.238) [-4.66%]	-0.077 (0.244) [-1.65%]
Community Rating: Small group	---	-0.064 (0.059) [-0.89%]	---	-0.191** (0.097) [-3.95%]

Notes: Data from 1990, 1991, 1992, 1993, and 1996 SIPP panels. Regressions control for an age spline at five-year intervals, race/ethnicity, education categories, urban residence, married indicator, any children under 18, Medicaid eligibility, state HMO penetration, state unemployment rate, state per capita income, Democratic governor indicator, single party control of state legislature and state and year fixed effects. Robust standard errors clustered at the state in parentheses, marginal probability effects in brackets.

*** indicates $p < 0.01$, ** indicates $0.05 < p < 0.01$, * indicates $0.10 < p < 0.05$

Table 5: Mean of Health Status and Utilization Variables for Persons with Non-Group and Group Coverage in Community Rated Relative to Non-Community Rated States, 1992 and 1994

Category and scale \ Year	<i>Health Insurance</i>	<i>Community rated States</i>		<i>Non-community Rated States</i>	
		1992	1994	1992	1994
Self-reported Health Status: 1-5, 1=Excellent, 5=Poor	Non-group	2.002	2.018	1.971	1.997
	Group	1.934	1.939	1.996	1.939
Total Activity Limitation: 1-4, 1=unable to perform major activity, 4=no limitation	Non-group	3.763	3.681	3.706	3.656
	Group	3.803	3.801	3.787	3.763
Ability To Work: 1-4, 1=unable to work, 4=no limitation	Non-group	3.772	3.681	3.683	3.637
	Group	3.797	3.798	3.785	3.758
Total Restricted Days in Past Two Weeks: 0-4 or more	Non-group	0.179	0.443	0.271	0.365
	Group	0.218	0.213	0.257	0.254
Any Bed Days in Past Two Weeks (binary)	Non-group	0.037	0.079	0.058	0.054
	Group	0.048	0.045	0.052	0.045
Any Other Days Of Restricted Activity In Past Two Weeks (binary)	Non-group	0.032	0.069	0.052	0.066
	Group	0.035	0.036	0.044	0.049
Bed Days in Past Twelve Months: 0-365	Non-group	4.039	8.026	5.168	6.931
	Group	4.214	4.233	4.569	3.792
Number of Doctor Visits in Past Two Weeks: 0-2 or more	Non-group	0.121	0.235	0.190	0.195
	Group	0.173	0.182	0.199	0.205
Number of Doctor Visits in Past 12 Months: 0-11 or more	Non-group	2.569	3.047	3.240	2.874
	Group	2.883	2.915	3.094	3.008
Any Hospital Episodes in Past Twelve Months (binary)	Non-group	0.075	0.106	0.085	0.079
	Group	0.090	0.073	0.088	0.084
Total Sample	Non-group	464	379	480	334
	Group	5,055	4,375	4,815	4,168

Note: Data from National Health Interview Survey State Data Files, 1992, 1994. States implementing community rating in 1993: NY, NJ, ME, and VT. Northeastern non-community rated comparison states: CT, MA, NH, PA, and RI.

Table 6: Regression Results for Health Status and Utilization Measures from NHIS under Different Model Specifications, 1992 and 1994

	<i>Difference</i>	<i>DD</i>	<i>DDD</i>
Self-reported Health Status	0.037 (0.049)	0.013 (0.090)	0.030 (0.034)
Total Activity Limitation	-0.063 (0.051)	-0.020 (0.074)	-0.048 (0.031)
Ability To Work	-0.074* (0.033)	-0.029 (0.054)	-0.039 (0.029)
Total Restrictive Days in Past Two Weeks	0.273*** (0.024)	0.173*** (0.032)	0.196*** (0.043)
Any Bed Days in Past Two Weeks†	0.364*** (0.093)	0.424*** (0.160)	0.259*** (0.075)
Any Other Days of Restrictive Activity In Past Two Weeks†	0.419*** (0.040)	0.231 (0.156)	0.231** (0.091)
Bed Days in Past Twelve Months	3.765*** (0.679)	2.254 (2.315)	2.523* (1.160)
Any Doctor Visits in Past Two Weeks†	0.433*** (0.054)	0.390*** (0.119)	0.191*** (0.052)
Number of Doctor Visits in Past Twelve Months	0.481*** (0.108)	0.832** (0.242)	0.104 (0.115)
Any Hospital Episodes in Past Twelve Months†	0.242*** (0.061)	0.290*** (0.117)	0.190** (0.087)
Sample Size	843	1,657	20,070

Note: Data from NHIS State Data Files, 1992 and 1994. States implementing community rating in 1993: NY, NJ, ME, and VT. Northeastern non-community rated comparison states: CT, MA, NH, PA, and RI. Difference represents the pre/post difference model; DD represents the difference-in-differences model; DDD represents the triple difference model. Each cell represents the impact of community rating in the non-group health insurance market for a different regression model. All regressions control for age, gender, race, marital status, income, education, and state fixed effects. Robust standard errors clustered at the state in parentheses.

† Indicates probit regression; otherwise OLS.

*** indicates $p < 0.01$, ** indicates $0.05 < p < 0.01$, * indicates $0.10 < p < 0.05$

Table 7: Mean of HMO Penetration for Persons with Non-Group and Group Coverage in Community Rated Relative to Non-Community Rated States, 1992 and 1994

			<i>Community Rated States</i>		<i>Non-Community Rated States</i>	
			<i>1992</i>	<i>1994</i>	<i>1992</i>	<i>1994</i>
Full Sample Ages 18-64	Non-group	Sample size	436	304	440	308
		%HMO	18.58%	26.64%	19.77%	19.81%
	Group	Sample size	4,676	4,064	4,458	4,027
		%HMO	30.45%	39.57%	35.68%	41.35%
Older Subsample Ages 45-64	Non-group	Sample size	193	133	182	131
		%HMO	19.69%	23.31%	10.44%	17.56%
	Group	Sample size	1,749	1,563	1,638	1,494
		HMO	30.47%	34.80%	32.54%	37.08%
Younger Subsample Ages 18-44	Non-group	Sample size	243	171	258	177
		%HMO	17.70%	29.24%	26.36%	21.47%
	Group	Sample size	2,927	2,501	2,820	2,533
		%HMO	30.44%	42.54%	37.52%	42.54%

Note: data from NHIS State Data Files, 1992 and 1994. States implementing community rating in 1993: NY, NJ, ME, and VT. Northeastern non-community rated comparison states: CT, MA, NH, PA, and RI.

Table 8: Probit Regressions of the Probability of having HMO Coverage under Different Model Specifications, 1992 and 1994

	<i>Difference</i>	<i>DD</i>	<i>DDD</i>
Full Sample, Ages 18-64	0.263*** (0.093) [7.0%]	0.197 (0.169) [5.5%]	0.153 (0.156) [3.8%]
Sample Size	740	1,488	18,713
Older Subsample, Ages 45-64	0.180 (0.119) [4.9%]	-0.196 (0.194) [-4.5%]	0.152 (0.213) [4.0%]
Sample Size	326	639	7,083
Younger Subsample, Ages 18-44	0.342** (0.155) [8.5%]	0.493** (0.241) [14.5%]	0.150 (0.162) [3.7%]
Sample Size	414	849	11,630

Note: Data from NHIS State Data Files, 1992 and 1994. States implementing community rating in 1993: NY, NJ, ME, and VT. Northeastern non-community rated comparison states: CT, MA, NH, PA, and RI. Difference represents the pre/post difference model; DD represents the difference-in-differences model; DDD represents the triple difference model. Each cell represents the impact of community rating in the non-group health insurance market for a different regression model. All regressions control for age, gender, race, marital status, income, education, self-reported health status, and state fixed effects. Robust standard errors clustered at the state in parentheses, marginal probability effects in brackets.

*** indicates $p < 0.01$, ** indicates $0.05 < p < 0.01$, * indicates $0.10 < p < 0.05$

**Appendix Table 1: Demographic information by Health Insurance Coverage for
Individuals Not Enrolled in School, Survey of Income and Program Participation**

	<i>Non-Group</i>	<i>Group</i>	<i>Uninsured</i>	<i>Public</i>	<i>Full Sample</i>
Sample Size	23,740	271,466	59,697	44,313	393,564
Gender					
Male	46.37	49.29	54.29	40.06	48.51
Female	53.63	50.71	45.71	59.94	51.49
Self Employment					
None in family	55.47	87.94	82.83	93.99	85.71
At least one person	44.53	12.06	17.17	6.01	14.29
Age	45.1	41.1	36.4	42.9	40.6
Health Status					
Excellent	30.11	32.3	24.08	14.32	29.33
Very Good	33.37	37.6	31.78	20.99	34.95
Good	24.15	23.31	30.35	27.7	24.82
Fair	8.48	5.33	10.3	21.73	7.76
Poor	3.88	1.47	3.49	15.26	3.14
Race					
White	86.38	81.22	60.92	62.93	76.52
Black	5.08	8.54	13.88	20.14	10.28
Hispanic	4.51	7.04	20.7	12.41	9.61
Other	4.03	3.19	4.50	4.52	3.59
Head Of Family					
Husband/wife	67.92	75.27	52.04	53.34	68.45
Male	12.43	10.38	20.98	11.95	12.37
Female	19.65	14.35	26.98	34.71	19.17
Employment					
No Full time	33.32	15.07	36.13	65.65	24.33
Full time	66.68	84.93	63.87	34.35	75.67
Income					
Under 100% of Poverty	14.10	3.21	28.83	35.75	11.55
100%-200% of Poverty	19.75	12.26	32.29	23.71	17.07
200%-400% of Poverty	32.43	37.97	27.65	23.12	34.37
Above 400% of Poverty	33.72	46.56	11.23	17.42	37
Urban					
Not part of MSA	43.71	39.68	45.43	44.94	41.29
Part of MSA	56.29	60.32	54.57	55.06	58.71
Married					
Not Married	37.46	28.27	57.38	50.06	35.93
Married	62.54	71.73	42.62	49.94	64.07
Kids under 18					
No Kids	64.66	51.85	60.34	53.02	53.82
With Kids	35.34	48.15	39.66	46.98	46.18

Note: data from 1990, 1991, 1992, 1993, and 1996 SIPP panels.

Appendix Table 2: Probit Regression of Non-Group Coverage and Uninsurance for Full SIPP Sample, 1990-2000

	<i>Non-Group</i>		<i>Uninsured</i>	
Community Rating: Non-Group	-0.015 (0.056) [-0.16%]	-0.032 (0.057) [-0.34%]	-0.016 (0.042) [-0.32%]	-0.007 (0.055) [-0.13%]
Community Rating: Small group	---	0.024 (0.032) [0.26%]	---	-0.013 (0.047) [-0.25%]
Age:25-29	0.039 (0.029) [0.43%]	0.039 (0.029) [0.43%]	-0.173*** (0.024) [-3.20%]	-0.173*** (0.024) [-3.20%]
Age:30-34	0.101*** (0.035) [1.15%]	0.101*** (0.035) [1.15%]	-0.287*** (0.023) [-5.08%]	-0.287*** (0.023) [-5.08%]
Age:35-39	0.207*** (0.031) [2.51%]	0.207*** (0.031) [2.50%]	-0.344*** (0.034) [-5.97%]	-0.344*** (0.034) [-5.97%]
Age:40-44	0.242*** (0.028) [2.99%]	0.242*** (0.028) [2.99%]	-0.395*** (0.033) [-6.68%]	-0.395*** (0.033) [-6.68%]
Age:45-49	0.270*** (0.028) [3.42%]	0.270*** (0.028) [3.42%]	-0.458*** (0.029) [-7.45%]	-0.458*** (0.029) [-7.45%]
Age:50-54	0.361*** (0.026) [4.88%]	0.361*** (0.026) [4.88%]	-0.541*** (0.041) [-8.34%]	-0.541*** (0.041) [-8.34%]
Age:55-59	0.503*** (0.039) [7.51%]	0.503*** (0.039) [7.50%]	-0.582*** (0.039) [-8.64%]	-0.582*** (0.039) [-8.64%]
Age:60-64	0.765*** (0.038) [13.44%]	0.765*** (0.038) [13.44%]	-0.652*** (0.035) [-9.25%]	-0.652*** (0.035) [-9.25%]
Race: Black	-0.380*** (0.030) [-3.20%]	-0.380*** (0.030) [-3.20%]	0.157*** (0.028) [3.38%]	0.157*** (0.028) [3.38%]
Race: Hispanic	-0.393*** (0.089) [-3.27%]	-0.393*** (0.089) [-3.27%]	0.542*** (0.034) [13.72%]	0.542*** (0.034) [13.71%]
Race: Other	0.002 (0.048) [0.03%]	0.002 (0.048) [0.03%]	0.386*** (0.064) [9.42%]	0.386*** (0.064) [9.42%]
Head of Family: Male	-0.212*** (0.033) [-2.00%]	-0.212*** (0.033) [-2.00%]	0.100*** (0.025) [2.11%]	0.100*** (0.025) [2.11%]
Head of Family: Female	-0.224*** (0.030) [-2.15%]	-0.224*** (0.030) [-2.15%]	0.026 (0.032) [0.53%]	0.026 (0.032) [0.53%]

(continued)

Appendix Table 2: Probit Regression of Non-Group Coverage and Uninsurance for Full SIPP Sample, 1990-2000 (continued)

	<i>Non-Group</i>		<i>Uninsured</i>	
Education: High school Grad	0.049*** (0.013) [0.53%]	0.049*** (0.013) [0.53%]	-0.113*** (0.015) [-2.28%]	-0.113*** (0.015) [-2.28%]
Education: Some College	0.090*** (0.019) [0.98%]	0.090*** (0.019) [0.98%]	-0.550*** (0.022) [-10.43%]	-0.550*** (0.022) [-10.43%]
MSA: Urban	-0.051** (0.024) [-0.55%]	-0.051** (0.024) [-0.56%]	-0.132*** (0.018) [-2.69%]	-0.132*** (0.018) [-2.69%]
Gender: Female	0.047*** (0.006) [0.50%]	0.047*** (0.006) [0.51%]	-0.128*** (0.010) [-2.58%]	-0.128*** (0.010) [-2.58%]
Married	-0.309*** (0.033) [-3.58%]	-0.309*** (0.033) [-3.58%]	-0.436*** (0.026) [-9.42%]	-0.436*** (0.026) [-9.42%]
Kids Under 18: Yes	-0.055*** (0.017) [-0.59%]	-0.056*** (0.017) [-0.59%]	-0.045** (0.022) [-0.90%]	-0.045** (0.022) [-0.90%]
Medicaid Eligibility	0.087 (0.098) [0.93%]	0.082 (0.094) [0.88%]	-0.111 (0.068) [-2.22%]	-0.108 (0.068) [-2.17%]
HMO Penetration	0.065 (0.163) [0.70%]	0.067 (0.165) [0.72%]	0.142* (0.134) [2.84%]	0.142 (0.132) [2.85%]
Unemployment Rate	0.012 (0.017) [0.12%]	0.011 (0.018) [0.12%]	-0.005 (0.008) [-0.09%]	-0.004 (0.008) [-0.09%]
Per Capita Income (\$1000s)	0.020 (0.012) [0.20%]	0.020 (0.011) [0.22%]	-0.012 (0.009) [-0.24%]	-0.012 (0.009) [-0.24%]
Democratic Governor	0.046** (0.020) [0.50%]	0.044** (0.021) [0.48%]	-0.029*** (0.015) [-0.58%]	-0.028** (0.014) [-0.56%]
Republican Legislative Control	0.007 (0.027) [0.08%]	0.005 (0.026) [0.06%]	0.001 (0.022) [0.01%]	0.002 (0.021) [0.03%]
Democratic Legislative Control	-0.013 (0.025) [-0.14%]	-0.010 (0.024) [-0.11%]	-0.019 (0.017) [-0.39%]	-0.021 (0.016) [-0.41%]

Notes: Data from 1990, 1991, 1992, 1993, and 1996 SIPP panels. Full sample, n=393,564. Regressions also include state and year fixed effects, and a constant. Robust standard errors clustered at the state in parentheses, marginal probability effects in brackets.

*** indicates $p < 0.01$, ** indicates $0.05 < p < 0.1$, * indicates $0.10 < p < 0.05$

Appendix Table 3: National Health Interview Survey, State Data Files, Demographic Information for Years 1992 and 1994 for Persons 18-64 Years Old

<i>Variable\Year</i>	<i>Categories</i>	<i>1992</i>	<i>1994</i>
Health insurance coverage	Non-group	7.15%	7.31%
	Group	64.99	66.27
	Public	10.59	9.77
	Uninsured	19.13	18.51
Gender	Male	47.15	47.31
	Female	52.85	52.69
Age	18-24	15.41	14.47
	25-44	52.62	51.47
	45-64	31.98	34.06
Race	White	82.68	82.10
	Black	12.86	12.92
	Other	4.47	4.99
Marital Status	Married	65.98	65.83
	Married Once	12.88	13.27
	Never Married	21.14	20.90
Education	Less than HS grad	18.53	16.40
	HS graduate	38.24	37.46
	More than HS grad	43.23	46.14
Family Income	Under \$10,000	9.15	8.49
	\$10,000- \$19,999	14.55	13.51
	\$20,000- \$34,999	21.33	21.71
	Over \$35,000	39.54	43.45
	Unknown	15.43	12.84
Poverty Index	Above	81.43	82.96
	Below	11.37	11.18
	Unknown	7.21	5.86
Major Activity	Working	69.90	70.87
	Keeping House	14.95	14.15
	Going to School	7.27	7.21
	Something Else	7.88	7.77
Working Status in Last Two Weeks	Working	72.44	73.87
	Unemployed	4.45	3.64
	Not in Labor force	23.11	22.49
Metropolitan Statistical Area	MSA- Central City	33.03	31.28
	MSA- Not Central City	45.90	46.20
	Non-MSA Nonfirm	19.84	21.29
	Non-MSA Farm	1.23	1.23
Sample Size		70,791	59,534

Note: Data from 1992 and 1994 NHIS State Data Files.