The Effect of Parental Involvement Laws on Birth Control and Mental Health: New Evidence from the YRBS

D. Mark Anderson
Montana State University
Email: dwight.anderson@montana.edu

Joseph J. Sabia
San Diego State University
Email: jsabia@mail.sdsu.edu

September 2013

The Effect of Parental Involvement Laws on Birth Control and Mental Health: New Evidence from the YRBS

Extended Abstract

Motivation. By September 2013, 27 states had enacted and were enforcing parental involvement (PI) laws, which require a pregnant minor contemplating an abortion to notify or obtain the consent of one or more parents. The enactment of these laws can be thought of as raising the expected cost of an abortion to minors, which could impact not only abortion decisions, but also sexual decisions "down the fertility tree" (Levine 2003). For instance, because these laws increase the expected cost of an abortion, they also increase the expected cost of unplanned pregnancy and unprotected sex and could therefore reduce each.

Using data from the National Survey of Family Growth, Levine (2003) found that the enactment of PI laws was associated with a reduction in rates of unprotected sex. Klick and Strattman (2003) found that PI laws were associated with a reduction in gonorrhea rates for 15-to-20 year-olds, providing further support for the hypothesis that PI laws reduce unprotected sex. Sabia and Rees (2013) concluded that the sexual behavior effects of PI laws might actually produce mental health benefits in the form of lower suicide rates.

However, a recent study in the *Journal of Health Economics* raises new doubts about whether PI laws really affect minors' sexual behavior. Colman, Dee, and Joyce (2013) found that the results of Klick and Strattman (2003) (i) can largely be explained by a contaminated treatment group (which includes 18-19 year-olds for whom PI laws are not binding) and, (ii) are sensitive to the use of sample weights and the inclusion of state-specific time trends. In their preferred specifications, Colman, Dee, and Joyce (2013) found that PI laws have no effect on

minors' rates of sexually transmitted infections (STIs). Moreover, using data from the national Youth Risk Behavior Surveys (YRBS) and a difference-in-difference (DD) approach, they found no evidence that PI laws affect the sexual behavior of 15-to-17 year-olds.

Despite the work of Colman et al. (2013), questions remain. Their analysis of the effects of PI laws on sexual behavior relied on the national YRBS, which often provided hundreds, and occasionally only dozens, of observations to the survey in any given year. This may generate state-specific variation in minor teen unprotected sex rates that are driven only by measurement error, which may make it difficult to identify effects of PI laws. In addition, over the period 1991-2009, the national YRBS does not include information on a number of states that changed their parental involvement laws, potentially important sources of identifying variation. Finally, because the national YRBS contain very few state-by-year observations on 18-year-olds, which comprise a natural within-state control group, Colman et al. (2013) are unable to estimate difference-in-difference-in-difference (DDD) models.

Contribution. Our study contributes to the above PI literature in several important ways. Our approach pools repeated cross sections of the state YRBSs from 1993 to 2011. We use individual-level data from the state, as opposed to national, YRBS because we often observe 1000s of observations per state-year in these data.[1] The state versions of the YRBS are school-based, and contain many of the same questions as the national YRBS. They are coordinated by the Centers for Disease Control, are administered to high school students every other spring, and are designed to be representative of sexual behaviors of those attending US high schools. These data also allow for additional identifying variation than was available in Colman et al. (2013) because they include data collected from additional states unavailable in the national YRBS. In

[1] For more information on the state YRBS data collection effort see: http://www.cdc.gov/HealthyYouth/yrbs/index.htm.

addition, the state YRBS contains information on over 30,000 18-year-olds, which will allows us to estimate difference-in-difference-in-difference models that allow more flexible differential time trends between states that adopt PI laws over the sample period and those that do not change their policies. This will allow us to better address policy endogeneity, which could result if, for example, states adopt PI laws in response to underlying trends in sexual activity common to minor and non-minor teens. To further test for policy endogeneity, we will also conduct falsification tests using state PI laws that have been passed by the legislature and signed by the state governor, but enjoined by the Courts. Enjoined laws should not raise the costs of unprotected sex to minors and any empirical association between such laws and youth sexual activity would likely be explained by state-specific trends in unmeasured teen sexual- or abortion-related attitudes.

Finally, this study extends the work of Colman et al. (2013) and Sabia and Rees (2013) by exploring whether there are psychological benefits or costs to PI laws. While PI laws could theoretically benefit some teens by helping them to avoid the psychological costs of unplanned pregnancy and encouraging greater communication with parents, these laws might also increase stress to minor teens who do not want to give birth to unwanted children, but whose parents will not permit an abortion.

Data and Methods. Our analysis uses repeated cross-sectional data from the state YRBS and a difference-in-difference-difference approach:

$$Y_{ijst} = \alpha + \beta_1(PI_{st} * Age \leq 17_j) + \boldsymbol{X_{1ijst}\beta_2} + \boldsymbol{X_{2st}\beta_3} + \nu_s + \tau_t + \omega_{st} + \gamma_{jt} + \theta_{js} + \varepsilon_{ijst}$$

where *i* indexes the individual, *j* indexes whether the respondent is in the treated (< 18 year-old females) versus the control group (18 year-old females), *s* indexes the respondent's state of residence, and *t* indexes the survey year. The vectors $\boldsymbol{X_1}$ and $\boldsymbol{X_2}$ contain individual-level (age, race, and grade) and state-level controls (unemployment rate, state income, beer taxes, and .08 BAC laws), respectively; v_s is a year-invariant state effect; τ_t is a state-invariant year effect. We also include state-by-year effects (ω_{st}), age-by-year effects (γ_{jt}), and age-by-state effects (θ_{js}). The coefficient of interest is β_1. This interaction term coefficient represents the marginal effect of PI laws on the treatment group relative to the control group.

We capture four sexual outcomes with *Y*:

- whether the respondent had sexual intercourse in the past three months;
- whether the respondent had engaged in unprotected sex at most recent sex;
- whether the respondent had engaged in sex without taking birth control pill at recent sex (unconditional and conditional on sex); and
- whether the respondent had engaged in sex without condom use at recent sex

In addition, we measure three mental health outcomes:

- whether the respondent felt sad or hopeless in the past 12 months;
- whether the respondent considered suicide in the past 12 months; and
- whether the respondent attempted suicide in the past 12 months

Results. Preliminary findings on the effect of PI laws on sexual behaviors are shown in Table 1 below. Consistent with both Levine (2003) and Colman, Dee, and Joyce (2013), we find

little evidence that PI laws affect the probability of having sex (column 1) or on unconditional (column 2) or conditional (column 3) contraceptive use, which includes condoms, IUDs, Depo-Provera (i.e. injectable birth control), nuva ring (or any other type of birth control ring), implanon (or any implant), and withdrawal methods. We also look at the two most common forms of birth control: condoms and the birth control pill. Consistent with Colman et al. (2013) we find that PI laws are not significantly associated with greater condom use (columns 4 and 5), which may explain why they find no effects on minor STI rates.

Table 1. Difference-in-Difference-in-Difference Estimates of the Relationship Between PI Laws and Minor Teen Female Sexual Behavior and Contraceptive Decisions

	Recent Sex	Recent Sex w/out Contraception	Contraception Conditional on Sex	Recent Sex w/out Condoms	Condoms Conditional on Sex	Recent Sex w/out Birth Control Pill	Birth Control Pill Conditional on Sex
	(1)	(2)	(3)	(4)	(5)	(6)	(6)
PI Law	.008 (.028)	-.005 (.009)	.018 (.016)	.024 (.020)	-.027 (.019)	-.032** (.012)	.044** (.017)
State Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Age Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age-by-Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age-by-State Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Y	.344	.065	.851	.186	.585	.911	.203
N	306,228	299,857	118,073	312,001	124,742	299,857	132,029

However, we do find that PI laws are associated with a 3.2 percentage point (3.5 percent) decline in the probability that females will have sexual intercourse without taking the pill.

Moreover, conditional on having recent sex, PI laws are associated with a 4.4 percentage point (21.7 percent) increase in the probability of using the pill. These results differ from those of Colman et al. (2013) and suggest that taking advantage of additional identifying variation available in the state YRBS, and addressing policy endogeneity via controls for state-specific time trends common to teenagers produces results consistent with the hypothesis that PI laws affect minor teen birth control decisions.

In Table 2, we explore whether these laws affect the mental health of women under age 18. On the one hand, PI laws could improve mental health if increased birth control use leads to less unwanted pregnancy or increases positive communication with parents. On the other, PI laws could adversely affect mental health if forced communication leads to stressful parent-child interactions or leads to births of unwanted children. Our findings in the state YRBS, shown below, show that PI laws are associated with a 2.8 percentage point (8.3 percent) reduction in the probability of feeling sad or hopeless, a 4.8 percentage point (22.5 percent) decline in the probability of considering suicide, and a (statistically insignificant) 2.4 percentage point (23.1 percent) decline in the probability of attempting suicide. These findings, consistent with Sabia and Rees (2013), suggest there may be important mental health benefits associated with PI laws.

Table 2. Difference-in-Difference-in-Difference Estimates of the Relationship Between PI Laws and Minor Teen Female Suicide Ideation and Suicide Attempts

	Sad or Hopeless	Considered Suicide	Attempted Suicide
	(1)	(2)	(3)
PI Law	-.028** (.011)	-.048** (.023)	-.024 (.016)
State Effects	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes
State-by-Year Effects	Yes	Yes	Yes
Age-by-Year Effects	Yes	Yes	Yes

Age-by-State Effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Mean of Y	.336	.213	.104
N	291,554	340,740	329,366

Extensions and Limitations. In the full paper, we intend to explore the effects of enjoined PI laws on adolescent sexual behavior and mental health to further test whether policy endogeneity can explain, in part or in whole, the findings we observe. In addition, we also intend to explore whether parental involvement laws affect the sexual behavior and mental health of teenage males.

An important limitation of our data is that we lack precise information on the respondent's age in months. Ideally, given the wording of the sexual behavior items (which refers to recent sex in the last 3 months), we would like to restrict our within-state control group to those ages 18.25 years and older. Therefore, some 18-year-old males in our control sample could be affected by PI laws. If individuals ages 18.0 to 18.25 are affected by PI laws in the same way those under age 18.0 are, then our estimates are actually lower-bound estimates. This is a potentially larger problem for the mental health outcomes. Depending on the timing of the mental health problems "in the last year" and the age of the respondent, some 18 year-olds may be affected by the policy. In our paper, we will explore additional falsification tests using other risky health behaviors that are plausibly unaffected by PI laws, such as cigarette consumption.

References

Colman, Silvie, Thomas Dee, and Ted Joyce. 2013. "Do parental involvement laws deter risky sex?" *Journal of Health Economics* 32: 873-880.

Levine, Philip B. 2003. "Parental involvement laws and fertility behavior." *Journal of Health Economics* 22(5): 861-878.

Klick, J. and T. Stratmann. 2008. Abortion access and risky sex among teens: parental involvement laws and sexually transmitted diseases." *Journal of Law, Economics, and Organization* 24(1): 2-21.

Sabia, Joseph J. and Daniel I. Rees. 2013. "Parental involvement laws on youth suicides." *Economic Inquiry* 51(1): 620-636.