INSTITUTE for RESEARCH on POVERTY
UNIVERSITY OF WISCONSIN–MADISON

IRP Discussion Paper

No. 1421-14

Mandating Prescription Contraception Coverage:
Effects on Contraception Consumption and Preventive Health Services

Kerri M. Raissian
Assistant Professor
Department of Public Policy
University of Connecticut
e-mail: Kerri.Raissian@uconn.edu

Leonard M. Lopoo
Associate Professor
Maxwell School
Director, Center for Policy Research
Syracuse University
e-mail: lmlopoo@maxwell.syr.edu

March 2014

We thank Ted Joyce and participants at the 2012 APPAM Fall Conference, the CPR Workshop at Syracuse University, and the Cornell Population Center/Aging Studies Institute Encore Conference for their helpful comments on earlier versions of this paper. We also thank Melissa Kearney for sharing her data on Medicaid waivers. A portion of this research was carried out at a U.S. Census Bureau Research Data Center facility in Ithaca, NY. We thank Warren Brown and Evan Buntrock at the NYCRDC and Nataliya Kravets at NCHS for their help with these confidential data. These results have been screened by the National Center of Health Statistics (NCHS) to avoid revealing confidential data. The results and conclusions of the paper are those of the author(s) and do not indicate concurrence by the Census Bureau or NCHS.

Abstract

While recent national discussions of the Affordable Care Act (ACA) made the introduction of mandated contraceptive coverage within health insurance policies seem like a novel idea, it is not new at all. Since the late 1990s, 29 states have mandated that insurance providers include prescription contraceptive supplies and/or services in their coverage. We use state-level policy variation to generate both difference-in-differences and triple difference estimates to determine if women in states with state-level contraception supply or contraception supply and services insurance mandates experienced changes in their utilization of contraception and preventive health care services. We do not find a relationship between these policies and contraception use; however, our results show an increase in the consumption of preventive health services as a result of these health insurance mandates.

Key words: health insurance, contraception, preventive health care

Mandating Prescription Contraception Coverage:
Effects on Contraception Consumption and Preventive Health Services

I. INTRODUCTION

Due to reproductive as well as other gender-specific differences, women's consumption of preventive healthcare services is often greater than their male counterparts (Asch et al. 2006; DHHS 2001). Moreover, women often require a unique set of preventive healthcare services, especially as it relates to their reproductive health. This increased demand for preventive services causes increased out-of-pocket expenditures for women (Bertakis et al. 2000; Kjerulff et al. 2007). Often out-of-pocket expenditures manifest in the form of insurance copayments and deductibles, and there is evidence that even modest copayments deter women—especially low income women—from consuming preventive services such as pap smears, mammograms (Solanki et al. 2000; Trivedi et al. 2010), and contraception (Kaiser Family Foundation 1998).

Women use oral contraceptives for many health related purposes, the most common of which is to prevent unintended pregnancy (Jones 2011).[1] While there is an array of contraceptive methods from which women may chose, there is variation in the cost and efficacy among available contraceptive options currently approved by the Food and Drug Administration (FDA), which are summarized in Table 1. Over-the-counter (OTC) methods are less expensive but are also often less efficacious in preventing pregnancy than prescription-only methods, which include relatively expensive barrier methods, hormonal methods, implanted devices, and sterilization. Understanding this variation, may help inform the need and rationale for policy interventions, such as insurance subsidies, intended to promote greater access to and use of contraception.

One such policy intervention is the Affordable Care Act (ACA), which now requires many health insurance plans to offer an array of preventive services to women with no cost sharing. Inclusion of FDA

[1]Fifty-six percent of oral contraceptive users also cite non-contraceptive health benefits as a reason for use (Jones 2011).

Table 1: Percentage of Women Experiencing an Unintended Pregnancy in First Year and Cost of Contraceptive Method

Method	Perfect Use	Typical Use	Cost
Over-the-Counter Methods			
Male Condom	2	15	$1–4 per condom
Female Condom	5	21	$4 per condom
Sponge*	9	16	$3–5 per sponge
Spermicide	18	29	$8 per package
Prescription and Service Methods			
Oral Contraceptives	0.3	8	$15–50 per month
Hormonal Patch	0.3	8	$15–80 per month
Vaginal Ring	0.3	8	$15–80 per month
Diaphragm*	6	16	$15–75 lasts 2 years
Cervical Cap*	9	16	$60–75 lasts 2 years
Injection	0.3	3	$15–80 per month
Copper IUD	0.6	0.8	$500–1,000 (several years)
IUD w/ Progestin	0.2	0.2	$500–1,000 (several years)
Implantable Rod	0.05	0.05	$400–800 for 3 years
Female Sterilization	0.5	0.5	$1,500–6,000 (permanent)
Male Sterilization	0.1	0.15	$350–1,000 (permanent)
Emergency Cont.	>75% reduction		$10–70 per use

*Percentages are for Nulliparous Women.

Sources: Cunningham, F. Gary, Kenneth J. Leveno, Steven L. Bloom, John C. Hauth, Dwight J. Rouse, and Catherine Y. Spong. (2010). William's Obstetrics: 23rd Edition. U.S.: The McGraw-Hill Companies, Inc. p. 675; Planned Parenthood website: http://www.plannedparenthood.org/health-topics/birth-control-4211.htm; Food and Drug Administration. August 2012. Birth Control Guide. http://www.co.burke.nc.us/vertical/sites/%7BDF44FA7A-21E3-466A-A30D-00122906F160%7D/uploads/FDA_Birth_Control_Guide-_Updated_August_2012.pdf.

approved contraceptive drugs and devices and annual well-woman visits are two of the seven key preventive services contained within the reform.[2] The inclusion of contraception provision in the ACA has garnered substantial public debate. Despite recent, national attention, this policy is not a new one. Since the late 1990s, 29 states have mandated (either through statute or legislative ruling) that when an insurance plan covers prescription drugs, it must also cover prescription contraception and contraceptive devices (sometimes referred to as "contraception equity"). Additionally, among those 29 states, 19 require insurance policies to cover contraceptive services, which includes examinations and other services related to contraceptive use. To date, the effects of these mandates and the resulting expanded coverage are unknown, and this gap in the literature serves as our primary motivation for this paper. Specifically, we ask if mandated contraception coverage within private health insurance policies 1) alters the likelihood of a variety of contraceptive choices and 2) affects complementary health services utilization, e.g., pap smears or pelvic examinations which are often performed when prescribing contraception (Henderson et al. 2010), for women in the United States. Investigating the effects of state-level private health insurance mandates could inform the national debate by providing some evidence for the effects one might expect following implementation of the ACA.

While the implications of mandating prescription coverage might seem to automatically imply increased use, the actual behavioral response is difficult to predict. If a woman's out-of-pocket cost of contraception is reduced via an insurance subsidy, then one would expect her to increase her consumption of prescription contraception. In particular, if the cost prohibited her from using her preferred method, then following the receipt of insurance coverage, she might change to another form of contraception. However, ambiguity surrounding the predicted effect of the mandates arises when one considers the population most likely to be affected. The policy only changes the cost of contraception for those with

---

[2]The other main preventive services included in the legislation are screening for gestational diabetes, Human Pappilomavirus DNA testing, domestic violence screening and counseling, HIV screening and counseling for sexually transmitted infections and diseases, and breastfeeding supplies.

private insurance, and most private insurance is provided through an employer. Women with insurance obtained through employment, all else equal, are likely to have higher education levels relative to women who do not have insurance or who have publically provided insurance. If true, then women with private insurance are probably more likely to use more effective methods of contraception to control their fertility (Martinez et al. 2012). While this could mean privately insured women would be particularly responsive to a policy that lowers the cost of contraception, it may also imply that these policies crowd-out privately financed contraception, i.e., that the women most likely to be affected by this policy are already privately financing their contraception because they have a relatively high and inelastic demand for contraception. Under these circumstances, mandates would simply change how women acquire or pay for contraception, but would not lead to a change in their contraceptive use.

In order to obtain prescription contraception, women must first see a health care provider. This could facilitate increased interaction between women and the health care system, potentially improving women's health more generally. In particular, one might expect to see an increase in other preventive services such as annual well-woman visits, pap smears, pelvic examinations, and counseling around more general sexual health issues. If contraceptive mandates act as a conduit for women's consumption of other preventive services, then this would be a positive externality of the policy.

Overall, we do not find evidence that women change their contraceptive consumption following the adoption of a contraception mandate. We do, however, find that women in states with mandates that cover contraceptive healthcare services are more likely to access services, such as pap smears and pelvic examinations. This paper proceeds in the following manner. In Section 2, we overview the literature, and in Section 3, we provide detail about the health insurance mandates and the states that adopted them. Next, we describe our data in Section 4 and our methods and empirical strategy in Section 5. We present our results in Section 6 and conclude in Section 7.

II. LITERATURE REVIEW

Much of the literature surrounding the topic of contraception investigates the relationship between improved access to contraception and contraceptive use. This improved access may take the form of legalization, removing geographic barriers, educating consumers—especially young consumers, or lowering the price of contraception. The literature consistently shows that improved access to contraception leads to an increase in contraceptive use. Bailey (2006) uses variation in state consent laws to understand how the legalization of *Envoid* (the first birth control pill) changed the timing of births. She finds that legalization and the subsequent increased consumption of oral contraception led to delayed births and increased labor force participation. She notes that oral contraception (or "the pill") was an attractive method of contraception in the 1960s because a woman could take the pill independent of her partner and long before she had intercourse. In addition, the pill was far more efficacious than other contraceptive methods available at the time. These reasons remain largely true today and also apply to contraceptive devices. According to Cunningham et al. (2010), the pill remains one of the most efficacious forms of contraception (even when one factors in "typical" versus "perfect" use), and, therefore, one would expect improved access to prescription contraception to continue to be an attractive option for women seeking to control their fertility.

Due to the important policy implications of teen pregnancy, many studies surrounding contraceptive access focus on teen pregnancy outcomes. Kirby (2001) summarizes these studies finding that as contraception (including condoms) is made more easily accessible to teen women, they are more likely to use contraception but are not more likely to increase their level of sexual activity. Contraception is usually made available through a school-based or school-linked clinic (thus removing geographic barriers to obtaining contraceptives), and contraception is often provided at little or no cost to teen women. The most successful programs are ones that include services and education which provide information about contraceptive use, STI/D transmission, and contain discussions about the teens' sexual behavior.

A couple of studies use expansions of the Medicaid Family Planning Program to identify both effects on contraception and preventive health services consumption. Kearney and Levine (2009) employ the National Survey of Family Growth (NSFG) to assess the impact of state-level Medicaid family planning service expansions on contraceptive use and sexual frequency. They use demographic variables in the NSFG to help isolate the respondents most likely to be affected by the policy change. Following increased access to contraceptive supplies through Medicaid expansions, they find non-teen women increased their contraceptive use, while the estimates among teen women are imprecisely measured. Wherry (2013) asks if expansions of the family planning services component of Medicaid, which include preventive healthcare services, had any impact on the likelihood that women receive breast and cervical cancer screenings as well as tests for sexually transmitted infections among women. She uses data from the Behavioral Risk Factor Surveillance System from 1993 to 2009, and finds an increase in the likelihood of cervical cancer screening (approximately 19 percent) and breast cancer screening (almost 15 percent).

More directly relevant, two recent studies ask about changes in contraceptive behaviors following the introduction of state-level private health insurance contraception mandates. Magnusson et al. (2012) use the 2006–2008 wave of the National Survey of Family Growth and find that privately insured women in mandate states were more likely to use contraception consistently than women in nonmandate states. Atkins and Bradford (2014) use the Behavioral Risk Factor Surveillance System (BRFSS) surveys between 1998 and 2010 in their analysis. They restricted their sample to five states—two that implemented contraceptive mandates (Delaware and Iowa) and three that did not (Kentucky, Nebraska, and South Dakota)—that asked comprehensive information on family planning in the BRFSS during their study window. Atkins and Bradford first show that living in Delaware of Iowa after the insurance mandate was enacted is positively related to the likelihood of using an effective contraception method. Among those women who were using an effective method, living in Delaware or Iowa was positively associated with use of the pill, but unrelated to condoms or "other" prescription methods.

We build on this earlier literature and make several important contributions. First, like Magnusson et al. (2012), we use data from all states making our results more nationally representative. Second, following Atkins and Bradford, we use variation in the policy variable across time to identify policy effects. In addition to incorporating some of the strengths of both studies, we add several new components. Neither previous study makes the distinction between states that mandate coverage of contraceptive supplies and states that mandate coverage of both supplies and services provided to accompany family planning (See next section for more detail). We argue that there are effectively two treatment groups among mandate states. Previous work lumps both treatment groups together. Because the extant literature does not make this distinction, this study represents the first estimates, of which we are aware, of the relationship between these mandates and preventive health services consumption. As we show below, these mandates have potentially important preventive health care benefits.

III. STATE-LEVEL MANDATES

During the period we investigate in this study, 29 states have either a statute or legal ruling requiring that private insurance policies that cover prescription drugs generally also cover prescription contraceptive drugs and devices that have been approved by the FDA.[3] The FDA approves both OTC contraception and methods requiring a prescription and/or administration by a service professional. These methods and relevant characteristics (i.e., likelihood of pregnancy with use, cost, and if the method entails a service component beyond an annual exam) are summarized in Table 1. In some sense, all prescription contraception methods have a service cost attached to them. For example, many physicians require an annual exam before they will prescribe oral contraception to their patients (Sonfield and Gold 2004; Henderson et al. 2010). While an exam would certainly involve a service cost, in Table 1, we indicate if a

[3]The mandate was issued via an administrative ruling in Michigan and an attorney general opinion in Montana. In both states, the ruling found that failing to cover contraception differentially affected women, as only women can become pregnant. The rulings argue failure to cover contraception violates women's civil rights under Title VII.

particular contraceptive method has a service cost beyond this annual exam to highlight the additional expenses associated with certain methods of contraception.

A few things are apparent from Table 1. First, OTC methods and prescription methods vary in cost and efficacy. While prescription methods may be cost effective over time, they often require a large upfront cost that may be prohibitive, especially among low-income women. Second, Table 1 illustrates that the more efficacious methods are prescription methods. Third, these methods frequently require outpatient contraceptive services beyond an exam.

These "services" can be costly and to address this additional medical expense, the majority (19 out of 29) of mandates also require insurance policies cover these related services. As an example, Arizona's statute defines these services as the following:

> "[O]utpatient contraceptive services" means consultations, examinations, procedures and medical services provided on an outpatient basis and related to the use of the United States food and drug prescription contraceptive methods to prevent unintended pregnancies. (Arizona Revised Statute 20-2329)

While each state created its own statute, the language concerning the services component is strikingly similar across states. The services component covers a wide range of health care expenses. As highlighted in Table 1, certain contraceptive options require a health care professional to administer or insert the contraception (often referred to as long-acting reversible contraception). Methods requiring this type of care are often more efficacious, and the services component may be especially valuable for women who prefer long-lasting reversible methods (injections, IUDs, implants) or methods that are meant to be permanent (sterilization). In many instances it would be hard for a woman to consume contraception without the accompanying service, and when states package these goods together, it probably increases the demand for both. It seems highly likely that if the cost of contraception is prohibitive for women, then the service fee is probably similarly prohibitive.

Many women often get a pap smear or pelvic examination (outcomes that we include in our study) as a pre-cursor to their health care provider writing their contraception prescription. These services are also covered by the supply and service mandates. One might view these services and contraception as

complements since about 45 percent of clinicians usually require these examinations (Henderson 2010). Therefore, insurance mandates, and in particular mandates that cover both supplies and services, could affect women's health care consumption by encouraging women to switch from an OTC method to a prescription contraception method, encouraging women to switch to a prescription contraception method that requires a service beyond an examination (like and IUD), or encouraging women to retain their current contraceptive method but to begin to take advantage of pap smears or pelvic examinations that were previously cost prohibitive.

We also note that the contraceptive mandate legislation does not require women to actually consume contraception in order for her preventive health related services to be covered by her private insurance policy. Therefore, it is also possible that some women take advantage of the contraceptive service component of an insurance mandate without having to also consume contraceptive supplies.

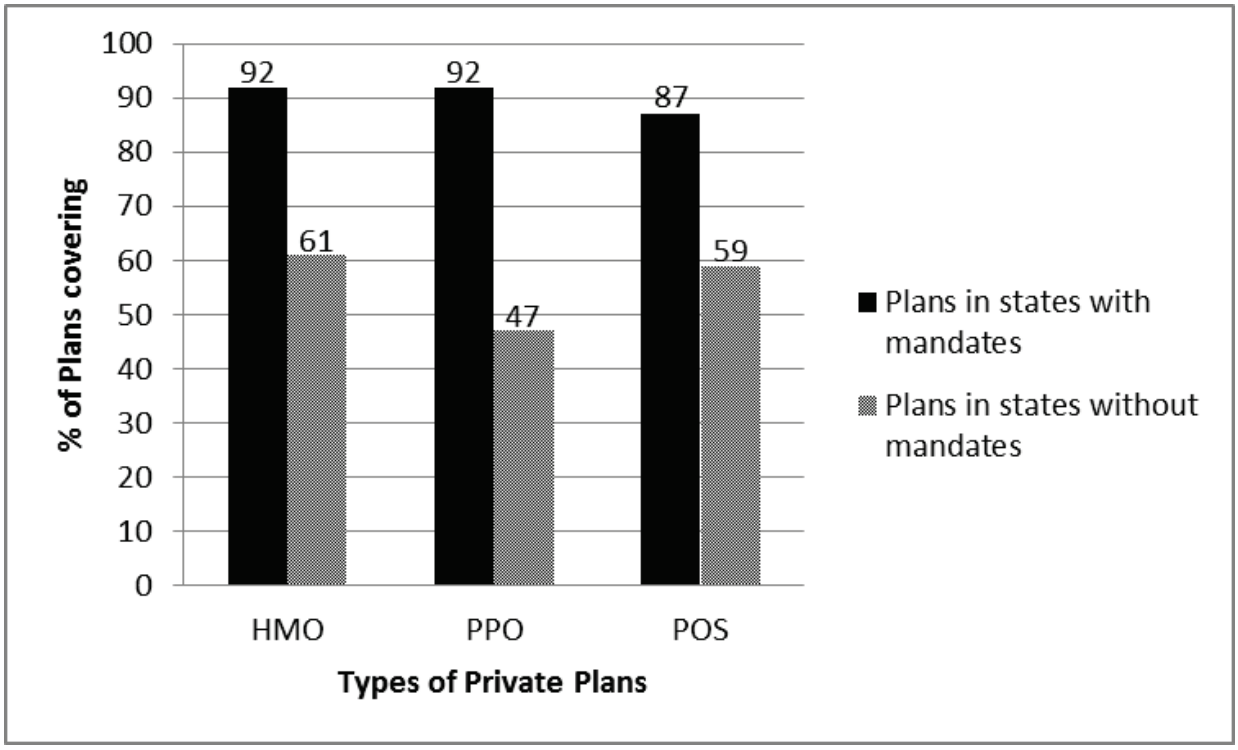
We view these two types of mandates as distinct policies, and in our empirical strategy, we will define them as two distinct treatments. Table 2 classifies states by their mandate status—states without mandates (22 states, which includes DC), states mandating contraception supplies (10 states), and states mandating contraception supplies and related services (19 states). One might ask if states with mandates have greater contraception coverage than states without the mandates. Work by Sonfield et al. (2002) compares contraceptive coverage among employer-provided insurance plans, and they find that insurance plans in states with mandates are 29 to 45 percentage points more likely to include contraception coverage (their results are summarized in Figure 1). Of course, we do not know if this increased coverage is a response to mandates, if mandate states always had higher coverage, or if some other factor besides the mandates led to mandate states having higher coverage. Our work and identification strategy assumes that contraceptive coverage expanded after the mandates were enacted.[4]

[4]We are not aware of a data set that would allow us to formally test this assumption.

Table 2: Overview of States with Mandates

States Without a Mandate	States Mandating Contraception Supplies	States Mandating Contraception Supplies and Related Services
Alabama	Arkansas	Arizona
Alaska	California	Delaware
Florida	Colorado	Hawaii
Idaho	Connecticut	Illinois
Indiana	Georgia	Iowa
Kansas	Nevada	Maine
Kentucky	New Jersey	Maryland
Louisiana	New Mexico	Massachusetts
Minnesota	New York	Michigan
Mississippi	Rhode Island	Montana
Missouri		New Hampshire
Nebraska		North Carolina
North Dakota		Oregon
Ohio		Texas
Oklahoma		Vermont
Pennsylvania		Virginia
South Carolina		Washington
South Dakota		West Virginia
Tennessee		Wisconsin
Utah		
Washington, DC		
Wyoming		
21 States + DC	**10 States**	**19 States**

Figure 1: Contraception Coverage Among Employer-Provided Insurance Plans: By State Mandate Status



Source: Sonfield A, RB Gold, JJ Frost, and JE Darroch. 2004. "US insurance coverage of contraceptives and the impact of contraceptive coverage mandates, 2002." *Perspectives on Sexual and Reproductive Health.* 36(2): 72–79; Table 2. Table modified from Sonfield, A and RB Gold. June 2004. "New Study Documents Major Strides in Drive for Contraceptive Coverage." *The Guttmacher Report on Public Policy*, p.5.

There are two key differences between state mandates we study in this paper and the contraceptive mandates written into the ACA. The ACA affects more insurance policies, and by extension more policyholders, and the ACA provides a more generous contraception subsidy than state mandates. Self-insured employers are legally excluded from state-level mandates by the federal Employee Retirement Income Security Act (ERISA) of 1974. Also, state mandates only apply to insurance policies that provide coverage of other prescription drugs,[5] and many states provide some sort of religious exemption.[6] We note, however, that while a plan may be legally excluded from the mandate, there may be pressure to cover contraception supplies and related services if competing policies within the state are extending this coverage (Sonfield and Gold 2004). State mandates allow cost sharing so long as the policy holder's out-of-pocket expenses do not exceed the out-of-pocket expense related to prescription drugs or devices in a similar drug class or formulary. The ACA does not allow for any cost sharing. Therefore, to the extent that the state-level mandates are able to predict the effect of the ACA, the estimates from state-level mandates should be viewed as conservative estimates.

Are the Mandates Endogenous to Private Insurance Coverage?

In many of our empirical models, we will analyze the contraceptive choices of women with private health insurance—the group targeted by the policy. However, we recognize that by selecting only women with private health insurance we are implicitly assuming that women do not purchase private health insurance coverage to take advantage of the contraception policy. As the cost of health insurance likely exceeds the cost of contraception, this assumption seems reasonable, but nevertheless, we employ an empirical test to examine our hypothesis. We used a state-level panel from 1989 through 2009 using

[5]This provision does not likely exclude many plans from the mandate. A 2011 Department of Labor report estimates that almost all plans include prescription medications in their insurance plans.

[6]At present, the extent to which the ACA will allow for religious exemptions is unclear due to pending legal actions in various federal courts.

data from the March CPS. We have a sample of women aged 15–44 in each year creating a total sample of over 780,000 women. We estimate a linear probability model regressing an indicator for private health insurance coverage on the mandated health insurance coverage policy variables; a set of indicators for race/ethnicity and a set for age as well as an indicator if the respondent was married; a linear measure of the individual's educational attainment and number of children (0, 1, 2 or more); the state poverty rate; the state unemployment rate; an indicator for state mandates for coverage of infertility treatments in health insurance policies; and state and year indicator variables. We show results both with and without linear state-time trends in Table 3.

In the first two columns, we report the association between the health insurance mandates and the likelihood that an individual has private health insurance only. In columns three and four, we include those individuals who have private health insurance combined with some form of public health insurance. Regardless of the model chosen, we do not find evidence that individuals are more or less likely to purchase private health insurance after the health insurance mandates were implemented, which makes this assumption plausible.

Another potential threat to our design is that upon passage of contraceptive mandates, firms either self-insure or drop health insurance from their employee benefits in order to avoid compliance. Previous evidence by Gruber (1994) finds that few firms adjust in this way. Furthermore, such scenarios seem unlikely when one considers the cost of compliance relative to the alternatives. A 2012 DHHS brief provides a review of actuarial studies showing that the cost of adding contraceptive coverage does not add more than approximately 0.5 percent to premiums and likely has cost savings beyond this due to averting unintended pregnancies.

IV. DATA

Our data regarding contraception use and preventive health services come from the National Survey of Family Growth (NSFG). We use data from the 1995, 2002, and 2006–2010 survey waves, which contain 10,847, 7,643, and 12,279 female respondents respectively, effectively creating a repeated

Table 3: Linear Probability Model of Probability of Private Health Insurance Coverage

	Private Health Insurance Only		Private and Public Health Insurance	
Supply States	0.013	0.008	0.014	0.014
	(0.008)	(0.12)	(0.007)	(0.011)
Supply and Service States	-0.001	-0.005	0.000	-0.005
	(0.005)	(0.009)	(0.006)	(0.009)
Sample Size	784,255	784,255	784,255	784,255
State Fixed Effects	Yes	Yes	Yes	Yes
State-Linear Trends	No	Yes	No	Yes

Notes: * $p < 0.05$; ** $p < 0.01$; Data from March CPS 1989–2009. Models contain all individual level covariates described in text. Regressions are weighted by the person weight. Standard errors are clustered at the state level.

cross-section with varying intervals between observations. Since some groups are oversampled, we employ sampling weights to produce representative statistics. State identifiers are suppressed in the public use files, but identifiers are available to researchers approved by the National Center for Health Statistics via a Census Research Data Center.

The NSFG asks several questions that allow us to measure changes in women's contraceptive consumption. The survey asks women what method of contraception (condoms, oral contraceptives, injectables, natural family planning, etc.) they used during their last sexual intercourse act and allows women to select multiple types of contraception (for example, a woman might use birth control pills to protect against pregnancy and a condom to protect against STD/Is). We used this information to construct several outcome variables, which all take the form of dummy variables. The first is a variable equal to one if a woman uses a contraceptive method that relies on OTC methods (such as condoms or spermicides) or natural methods (such as the calendar method, rhythm method, or withdrawal method) and zero otherwise. The next is a variable equal to one if a woman uses a method that requires a prescription but does not require an additional health service (such as contraceptive pills and other hormonal methods like patches) and zero otherwise. Finally, we constructed a variable equal to one if a woman uses a contraceptive method that would require a health service (such as IUD implantation, a diaphragm fitting, etc.) and zero otherwise. We also created a variable which combines the latter two variables and thus is equal to one if a woman uses any type of prescription contraception and zero otherwise.

In addition, the survey asks women about their consumption of sexual health services. In particular, we are interested in three measures of sexual health—as we believe women who are seeking prescription contraception are likely to obtain these services during their annual exam (a frequent pre-cursor to contraception). In particular, the NSFG asks women if they had a pap smear, pelvic exam,

and/or a test for a venereal disease or sexually transmitted infection (STD/I) within the last 12 months.[7] As before, with each of the three services we create three distinct variables equal to one if the woman had the service and zero otherwise.

Finally, the survey also collects a range of individual level demographic variables. We are able to control for the respondent's age, and we created indicator variables to control for her religion (no religion stated, protestant, Catholic, and other religious preference), education (less than high school, high school or GED, some college, and college or college and beyond), race (white, non-Hispanic, black, non-Hispanic, other, non-Hispanic, and Hispanic), and marital status (married, single, a collapsed category of separated, divorced and widowed). We also controlled for state level income and postpartum duration Medicaid eligibility expansions. Melissa Kearney provided us with information about these policy changes and these data update Kearny and Levine (2009). Finally, the data identifies the respondent's insurance status (private insurance, public insurance, and no insurance), which we use for sample selection and treatment assignment in our models.

We used three sources to collect the state mandate variable: the Guttmacher Institute, the National Council of State Legislatures (NCSL), and a review of each state statute (retrieved through WestLaw). The Guttmacher Institute classifies each state mandate as a "supplies" mandate or a "supplies and services" mandate. Our own reading of the statutes almost always agreed with the Guttmacher Institute's interpretation of the statute. The main benefit of consulting the state statutes was to collect the "effective" date of the policies. While statutes were enacted in a given year, many states allowed insurers six months to a year before they were required to cover contraceptive supplies or services. We consider this latter date to be the effective date, and this is the year we use to turn the policies "on."

---

[7]Other outcomes, such as breast exams, were asked in various surveys but none was asked continuously making them impractical for our analyses.

V. METHODS

To estimate the effect of the mandates on women's contraceptive consumption and consumption of health care services, we use a difference-in-differences (DD) model. We recognize that two potential treatment groups exist: women who reside in states with contraceptive supplies (CS) mandates and women who reside in states with contraceptive supplies and services (CSS) mandates. Women in non-mandate states serve as a comparison group. In our DD models, we only include women with private insurance, as these are the women most likely to be affected by the policy change. The DD model will reveal the mean difference in the probability that women in CS or CSS states will use a particular contraception or consume a particular health service relative to women in states without either mandate. Our regression model can be expressed as follows:

2) $$Y_{ist} = \alpha_0 + \alpha_1 CS_{ist} + \alpha_2 CSS_{ist} + \mathbf{X_{ist}}'\boldsymbol{\gamma} + \lambda_s + \theta_t + \lambda_s * \text{survey year} + \varepsilon_{ist},$$

where Y is equal to one of the outcome variables previously described (either her contraceptive method or health care service consumption), α_s is a state fixed effect, and θ_t is a time fixed effect, which is characterized by the survey year. The vector **X** represents a set of control variables, including the respondent's age, race, religion, marital status, and if her state has passed a Medicaid eligibility expansion. We also report results with (λ_s*survey year) and without state level linear time trends. The coefficients for CS and CSS are difference-in-differences (DD) estimates previously described. We run this model for all contraceptive outcomes and all health service outcomes for our total population of privately insured women. Descriptive statistics for this sample can be found in Table 4.

Because low socioeconomic status (SES) women with health insurance may have larger behavioral responses than high SES women due to the relatively high cost of prescription contraception and preventive health services, we also disaggregate our estimates by women's educational attainment. We define low SES women as those whose highest level of educational attainment is a high school diploma or equivalency. High SES women completed some college, have a college degree, or completed some graduate-level education.

Table 4: Means and (Standard Deviations) for Those with Private Insurance Coverage

	Full Sample	Any Mandate	No Mandate	Supply Mandate	Supply and Service Mandate
Pap Smear in Past 12 Months	0.656	0.656	0.656	0.641	0.667
	(0.475)	(0.475)	(0.475)	(0.480)	(0.471)
Pelvic Exam in Past 12 Months	0.627	0.628	0.625	0.605	0.644
	(0.484)	(0.483)	(0.484)	(0.489)	(0.479)
Pap or Pelvic in Past 12 Months	0.68	0.683	0.676	0.666	0.695
	(0.466)	(0.465)	(0.468)	(0.472)	(0.461)
STD/I Test in Past 12 Months	0.108	0.116	0.096	0.119	0.114
	(0.311)	(0.320)	(0.294)	(0.323)	(0.317)
Contraceptive Method is OTC or Natural	0.206	0.221	0.179	0.234	0.212
	(0.404)	(0.415)	(0.383)	(0.424)	(0.409)
Contraceptive Method is Pill	0.195	0.196	0.193	0.176	0.209
	(0.396)	(0.397)	(0.395)	(0.381)	(0.407)
Contraceptive Method is Prescription	0.034	0.034	0.034	0.038	0.032
	(0.182)	(0.182)	(0.181)	(0.190)	(0.177)
Method is Pill or Prescription	0.220	0.230	0.226	0.214	0.241
	(0.420)	(0.421)	(0.418)	(0.410)	(0.428)
Age	30.43	30.39	30.5	30.46	30.35
	(8.687)	(8.667)	(8.724)	(8.717)	(8.633)
Parity	1.139	1.089	1.228	1.108	1.076
	(1.306)	(1.281)	(1.345)	(1.310)	(1.260)
Married	0.511	0.494	0.541	0.489	0.498
	(0.500)	(0.500)	(0.498)	(0.500)	(0.500)
Separated/ Divorced/ Widowed	0.094	0.094	0.094	0.091	0.096
	(0.292)	(0.292)	(0.292)	(0.287)	(0.295)
Single	0.395	0.411	0.365	0.42	0.405
	(0.489)	(0.492)	(0.481)	(0.494)	(0.491)
No Religion Stated	0.14	0.156	0.112	0.159	0.154
	(0.347)	(0.363)	(0.316)	(0.365)	(0.361)
Protestant	0.353	0.352	0.354	0.351	0.354
	(0.478)	(0.478)	(0.478)	(0.477)	(0.478)
Catholic	0.439	0.421	0.472	0.402	0.435
	(0.496)	(0.494)	(0.499)	(0.490)	(0.496)
Other Religious Preference	0.067	0.07	0.062	0.088	0.057
	(0.250)	(0.255)	(0.242)	(0.284)	(0.232)
Hispanic	0.099	0.129	0.044	0.185	0.091
	(0.298)	(0.335)	(0.206)	(0.388)	(0.288)
White, Non-Hispanic	0.735	0.692	0.812	0.614	0.745
	(0.441)	(0.462)	(0.391)	(0.487)	(0.436)
Black, Non-Hispanic	0.113	0.113	0.113	0.12	0.109
	(0.317)	(0.317)	(0.317)	(0.325)	(0.311)
Other, Non-Hispanic	0.053	0.066	0.03	0.081	0.055
	(0.224)	(0.248)	(0.171)	(0.273)	(0.229)
Less than High School	0.177	0.178	0.177	0.196	0.166
	(0.382)	(0.383)	(0.381)	(0.397)	(0.372)
High School/ GED	0.209	0.194	0.238	0.188	0.197
	(0.407)	(0.395)	(0.426)	(0.391)	(0.398)
Some College	0.324	0.326	0.32	0.324	0.328
	(0.468)	(0.469)	(0.467)	(0.468)	(0.469)
College or College Plus	0.289	0.302	0.266	0.292	0.309
	(0.453)	(0.459)	(0.442)	(0.455)	(0.462)

(table continues)

Table 4, continued

	Full Sample	Any Mandate	No Mandate	Supply Mandate	Supply and Service Mandate
Full-time Work Status	0.482	0.478	0.489	0.462	0.489
	(0.500)	(0.500)	(0.500)	(0.499)	(0.500)
Part-time Work Status	0.21	0.21	0.21	0.202	0.216
	(0.408)	(0.408)	(0.407)	(0.401)	(0.412)
Temporarily Away from Work	0.042	0.04	0.046	0.042	0.039
	(0.200)	(0.196)	(0.209)	(0.200)	(0.193)
Out of Work	0.024	0.025	0.022	0.028	0.023
	(0.153)	(0.156)	(0.146)	(0.165)	(0.150)
Not in Labor Force	0.242	0.246	0.234	0.266	0.233
	(0.428)	(0.431)	(0.423)	(0.442)	(0.423)
Medicaid Income Expansion	0.269	0.337	0.147	0.388	0.303
	(0.443)	(0.473)	(0.354)	(0.487)	(0.459)
Medicaid Eligibility Expansion	0.142	0.123	0.177	0.096	0.141
	(0.349)	(0.328)	(0.382)	(0.295)	(0.348)
Sample Size	20,610	13,991	6,619	5,810	8,181

Note: Person weights were used to calculate means and standard deviations.

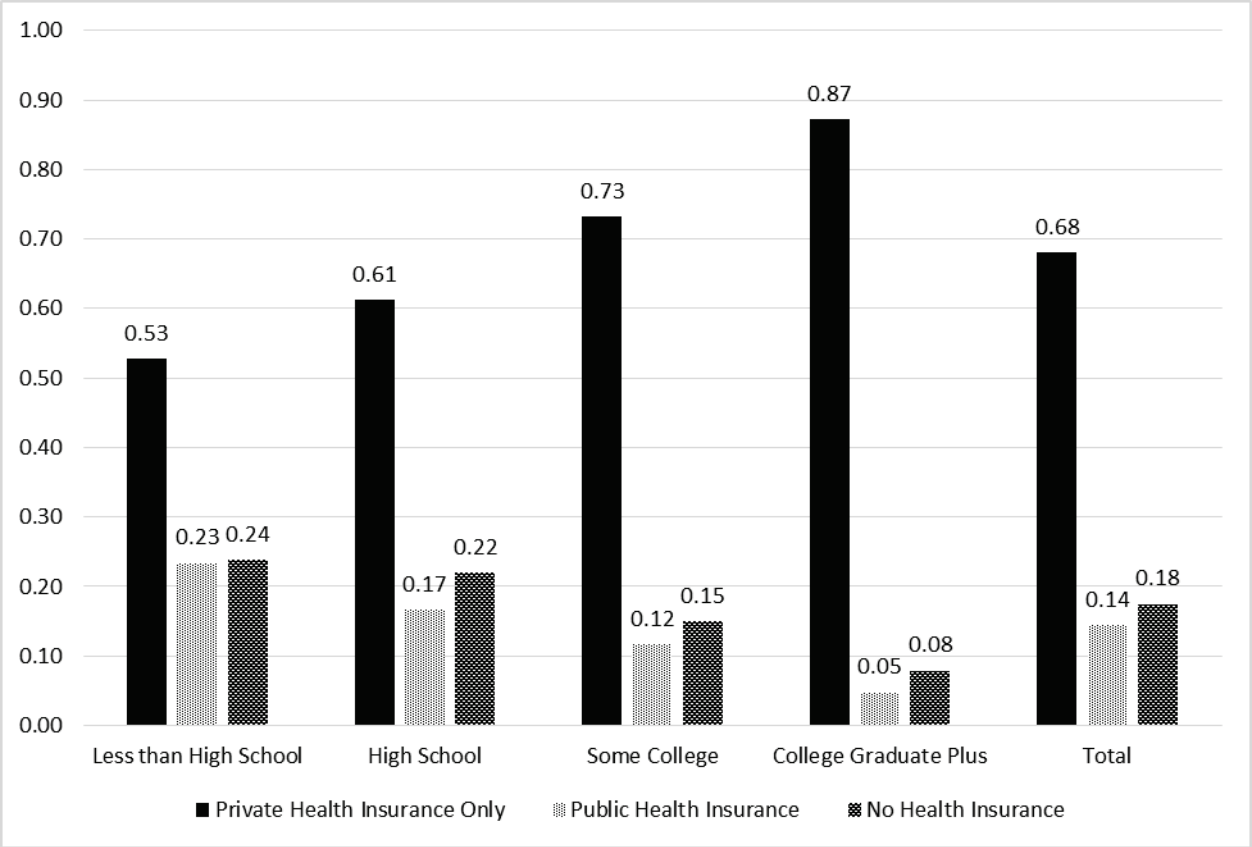
While comparing similar women in states with a mandate to women in states without a mandate can be informative, an appropriate within state control group would be ideal as it would potentially reduce omitted variable bias that could arise from other state policies or other health care initiatives that affect all women within the same state. We selected women that do not have private insurance as our within state control group, and also estimate a difference-in-difference-in-differences model (DDD). This model asks if the difference in the outcome among privately insured and non-privately insured women in mandate states is any different from the difference in the outcome among privately insured and non-privately insured women in non-mandate states. For example, states with contraception mandates may have public health care campaigns that encourage all women to increase their preventive health care. Observing an increase in preventive health care among women in these states may not be due to the health insurance mandates but instead due to the public messages. By comparing women within the same state, any differences observed within state cannot be due to the intrastate message effects or any other factors common to women within the same state. As with the DD models, we disaggregate our results by the woman's educational attainment. In all models, we cluster the standard error at the state level to correct for serial correlation.

VI. RESULTS

Before we present our results, it is important to determine what proportion of Americans have private health insurance. If this number is low, then one might not expect to see much of a policy effect simply because the number of women "treated" by the policy is quite small. Furthermore, the likelihood that someone has private health insurance may differ by education level. If high SES women are the only individuals with private health insurance, for example, we may observe that women with private health insurance consume contraception at the same rates as before the mandate, they simply no longer have to pay for the contraception out-of-pocket, i.e., that there is no discernable contraception effect.

Figure 2 reports results from the CPS using data from 1989 through 2009 for all women aged 15–44 and for women by education level. These data show that a majority of women (68 percent) have

Figure 2: Proportion of Women 15–44 by Health Insurance Category



Source: Authors' calculations using the March CPS from 1990–2009 for women aged 15–44.

private health insurance regardless of their level of education. For women who have not completed high school, 53 percent have private health insurance, and 61 percent of high school graduates have private health insurance. For women with a college education, 87 percent have private health insurance. Given the large proportion of women who are subject to the "treatment", i.e., have private health insurance, we believe it reasonable to expect to identify health insurance mandate effects, should they exist.

Contraceptive Outcomes

We first describe how the mandates affect women's choice of contraception. In particular, we ask if the mandates changed the probability women use OTC methods, prescription methods that do not require a service (mainly hormonal methods), prescription methods that do require a service, or any type of prescription method?

The top panel of Table 5 provides results from Model 1 with and without state specific linear time trends. Among all privately insured women, the mandates in the CS states do not seem to have an effect on contraceptive use.[8] The estimated coefficients imply small changes, and all are statistically insignificant. In CSS states, however, women with private health insurance are 3 percentage points less likely to use OTC methods than women in non-mandate states, and the difference is significant at the 5 percent level. One would expect this reduction in OTC methods, assuming a constant level of contraceptive use, would translate into increases in methods that are covered. While coefficients estimates for the effect of prescription methods (those not requiring and those requiring a service) are positive, neither model yields a significant estimate.

The lower panel of Table 5 disaggregates respondents into low (less than or equal to high school completion) and high levels (more education than high school completion) of education. These results suggest that women with low educational attainment are more responsive to the contraceptive mandates

[8]While we would prefer to estimate these models by race/ethnicity, due to very small subgroups, we are only able to perform these analyses for all racial groups combined.

Table 5: Difference-in-Difference Models Among Privately Insured Respondents. Contraceptive Outcomes

All Women

	Over the Counter/ Natural Methods		Pill, Hormonal Method, Or Requires Service		Contraceptive Pill or Hormonal Methods		Method Requiring Service	
Supply Mandate States	-0.015	0.003	0.010	0.033	0.023	0.034	-0.012	0.000
(DD Estimate)	(0.015)	(0.026)	(0.012)	(0.032)	(0.012)	(0.029)	(0.006)	(0.011)
Services Mandate States	-0.009	-0.03*	0.006	0.017	0.010	0.012	-0.006	0.005
(DD Estimate)	(0.011)	(0.013)	(0.017)	(0.039)	(0.014)	(0.031)	(0.007)	(0.013)
Trend Included	No	Yes	No	Yes	No	Yes	No	Yes
Sample Size	20,610	20,610	20,610	20,610	20,610	20,610	20,610	20,610

Disaggregated By Education Status

	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed
Supply Mandate States	0.067	-0.030	0.151**	-0.027	0.129**	-0.017	0.022	-0.008
(DD Estimate)	(0.040)	(0.034)	(0.046)	(0.048)	(0.047)	(0.045)	(0.019)	(0.009)
Services Mandate States	-0.087*	-0.009	0.039	-0.001	0.034	-0.004	0.005	0.003
(DD Estimate)	(0.034)	(0.023)	(0.059)	(0.043)	(0.055)	(0.029)	(0.017)	(0.018)
Trend Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample Size	8,246	12,364	8,246	12,364	8,246	12,364	8,246	12,364

Notes: * $p < 0.05$; ** $p < 0.01$; Models contain women who have private health insurance. Models contain all individual level covariates described in text. Regressions are weighted by the person weight. Standard errors are clustered at the state level.

when compared to women with higher levels of education. In particular, women in CS states are approximately 15 percentage points more likely to use a contraceptive method which requires a prescription. Moreover, this change seems to be isolated to an increase in pill or hormonal methods, or methods that do not require an additional service component. Similarly, women in CSS states with low educational attainment are less likely to use OTC or natural methods following the adoption of mandates. Our findings suggest a 8.7 percentage point decline in the probability of OTC/natural methods. While some of this reduction may be offset by increases in prescription methods, the DD coefficients for all categories of prescription methods are not statistically significant.

As explained earlier, we are concerned that the DD models suffer from bias due to factors that are different between mandate and nonmandate states; therefore, we do not emphasize these results. Next, we employ a DDD model, which utilizes within state variation to identify mandate effects, since only privately insured women are eligible to receive contraception supplies and/or services while women without private insurance are not. Our results pertaining to contraceptive use can be found in Table 6. In CS states, we find no statistically significant change in the use of contraceptive outcomes methods, regardless of type, although all of the coefficient estimates are negative. Similarly, we find no statistically significant change in contraceptive use among women with private health insurance in CSS states. Disaggregating the models by women's educational attainment does not reveal different responses either. Overall, then, we do not find any consistent evidence of a contraception effect created by these private insurance mandates.

Health Services Outcomes

We also investigate if the mandates led to an increase in health care utilization, and in particular we observe changes in the likelihood that a woman received a pap smear, pelvic exam, or STI/D test in the past 12 months. As before, we start by presenting results from our DD model and then move into results from the DDD model.

Table 6: Difference-in-Difference-in-Difference Results: Contraception Outcomes

	Over the Counter/ Natural Methods	Pill, Hormonal Method, or Requires Service	Contraceptive Pill or Hormonal Methods	Method Requiring Service
Supply Mandate States	-0.013	-0.039	-0.016	-0.025
(DDD Estimate)	(0.033)	(0.028)	(0.021)	(0.020)
Services Mandate States	-0.015	0.027	0.03	-0.004
(DDD Estimate)	(0.026)	(0.021)	(0.024)	(0.016)
Sample Size	30,132	30,132	30,132	30,132

Disaggregated By Education Status

	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed
Supply Mandate States	-0.056	0.043	-0.01	-0.056	0.02	-0.068	-0.03	0.01
(DDD Estimate)	(0.056)	(0.026)	(0.039)	(0.057)	(0.033)	(0.045)	(0.016)	(0.023)
Services Mandate States	-0.013	-0.066	0.042	0.033	0.063	0.000	-0.022	0.03
(DDD Estimate)	(0.033)	(0.040)	(0.034)	(0.049)	(0.037)	(0.039)	(0.017)	(0.031)
Sample Size	15,110	15,022	15,110	15,022	15,110	15,022	15,110	15,022

Notes: * $p < 0.05$; ** $p < 0.01$; Models contain women who have private, public, or no health insurance. Models contain all individual level covariates described in text. Regressions are weighted by the person weight. Standard errors are clustered at the state level.

Table 7 shows our findings from the DD model. Overall, we do not observe a statistically significant change in health care utilization following a CS or CSS mandate, although all of the estimates for CSS states are positive. When we estimate the DDD model (results presented in Table 8), we find that women in CS mandate states do not increase their health services consumption following the mandate. This result is expected, as the CS mandate does not alter the cost of services in any meaningful way. In contrast, women in CSS states do alter their health services consumption. We observe a 10.4 percentage point increase in pap smears (a 15.9 percent increase over the sample mean), and an 8.1 percentage point increase in pelvic examinations (a 12.8 percent increase over the sample mean).

The bottom panel of Table 8 illustrates some nuance to this finding. The increases in preventive health care services appears to be concentrated among women who have low levels of education and who have private health insurance. Given that these services can be expensive, it is not surprising that we see the beneficial impacts of this program among low SES women. As we do not see a corresponding change in the women's contraceptive choice, these results suggest that low SES women who are were already consuming contraception are now able to add preventive health services to their health care routine. Additionally, we find no change in STD/I testing regardless of SES. Perhaps this is not surprising: those women at highest risk of STD/Is are young, may not have private health insurance, struggle financially (Gonzalez et al. 2009, Laumann and Youm 1999), and often do not have access to quality sexual or health services (Eng and Butler, 1997), all of which imply low access to employer provided health insurance.

VII. CONCLUSION

The Affordable Care Act has generated considerable discussion among policymakers, and the mandated contraception coverage has been one of the biggest sources of concern within the public debates of the ACA. Given the acrimony over this feature of the legislation, one might think that the mandated contraceptive coverage was a new idea legislators were considering for the first time; however, mandated contraception coverage is not a new policy at all. Since the 1990s, 29 states have implemented policies that require health care providers cover contraception in their health care insurance policies that

Table 7: Difference-in-Difference Models Among Privately Insured Respondents. Health Service Outcomes

	Pap Smear in Past 12 Months		Pelvic Exam in Past 12 Months		STD/I Test in Past 12 Months	
Supply Mandate States	-0.022	0.008	-0.029	-0.054	0.023	-0.010
(DD Estimate)	(0.018)	(0.041)	(0.016)	(0.036)	(0.012)	(0.025)
Services Mandate States	0.042	0.049	0.027	0.035	.029*	0.004
(DD Estimate)	(0.022)	(0.039)	(0.025)	(0.046)	(0.012)	(0.020)
Trend Included	No	Yes	No	Yes	No	Yes
Sample Size	20,610	20,610	20,610	20,610	20,610	20,610
Disaggregated By Education Status						
	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed
Supply Mandate States	0.090	-0.040	0.000	-0.080	0.040	-0.040
(DD Estimate)	(0.070)	(0.070)	(0.060)	(0.060)	(0.040)	(0.030)
Services Mandate States	0.060	0.040	0.000	0.050	-0.020	0.020
(DD Estimate)	(0.040)	(0.050)	(0.060)	(0.050)	(0.030)	(0.030)
Trend Included	Yes	Yes	Yes	Yes	Yes	Yes
Sample Size	8,246	12,364	8,246	12,364	8,246	12,364

Notes: * $p < 0.05$; ** $p < 0.01$; Models contain women who have private health insurance. Models contain all individual level covariates described in text. Regressions are weighted by the person weight. Standard errors are clustered at the state level.

Table 8: Difference-in-Difference-in-Difference Results: Health Outcomes

	R Had Pap Smear in Past 12 Months	R Had Pelvic Exam in Past 12 Months	R had STD/I Test in Past 12 Months
Supply Mandate States	-0.024	0.004	0.007
(DDD Estimate)	(0.032)	(0.029)	(0.021)
Services Mandate States	0.104**	0.081*	0.024
(DDD Estimate)	(0.032)	(0.035)	(0.017)
Sample Size	30,132	30,132	30,132

Disaggregated By Education Status

	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed	<= High School Ed	> HS Ed
Supply Mandate States	-0.005	-0.016	0.044	-0.027	-0.02	0.045
(DDD Estimate)	(0.057)	(0.039)	(0.047)	(0.042)	(0.029)	(0.035)
Services Mandate States	0.151**	0.019	0.122**	0.004	0.017	0.029
(DDD Estimate)	(0.045)	(0.064)	(0.062)	(0.058)	(0.020)	(0.036)
Sample Size	15,110	15,022	15,110	15,022	15,110	15,022

Notes: * $p < 0.05$; ** $p < 0.01$; Models contain women who have private, public, or no health insurance. Models contain all individual level covariates described in text. Regressions are weighted by the person weight. Standard errors are clustered at the state level.

include other prescription drug benefits. Our objective in this paper was to estimate the impact of these health insurance mandates on contraceptive use and preventive health care among American women. We also believe the results from this policy analysis should inform the debates surrounding the contraceptive coverage in the ACA.

Using three different panels of the NSFG, our findings show that these health insurance mandates have no statistically discernible effect on the likelihood that women use OTC contraception, contraception that does not require extensive services, such as oral contraception or hormonal patches, or contraception that does require consultation and extensive testing/services, for example sterilization or an IUD. A number of plausible explanations for this finding exist. First, most obviously, people may not be aware of these changes or may not want to take advantage of this option because they believe it will create high transaction costs. Alternatively, women may have maintained their contraceptive practices after the implementation of this policy, but simply stopped paying for them out-of-pocket and are using their health insurance policy to fund their consumption. Our data do not let us track individual-level contraception use or forms of payment for the contraception. Future work that has individual level data would provide important insights into this issue.

We do find evidence that women who are in states with mandates that require coverage of both contraceptive supplies and as well as supplemental preventive healthcare services are more likely to utilize these services. Specifically, we find a nearly 16 percent increase in the likelihood that women with private insurance received a pap smear and 13 percent increase in the likelihood of a pelvic exam in the past year. While large, these estimates are similar to those reported by Wherry (2013) in her study of Medicaid expansions for the same time period. This result surfaces when we employ a DDD model, i.e., comparing the differences in preventive health care for women with private health insurance within the state to women in the state who do not have health insurance to the same difference for women in nonmandate states. This adjustment was made to account for unobserved differences between states that mandate this type of coverage and residents of states that do not have mandated coverage. Furthermore,

these results surface only among with low levels of education (High school graduates or less). Clearly, low SES women with private health insurance are more likely to use this benefit.

While informative, this study does have several limitations, in addition to those mentioned earlier. We would have preferred to test for differences by race. The small sample sizes by race particularly once disaggregated by education level within states made these separate analyses untenable. We would also have benefitted from a data source with greater variation across time in contraception use and preventive health care services. In this study, we utilize the changes across three difference cohorts of the NSFG to identify effects, but annual variation from 1995 to 2010 would have been preferable. With more variation to explain, our point estimates would likely have been more precise and our contraception results potentially more robust. To the best of our knowledge, the NSFG is the only data source with samples that would allow a state-level analysis of contraception.

Despite these limitations, we do find evidence that mandating that private health insurance policies cover contraception and health care services, likely increased women's consumption of preventive health care. Given that this is one of the primary objectives of the ACA, then this policy may improve women's health generally. Because the ACA should cover more women and especially women in the lower portion of the income distribution, then one might find greater health benefits with the ACA than the health insurance mandates under study. If our results can be generalized to the ACA, then one is unlikely to observe large changes in contraceptive use at least among women who currently have health insurance.

REFERENCES

2013 Arizona Revised StatutesTitle 20 - Insurance§ 20-2329 Prescription contraceptive drugs and devices; definition. (n.d.). *Justia Law*. Retrieved February 23, 2014, from http://law.justia.com/codes/arizona/2013/title-20/section-20-2329

Asch, S. M., Kerr, E. A., Keesey, J., Adams, J. L., Setodji, C. M., Malik, S., and McGlynn, E. A. (2006). Who Is at Greatest Risk for Receiving Poor-Quality Health Care? *New England Journal of Medicine*, *354*(11), 1147–1156. doi:10.1056/NEJMsa044464

Atkins, D. N. and Bradford, W. D. (Forthcoming, 2014). Changes in state prescription contraception mandates for insurers: The effect of women's contraceptive use. *Perspectives on Sexual and Reproductive Health*, 46(1).

Bailey, M. J. (2006). More power to the pill: The impact of contraceptive freedom on women's life cycle labor supply. *The Quarterly Journal of Economics*, *121*(1), 289–320.

Bertakis, K. D., Azari, R., Helms, L. J., Callahan, E. J., and Robbins, J. A. (2000). Gender differences in the utilization of health care services. *The Journal of family practice*, *49*(2), 147–152.

Clinical Preventive Services for Women: Closing the Gaps - Institute of Medicine. (n.d.). Retrieved February 23, 2014, from http://www.iom.edu/Reports/2011/Clinical-Preventive-services-for-Women-Closing-the-Gaps.aspx

Cunningham, F. G., and Williams, J. W. (2010). *Williams obstetrics*. New York: McGraw-Hill Medical.

Dailard, C. (2003). The cost of contraceptive insurance coverage. Retrieved February 23, 2014, from http://www.guttmacher.org/pubs/tgr/06/1/gr060112.html

Department of Health and Human Services. (2001). Utilization of ambulatory medical care by women: United States, 1997–1998. In *Vital and Health Statistics*. National Center for Health Statistics, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. Atlanta, GA. Available at http://www.cdc.gov/nchs/data/series/sr_13/sr13_149.pdf. Date Accessed March 10, 2012.

Department of Health and Human Services. (2012). ASPE Issue Brief: The cost of covering contraceptives through health insurance. Available at http://aspe.hhs.gov/health/reports/2012/contraceptives/ib.shtml. Date Accessed March 10, 2012.

Eng, TR and WT Butler. (1997). *The hidden epidemic: Confronting sexually transmitted diseases.* Editors Committee of Prevention and Control of Sexually Transmitted Diseases, Institute of Medicine. Washington, DC: National Academies Press.

Frost, J. J. (2008). Trends in US women's use of sexual and reproductive health care services, 1995–2002. *American Journal of Public Health*, *98*(10), 1814–1817. doi:10.2105/AJPH.2007.124719

Gold, R. B., Sonfield, A., Richards, C. L., Frost, J. J., and Institute, A. G. (2009). *Next steps for America's family planning program: Leveraging the potential of Medicaid and Title X in an evolving health care system*. Guttmacher Institute.

Gonzalez, J. S., Hendriksen, E. S., Collins, E. M., Durán, R. E., and Safren, S. A. (2009). Latinos and HIV/AIDS: Examining factors related to disparity and identifying opportunities for psychosocial intervention research. *AIDS and Behavior*, *13*(3), 582–602. doi:10.1007/s10461-008-9402-4

Gruber, J. (1994). State mandated benefits and employer-provided health insurance. *Journal of Public Economics* 55(3): 433–464

Henderson, J. T., Sawaya, G. F., Blum, M., Stratton, L., and Harper, C. C. (2010). Pelvic examinations and access to oral hormonal contraception. *Obstetrics and gynecology*, *116*(6), 1257–1264. doi:10.1097/AOG.0b013e3181fb540f

Jones RK. (2011). *Beyond Birth Control: The Overlooked Benefits of Oral Contraceptive Pills*, New York: Guttmacher Institute.

Kaiser Family Foundation. 1998. Americans Support Requiring Insurers to Cover Contraceptives, Even If Premiums Rise. Available at http://www.kff.org/womenshealth/1404-insurance.cfm (Date Accessed November 3, 2012).

Kearney, M. S., and Levine, P. B. (2009). Subsidized contraception, fertility, and sexual Behavior. *The Review of Economics and Statistics*, *91*(1), 137–151.

King, M., Ruggles, S., Alexander, T., Flood, S., Genadek, K., Schroeder, M. B., Vick, R. (2010). Integrated public use microdata series, current population survey: Version 3.0.[machine-readable database]. *Minneapolis: University of Minnesota*, *20*.

Kirby, D. (2001). Emerging answers: research findings on programs to reduce teen pregnancy (Summary). *American Journal of Health Education*, *32*(6), 348–355. doi:10.1080/19325037.2001.10603497

Kjerulff, K. H., Frick, K. D., Rhoades, J. A., and Hollenbeak, C. S. (2007). The cost of being a woman: a national study of health care utilization and expenditures for female-specific conditions. *Women's health issues: official publication of the Jacobs Institute of Women's Health*, *17*(1), 13–21. doi:10.1016/j.whi.2006.11.004

Laumann, E. O., and Youm, Y. (1999). Racial/ethnic group differences in the prevalence of sexually transmitted diseases in the United States: a network explanation. *Sexually Transmitted Diseases*, *26*(5), 250–261.

Magnusson, B.M., Sabik, L., Chapman, D.A., Masho, S., Lafata, J.E., Bradley, C.J., and Lapane, K.L. (2012). *Medical Care*, 50(7): 562–568.

Solanki, G., Schauffler, H. H., and Miller, L. S. (2000). The direct and indirect effects of cost-sharing on the use of preventive services. *Health Services Research*, *34*(6), 1331–1350. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1089084/

Sonfield, A and RB Gold. (June 2004). "New Study Documents Major Strides in Drive for Contraceptive Coverage." *The Guttmacher Report on Public Policy*, p.5.

Sonfield A., Gold RB, Frost J.J., and Darroch, J.E. (2004). "US insurance coverage of contraceptives and the impact of contraceptive coverage mandates, 2002." *Perspectives on Sexual and Reproductive Health.* 36(2): 72–79

Thomas, A. and E Monea. (2011). *The High Cost of Unintended Pregnancy*. Brookings Center for Children and Families Brief #45.

Trivedi, A. N., Moloo, H., and Mor, V. (2010). Increased ambulatory care copayments and hospitalizations among the elderly. *New England Journal of Medicine*, *362*(4), 320–328. doi:10.1056/NEJMsa0904533

University of Kentucky Center for Poverty Research. (n.d.). Retrieved February 11, 2014, from http://www.ukcpr.org/AvailableData.aspx

Wherry, L. R. (2013). Medicaid family planning expansions and related preventive care. *American Journal of Public Health*, 103(9), 1577–1578.