

NOT FOR PUBLICATION

Appendix to "Insurance Mandates and Mammography"

Appendix Table 1 presents descriptive statistics of the key demographic variables as well as for the other screening outcomes used in this analysis for adult women in the BRFSS. Column 1 presents results for all women, while the remaining columns present associated descriptive statistics for age-specific samples of interest: 25 to 34 year old women, 35 to 39 year old women, 40 to 49 year old women, and 50 to 64 year old women. (As in Figure 2, these age groups reflect the modal laws.) We present basic demographic characteristics (e.g., age, race/ethnicity, education, marital status) as well as the fraction of women in each group who had a past year Pap test or clinical breast exam (CBE), neither of which should have been affected by the mammography mandates and thus serve as placebo tests below. The patterns of demographic characteristics across groups indicates that most of the sample for each age group is white non-Hispanic, while about ten percent of the sample is black non-Hispanic, and nine percent of the sample is Hispanic. Educational attainment is predictably higher for younger women compared to the women age 50–64. Over two-thirds of the sample is married and over 85 percent of women report that they have a health care plan. Finally, note that other non-mammography screening levels (past year Pap tests and clinical breast exams) are fairly regularly high across age groups—much higher than the associated mammography rates in Table 1 (in text)—and show the opposite age patterns (i.e., younger women are more likely to obtain these screenings).

In Appendix Table 2 we show that the relationship between mandates for annual mammograms and past year mammography is robust to restricting attention to the sampled years in which we observe outcomes related to clinical breast exams and Pap tests (addressed in Table 5 in the text). In column 1 of Appendix Table 2 we show that over the period 1990–2000 (when questions about clinical breast exams were asked), mammography mandates for annual screenings significantly increased past year mammography rates, and in column 2 we show that the main finding is similarly robust over the period 1988–2000 (when Pap test questions were asked).¹

In Appendix Table 3 we provide further evidence on the robustness of our estimated effects of insurance mandates on past year mammography rates. First, we address issues about

¹ All of the models in Appendix Table 2 include the full set of controls in the triple difference specification.

the unbalanced panel nature of the BRFSS data. Recall that states began participating throughout the late 1980s and early 1990s. Column 1 shows that restricting attention to all states observed continuously from 1989–2000 produces similar estimates to those reported in Table 2.² Column 2 of Appendix Table 3 shows that when we replace the 5-year age group dummy variables with single year of age dummy variables (as well as all of the relevant single-year-of-age-based interaction terms), we obtain very similar results. Column 3 of Appendix Table 3 shows that our consistent findings of significant increases in screenings attributable to mandates for annual mammograms is larger and more precisely estimated for the much more common "cover" mandates than for the small number of "offer" mandates, as expected. Finally, column 4 of Appendix Table 3 shows that our main result also obtains if we ignore the baseline/biennial/annual distinctions among the various mammography benefits and simply control for an indicator variable equal to one if the woman is covered by any type of mammography mandate. Thus, columns 3 and 4 show that more and less involved ways of defining mandates return consistent evidence that the insurance mandates increased mammography use, particularly mandates requiring coverage of annual screenings.

In Appendix Table 4 we provide evidence on the effects of mandates for various subgroups of women in the fully saturated DDD models. Column 1 shows that among white women there were statistically significant increases in past year mammography rates associated with mandates for annual mammograms. Coefficient estimates also indicate meaningful increases in past year mammography associated with these same mandates for non-Hispanic black and Hispanic women, though these estimates are not statistically precise given the smaller sample sizes and are smaller in magnitude if the samples are restricted to non-Hispanic black or Hispanic women with a health plan. In column 4 of Appendix Table 4 we find that the mandates for annual mammograms are estimated to significantly increase past year mammography rates for high school dropouts, although again, not statistically significantly if restricted to the sample of high school dropouts with a health plan. Coefficient estimates on the annual mammogram mandate variable for the other groups of women in columns 5–7 are all positive though none is statistically significant at conventional levels. Notably, however, we also found positive and statistically significant effects of mammography mandates for annual screenings for college

² The same is true when we restricted attention to states in a balanced panel from 1987–2000 or using the balanced panel of states observed in 1987 and 1989–2000 (keeping in mind that the questions were asked to a very small subset of women in 1988).

graduates (coefficient is 0.046) when we restricted attention to women who had a health plan (the group who should have been most directly affected by the policies).³

³ These additional results are available upon request. In Appendix Table 4 we estimate that mandates for biennial mammograms significantly increased past year screenings: non-Hispanic white women, non-Hispanic black women, and women with a high school degree. The statistical significance of these findings, however, goes away when we restricted attention to women with a health plan.

Appendix Table 1
Descriptive Statistics, BRFSS Females

Variable	All ages 25–64	Age 25–34	Age 35–39	Age 40–49	Age 50–64
White non-Hispanic	.762	.722	.749	.769	.806
Black non-Hispanic	.105	.114	.106	.104	.095
Other race non-Hispanic	.035	.040	.037	.036	.027
Hispanic	.094	.120	.105	.086	.068
Less than high school degree	.118	.093	.093	.099	.177
HS degree	.339	.315	.319	.328	.386
Some college	.272	.290	.289	.281	.235
Bachelors degree or more	.270	.301	.298	.290	.199
Married	.679	.636	.710	.709	.681
Widowed/Divorced/Separated	.195	.121	.169	.212	.275
Never married	.103	.204	.095	.061	.037
Living with a partner	.021	.038	.023	.015	.005
Has any health care plan (1990-00)	.859	.824	.856	.874	.882
Had Pap test last year (from 1988)	.695	.774	.703	.674	.624
Had clinical breast exam last year (from 1990)	.697	.723	.680	.683	.691
N	593737	170352	97610	162580	163195

Notes: Author calculations from 1987–2000 BRFSS adult females 25–64 who completed interviews by December 2000. Some of the variables are not defined in some of the years (e.g., health insurance is not asked until 1990). Statistics are weighted. Between 0.1% and 0.3% of observations are missing values for education, marital status, employment status, or health insurance. A larger share is missing household income. Questions about Pap tests and clinical breast exams not asked for all years and all states, and thus are reported for a smaller number of observations than the reported N.

Appendix Table 2:
Mammography Mandate Effects Observed in Same Sample as Available for CBE and Pap
"Falsification" Tests
BRFSS 1987–2000, Adult Women 25–64, DDD

	(1)	(2)
Outcome is →	Mammogram in past year	Mammogram in past year
Sample is →	1990–2000 (when CBE questions asked)	1988–2000 (when Pap test questions asked)
Treated by mandate for baseline mammogram	-.007 (.012)	-.002 (.008)
Treated by mandate for biennial mammogram	.011 (.010)	.017 (.011)
Treated by mandate for annual mammogram	.018** (.008)	.019*** (.007)
Adjusted R-squared	.23	.22
N	535890	571817

Notes: Each column shows the results from a separate DDD regression model with the specification in column 5 of Table 2 (in text) but estimated for a different sample. The sample in column 1 includes the set of states and years in which questions about clinical breast exams were asked. The samples in column 2 includes the set of states and years in which questions about Pap tests were asked. See notes to Table 2 (in text) for list of additional control variables. * significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors throughout are clustered at the state level and estimates are weighted.

**Appendix Table 3:
Robustness Checks – Outcome is mammogram in past year
BRFSS 1987-2000, Adult Women 25-64, DDD Models**

	(1)	(2)	(3)	(3)
	Balanced panel (no 87/88)	Single year of age controls	Cover vs. Offer Specification	Any mandate specification
Treated by mandate for baseline mammogram	-.005 (.009)	-.008 (.009)	--	--
Treated by mandate for biennial mammogram	.015 (.010)	.017 (.011)	--	--
Treated by mandate for annual mammogram	.018** (.007)	.015** (.006)	--	--
Treated by cover mandate for baseline mammogram	--	--	-.008 (.009)	--
Treated by offer mandate for baseline mammogram	--	--	.006 (.013)	--
Treated by cover mandate for biennial mammogram	--	--	.014 (.011)	--
Treated by offer mandate for biennial mammogram	--	--	.020* (.011)	--
Treated by cover mandate for annual mammogram	--	--	.015*** (.005)	--
Treated by offer mandate for annual mammogram	--	--	.009 (.015)	--
Treated by any mammography mandate	--	--	--	.011* (.006)
Adjusted R squared	.22	.22	.22	.22
N	562002	591170	591170	591170

Notes: Each column shows the results from a separate DDD regression model with the specification in column 5 of Table 2 (in text), with the exception that the specification in column 2 includes single year of age dummies and interactions; the mandate variables are split into cover and offer for column 3; and the mandate variables are collapsed into a single any mandate variable for column 4. The dependent variable in each model is equal to one if the woman had a mammogram in the past year. Relevant mandate variables account for the share of the last calendar year the law was in effect. See notes to Table 2 (in text) for description of additional control variables. Sample in column 1 is a balanced set of state year cells (and excludes 1987 and 1988). Columns 2-4 use the full sample of women. * significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors throughout are clustered at the state level and estimates are weighted.

Appendix Table 4:
Results by Demographic Group: Mammography in Past Year
BRFSS 1987-2000, Adult Women 25-64, DDD Models

	(1) White, non- Hispanic	(2) Black, non- Hispanic	(3) Hispanic	(4) Less than high school degree	(5) High school degree	(6) Some college	(7) College degree or more
Treated by mandate for baseline mammogram	-.006 (.010)	-.021 (.036)	-.013 (.040)	.0005 (.024)	-.019 (.021)	.010 (.015)	-.022 (.015)
Treated by mandate for biennial mammogram	.020** (.009)	.054* (.032)	.031 (.045)	.021 (.023)	.037** (.017)	.003 (.018)	-.007 (.018)
Treated by mandate for annual mammogram	.019** (.007)	.024 (.019)	.061 (.049)	.041** (.020)	.002 (.012)	.010 (.017)	.017 (.019)
Adjusted R-squared	.23	.18	.18	.13	.20	.23	.28
N	473842	58011	34891	59541	197322	168298	165303

Notes: Each column shows the results from a separate DDD regression model with the specification in column 5 of Table 2 (in text) but estimated for a different sample. Column 1 sample is non-Hispanic white women; column 2 sample is non-Hispanic black women; and column 3 sample is Hispanic women. Column 4 sample is women with less than a high school degree; column 5 sample is women with exactly a high school degree; column 6 sample is women with some college education; and column 7 sample is women with at least a bachelor's degree. See notes to Table 2 (in text) for list of additional control variables. * significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors throughout are clustered at the state level and estimates are weighted.