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# **Do Small Group Health Insurance Regulations Influence Small Business Size?**

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## **ABSTRACT**

The cost of health insurance has been the primary concern of small business owners for several decades. State small group health insurance reforms, implemented in the 1990s, aimed to control the variability of health insurance premiums and to improve access to health insurance. Small group reforms only affected firms within a specific size range, and the definition of the upper size threshold for small firms varied by state and over time. As a result, small group reforms may have affected the size of small firms around the legislative threshold and may also have affected the propensity of small firms to offer health insurance. Previous research has examined the second issue, finding little to no effect of health insurance reforms on the propensity of small firms to offer health insurance. In this paper, we examine the relationship between small group reform and firm size. We use data from a nationally representative repeated cross-section survey of employers and data on state small group health insurance reform. Contrary to the intent of the reform, we find evidence that small firms just below the regulatory threshold that were offering health insurance grew in order to bypass reforms.

JEL Classification: I18 (Health: Government Policy; Regulation; Public Health) and L25 (Industrial Organization: Firm Performance: Size, Diversification and Scope, Age, Profit, and Sales)

Keywords: Health insurance, small business

## 1. INTRODUCTION

Small firms in the United States that seek to offer health insurance to their employees have historically reported problems with the availability and affordability of their options. The cost of health insurance has been the primary concern of small business owners for several decades. In 2004, two-thirds of small business owners listed health care costs as a critical problem – a proportion that increased by 18 percentage points between 2000 and 2004 (NFIB, 2004).

Health insurance plans offered to small businesses tend to suffer from limitations that are widely acknowledged. First, small group health insurance premiums have varied dramatically depending on the expected cost of the group (Cutler, 1994). In addition, the health insurance policies offered to small firms often contain pre-existing condition clauses that exclude expensive conditions from coverage (OTA, 1988). Some insurers simply do not offer policies to small firms resulting in limited choices for small firms.

In an attempt to address such problems with the small group market, most states passed small group health insurance reforms in the 1990s. These reforms have three key characteristics. First, they restrict insurers' ability to deny coverage to small firms. Second, they restrict premium variability and finally they encourage portability when employees move from job to job. While these reforms aimed to improve insurance availability for small firms, research shows that the effect of the reforms on premiums and health insurance availability has been mixed. In this paper, we explore whether the health insurance reforms had unintended effects by studying the extent of size distortions among small firms as a result of small group health insurance regulations. In particular, we ask whether firms right around the legislative threshold and that offered health insurance manipulated their size to avoid or take advantage of the reforms.

Small group health insurance reforms regulate the health insurance policies that are offered to firms below a certain size threshold. Firm size thresholds are specified in the regulations that vary by state. The upper limit of the size threshold is usually 25 or 50 employees, while the lower limit is usually 2 or 3 employees. The size thresholds embodied in these regulations raise the possibility that firms may be influenced by health insurance regulations in making choices regarding the size of the workforce. Small firms that value health insurance that is protected by small group regulations may choose not to expand beyond the upper size threshold. On the other hand, if the regulations result in higher premiums and lower availability, small firms may prefer to expand to a size that is beyond the reach of the health insurance regulations.

The previous literature has assumed that business size is exogenous and has simply compared health insurance offering among small firms and large firms before and after the implementation of reforms. However, because the implementation of these reforms involved specific size thresholds that determined whether a firm was affected by the reform, it is possible that the reforms had an unintended effect of influencing firm size rather than or in addition to health insurance offering decisions. Our analysis suggests that reforms affected firms around the legislative threshold, and that firm size is not exogenous to the reform. Estimating the magnitude of these effects, and understanding the effect of small group regulation on business size and access to health insurance is essential in refining reforms to the small group health insurance market. Because it is relatively common for regulations to be implemented with a specific size threshold, understanding the magnitude of such unintended effects may have important implications for other regulatory policies as well.

## **2. BACKGROUND**

### **2.1. SMALL GROUP HEALTH INSURANCE MARKET**

The difficulties that small firms face in obtaining and maintaining health insurance for their employees have been widely documented (Brown, Hamilton and Medoff, 1990; McLaughlin, 1992; Fronstin and Helman, 2000). Only 43 percent of firms with fewer than 50 employees offer health insurance, compared to 95 percent of firms with 50 or more employees (AHRQ, 2003) This low proportion has been attributed, in part, to the high administrative cost of health insurance for small firms, the low demand for insurance among workers in these firms, and the unwillingness of insurers to take on small firm risks (McLaughlin, 1992; Fronstin and Helman, 2000; Monheit and Vistnes, 1999).

According to surveys conducted by the National Federation of Small Business (NFIB, 2004), the cost of providing health insurance has been the number-one concern of small business owners since 1986. In 2004, nearly two-thirds of small business owners cited it as a critical issue. While the cost of health insurance is a concern for all employers irrespective of size, it is well documented that the administrative cost of health insurance is substantially higher for small employers – 20 to 25 percent of employee premiums in small firms compared to 10 percent of premiums in large firms – and is one possible reason for why so few small businesses offer health insurance to their employees (GAO, 2001).<sup>1</sup> Several studies have shown that small firm employees that do not have health insurance are relatively young and healthy, and are more likely to have higher job turnover, and hence have a lower demand for employment-based health insurance (Monheit and Vistnes, 1994; 1999). Even though the demographic characteristics of the employees of small firms as a whole (insured and uninsured combined) appear to be quite similar to those of other employees, small firms employ a slightly larger share of workers under age 25, and a much larger share of workers over age 65 (Headd, 2000). This suggests that small firms are more likely to employ individuals with a relatively low demand for employer sponsored health insurance: the youngest and healthiest workers but also the oldest workers who are eligible for health insurance coverage under Medicare.

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<sup>1</sup> The lower administrative costs in large firms may be due to the fact that large firms tend to have a benefits manager to coordinate health claims and complete paperwork. The benefits office in large firms acts as an intermediary between employees and insurers, reducing administrative burden for large firm insurers. Large firms are also less likely to drop insurance resulting in lower transition costs for insurance companies.

## **2.2. SMALL GROUP HEALTH INSURANCE REFORM**

To address these problems with the small group market, virtually all states passed some form of small group health insurance reform in the 1990s. Although the extent of and approach to the reforms vary from state to state, they contain broadly similar elements. These elements include:

### Rating Reforms

State reforms have placed restrictions on the factors that can be used to set health insurance premiums, and/or limited the rate variations to specified ranges. Most states' premium rating reform follows the rate-banding approach that limits insurers to a set number of classes for which they can charge separate rates. Age, geographic location, family size, and group size are often allowable factors that can be used to set classes. The reform restricts the variation in premiums that the insurer can charge to firms within each of these classes and restricts the variation allowed between business classes. Most states allow nine business classes, and about 15- to 30-percent premium variation within and between classes, although these numbers vary somewhat from state to state. Rating reforms do not regulate the dollar value of the premium; however, they do often restrict the percentage increase in premiums from year to year. About 10 states have implemented modified community rating where the use of claims experience and employee health status in setting premiums has been restricted, and premiums can be set only on the basis of demographic factors such as family size and age. Community rating, the strongest form of rating reforms, has only been implemented by a few states, and disallows variation in premiums due to demographic and health factors.

It is plausible that these restrictions on premiums may have limited premium variability for a small firm. In addition, these reforms may have succeeded in reducing premiums for small firms that employ individuals with high health costs. The rate banding approach is the most common premium rating reform, and this form of reform often allows claims experience to be used to set premiums. Therefore, in practice, in most states premiums still do vary substantially due to claims experience and the health characteristics of the insured (GAO, 1995; Hall, 1999).

### Guaranteed Issue and Guaranteed Renewal Reforms

Every state that has passed small group insurance reform, except Georgia, has included guaranteed renewal reform in its package. This reform requires insurers to renew coverage for all groups, except in cases of non-payment of premium or fraud. Guaranteed issue legislation, on the other hand, is excluded from the reform packages of eight states that have passed guaranteed renewal laws. Guaranteed issue legislation requires insurance companies to offer health insurance coverage to any small employer in the state. Some guaranteed issue legislation requires insurance companies to offer only one or two specific benefit plans, while others require insurers



to offer every small group health plan they sell to each small employer. Guaranteed issue limits the ability of insurers to circumvent rating reform by insuring only low cost small firms.

#### Pre-existing Condition Limitation and Portability Reforms

Health plans often impose waiting periods for coverage. These waiting periods may pertain to all coverage or coverage for pre-existing health conditions. In some instances, health plans permanently exclude coverage for specific health conditions. State reforms limit the length of time for which pre-existing health conditions can be excluded from coverage. Most states limit the waiting period for coverage for pre-existing conditions to a maximum of 12 months, and allow only conditions present in the past six months to be defined as pre-existing.

Portability reforms ensure that an individual who is covered by health insurance on a previous job does not face any new pre-existing condition exclusions or waiting periods as a result of changing jobs. Note that portability reforms do not place any restrictions on either premiums charged by insurance companies to small firms or premium contributions that firms charge workers. Portability and pre-existing condition limitation laws have been enacted at the same time in most states.

Pre-existing condition exclusion limitations are reinforced by the federal Health Insurance Portability and Accountability Act (HIPAA) of 1996. In essence, these laws virtually remove small group insurers' ability to exclude coverage for certain conditions or to deny individuals coverage in small firm policies. Therefore, after the passage of these laws, charging higher premiums, subject to the state's premium rating reforms, may be small group insurers' only available underwriting option.

The market for health insurance is subject to regulation at the state and federal level. The state health insurance mandates examined in this paper imposed additional regulations or restrictions (as described above) on the market for health insurance offered to small firms, defined as those with fewer than the threshold level of employees. Thus, when a state implements these reforms, we refer to the market for health insurance offered to small firms as being "more regulated" than the market for insurance offered to larger firms. However, it is important to note that ERISA allows firms that self insure to bypass state regulations. Larger firms are substantially more likely to self insure than smaller firms. Among firms that employ 3-199 workers, 13 percent self-insure compared to 82 percent of firms that employ more than 5,000 workers (KFF-HRET, 2005).



### 3. LITERATURE REVIEW

No existing research has examined the effect of small group health insurance regulations on firm size. However, a related literature has examined the effect of these regulations on health insurance coverage, firms' propensity to offer coverage, and health insurance premiums. This research generally has shown a small effect or no effect on small firms' propensity to offer health insurance or on employees' insurance coverage (Sloan and Conover, 1998; Jensen and Morrissey, 1996; Zuckerman and Rajan, 1999; Monheit and Schone, 2003; Buchmueller and DiNardo, 1999; Hall, 1999; Marquis and Long, 2002). However, a few studies do find modest effects of the reforms on insurance offer rates and insurance coverage; however, the direction of the effects varies between the studies (Uccello, 1996; Hing and Jensen, 1999; Simon, 1999; Buchmueller and Jensen, 1997).

The overall effect of reforms is likely to depend on how stringent the rating reforms are. The Health Insurance Association of America estimates that guaranteed issue provisions have only a small impact on premiums – 2 to 4 percent (Thompson, 1992). Jensen, Morrissey, and Morlock (1995) found no evidence that guaranteed issue, pre-existing condition limits, or laws limiting exclusions on the basis of condition or occupation resulted in premium increases. Premiums in New York, which enacted very stringent rating reforms in the small group market, rose about 5 percent during the first year that community rating was in effect (Chollet and Paul, 1994). Minnesota, which adopted restrictions on premium rate variations, also experienced premium rate increases of less than 5 percent in the year after it enacted these rating reforms in combination with a number of other small group reforms (Blumberg and Nichols, 1996). Two existing studies examine the labor market effects of small group health insurance reform and find small or no effects on mobility among workers with high expected health costs and no effect on wages or hours worked (Kapur, 2003; Simon and Kaestner, 2002).

While there is no existing research on the effect of small group health insurance reforms on the size of small firms, a few studies have examined the effect of other regulations on business size. Schivardi et al. (2004) examine the effect of employment protection legislation on business size in Italy. Employment protection legislation, which imposes higher unfair dismissal costs on firms that employ more than 15 employees, was found to reduce business size and growth for firms that were just below the size threshold. Using the same data source, Garibaldi et al. (2004) find results that are consistent with Schivardi et al. (2004). The German Protection Against Dismissal Act allows firms above a certain size threshold to sue for wrongful termination. The threshold size has varied over time. Verick (2004) examined the effect of this size threshold on firm size and found mixed effects.



#### 4. CONCEPTUAL FRAMEWORK

Small group health insurance reforms regulate the type of health insurance that insurance companies can sell to small firms. They have no direct effect on the insurance offered to other firms, although they may have an indirect effect if insurers adjust policies in the large group market in order to make it easier to comply with the regulations in the small group market.

As mentioned earlier, the definition of a small firm varies between states and in some cases over time within the same state. The upper size threshold for a small firm varies between 25 and 100 employees depending on the state and year. The lower threshold varies between 1 and 5 employees.

Small group health insurance reform may affect the scope, price, and availability of health insurance for small firms. For the sake of exposition, let us assume that there are two types of small firms – “low cost” firms that employ a high proportion of young and healthy workers, and “high cost” firms that employ workers with high expected health costs (either older workers or sick workers). Small group health insurance reforms prevent insurers from excluding pre-existing conditions from insurance coverage, implying more complete health insurance for all small firms. However, in states that impose tight premium rating restrictions and guaranteed issue, the combination of the two types of reforms may drive insurers to set premiums in a way that increases premiums for low cost firms and reduces premiums for high cost firms. Alternatively, the regulations might affect the completeness of the plans offered if insurers find it impossible to offer comprehensive plans to all small firms at a reasonable price. In states with weak premium rating restrictions, premiums may be affected relatively little.

Guaranteed issue and renewal laws directly affect the availability of health insurance. In particular, in states with guaranteed issue, high cost firms that may have had problems obtaining access to health insurance should find obtaining a policy much easier. However, the overall burden of complying with the state small group health insurance regulations may be a disincentive for offering health insurance in the small group market for some insurers and insurers may consider exiting the market in highly regulated states or consider reducing their marketing efforts in those states. As a result, the reforms may have an adverse effect on availability for low cost firms. Therefore, the reforms may have heterogeneous effects on price and availability, depending on the strength of their component provisions and the composition of low cost versus high cost small firms.

The behavioral response of small firms will depend on their valuation of the more complete health insurance offered as a result of the reforms relative to the premium change (if any) and the change in availability. Without imposing assumptions on these valuations and the

price responses, the theoretical effect is ambiguous. In addition, we expect this relative valuation to vary by the type of firm (low cost versus high cost). We expect that if small firms value the changes brought about by the reforms, they will be more likely to offer health insurance, and those who offer would be more likely to maintain a size below the upper threshold of the reform. However, if small firms do not value the reform changes, they will be less likely to offer health insurance and/or more likely to expand their size so that their insurance packages are not affected by the reform. It is plausible that low cost firms described above will fall into the first category and high cost firms into the second category.

More formally, assume that in the unregulated (pre-reform) market for small group health insurance, firms face a per-employee price for health insurance  $P(\mathbf{x}, \mathbf{y})$  that is a function of a vector of firm characteristics  $\mathbf{x}$  and vector of insurance policy characteristics  $\mathbf{y}$ , where  $\mathbf{y} \in Y$ , and  $Y$  is the set of insurance policies available to a firm in an unregulated, pre-reform market.

A firm with characteristics  $\mathbf{x}$  places a value  $V(\mathbf{x}, \mathbf{y})$  on health insurance policy with characteristics  $\mathbf{y}$ .

In the unregulated market, small firms choose a health insurance policy to maximize the difference between the value of the insurance policy and the price of that policy.

Formally, they choose  $\mathbf{y}^* \in Y$  such that

$$\mathbf{y}^* = \text{Argmax} [V(\mathbf{x}, \mathbf{y}) - P(\mathbf{x}, \mathbf{y})] \text{ if } V(\mathbf{x}, \mathbf{y}) - P(\mathbf{x}, \mathbf{y}) > 0$$

or no insurance if  $V(\mathbf{x}, \mathbf{y}) - P(\mathbf{x}, \mathbf{y}) < 0$ .

Health insurance mandates or reforms do three things. First, they specify a threshold  $t$  below which firms automatically fall into a regulated insurance market. Second, the reforms prevent insurers from offering firms smaller than  $t$  insurance policies with certain characteristics.<sup>2</sup> Third, they restrict the price that insurers are able to charge. This implies that after reform, firms face a new per employee price for health insurance  $P'(\mathbf{x}, \mathbf{y})$  and a new set of available policies  $Y^R$ . In general, we would expect that  $Y \neq Y^R$ . We would also expect that the price function pre-reform differs from the price function after reform so that  $P(\mathbf{x}, \mathbf{y}) \neq P'(\mathbf{x}, \mathbf{y})$ . That is, in equilibrium, the set of policies offered by insurers prior to regulation will differ from the set of those offered after the regulation takes effect, and the relationship between firm and policy characteristics and price will change.

As a result, after the reform goes into effect, firms face a different optimization problem and choose

$$\mathbf{y}^{*R} \in Y^R = \text{Argmax} [V(\mathbf{x}, \mathbf{y}) - P'(\mathbf{x}, \mathbf{y})] \text{ if } V(\mathbf{x}, \mathbf{y}) - P'(\mathbf{x}, \mathbf{y}) > 0$$

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<sup>2</sup> While it is true that in the unregulated market condition, insurers may not have offered certain types of insurance policies, we can think of that as insurance companies offering such policies at an infinitely high price.

or no insurance if  $V(\mathbf{x}, \mathbf{y}) - P'(\mathbf{x}, \mathbf{y}) < 0$

Using this simple model, we can illustrate the ways in which health insurance reform might impact small firms and discuss plausible responses.<sup>3</sup>

For firms that purchased insurance prior to the implementation of the regulations, we know that  $V(\mathbf{x}, \mathbf{y}^*) - P(\mathbf{x}, \mathbf{y}^*) > 0$ . However, in the regulated market, it is possible that  $\mathbf{y}^*$  is no longer available (for example, if the policy excluded pre-existing conditions). Even if  $\mathbf{y}^*$  is still available, it is possible that because of the price restrictions imposed on the reform that  $V(\mathbf{x}, \mathbf{y}^*) - P'(\mathbf{x}, \mathbf{y}^*) < 0$ . In either case, the firm will no longer purchase policy  $\mathbf{y}^*$ . They will either purchase  $\mathbf{y}^{*R}$ , purchase no health insurance, or expand their size so that they are above the threshold  $t$ , in which case  $\mathbf{y}^*$  would be available to them again.

For firms that did not purchase health insurance prior to the reforms, we need to consider the options for those that fall below the threshold  $t$  and those above it. For those below the threshold, it is possible that there now exists some  $\mathbf{y}^{*R}$  such that  $V(\mathbf{x}, \mathbf{y}^{*R}) - P'(\mathbf{x}, \mathbf{y}^{*R}) > 0$  and that the firm purchases insurance after the reform. For firms above the threshold, the reform would not be expected to impact the insurance options available to them. However, such firms would have the option of shedding employees in order to fall below the threshold. It is therefore plausible that some firms that had been above the threshold would reduce the number of employees and choose a health insurance policy  $\mathbf{y}^{*R}$  such that  $V(\mathbf{x}, \mathbf{y}^{*R}) - P'(\mathbf{x}, \mathbf{y}^{*R}) > 0$ .

Without imposing assumptions on the price functions and the value functions, we cannot determine whether the reforms would lead to a higher or lower propensity for small firms to offer health insurance. The conceptual framework does suggest that the reforms can be expected to influence firm size (especially among firms that are at or near the threshold), the decision to purchase health insurance, as well as the characteristics of insurance purchased. However, it cannot generate predictions regarding the direction of these effects. Indeed, the framework suggests that the net effect on small firm growth and decision to offer health insurance is ambiguous.

In our empirical estimation, we focus on firms that offer health insurance right around the legislative threshold – since it is their decisions that are most likely to be affected by the reform. We estimate whether reform states are more likely to have a higher or lower proportion of firms offering health insurance under the threshold compared with non-reform states. If firms value the reforms, the proportion of firms under the threshold relative to over the threshold should be higher in reform states as firms attempt to manipulate their size to remain below the reform

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<sup>3</sup> A more complete, general equilibrium model would involve a simultaneous consideration of the decision by the health insurers regarding the characteristics of plans to offer and their prices.

threshold. If firms do not value the reforms, they will do just the opposite – expand so that they are no longer subject to the reforms, and then the proportion of firms under the threshold relative to firms over the threshold will be lower in reform states.



## 5. DATA

Our primary data source is a nationally representative employer-based survey conducted by the KPMG Consulting (now BearingPoint). We use repeated cross-section samples from 1993, 1996, and 1998. The samples were drawn from Dun & Bradstreet's list of the U.S. private and public employers, and were stratified by region, industry, and number of workers in a firm. KPMG contracted with National Research Incorporated to conduct telephone interviews with human resource and benefits managers. This survey is the predecessor of the current employer health benefit surveys conducted by the Kaiser Family Foundation and the Health Research and Educational Trust (HRET).

The data source contains information on health insurance offering, number of workers employed in the firm, and the industry to which the firm belongs.<sup>4</sup> The full survey includes up to 400 questions about a firm's largest conventional health maintenance organization (HMO), preferred provider organization (PPO), and point-of-service (POS) health plans. The survey questions ask about the characteristics of each plan (e.g., coverage rates, premiums, worker contributions, etc.). To increase the response rate, firms that were not willing to answer the full survey were asked to answer one question: "Does your company offer or contribute to a health insurance program as a benefit to your employees?" Because most states adopted small business health insurance reforms during the early 1990s, we use the surveys from 1993, 1996, and 1998. These were the only years during the 1990s in which the survey included smaller firms with fewer than 200 employees.

We also use a data set that characterizes the presence of a small business health insurance reform for any given state and year, as well as the detailed characteristics of the reform if one exists. These data come from the state small group reform survey conducted by Simon (1999) and Marquis and Long (2002). Our analysis used the following individual components of the reforms: the upper and lower limit of the firm size thresholds for the reform to be applicable.

The health reform data and the firm level survey were merged using the year of survey and the state of the firm. Due to confidentiality reasons, no state level data or state specific statistics can be reported in our results; however, encrypted state identifiers can be used to control for state specific effects in the models. We assumed that a reform was in effect starting

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<sup>4</sup> We used data on the number of workers employed in the entire firm rather than in a single location because health insurance decisions tend to be made at the firm level rather than the plant level. However, as a sensitivity check, we re-estimated our models for the sample of single location firms. We found results that were qualitatively similar, but far less precise, primarily because we lost about half the sample in conducting this check.

with the year that it was implemented. Our analysis of the state reform database revealed that over two-thirds of the reform changes during our three survey years were implemented in the first half of the calendar year. Furthermore, given that the gap between the date of enactment and the date of implementation was often about a year, insurance companies may anticipate the regulatory changes and factor them in at the start of the calendar year.<sup>5</sup> Small group health insurance reform is coded using a binary indicator of having a reform or not.<sup>6</sup>

Table 1 provides a data summary of the state health reforms. As the table indicates, in 1993, there were 14 states that had no reform, while by 1997, all states except for one (Michigan) had adopted some type of small business health care reform. Most states have a moderate reform that includes restrictions on premiums using a rate band approach rather than by imposing community rating or modified community rating.

**Table 1.**  
**State Counts by Reform Level and Year**

<b>Reform Level</b>	<b>1992</b>	<b>1993</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
No reform	27	14	5	4	1	1
Reform	23	34	44	44	48	48

Note: Does not include Hawaii, but does include Washington, DC.

Table 2 presents the size upper limit for small-group health insurance reforms. Most states with a reform have either 25 or 50 employees as the upper size threshold. In our data, 81 percent of state-year observations have thresholds at either 25 or 50. Over time, states tended to raise their thresholds and the number of states with upper size threshold of 25 employees decreases. By 1997 there are no states that have 25 employees as the upper size threshold.<sup>7</sup>

To derive national estimates, we develop survey weights for our data by post-stratifying based on the distribution of firm sizes and insurance offering in the 1993 National Employer Health Insurance Surveys (NEHIS) and the 1996 and 1998 Medical Expenditures Panel Survey - Insurance Component (MEPS-IC).<sup>8</sup> Both the NEHIS and the MEPS-IC report the nationally

<sup>5</sup> As a sensitivity check, we estimated all models using the alternative assumption that reforms took effect in the year following the reform implementation. We found similar results.

<sup>6</sup> In sensitivity analyses reported later, we explore using alternative definitions of reform.

<sup>7</sup> The lower size limit for the reforms was 1, 2, or 3 employees, depending on the state and year. However, California in 1993 had a lower threshold of 5 employees. Our data set only includes firms that have 3 or more employees. We have re-estimated our models, excluding Californian firms with less than 5 employees in 1993 (N=8), and find virtually identical results.

<sup>8</sup> The weights provided with the KPMG data were unreliable since they provided vastly different distribution of firms by survey year.

representative number of firms corresponding to different size categories for each state. We match the size categories and insurance offering in our data to the size distribution in the NEHIS and MEPS-IC data. The weights vary by state, year, size and health insurance offering. In the appendix, we demonstrate that post-stratification yields a nationally representative sample of firms.

**Table 2.**  
**State Counts by Firm Size Upper Limit**  
**for State Small-Group Health Insurance Reform by Year**

<b>Firm Size Upper Limit</b>	<b>1992</b>	<b>1993</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
25	18	24	12	11	0	0
26-50	5	11	30	32	48	48
51-100	0	1	3	3	1	1
No reform	27	14	5	4	1	1

Note: Does not include Hawaii, but does include Washington, DC.



## 6. METHODOLOGY

The purpose of this analysis is to assess whether small group regulatory thresholds affect the size of small firms that offer health insurance. As discussed above, different states passed small group health insurance reforms at different times. In addition, the upper size threshold for the reforms varies between states and within states over time. This enables us to utilize both cross-sectional and time-series variation in the regulations to identify the effect of the reforms on the size and health insurance status of small firms.

To capture proximity of the size of the firm to the reform threshold, we restrict our analysis to states that implemented a reform with an upper size threshold of either 25 or 50 and use separate models to examine the effect of the each threshold.<sup>9</sup> Since the inherent distribution of firms around the 25 size threshold differs from the distribution of firms around the 50 size threshold, we cannot estimate a model that compares distributional changes across different thresholds.

Our empirical strategy is to focus on a narrow set of firms around the threshold and study whether the proportion of firms under the threshold differs across reform and non-reform states. For the 25-threshold model we construct a threshold variable that takes on value “1” if the state had a reform with an upper size threshold of 25 in a given year. Otherwise, the reform variable takes on value “0”. This analysis excludes states that had a reform with an upper size threshold of more than 25. All states adopting reforms start with an upper size threshold of 25, and gradually increase it over time. Including states with higher thresholds and characterizing their threshold variable to take on value “0” would bias our results since those states would have already gone through a reform experience with a 25 upper size threshold in an earlier year and therefore, the existing firm size distribution would reflect the effects of the earlier 25 threshold reform. Similarly, for the 50 threshold model, the threshold variable takes on value “1” if the state had a reform with upper size threshold of 50 in a given year, and takes on value “0” otherwise. We exclude states that had a reform with an upper size threshold of more than 50 since these states may have had earlier reforms that had threshold at 50, and therefore, the existing firm size distribution would reflect the effects of the earlier 50 threshold reform. The analysis includes states with 25 upper size thresholds, but the threshold variable for these states takes on value “0”.

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<sup>9</sup> Since over 80 percent of state-year observations had thresholds at either 25 or 50, we are able to retain the vast majority of our data.

## 6.1. DESCRIPTIVE ANALYSIS

We compare the distribution of firm size in reform and non-reform states by plotting kernel density estimates of the number of employees in reform states and non-reform states. This approach combines both cross-sectional identification where we compare states with a reform to states with no reform in a given year, and time-series identification in which a given state is compared over time in terms of the presence of a reform. For example, if a given state doesn't have a reform in 1993, but has a reform in 1996, firms in that state are classified to belong to a non-reform state in 1993, but to a reform state in 1996. We focus on firms offering health insurance that have firm sizes that are right around the regulatory thresholds.<sup>10</sup> Figure 1 presents the kernel density plots of firm size for firms with 15-35 employees offering health insurance, both for states with a 25 upper size threshold reform and for non-reform states. The figure uses weighted data; however, it does not control for observables such as state, year and firm industry. It is interesting to note that the proportion of firms just above the threshold (with 25-35 employees) is higher in reform states compared with non-reform states. Another observation is that the proportion of firms just below the threshold (with 15-25) employees is lower in reform states compared with the non-reform states. These two observations suggest that the reform might have induced some firms below the threshold to move above the threshold.

[Figure 1 here]

**Figure 1.**  
**Kernel Density Plot of Firms that Offer Health Insurance: No reform states versus 25-threshold reform states**

Figure 2 repeats the same exercise for firms in states with a 50-threshold and in those without a reform. The pattern here is not as clear as in Figure 1. It appears that the proportion of firms just below the threshold (with 47-50 employees) and just above the threshold (with 50-54 employees) are lower in reform states compared with non-reform states. This pattern could arise if, for example, some firms just below the threshold increased their size, and some firms just above the threshold decreased their size as a response to reform. Given that we do not observe any clear kinks in the data, we need to rely on multivariate tests to assess the net impact of the reforms on firm size distribution.

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<sup>10</sup> The sample size for firms that do not offer health insurance is too small for them to be a suitable comparison group. For example, for the 25 threshold, only 10 firms fall into the 20-30 bin and 15 firms fall into the 15-35 size bin.

[Figure 2 here]

**Figure 2.**  
**Kernel Density Plot of Firms that Offer Health Insurance: No reform states versus 50-threshold reform states**

Another interesting analysis would rely only on the time-series identification and consider only the states with no reform in 1993, and track them over time.<sup>11</sup> For example, we could focus on firms with no reform in 1993, but a reform in 1998. When we plot the firm size distribution in 1993, we should not expect to see any discontinuity at the reform threshold level. However, the corresponding density plot for 1998 should illustrate a discontinuity.

This approach unfortunately is not feasible for studying the 25-threshold reforms. Among the 14 states with no reform in 1993, only 2 of them adopted a 25-threshold reform in 1996, and both of these states adopted a 50-threshold reform by 1998. Given that we are mainly interested in firms right around the threshold, our sample size becomes very small. However, we could use this time-series identification strategy to examine the 50-threshold reforms. Although only 4 out of the 14 non-reform states in 1993 adopted a 50-threshold reform in 1996 or 1998, we could classify the 24 states with a 25-reform in 1993 as non-reform states since they did not have a 50-threshold, and we do not expect to see any distributional change in firm size at 50 for these states in 1993. All of these 24 states adopted a 50-threshold by 1998. Figure 3 plots the kernel density of firm size for 38 states<sup>12</sup> with no 50-threshold reform in presence in 1993 but with a 50-threshold reform in 1998. We provide separate plots for 1993 and 1998 focusing on firms that offer health insurance. The figure illustrates a clear discontinuity at 50 employees suggesting an increase in the proportion of firms over 50 employees and a decrease in the proportion of firms with less than 50 employees in 1998 compared with 1993.

[Figure 3 here]

**Figure 3.**  
**Kernel Density Plot of Firms that Offer Health Insurance: States with no 50-threshold reform in 1993, but with a 50-threshold reform in 1998**

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<sup>11</sup> We thank Mark Showalter for suggesting this identification strategy.

<sup>12</sup> 14 states with no reform and 24 states with a 25-threshold reform in 1993.

## 6.2. MULTIVARIATE ANALYSIS

We estimate binomial logit models, for each size threshold (25 and 50), with a dependent variable,  $Y_i$ , which takes on value “1” if the firm is under the size threshold and “0” otherwise. The key independent variable is a “reform” variable which takes on value “1” if the state has a reform with the threshold under study, and “0” otherwise. The sample is restricted to firms offering health insurance. We focus on the firm size distribution conditional on the decision to offer health insurance primarily because our model to estimate the effect of the reforms on size threshold is based on narrowly examining firms that are right around the regulatory size threshold. This necessitates a reduction of the sample size in order to obtain consistent estimates of the effect of the reform on firm size. A model to estimate the effect of the reform on health insurance would not need to make this sample restriction – efficient estimates could be obtained by comparing a much wider range of small firms to larger firms. This approach has been followed in the literature and has yielded estimates that imply small or no effect of the reform on health insurance offer rates suggesting that estimating a model conditional on the health insurance offer decision is reasonable.

The estimating equation for firm  $i$  in state  $s$  at year  $t$  is as follows:

$$\Pr(Y_{ist} = 1) = f(\alpha_s + \delta_t + \beta * \text{Re form}_{st} + Z_i' \gamma)$$

Reform is a measure of the presence of a state small group health insurance reform. The  $\alpha_s$  and the  $\delta_t$  represent state fixed effects and year fixed effects respectively. The matrix  $Z$  consists of firm specific characteristics measured by the firm’s industry.<sup>13</sup> The state indicators will account for any time-invariant state specific differences in firm distribution. Similarly, the industry-specific differences in firm distribution are captured by the industry indicators, and time specific differences that do not vary between states are captured by the year indicators. We estimate a weighted model and account for the clustering with state year cells in our estimation.

The estimates obtained from this model are shown in Table 3 for the 25-threshold model, and in Table 4 for the 50-threshold model. For the 25-threshold model, column 1 presents results from a model with a very narrow band around the threshold -- only firms with 20-30 employees are included in this model. We find a negative and statistically significant coefficient on the reform variable, suggesting that the proportion of firms under the threshold is smaller in reform states than in non-reform states. We widen the band around the threshold in column 2 to include firms with 15-35 employees and we obtain the same negative and statistically significant

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<sup>13</sup> We also experimented with including state specific time trends to control for state specific trends in firm distribution and found that this did not change our results.



association between reform and the probability of being under the threshold, but the magnitude of the effect is smaller. We examine even wider bands in columns 3 and 4 and find that the statistical significance of the coefficient on reform disappears, and the magnitude of the coefficient becomes smaller. These findings are consistent with the prediction that the firms that are affected by the reform are those that are closest to the threshold. This exercise of expanding the band around the threshold also serves as a falsification analysis in that we should not expect to find an impact of reform on firm size distribution as we incorporate larger and larger firms.

**Table 3.**  
**Impact of 25-Threshold Reform on Size Decision of Firms that Offer Health Insurance**

	<b>Firms with 20-30 employees</b>	<b>Firms with 15-35 employees</b>	<b>Firms with 10-40 employees</b>	<b>Firms with 0-50 employees</b>
Reform with 25 threshold	-2.55** (1.05)	-1.68*** (0.47)	-0.63 (0.49)	-0.44 (0.27)
Observations	92	179	318	519

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Industry fixed effects, state fixed effects and time fixed effects included.

Clustered at the state-year level.

Dependent variable: 1 if under 25 employees, 0 otherwise.

The results presented in Table 4 for the 50-threshold model have similar qualitative results. We again find a negative association between the existence of reform and the probability of being under the threshold. Although the association is statistically significant only at the 9% level when we consider only firms with 45-55 employees or 40-60 employees, this may be due to the fact that only a few observations fall in these ranges. The number of observations almost doubles when we increase the band around the threshold from firms with 40-60 employees to firms with 30-70 employees, and the coefficient on reform becomes statistically significant. As we go much further to consider firms with 0-100 employees, the statistical significance disappears. Overall, as in the 25-threshold model, increasing the band around the threshold decreases the magnitude of the coefficient on reform.

**Table 4.**  
**Impact of 50-Threshold Reform on Size Decision of Firms that Offer Health Insurance**

	<b>Firms with 45-55 employees</b>	<b>Firms with 40-60 employees</b>	<b>Firms with 30-70 employees</b>	<b>Firms with 20-80 employees</b>	<b>Firms with 0-100 employees</b>
Reform with 50 threshold	-1.21*	-0.74*	-0.46**	-0.32**	-0.09
	(0.70)	(0.38)	(0.18)	(0.16)	(0.15)
Observations	230	417	762	1127	2160

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Industry fixed effects, state fixed effects and time fixed effects included.

Clustered at the state-year level.

Dependent variable: 1 if under 50 employees, 0 otherwise.

To obtain a better sense of the magnitude of these effects, we predicted firm size distribution from the models in Tables 3 and 4. The predictions for firm distribution under the scenario of “no reform” are obtained by setting the reform indicator to zero for all firms in the estimation sample and using the model estimates to obtain the firm distribution under the assumption of no reform for any state year combination. Next, for the scenario with the reform, the reform indicator is set to one for all state year combinations, and the model estimates are used to predict the firm distribution.

For the 25-threshold model, for firms with 20-30 employees that offer health insurance, the model predicts that under the scenario of no reform, 75 percent of firms within the 20-30 size band would fall under the threshold. However, under the scenario of having a reform, only 31 percent would be under the threshold. For the 50-threshold model, for firms with 45-55 employees that offer health insurance, the model predicts that under the scenario of no reform, 82 percent of firms within the 45-55 size band would fall under the threshold. However, under the scenario of having a reform, 65 percent would be under the threshold. These effects are substantial; however, it is important to note that even though the percentage flows appear large, they apply to a relatively small segment of the firm distribution – in particular, those firms that are right around the regulatory threshold.

While we have interpreted the increase in the percentage of firms over the threshold as a flow of firms from below the threshold to above the threshold, it is possible that firms under the threshold exited the market with no change in the number of firms over the threshold. We explored this possibility by predicting the number of firms offering health insurance under the

threshold as a function of the presence of reform, state and year indicators for 25 threshold and 50 threshold reforms separately. For this exercise, we used data from the nationally representative 1993 National Employer Health Insurance Survey (NEHIS) and the 1996 and 1998 Medical Expenditures Panel Survey - Insurance Component (MEPS-IC) which report total number of firms by firm size categories and health insurance offering.<sup>14</sup> We hypothesized that if the reforms induced small firms to exit the market, total number of firms offering health insurance under the threshold would decrease in reform states. Contrary to this hypothesis, we found that the number of firms under the threshold that are offering health insurance are not significantly influenced by the presence of a reform.<sup>15</sup>

We also explored the possibility that stronger reforms that mandate guaranteed issue of all plans and community rating (full or modified) might have differential impact on firms' size decisions. We distinguished strong reforms from regular reforms and found the strong reform coefficient to be the same sign and similar magnitude as that of a regular reform. However, the estimated coefficient on strong reform was not statistically significant across all specifications. For example, in the 25 size threshold model, when we focus on firms with 20-30 employees, we find that the coefficient on regular reform is -2.55 (standard error 1.15) indicating that the reform states have a higher proportion of firms over the threshold, while the coefficient on strong reform is -2.59 (standard error 2.28). The statistical insignificance of the strong reform must be interpreted with caution. Because we focus on such small bands around the reform thresholds, we are left with significantly less observations that are subject to a strong reform. For example, for the specification mentioned above, only 172 observations fell under the "strong reform" definition while 997 fell under the "regular reform" definition. We relaxed the strong reform definition to mandate guaranteed issue of all or some plans, and community rating (full or modified), and obtained very similar results.

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<sup>14</sup> We did not use the aggregated NEHIS and MEPS-IC for our logit estimation to generate the main results of the paper since the size categories in these data are more broadly defined and do not enable us to capture firm behavior right around the threshold. Moreover, micro data were not publicly available.

<sup>15</sup> An ordinary least squares regression of the number of firms under threshold and offering health insurance on reform indicator, state and year fixed effects revealed a reform coefficient of 2064 (p-value of 0.77) for the 25 threshold reform, and a reform coefficient of 2479 (p-value of 0.40) for the 50 threshold reform.



## 7. DISCUSSION AND CONCLUSIONS

Although small group health insurance reforms were well intentioned, previous research indicates that they did not achieve their goal of improving access to health insurance for small firms. In view of the relative failure of the policies on this score it is perhaps all the more important to assess whether the reforms had other unintended consequences. In this paper, we examine the effect of health insurance mandates on the size of firms that were near the threshold that states used to determine whether a firm was covered by the reform or not.

Our analysis provides evidence that in states that implemented these reforms, firms offering health insurance are significantly more likely to be just above the threshold than just below the threshold. In states that implement a 25 employee threshold, we estimate that 31 percent of firms with 20-30 employees would fall below the 25 employee threshold, compared with 75 percent in states that did not have a reform. In states that implement a 50 employee threshold, we estimate that 65 percent of firms with 45-55 employees would fall below the threshold, compared with 82 percent of firms with 45-55 employees in states that did not have a reform. The magnitudes of these predicted changes in firm size distribution are large; however, they apply to a relatively small segment of the firm distribution that is clustered around the regulatory threshold.

Our results are unbiased assuming that the distribution of firms is not changing for any other reason, like economic growth or other regulations, in a way that is correlated with the implementation of the state small group health insurance reforms. Specifically, for our results to be biased, these contaminating factors would need to be correlated with the timing of implementation within those states that had reforms, but not correlated with those states that did not have reforms. Furthermore, it seems unlikely that general differences across states, such as differences in economic growth, would have a disproportionate impact on firms right around the threshold for the health insurance mandates. Unfortunately, we cannot control for other state level factors that change over time due to our data agreement. Although this is a limitation of the analysis, it is reassuring that we see a strong threshold effect for firms right around the threshold, but the effect disappears as we increase the band around the threshold. A related concern is that there are other reforms or regulations that took effect at the same time and were implemented with exactly the same thresholds as the one used for health insurance mandates in the same set of states that adopted the health insurance mandates. If this were

the case, our analysis would capture the combined effect of these other reforms and the health care mandate reforms. We are not aware of any reforms that have these characteristics<sup>16</sup>.

These findings suggest that small employers near the threshold that offered health insurance found the state health insurance mandates to be onerous, and increased their size in order to avoid the regulated market. As expected, our analyses suggest that the ability of firms to make such an adjustment was greater for firms that were closest to the regulatory threshold. The magnitude and statistical significance of the effect declined as we expanded the size of the band around the threshold under consideration.

Our study shows that the small group health insurance reform implemented by states in the mid-1990s had unintended consequences. The reforms appear to have led firms to distort their firm size decisions in order to avoid the more regulated market. What happened to the health insurance market in reform states to lead to these outcomes? There is evidence from previous research to suggest that the implementation of reforms increased the breadth of health insurance policies, but also led to an increase in premiums as insurers that find the small group regulations burdensome exit the market. For example, in New York, premiums were estimated to have risen for about 30 percent of the insured and 500,000 New Yorkers were estimated to have cancelled their individual or small group policies after the implementation of reforms (NCAP, 1994). In Oregon, insurers were reported to have exited the small group market in response to the reforms.<sup>17</sup> However, Buchmueller and DiNardo (2002) compared the New York market that had community rating (strong reform) to the market in Pennsylvania and Connecticut (states that did not have strong reform) and found no evidence that insurance had fallen in New York.

These reports suggest that the reforms may have resulted in changes in the small group market that were valued by some, but not other small firms. High cost firms (that is, firms that employ workers with high expected health care costs, as defined in the conceptual framework section) that previously couldn't obtain health insurance are able

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<sup>16</sup> For example, the Family and Medical Leave Act applies to employers with 50 or more employees. The Act went into effect in August of 1993, but as a federal regulation, it was implemented nation-wide, not just in the states that implemented health insurance mandates. State mandated health insurance benefits were also implemented during this period; however, they applied to all non self-insured firms, and did not incorporate specific size thresholds.

<sup>17</sup> <http://www.bizjournals.com/portland/stories/1998/01/26/newscolumn2.html>

to access coverage after the reform. Some of these firms may value the access to health insurance and the broad coverage offered under reform, even if it means higher premiums. Low cost firms (that is, firms that employ workers with low expected health care costs), on the other hand, may place little value on the breadth of coverage offered under reform. For example, many small firms hire a younger, healthier workforce and have higher worker turnover than larger firms (Kapur, 2004), and these workers may not value the more complete policies and higher premiums associated with small group health insurance reforms. If it is at all feasible, these firms may increase their firm size in order to avoid the reform and purchase insurance in the unregulated market.

Small business health insurance reform is a policy issue that is continually in the limelight. Since the majority of uninsured working Americans are employed in small businesses, extending health insurance coverage to small businesses is an important mechanism for reducing the number of uninsured. States have continued to adjust their small group health insurance reform packages to make them more effective. However, these incremental pricing and access reforms cannot be expected to solve the fundamental problems of high administrative costs, adverse selection and a shallow risk pool that afflict the small group health insurance market. Regulations that restrict premium variation may lower prices for some, but increase prices for others, and may drive some insurers out of the market.

Solutions to the problem of health insurance access and affordability will likely need to address these fundamental issues. Indeed, the policy debate has shifted in this direction. The Small Business Health Plan legislation in the House and Senate proposes to improve access and availability to health insurance by allowing small businesses to band together to purchase health insurance, for example through their industry associations.<sup>18</sup> Another solution that has been advocated by the Bush administration and by policy analysts is the development of consumer directed health plans (CDHPs). These plans aim to control costs by increasing consumers' financial responsibility and involvement in their health care choices. Since CDHPs are potentially less costly than traditional health plans and may appeal to younger workers with low health care demand, these plans may be well suited to workers in small businesses (Laing, 2005). The results from our study are useful in guiding efforts to refine small group health insurance reform

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<sup>18</sup>[http://www.uschamber.com/issues/index/health/0306\\_ahps\\_facts.htm](http://www.uschamber.com/issues/index/health/0306_ahps_facts.htm)

packages. More broadly, our results suggest that policy makers need to be aware that legislative size thresholds may have unintended consequences on business size.



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## APPENDIX

To derive national estimates, we first post-stratify the survey data based on the distribution of firm sizes in the 1993 National Employer Health Insurance Surveys (NEHIS) and 1996 and 1998 Medical Expenditures Panel Survey - Insurance Component (MEPS-IC). Both the NEHIS and the MEPS-IC report the nationally representative number of firms corresponding to different size categories by state, year and health insurance offering decision. We construct the same size categories using our survey sample. The basic post-stratification weight for a given size category  $c$  at a given time period  $t$ , state  $s$  is calculated as below:

$$weight_{cst} = \frac{Nobs\_NEHIS / MEPS_{cst}}{Nobs\_KMPG_{cst}}$$

We do this calculation separately by whether the firm offers health insurance or not.

Tables A1, A2 and A3 demonstrate the impact of post-stratification. The weights calculated using the above formula performs well in predicting the nationally representative proportion of firms with less than 50 employees, and the total number of employees.

**Table A1.**  
**Number of Observations by Firms Size for 1993**

	NEHIS	KPMG Survey	Weighted Survey
Under 50 employees	5,152,000 (82%)	682 (37%)	4,528,388 (82%)
Total	6,276,800	1,841	5,522,424

**Table A2.**  
**Number of Observations by Firms Size for 1996**

	<b>MEPS-IC</b>	<b>KPMG Survey</b>	<b>Weighted Survey</b>
Under 50 employees	4,678,649 (79%)	795 (32%)	4,188,510 (78%)
Total	5,956,479	2,486	5,369,885

**Table A3.**  
**Number of Observations by Firms Size for 1998**

	<b>MEPS-IC</b>	<b>KPMG Survey</b>	<b>Weighted Survey</b>
Under 50 employees	4,840,741 (78%)	685 (26%)	5,733,320 (82%)
Total	6,197,685	2,599	6,991,853

Figure 1: Kernel Density Plot of Firms that Offer Health Insurance  
No Reform States versus 25-threshold Reform States

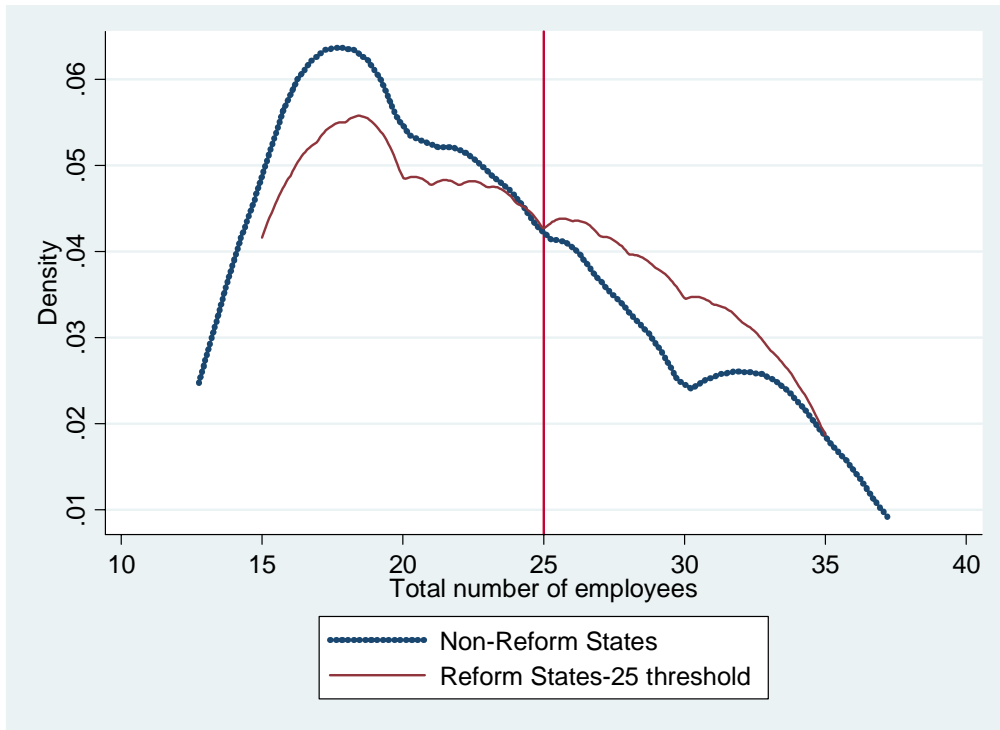


Figure 2: Kernel Density Plot of Firms that Offer Health Insurance  
No Reform States versus 50-threshold Reform States

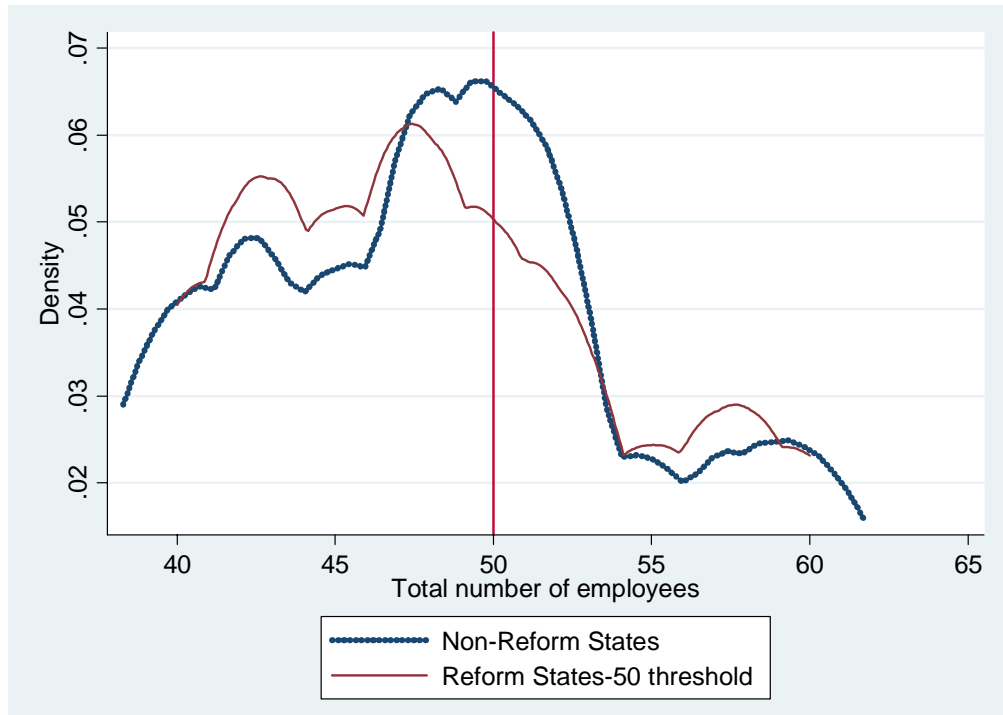




Figure 3: Kernel Density Plot of Firms that Offer Health Insurance  
States with no 50-threshold reform in 1993, but with a 50-threshold reform in 1998

