The Effect of Health Insurance Benefit Mandates on Premiums

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This paper examines the effects of laws mandating that health insurance cover specific conditions, procedures, providers, and beneficiaries. Unlike previous work, this paper considers the market for employer-based health insurance rather than the much smaller individual market, and uses a panel data approach to account for unobserved heterogeneity among states. Using a fixed effects model, I find that the average mandate increases premiums by 0.44–1.11 percent annually. This implies that new mandates were responsible for 9–23 percent of all premium increases over the 1996–2011 period.
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INTRODUCTION

Much work in health economics has tried to determine why health costs in the United States have increased so rapidly in the last few decades. One underexplored mechanism for increasing costs is state-level health insurance regulation. In 1970, the average US state had less than one health insurance mandate. By 2011, the average US state had 37, according to Laudicina et al. [2011]. Most mandates require health insurance plans to cover a specific procedure, such as mastectomy, or a specific condition such as autism. Other mandates require insurance to cover certain types of health care providers, such as chiropractors. Finally, mandates may specify who is covered by health insurance, for instance, the policyholder's grandchildren.

When a mandate is passed, more medical spending is channeled through insurers, rather than being paid directly out of pocket by consumers. This partly explains the long-term shift away from out-of-pocket spending in the US health care market, which is shown in Figure 1. As more medical spending is done using insurance, health insurance costs and premiums will rise. It is quite clear that health insurance premiums have been rising over time, but it is not so clear why exactly this has been happening. This paper will estimate how much of rising premiums can be attributed to the passage of insurance mandates.

The main economic argument for mandates is the classic Rothschild and Stiglitz's [1976] concern about adverse selection. Just as sicker people can push out healthier people by raising the cost of insurance generally, people with a high demand for a specific insured benefit can raise costs for others. For example, an insurer may want to cover treatments for AIDS but may worry about attracting customers who reveal
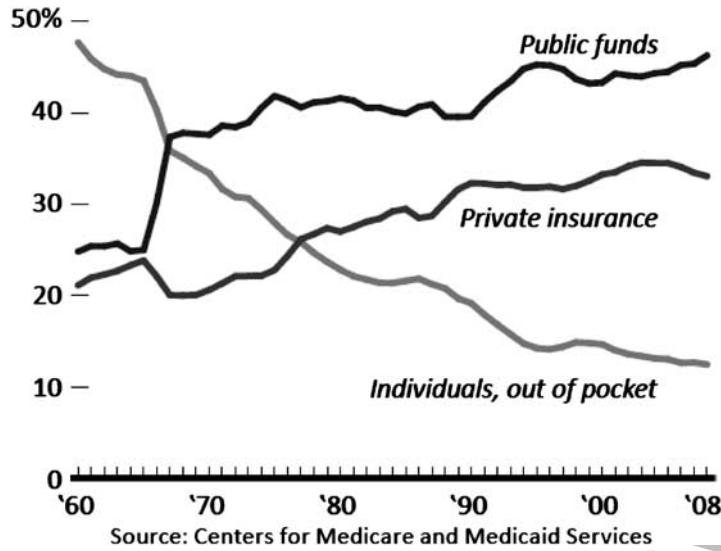
Figure 1. Source of funds for the US health care spending (1960–2008).

that they have AIDS right after signing up at the normal premium. If AIDS coverage is mandated for all insurers then none suffers an adverse selection problem.

The behavioral argument for mandates is that people may not be able to correctly evaluate an insurance policy when enrolling in it. If people systematically undervalue some kinds of coverage, a mandate could make them better off.

Finally, individuals may support mandates because they believe that the costs will be born by insurers and employers, giving individuals coverage at no cost. However, Gruber [1994a] found that the cost of a maternity care mandate was almost entirely passed on to individuals likely to use the coverage in the form of lower wages. Lahey [2012] found that infertility benefit mandates did not reduce wages for the affected group, but they did reduce employment.

The simple argument against mandates is that they reduce welfare by forcing people to pay for coverage that they were not willing to pay for voluntarily. The adverse selection argument suggests, however, that people may be more willing to pay for coverage if others are doing it too. Therefore, most arguments against mandates try to demonstrate that they raise insurance premiums and reduce the number of people with insurance. Most academic work has focused on the connection between mandates and the number of people without insurance. In one of the first papers on the subject, Jensen and Gabel [1992] developed a theoretical model of a firm's decision to offer health insurance, and showed that mandates make firms less likely to offer insurance.

Gruber [1994b] found that five specific mandates did not have a significant effect on the percentage of people with health insurance. He attributed this finding mainly to the fact that the mandates were not binding, since most insurance plans already covered the mandated services. Sloan and Conover [1998] found that a higher total number of mandates does reduce the number of people with insurance, while Cummins [2011] found that different types of mandates may increase or decrease insurance coverage.

This paper proceeds as follows: The section "Previous work" describes previous studies of the effect of mandates on premiums, the section "Data" describes the data sources used, the section "Results" presents the econometric results, the section

"Discussion" discusses the robustness and implications of the results and the section "Conclusion" concludes.

PREVIOUS WORK

Review articles by Jensen and Morrisey [1999] and Monheit and Rizzo [2007] describe much of the work that has been done on mandates in general. However, only a handful of studies have examined the effect of mandates on insurance premiums. These are described below.

Kowalski et al. [2008] use data on premiums from high-deductible non-group plans sold by the insurer Esurance in 42 states in 2003. They use Blue Cross Blue Shield Association (BCBSA) data on the total number of mandates in each state. They find that the average mandate increases average premiums by 0.26–0.74 percent, and the effect is significant in most specifications. They suggest the importance of panel data for future work, noting "As with most cross-sectional work, we are also vulnerable to issues of endogeneity and omitted variable bias. In particular, it is possible that our regulation measures are correlated with unmeasured aspects of the insurance market within each state."

Gohmann and McCrickard [2009] also get premium data from non-group plans sold by Esurance. Their data is from 2006, and they focus on plans sold in Metropolitan Statistical Areas (MSA) that cross state borders, leaving them with data for 108 cities in 35 states. By examining the difference in premiums on different sides of a state border on the same side of an MSA, they are able to account for unobserved heterogeneity at the MSA level that could affect premiums. By assuming that all remaining differences in premiums are due to differences in mandates, however, they ignore all other sources of heterogeneity at the state level. For example, other state regulations and taxes besides mandates are likely to affect premiums. Their data on mandates comes from the Council for Affordable Health Insurance. They examine the effect of many specific mandates, finding that most mandates have a large positive effect on premiums while a few have a large negative effect. The problem with examining specific mandates is that there are over 100 kinds of mandates, but including more than 25 or so in a single regression causes perfect multicollinearity. The mandates chosen may be non-representative. This is why most studies simply measure the effect of the total number of mandates.

LaPierre et al. [2009] use self-reported data on premiums from individuals in the Community Tracking Survey 1997–2003. Their data covers 3,552 families in 60 communities and 33 states, and includes only non-group plans. Their data on mandates is from the BCBSA. They use separate variables for the number of benefit, provider, and coverage mandates rather than considering all mandates together. Using interval regression, they find coefficients suggesting that benefit mandates increase premiums while provider mandates decrease them. This could be because provider mandates encourage people to seek out lower cost alternatives to doctors. In any case, the effect of mandates is not significant in any of their specifications.

DATA

This paper uses data on insurance premiums from the Medical Expenditure Panel Survey Insurance Component (MEPS-IC). The MEPS-IC is an annual survey of employers conducted by the Agency for Healthcare Research and Quality, a part of
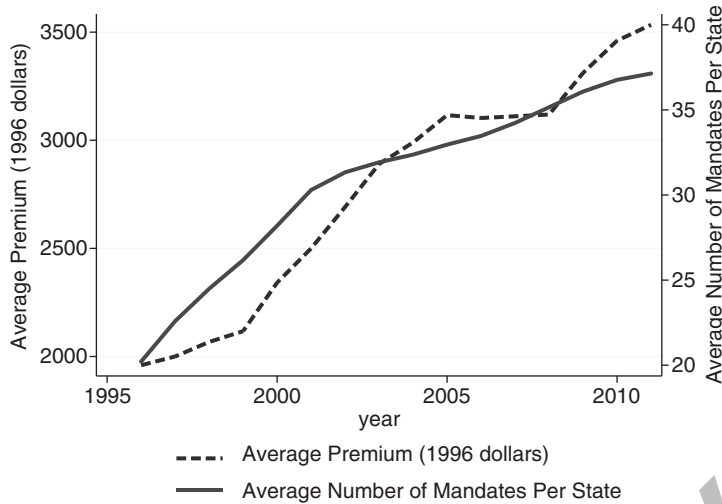
Figure 2. Average mandates and premiums (1996–2011).

the US Department of Health and Human Services. MEPS provides state-level information about the health insurance benefits offered by employers. The main variable used in this paper is the annual premium paid for the average single-coverage employer-based health insurance policy. MEPS reports data on family and single-coverage plans seperately; this paper focuses on the single-coverage plans because they represent a slight majority of covered workers in 2011, and changes in their costs are less driven by changes in family structure. MEPS-IC also provides information about how employer-based health insurance premiums vary by firm size. This information is used as part of a robustness test. MEPS began collecting data on premiums in 1996, and their data currently runs through 2011. There are some gaps in the data: MEPS did not collect any information about premiums in 2007. Before 2003, MEPS did not collect data on premiums in every state and year; in some years, there is data on as few as 40 states. The original MEPS premium data is not inflation-adjusted, so I deflate MEPS premiums to be measured in 1996 dollars, using the Consumer Price Index for all urban consumers provided by the Bureau of Labor Statistics (Figure 2).

The data on mandates comes from the BCBSA, found in Laudicina et al. [2011]. BCBSA collects data on new mandates each year and classifies them as benefit, provider, or coverage mandates. They also provide the year in which each existing mandate was passed. I have generated a count of the total number of mandates from BCBSA data by combining their count of benefit, provider, and coverage mandates, as well as "additional mandates" that were only passed in a handful of states. The effects of each kind of mandate are also investigated separately. According to BCBSA data, there were 1896 total mandates in 2011, counting mandates in all states and the District of Columbia, meaning an average of 37 mandates per state. This is an increase from 1,031 total mandates (20.2 per state) in 1996. Virginia passed the most new mandates over the 1996–2011 period with 32, while Ohio passed the fewest with 5. Thirteen states have passed mandate waivers, which allow some insurers or businesses to offer "mandate-lite" plans exempt from some

mandates. Data on mandate waivers comes from the Robert Wood Johnson Foundation's State Coverage Initiative.

Data for demographic control variables come from the US Census Bureau's Current Population Survey (CPS). They were retrieved from the Integrated Public Use Microdata Series compilation of CPS data. The control variables used are race, union membership, mean income, and mean age.

RESULTS

I estimate fixed effects models of the form

$$lnPremium_{st} = \beta_0 + \beta_1 * Mandates_{st} + \beta_2 * Controls_{st} + \beta_3 Time$$

where $InPremium_{st}$ is the natural log of the average group health insurance premium in state s in year t, $Mandates_{st}$ is the total number of mandates in force in state s in year t, and $Controls_{st}$ represents demographic information about state s in year t. All data are reported annually at the state level from 1996 to 2011. There are 693 state-year observations in the data. A linear time trend is included to control for the fact that medical costs are increasing over time for reasons other than changes in mandates and demographics. The fixed effects estimator is used, meaning that the regression controls for unobserved state-specific effects. Fixed effects estimators are consistent but may not be efficient. Hausman tests confirmed that the fixed effects estimator was more appropriate than random effects for this data.

I estimate several different specifications to check the robustness of the results. Column 1 of Table 1 shows the results of a simple fixed effects regression of mandates on premiums, which results in a very large estimated effect of mandates. Column 2 shows the results once time and demographic changes are controlled for. The estimated effect is much smaller but remains strongly statistically significant.

The Wooldridge test described by Drukker [2003] suggests that the standard fixed effects models used to generate Columns 1 and 2 suffer from serially correlated

Table 1 Effect of mandates on average employer-based health insurance premiums

	(1)	(2)	(3)
Total mandates	0.0297***	0.0044***	0.0111***
	(0.0007)	(0.0009)	(0.0027)
Percent union		1.015***	1.856***
		(0.2252)	(0.3981)
Mean income		−0.0023	0.0164***
		(0.0017)	(0.0034)
Percent black		−0.4401*	0.6667*
		(0.2310)	(0.3455)
Mean age		0.0151***	0.1707***
		(0.0042)	(0.0039)
Mandates waivers		0.0132	0.0401
		(0110)	(0.0280)
Time		0.0379***	0.0018
		(0.0019)	(0.0039)
Overall R^2	0.18	0.76	0.34

*, **, ***indicates P-value <0.10, <0.05, <0.01, respectively.
A total of 693 observations; standard errors given in parentheses.

errors. Because of this, it may be more appropriate to use fixed effects with an AR(1) disturbance term, meaning that premiums that are higher than predicted in 1 year are likely to remain somewhat higher than predicted the next year. Baltagi and Wu [1999] explain how this model may be especially appropriate for panels with unequally spaced data; the MEPS premium data used has such gaps, with an average of 13.6 years of data for each state over the 16 years from 1996 to 2011. Column 3 shows the results when this fixed effects with AR(1) disturbances model is used.

Because the dependent variable is the natural log of premiums, the coefficients can be interpreted as the percentage change in premiums caused by a one unit change in the independent variable. For instance, the 0.0044 coefficient of mandates in Column 2 means that each mandate increases premiums by 0.44 percent. Under the alternative assumption of AR(1) disturbances reported in Column 3, each mandate increases premiums by 1.12 percent.

The number of average number of mandates in each state increased by 17 in the period studied, from 20 to 37. Combined with the estimates found in Columns 2 and 3 above, this suggests that mandates were responsible for premium increases from 7.5 percent to 19 percent. Over the same period, annual inflation-adjusted single-coverage premiums increased from US$1960 to $3534, or 80.3 percent. This means that mandates seem to account for 9.3 percent to 23.6 percent of all premium increases from 1996 to 2011.

DISCUSSION

One limitation of these results is that the effect of any given mandate may be very different from the average effect. Some mandates certainly cost much more or less, depending on the cost and popularity of the mandated benefit and the number of plans that already covered it before the mandate. Furthermore, this analysis estimates the average cost of mandates in the 1996–2011 period. This average is a function of the kind of mandates passed in the period. In the future, states may pass a mix of mandates that are more or less expensive.

In order to get a better idea of how different mandates may have different costs, I estimate the effect of three different categories of mandates separately. Table 2 shows the estimated effects of benefit mandates (which require insurance to cover a certain condition or procedure), provider mandates (which require insurance to coverage a certain kind of provider, such as marriage therapists), and person mandates (which require insurance to cover a certain kind of person, such as adult dependent children). I find that benefit and provider mandates significantly increase premiums, while person mandates do not. This last result could be seen as a

Table 2 Effect of different types of mandates on premiums (1996–2011)

	Benefit mandates	Provider mandates	Person mandates
Estimated coefficient	0.0049***	0.0171***	−0.0025
Standard error	(0.0014)	(0.0029)	(0.0053)

*, **, ***indicates P-value <0.10, <0.05, <0.01, respectively.
Results are from fixed effects regressions of the natural log of premiums on mandates, mandate waivers, demographic controls, and time with 693 observations.

robustness check, since the premium data used is for single-coverage plans as opposed to family plans. Most person mandate laws are only written to apply to family plans.

State-level mandates do not actually apply to all insurance plans. The Employee Retirement Income Security Act of 1974 (ERISA) is a federal law that preempts most state-level insurance regulation, and allows employers to self-insure. Employer plans covered by ERISA are exempt from most state-level mandates, so mandates should not directly affect their premiums. According to 2011 MEPS data, 58.5 percent of all privately insured workers are enrolled in self-insured plans. Most large employers offer self-insured plans, since they are better able to pool risks. Table 3 gives data from MEPS illustrating that employees at larger firms are much more likely to be enrolled in self-insured plans. Table 3 also shows the results of regressions estimating the effect of benefit mandates on firms of various sizes. The results clearly show the effect of self-insurance: larger firms experience smaller and less significant increases in premiums as a result of mandates. Firms with over 1,000 employees are estimated to see only a 0.43 percent premium increase following a mandate, compared with a 0.77 percent increase at small firms with 10–24 employees. It is important to keep self-insurance in mind when applying the results of this paper. Any future federal mandates are likely to have larger effects than those estimated here because, unlike state mandates, they can also apply to self-insured firms.

A possible shortcoming of the econometric approach used in this paper is that it does not fully account for endogeneity in the passage of mandates. If states with increasing premiums are more likely to pass mandates then these results overestimate the true effect of mandates on premiums. If, on the other hand, states with rising premiums are less likely to pass mandates then these results underestimate the true effect. This short-coming was greater in previous studies that did not control for state and year effects. The fixed effects model used with panel data in this paper reduces the extent of the problem by accounting for anything which regularly makes states have both high premiums and many mandates (perhaps a permanently strong doctor's lobby). However, it still misses the effect of year-to-year changes in variables that affect both premiums and mandates (such as an increase in lobbying efforts by doctors).

This potential bias in the results could in principle be overcome by using an instrumental variable for the passage of mandates, as was done in van der Goes et al. [2011]. However, in practice, unbiased instruments that are correlated with mandates but uncorrelated with premiums except through mandates are hard to find. Most variables that could lead to the passage of mandates, such as a change in the majority political party or an increase in the number of people with a condition, are also likely to have direct impacts on health insurance premiums.

Table 3 Effect of mandates on premiums by firm size

Number of employees in a firm	10–24	25–99	100–999	Over 1,000
Employees in self-insured plan	9.5 %	13.2 %	35.0 %	86.3 %
Benefit mandates coefficient	0.0077***	0.0061***	0.0069***	0.0043**
	(0.0023)	(0.0021)	(0.0021)	(0.0018)

*, **, ***indicates P-value <0.10, <0.05, <0.01, respectively.
Data on self-insurance is the US average in 2011 according to MEPS. Coefficients are from a fixed effects regression controlling for mandate waivers, demographics, and time with 693 observations from 1996 to 2011. Standard errors are in parentheses.

The finding of certain smaller and less significant results in this paper argues against a large bias from endogeneity or omitted variables. If endogeneity or an omitted variable were at work, we might expect them to tie all kinds of mandates and premiums together. However, if mandates are the main causal force at work then we know when they should have little to no effect on premiums. Person mandates should not affect the premiums of single coverage plans, and in fact no significant relationship was observed between person mandates and single-coverage premiums. Mandates in general should have a smaller effect on large firms that can self-insure, and this was in fact found to be the case. There does appear to be a real causal effect of mandates on premiums, though there may still be some bias at work, and the question of how mandates get passed remains open.

A final caveat is that the reported estimates in this paper may be biased downward. This is because plans can have ways to respond to a new mandate other than by simply adding coverage and passing the cost on in a premium. In order to keep the overall cost of the plan near the pre-mandate level, they could reduce coverage of other benefits or increase deductibles and co-payments. These changes would reduce the cost of the plan and reduce premiums, masking the full cost of the mandate.

CONCLUSION

This paper finds that mandates have a substantial and strongly significant positive impact on health insurance premiums. The average mandate increases premiums from 0.44 percent to 1.11 percent. This result is based on premium data representing half of the employer-based market, and is therefore more general and robust than the results of previous work, most of which relied on data from a single insurer in a single year, and all of which focused on the small non-group market. Mandates were found to cause larger premium increases at smaller firms. The finding that mandates tend to substantially raise premiums should be borne in mind by states when considering new legislation. Mandates do not provide a free lunch.

Acknowledgements

References

Baltagi, Badi H., and Ping X. Wu. 1999. Unequally Spaced Panel Data Regressions With AR(1) Disturbances. *Econometric Theory*, 15(6): 814–823.

Cummins, Jeff 2011. Party Control, Policy Reforms, and the Impact on Health Insurance Coverage in the US States. *Social Science Quarterly*, 92(1): 246–267.

Drukker, D.M. 2003. Testing for Serial Correlation in Linear Panel-Data Models. *Stata Journal*, 3(2): 168–177.

Gohmann, Stephan F., and Myra McCrickard. 2009. The Effect of State Mandates on Health Insurance Premiums. *The Journal of Private Enterprise*, 24(2): 59–73.

Gruber, Jonathan 1994a. The Incidence of Mandated Maternity Benefits. *The American Economic Review*, 84(3): 622–641.

———— . 1994b. State-Mandated Benefits and Employer-Provided Health Insurance. *Journal of Public Economics*, 55(3): 433–464.

Jensen, Gail A., and Jon R. Gabel. 1992. State Mandated Benefits and the Small Firm's Decision to Offer Insurance. *Journal of Regulatory Economics*, 4(4): 379–404.

Jensen, Gail A., and Michael A. Morrisey. 1999. Employer-Sponsored Health Insurance and Mandated Benefit Laws. *The Milbank Quarterly*, 77(4): 425–459.

Kowalski, Amanda E., William J. Congdon, and Mark H. Showalter. 2008. State Health Insurance Regulations and the Price of High-Deductible Policies. *Forum for Health Economics & Policy*, 11(2): 1–24.

Lahey, Joanna N. 2012. The Efficiency of a Group-Specific Mandated Benefit Revisited: The Effect of Infertility Mandates. *Journal of Policy Analysis and Management*, 31(1): 63–92.

LaPierre, Tracey A., Christopher J. Conover, James W. Henderson, J. Allen Seward, and Beck A. Taylor. 2009. Estimating the Impact of State Health Insurance Mandates on Premium Costs in the Individual Market. *Journal of Insurance Regulation*, 27(3): 3–36.

Laudicina, Susan, Joan Gardner, and Kim Holland. 2011. State Legislative Healthcare and Insurance Issues, Technical Report: Blue Cross Blue Shield Association.

Monheit, Alan C., and Jasmine Rizzo. 2007. Mandated Health Insurance Benefits: A Critical Review of the Literature, Technical Report: New Jersey Department of Human Services, http://www.cshp.rutgers.edu/Downloads/7130.pdf.

Rothschild, Michael, and Joseph Stiglitz. 1976. Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information. *The Quarterly Journal of Economics*, 90(4): 629–649.

Sloan, Frank A., and Christopher J. Conover. 1998. Effects of State Reforms on Health Insurance Coverage of Adults. *Inquiry: The Journal of Health Care Organization, Provision and Financing*, 35(3): 280–293.

van der Goes, David N., Justin Wang, and Katharine C. Wolchik. 2011. Effect of State Health Insurance Mandates on Employer-Provided Health Insurance. *Eastern Economic Journal*, 37(4): 437–449.