Exploring the Effect of Comprehensive Sex Education in the U.S.

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Ⅰ. Summary

In this report, we analyze the effect of comprehensive sex education in California, South Carolina, and Illinois, on teen (aged 15-19) sexual behavors as measured by four metrics: teen birth rates (number of births per 1,000 people), the rate of teens not using condoms, the rate of teens not using any form of birth control, and the percentage of teenagers who have never had sexual intercourse (have abstained from sex). We did not find overwhelming evidence that these policies were effective in inspiring safer sexual behavior in teens.

Ⅱ. Introduction

Sex education is a hot topic for debate in the United States. Strong opinions on policies vary from “teaching young people about sex will only encourage them” to “stressing abstinence is sufficient sex ed” to “teens will have sex anyway, we need to at least teach them how to do it safely.” The majority of states do not require sex education at all. However, a nationwide policy change in 2010 seemingly motivated more changes in state-level sex education policies. This policy change included the elimination of two federal programs that funded abstinence-only education. Some states have opted to require more comprehensive programs, while others chose to require a stress on abstinence if sex education is taught. This report analyzes three states that have updated their sex education laws within the past decade in an effort to provide more comprehensive (not abstinence-only) sex education to students. We seek to gain an overall understanding on the effect of sex education in schools, as well as compare the effectiveness of the policies per state to each other.

Variables

We chose to measure the effectiveness of these policy changes in our treatment states using four variables: teen birth rate, condom use rate, overall birth control rate, and teen sex activity rate. Our teen birth rate metric comes from empirical medical data, but our other response metrics are represented by positive response rates to the survey questions: “Did Not Use A Condom During Last Sexual Intercourse”, “Did Not Use Any Form of Birth Control During Last Sexual Intercourse” and “Ever Had Sexual Intercourse”. See the data section for more details about these variables and our sources.

Policies

The following are the policies that we have chosen to study. From here on, we will refer to the states with these policies as our “treatment states".

1. **California**

   The California Healthy Youth Act (effective January 2016) mandates that all school districts provide medically accurate, comprehensive, inclusive sexual health education once in middle school and once in high school. Abstinence-only education is not permitted, but it can be highlighted as the best option. Before this Act went into effect, schools were only required to cover basic HIV education.

   An article released by the U.S. Official News on October, 15, 2015 dubbed this policy change “California’s Latest Health Triumph”. This article describes a report that demonstrates the need for this policy change: “A recent report on sex education in California found that 15 percent of students thought condoms were not effective at preventing STDs/HIV, while another 16 percent were unsure about their effectiveness.” Another article from Ana b. Ibara of the Merced Sun-Star released on December 8, 2015 explains that rising numbers of sexually transmitted diseases motivated the policy change, and notes that “local health educators are hopeful [this] new state law, which will mandate comprehensive sex education in middle schools and high schools, will help lower the rate of sexually transmitted diseases in the Valley.”

2. **Illinois**

   Illinois’ House Bill 2675 (effective August 2013) requires medically accurate, age appropriate sex education curriculum in grades 6-12 that includes both the idea that abstinence is a responsible/positive decision, and comprehensive coverage of contraceptive methods.

   House Bill 2675, unlike the other two policies we are analyzing, is not a sex education mandate but a conditional law, in that sex education is not required in the state of Illinois, but if it is offered, it must reach the criteria described above. However, we have chosen to study this policy change alongside our mandates anyway, as data shows that the lack of a sex education *mandate* does not equate to a lack of sex education in Illinois. According to CDC’s 2014 School Health Profiles report, 98.4% of secondary schools in Illinois reported teaching students about “Health consequences of HIV, other STDs, and pregnancy”. This metric increased to 99.2% for the CDC’s 2018 report. Thus, we believe this study has equal potential to demonstrate the effect of a more comprehensive sex education on our response metrics.

An article released by the Huffington Post on May 24, 2013 discusses a lack of sexual knowledge among Illinois students, citing that “60 percent of young adults underestimate birth control's effectiveness and are more likely to skip it because they don't believe it will make a difference.” The Post also explained that this law is “designed to break the stranglehold that abstinence-only education has had on the state”. Another article dated August 21, 2013 from the Windy City Times notes that “Illinois schools thought they were prohibited from offering comprehensive sex education because Illinois law did not mandate it”, and expresses excitement that House Bill 2675 will mend this issue. The Times also included some discussion about how the bill is expected to benefit LGBTQ youth. However, a third article, dated January 31, 2014 from The McDonough County Voice, laments that the policy change will likely not impact their community, as they have already been teaching their students comprehensive sex curriculum. This hints at a potential limitation for our analysis.

3. **South Carolina**

The Comprehensive Health Education Act (effective June 2014) calls for general health education to take place in schools (grades not specified), which includes reproductive health education as defined by “instruction in human physiology, conception, prenatal care and development, childbirth, and postnatal care, but does not include instruction concerning sexual practices outside marriage”. This act demands that abstinence and risks associated with premarital sex be strongly stressed. Even so, additional methods of contraception and their associated risks must be discussed.

Although this policy change is arguably more conservative sounding than our other two, news articles from around the time of change still considered this to be a big step. A column dated January 15, 2014 from South Carolina’s Anderson Independent-Mail argued that this more comprehensive act was strongly needed, as with the abstinence-only policies they had at the time, South Carolina was the “third worst in the United States for reported cases of gonorrhea and chlamydia (sexually transmitted infections) among young people aged 15-19” and teens were not actually upkeeping the celibacy pledges schools were offering students. Another article dated July 8, 2015 from the Charleston News Outlet: Post & Courier describes how The Comprehensive Health Education Act was met with a good amount of pushback from parents that prefer their children not to be exposed to anything beyond abstinence-only education. Still, this article acknowledges a need for the policy change, also stating that students are not actually staying abstinent as advised, and that condom use is declining according to the YRBS survey.

In our analysis, we will be comparing these treatment states to a control group that is composed of 17 states. See methods section for more details.

Ⅲ. Data

Our data comes from the Center for Disease Control (CDC) and from the Youth Risk Behavior Surveillance System (YRBSS) for teens aged 15-19 years old. We combined the data from these two sources to represent each of our response variables for each of our states from 2007 to 2019. One unit of observation in this combined data represents a state-year combination. For the birth control rate, condom rate and sex activity rate variables, we have observations for every other year in our timeframe since the YRBSS is conducted biannually. We have data for every year in our time frame for birth rate since the CDC collects this data annually.

The data from the YRBSS survey had missing values throughout, including a big hole in state-level California data from before the year 2015. To handle the California issue, we exchanged the state-level data for school-district-level data of three large California school districts: San Diego, San Francisco, and Los Angeles. With this adjustment, the analysis of treatment effects on the not using birth control rate, the not using a condom rate, and the abstaining from sex rate are limited to these three school districts rather than the entire state of California. We did not have to make this sort of correction in the same response variables for Illinois and South Carolina. Treatment effect on teen birth rate is at state-level for California, Illinois and South Carolina.

We handled the holes in our data by calculating the mean of the surrounding values and inserting the result, assuming that the data followed a general linear trend. For example, if the value for Delaware (one of our control states) 2015 was missing, we would take the mean of the values for Delaware 2013 and Delaware 2017, and use the result as the value for Delaware 2015. Any values that could not be fixed using surrounding values (i.e. values from 2019, the end of our data) were dropped.

The following plots shows the distribution of teenage birth rate, the rate of teenagers not having sex at all, the rate of teenage not using any forms of birth control, and the rate of not using a condom the last time they had sexual intercourse in all 20 states included in this study from 2007 to 2019.

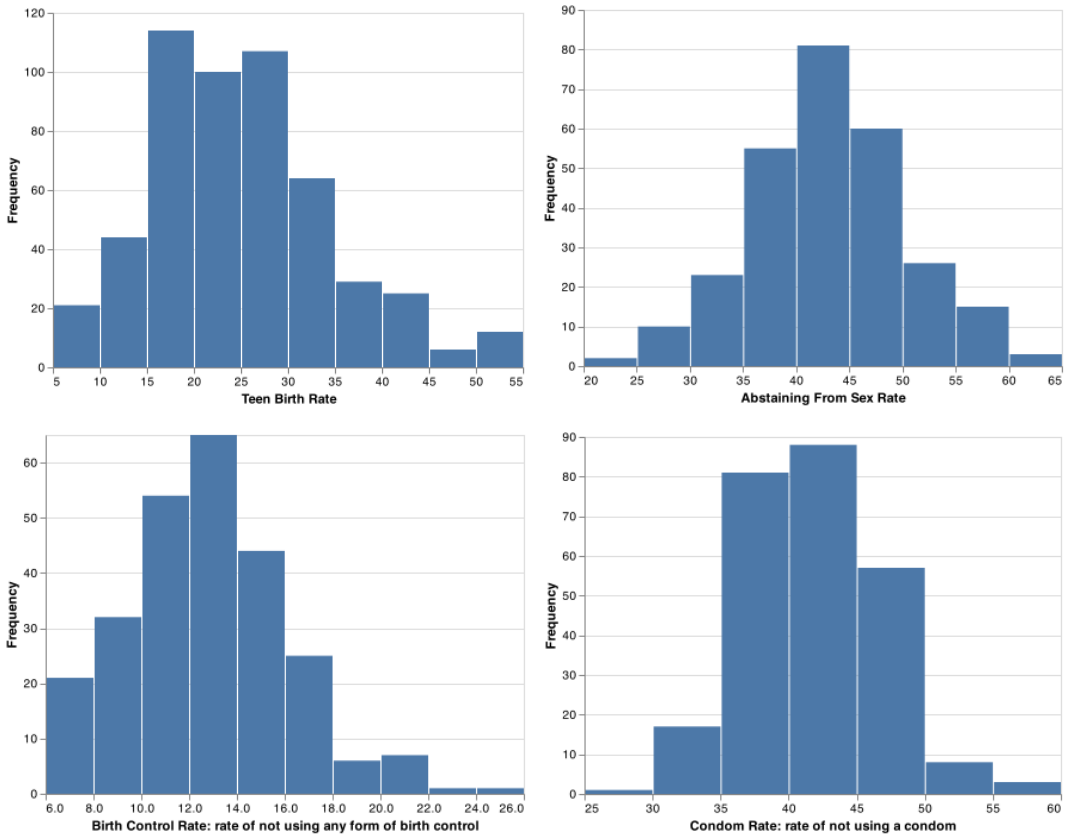


Fig. 1 The histogram of teen birth rate, birth control rate, condom use rate and sex rate of all the treatment states and control states from 2010 to 2019.

IV. Methods and Results

a. Difference-In-Difference Plotting

The effect of treatment can be shown in the difference-in-difference (DD) graphs. We made separate DD plots for each of the three treatment states and a control group we put together (see below), for each variable we considered (three treatment states, four variables, twelve total plots). The variable is first centered on the year the state overhauled their sex education curriculum to be more comprehensive. Two separate regression lines are fitted over centered year on the treatment and control states before the policy change occurred, and another two separate regression lines after the policy change occured. For each of the four regression lines, we also include the predicted 95% confidence interval as the error bands. We plot the four linear regressions lines and their error bands.

Control Group

We opted to construct a control group out of states that do not have comprehensive sex education, as indicated by SIECUS, a nonprofit organization

advocating for comprehensive sexual education to promote sexuality as a healthy and normal part of life. Some of the states we selected for this group mandate sex education that stresses abstinence, while others do not mandate sex education, but also do not have any conditional laws such as the one we have described for Illinois.

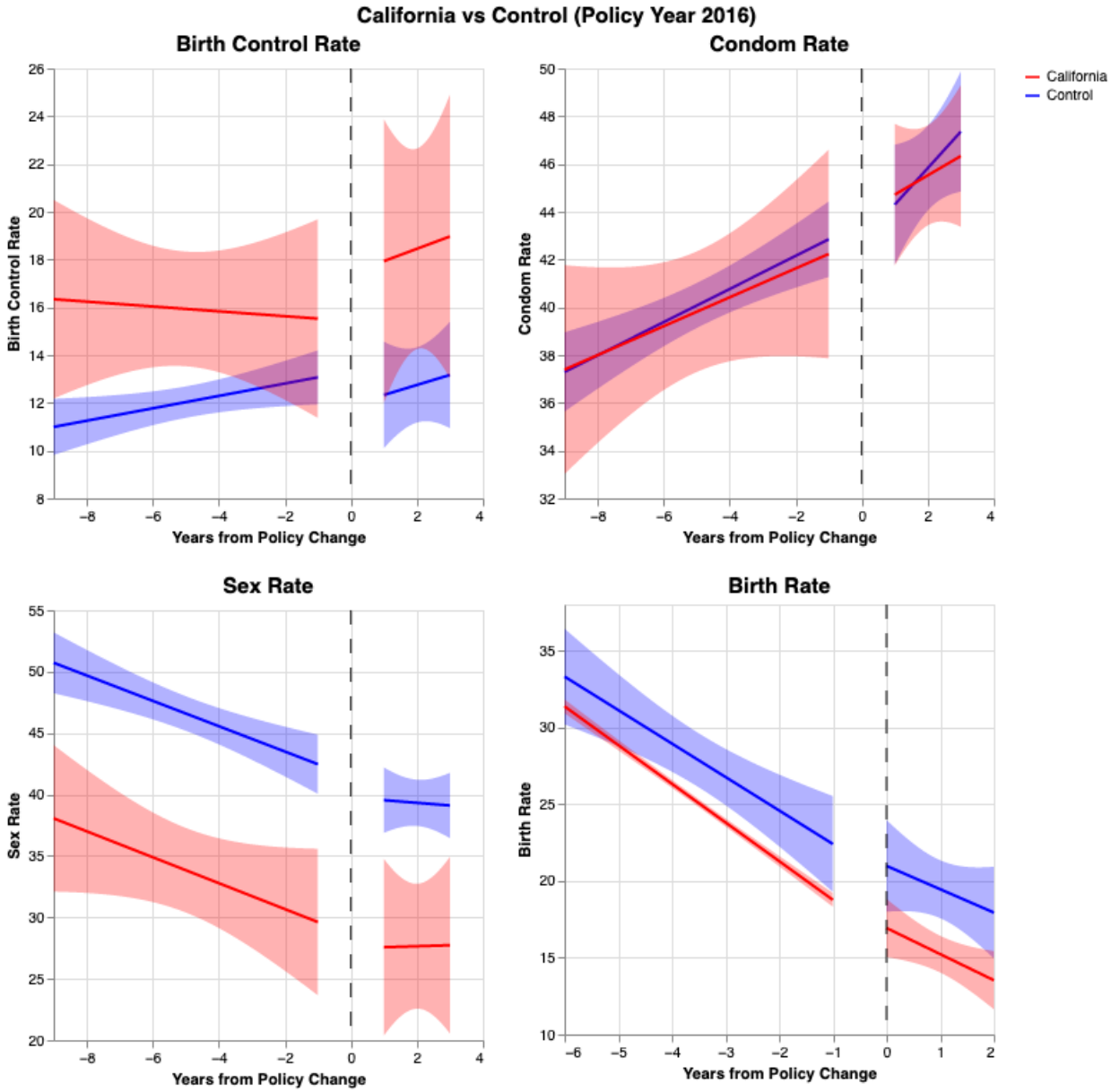
Once we had a list of all these states, we used data from the CDC's 2014 School Health Profile to ensure that the control group was a suitable point of comparison for our treatment states. This profile includes the percent of school districts that reported teaching students the "efficacy of condoms" by the time students completed 8th grade. We chose to use the profile from 2014, as that is the year with available data closest to the time of our three policy changes. We chose this "efficacy of condoms" metric as this is a simple metric to demonstrate that a school is offering sex education that goes beyond abstinence.

For California, Illinois, and South Carolina, this metric was 47.8, 42.7 and 52.1, respectively, which averages out to 47.5. To match this as closely as possible, we narrowed down our original list to the 21 states where this metric was between 30 and 60, to get a control group with a comparable average for this metric to our treatment group, 46.4

Finally, four more states needed to be eliminated from the control group due to too many missing values, bringing the new total number of control states to 17 and the new metric average for the control group to 46.7.

Control States: Alabama, Arkansas, Connecticut, Delaware, Florida, Indiana, Iowa, Massachusetts, Mississippi, North Dakota, Ohio, Pennsylvania, Montana, Nebraska, West Virginia, Wisconsin, and Wyoming.

California


California vs Control (Policy Year 2016)
Birth Control Rate
Condom Rate
Sex Rate
Birth Rate
Birth Control Rate
Condom Rate
Sex Rate
Birth Rate
Years from Policy Change
California
Control

California: **Birth Control Use Rate**

On the top left, we observe that the rate at which students are not using any form of birth control slightly decreases in the years before the policy change in 2016 for California, whereas our control states see an increasing trend in these pre-policy years. The intercept for the California birth control rate is always higher than that of the control group, both before and after the policy change, indicating that on average, California teens are using less birth control compared to their peers in control states. It is also interesting to note how the slope and intercept becomes more positive in the post policy years for California. Counterintuitively, this suggests that California teens start not using birth control at a higher rate after the policy change. However, the wide error bands in this plot indicate that the trends could be considered parallel both before and after the policy was implemented, which suggests minimal effect.

California: **Condom Use Rate**

On the top right, we can see that the rate of teens not using condoms steadily increases for both California and nationally in the years before the policy change, and once the policy change is implemented, this increasing trend continues. The trends for both California and the control group could be considered the same throughout the plot, indicating no significant treatment effect.

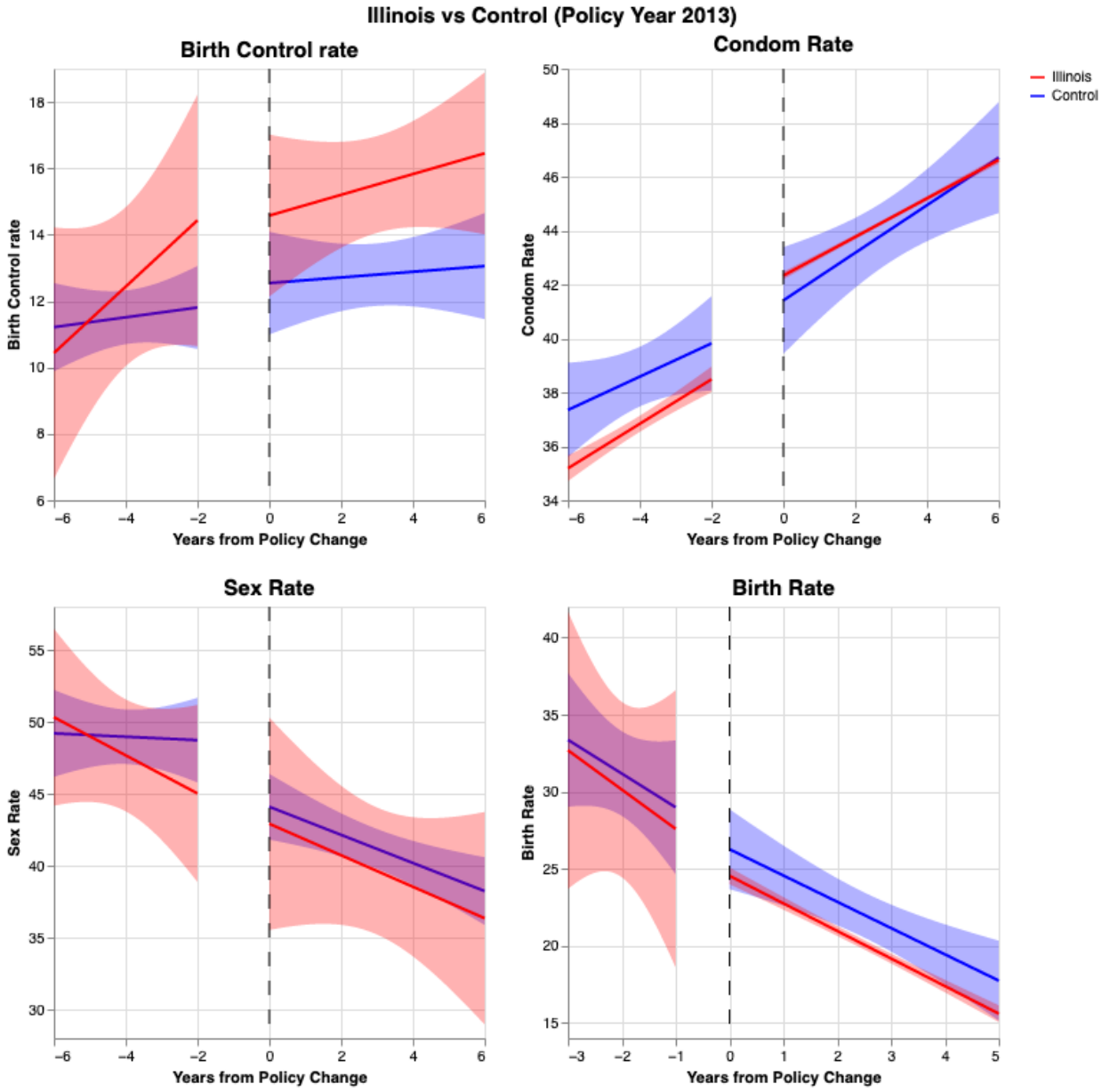
California: **Sex Activity Rate**

On the bottom left, we can see that sex activity rate steadily decreases at a similar rate for both treatment and control in the pre-policy years, although the regression line for the three California school districts sits lower than the regression line for the control states. After the policy change, these decreasing trends appear to flatten out for both the control and the treatment state. This plot does suggest a reduction in sex activity for California teens, but not more of a reduction than that which occurred in the control states.

California: **Teen Birth Rate**

On the bottom right, in the plot for teen birth rate, we can see that teen birth rate appears to be mostly unaffected by the policy change. We observe a similar pattern for both our treatment and control states, although the control states lie at a higher intercept. The lower intercepts for the California regression lines show that the birth rate for California teens is lower on average compared to their peers nationally. However, the parallel tendency between the two suggests that California's new sex education policy did not meaningfully contribute to lowering the rate of teen births in comparison to the control states.

Illinois


Illinois vs Control (Policy Year 2013)
Birth Control rate
Birth Control rate
Years from Policy Change
Condom Rate
Condom Rate
Years from Policy Change
Illinois
Control
Sex Rate
Sex Rate
Years from Policy Change
Birth Rate
Birth Rate
Years from Policy Change

Illinois: **Birth Control Use Rate**

On the top left, we observe that the rate of teens not using birth control increases both before and after the policy change, for both Illinois teens and for teens in our control states. In the pre-policy years, the rate at which teens are not using birth control appears to be increasing faster in Illinois than in our control states, but these trends could be considered the same within the error bands. In the post-policy years, these rates diverge, but continue increasing, at more neutral slopes than in the pre-policy years. However, Illinois sits at the higher intercept in the post-policy years, counterintuitively suggesting that the policy change motivated less birth control use.

Illinois: **Condom Use Rate**

On the top right, we observe the rate at which teens are not using condoms to be increasing at similar rates for both Illinois and our control states in the pre-policy years, however, the regression line for Illinois lies at a lower intercept. This lower intercept indicates that although teens are increasing in their non-condom-usage similarly in Illinois and the control states, teens in Illinois still better on average about using condoms. In the post-policy years, the slopes remain similar for both groups, and the gap that existed before in their intercepts narrows. This suggests another counterintuitive effect of a sex education policy change.

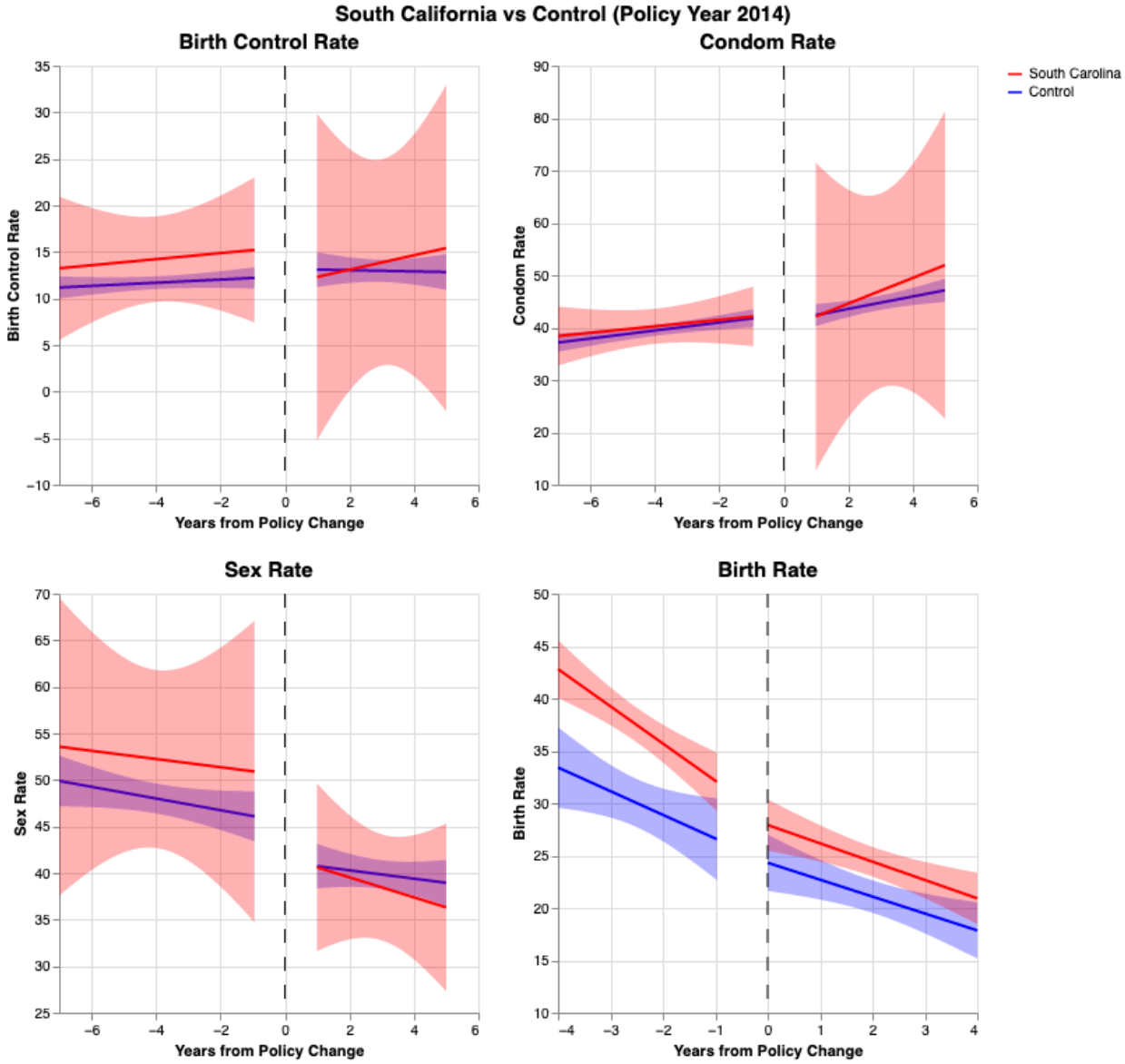
Illinois: **Sex Activity Rate**

On the bottom left, we observe that the sex activity rate decreases in both Illinois and the control states throughout all years, and decreases at a steeper rate following the policy change. However, the trends can be considered the same within the error bands both pre and post policy change, indicating minimal treatment effect.

Illinois: **Teen Birth Rate**

On the bottom right, we observe a similar pattern for our control states and the treatment state Illinois, with the control states starting at a higher intercept, but insignificantly, as both regression lines from the pre-policy years could be considered the same within the error bands. In the post-policy years, the regression line for Illinois drops in intercept more, and becomes slightly out of range for the error band for the control group, indicating that the policy change might have made a small effect in reducing teen birth in Illinois compared to our control states.

South Carolina



South Carolina: **Birth Control Use Rate**

On the top left, we can see that both treatment and control slopes slightly increase across the years and are almost indistinguishable. These two trends could be considered the same within the error bands before and after the policy change, indicating no treatment effect.

South Carolina: **Condom Use Rate**

On the top right, we see that the rate of teens not using a condom steadily increases again in the years before the policy change, and that the regression lines for both South Carolina and our control states can be considered the same in both slope and intercept within the error bands. In the years post policy change, we could argue that no effect is shown here, as the regression lines could be identical within our error bands, and the trends of these post policy change years seem to continue the same trends we see in the pre-policy years. However, it does appear that South Carolina teens are not using condoms at a higher rate than teens in the control states post policy change, which would suggest that the sex education in South Carolina is having the opposite of the desired effect for this variable.

South Carolina: **Sex Activity Rate**

On the bottom left, before the policy change, we observe that the rate of teens indicating that they have had sex decreases similarly for both South Carolina and the control states. In the years following the policy change, both trends continue to decrease. The regression line for South Carolina drops below the control states between two and three years after the policy change. This could indicate that South Carolina's policy change inspired a slight decline in teens choosing to have sex, but this wouldn't be statisitcally significant as the trends for the control states and South Carolina could still be considered the same within the error bands.

South Carolina: **Teen Birth Rate**

On the bottom right, we can see that the rate of teen mothers giving birth is still decreasing after the policy change went into effect, however the rate at which it decreases slows down. We observe this for the control states as well, but the effect is more dramatic for South Carolina (treatment). This trend indicates that South Carolina's new sex education policy might have helped to continue lowering the rate of teen births. However, despite the apparent effect from looking at just the regression lines, these trends could be considered parallel throughout within the error bands, which suggests no effect.

b. Regression

Based on the difference in difference plots, the assumption on parallel trend is satisfied for our differences-in-differences (DD) regression model to quantify the treatment effect. Four separate regression models are performed on birth rate, condom rate, birth control rate, and sex rate. All treatment states (and districts, in the case of California) and controlled states are added into one data frame so that the regression has more power compared to using only each treatment and control piar. Since the treatment is enacted at different times for each treatment state, a multistate regression DD model is appropriate. We introduce a new variable, "Comprehensive", to indicate if a specific state/county is subjected to the policy of more comprehenisve sex education a given year. Delayed policy effect is accounted for to some extent by excluding data for the two years after the policy change for each of the treatment states. "Comprehensive" is 0 for all control states throughout the years 2007 to 2019. It switches from 0 to 1 for the state of California and its three counties in 2017; South Carolina in 2016; and Illinois in 2015. State is used as an categorical indicator for "Entity Effects", controlling the differing baseline of each state (or school district). Year is added to the regression as an categorical indicator for "Time Effects", accounting for trends in birth rate, condom rate, birth control rate or sex rate that are common to all states and local school districts. The time effects include any common shock to the variables due to the national-wide decreasing trend and any national policy changes. Clustered error is used to reflect the fact that the standard error of the estimated treatment effect is common to all the observations in the treatment group. We used panel data by re-indexing the data frame of each response variable on state/school districts and years, then fitted four separate regression models using Panel OLS. The estimated treatment effects and the clustered errors are summarized in Table 2, 3, 4, and 5 in the next section.

Interpreting treatment effects from the regression models

Table 2. PanelOLS estimation summary of the regression model on the effect of comprehensive sex education policy on teenage birth rate.

Dep. Variable:	state birth rate	**R-squared:**	0.0103
Estimator:	PanelOLS	**R-squared (Between):**	-0.0052
No. Observations:	486	**R-squared (Within):**	0.0108
Entities:	20	**R-squared (Overall):**	-0.0014
Time periods:	9	**Log-likelihood**	-910.77

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
Required	-1.5981	0.9825	-1.6265	0.1045	-3.5289	0.3327

F-test for Poolability: 614.64, P-value: 0.0000, Distribution: F(27,457)
Included effects: Entity, Time

Table 3. PanelOLS estimation summary of the regression model on the effect of comprehensive sex education policy on teenage lifetime sex activity rate.

Dep. Variable:	abstaining from sex rate	**R-squared:**	0.0111
Estimator:	PanelOLS	**R-squared (Between):**	-0.0040
No. Observations:	341	**R-squared (Within):**	0.0219
Entities	22	**R-squared (Overall):**	-0.0015
Time peroids:	7	**Log-likelihood**	-740.63

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
Required	-1.8125	1.4937	-1.2134	0.2259	-4.7515	1.1265

F-test for Poolability: 126.00, P-value: 0.0000, Distribution: F(27,312)
Included effects: Entity, Time

Table 4. PanelOLS estimation summary of the regression model on the effect of comprehensive sex education policy on teenage not using any forms of birth control.

Dep. Variable:	did not use birth control rate	**R-squared:**	0.0024
Estimator:	PanelOLS	**R-squared (Between):**	-0.0066
No. Observations:	332	**R-squared (Within):**	0.0014
Entities:	22	**R-squared (Overall):**	-0.0032
Time periods:	7	**Log-likelihood**	-681.32

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
Required	-0.7194	1.3687	-0.5256	0.5995	-3.4129	1.9740

F-test for Poolability: 26.488, P-value: 0.0000, Distribution: F(27,303)
Included effects: Entity, Time

Table 5. PanelOLS estimation summary of the regression model on the effect of comprehensive sex education policy on teenage not using condom.

Dep. Variable:	did not use condom rate		**R-squared:**		0.0039
Estimator:	PanelOLS		**R-squared (Between):**		0.0085
No. Observations:	329		**R-squared (Within):**		0.0140
Entities	22		**R-squared (Overall):**		0.0044
Time periods:	7		**Log-likelihood**		-676.29
	Parameter	**Std. Err.**	**T-stat**	**P-value**	**Lower CI**	**Upper CI**
Required	0.9325	0.7559	1.2336	0.2183	-0.5551	2.4201

F-test for Poolability: 24.146, P-value: 0.0000, Distribution: F(27,300)
Included effects: Entity, Time

The estimated treatment effect of a state opting out of comprehensive sex education is a 0.160 percentage point decrease in teenager birth rate, but this is not significant. The percentage of teenagers ever having sex by the time of the survey drops 0.18 percentage points, but this is also not statistically significant. We see a 0.072 percentage points decrease in the rate of teenagers not using any form of birth control. This effect is not statistically significant. On the other hand, the percentage of teenagers who did not use condoms increased 0.093 percentage points, but this was not statistically significant. Sample size being small attributes to the relatively large clustered standard error of the treatment effects. This could lead to estimated treatment effects not being significant. Still, this does not mean the treatment effects are trivial. In the treatment states after policy change, every 1 million teenagers, 1600 fewer of them give birth, and 1800 fewer of them abstain from having sex by the time of the survey. Moreover, 710 fewer of every 1million teenagers indicate they did not use any form of birth control. Meanwhile, every 1 million teenagers, 933 more of them indicate they did not use a comdom last time they had sex.

The negative treatment effects on teenage birth rate and sex activity rate are consistent with the findings from the DD plots on these two variables. The positive treatment effects on rate of not using condom is also in agreement to the observations from the DD plots in Section IV. a. The negative treatment effect on the rate of not using any form of birth control is opposite to what we see in the DD plots, but this discrepancy is within the error bands and the clustered standard error.

V. Conclusion

Discussion

Overall, we did not find overwhelming evidence that shows that comprehensive sex education curriculum are effective in reducing teen births, motivating birth control usage, or convincing teens to be abstinent. Quite a few of our Difference-in-Difference plots showed that the trends for our metrics did not differ between our treatment states and the

control states within the error bands, both before and after the policy change, indicating no treatment effect. This group includes California: Condom Rate, South Carolina: Birth Control Rate, South Carolina: Condom Rate, South Carolina: Sex Activity Rate, and Illinois: Sex Activity Rate. Another group of our metrics did not have any pairs of trends that could be considered the same, but these trends were parallel enough within error bands throughout to also lead us to doubt the existence of a meaningful treatment effect. This group includes California: Birth Contol Rate, California: Sex Rate, California: Birth Rate and South Carolina: Birth Rate.

One plot (Illinois: Condom Rate) showed parallel trends before the policy change (with treatment state at the lower intercept), and then saw those trends converge to be the same within the error bands after the change. This suggests that the Illinois policy change erased the status of being better about using condoms than their peers nationally that they formerly held.

Finally, a pair of metrics showed that the trends between the treatment state and the control group could be considered the same in the years leading up to the policy change, but diverged in the years after the policy change, suggesting an effect. This group includes Illinois: Birth Control Rate and Illinois: Birth Rate. Of these two, only the Birth Rate plot indicates that the policy change inspired safer behavior. This plot shows that the teen birth rate in Illinois drops below that of the control group after the policy change, despite these two trends being similar before the policy change. The Birth Control Plot shows a counterintuitive result, indicating that the policy change in Illinois led teens to start not using birth control at a higher rate than their peers nationally.

Our regression analysis did not provide any statistically significant evidence of a treatment effect in any of our states.

In summary, across all three treatment states, Illinois is the only state that showed treatment effects that could be significant through the difference-in-difference plots, and Illinois: Birth Rate is the only metric that reflects the hypothesis that comprehensive sex education leads to safer behavior in teens. Illinois being our only state that showed effects is interesting considering it was the one policy change that did not mandate sex education, but only provided conditional guidelines. One theory for why we got this result lies in that keyword: mandate. As we saw with the CDC metric earlier (99.2% of Illinois schools report teaching “Health consequences of HIV, other STDs, and pregnancy” as of 2018), Illinois does not have to mandate sex education for it to be present in their state. This may go to show that the people of Illinois place a higher value on sex education to begin with. This motivation could be what makes state intervention more impactful in Illinois.

Limitations

Our results do not necessarily mean comprehensive sex education is not important for schools to have. There are a few aspects of our analysis that could be holding us back from more meaningful results. One of these limitations includes the possibility of delayed treatment effects that we were not able to account for in our difference-in-difference plots. We had hoped to exclude the first 1-2 years post-policy change from the plots to give more time for the policy changes to kick in their potential effects, but because most of our metrics come from data that was collected biannually, and that we only have data until 2019, we would not have enough data to generate error bands. An analysis like ours should be tried again once more data is released. Having more years represented following these policy changes would also capture results from more teens in later cohorts, which could also be a factor holding us back from conclusive results.

While our regression analysis did not have the delayed effects issue to the same extent, as we were able to exclude the first year after the policy change in that aspect of the project, there are other limitations specific to the regression that should be considered. Change in state sex education policy includes multiple aspects. There are likely other unmeasured factors such as changes in teaching style, parent participation, or cultural influences that occurred alongside our policy changes that could be confounding to our estimated treatment effects. Including indicator variables for having HIV education, parent role, and other detailed content requirements could prevent the omitted variable bias to some extent. However, tracking all the changes and when each occurred based on each state's legislative documents is beyond the scope of this project.

Another limitation to our study is the applicability of our findings to all 50 states. By selecting 20 specific states that we felt satisfied our requirements for comprehensive versus abstinence-only sex education, we may have unknowingly picked states that are not representative of all 50 US states.

Finally, we must continue to acknowledge that just because a state does not have comprehensive curriculum in their sex education requirements, that does not mean some schools in that state do not provide comprehensive sex education resources or programing. We were first hinted that this could be a problematic factor in our analysis from that article described earlier from the Illinois paper *The McDonough County Voice,* that predicted that a policy change would have little impact due to their already existing comprehensive program. The truth is that sex education will continue to be a difficult concept to research as long as we are left without school district level data detailing sex education rules, and other important details such as the quality of teaching, willingness of teens to learn, and resources available.

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