



# The Impact of State Mandatory Counseling and Waiting Period Laws on Abortion: A Literature Review

Theodore J. Joyce, Stanley K. Henshaw, Amanda Dennis, Lawrence B. Finer and Kelly Blanchard

## HIGHLIGHTS

- As of January 2009, 24 states require that women must receive counseling with certain state-specified information and then wait, usually for 24 hours, before an abortion can be performed.
- A literature search identified 12 studies of the impact of mandatory counseling and waiting period laws.
- The clearest documented impact was obtained from analyses of Mississippi's mandatory counseling and waiting period law, which requires an additional in-person visit before the procedure. Following enforcement of the law, abortion rates fell, the number of women going out of state for an abortion rose and the proportion of second-trimester abortions increased.
- Waiting period laws that allow mandatory counseling to be delivered over the Internet or by mail or telephone appear to impose relatively little cost on patients, and neither the waiting period requirement nor the mandatory counseling has a measurable impact on reproductive outcomes, other than to postpone the timing of some abortions.
- Some studies found large impacts of these laws on infant and child health, as well as on suicide rates. However, these findings are implausible, given the small or undocumented increase in unintended childbearing associated with the laws and the limited data on infant and child well-being.
- Many studies of mandatory counseling and waiting period statutes have limitations, including incomplete data and inadequate controls for factors other than the imposition of the law.
- Future research should aim for straightforward designs. Researchers should strive for transparency by showing prelaw trends in outcomes among those who were exposed and unexposed to the laws. They also should clearly discuss expected outcomes, statistical power and the plausibility of their findings.



April 2009

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## **ACKNOWLEDGMENTS**

This report was written by Theodore Joyce, Baruch College and Graduate Center, City University of New York; Stanley Henshaw and Lawrence Finer, the Guttmacher Institute; and Amanda Dennis and Kelly Blanchard, Ibis Reproductive Health. The report was edited by John Thomas.

This report was developed as part of the Expanding Access Through Evidence project of the Guttmacher Institute, with funding from the Educational Foundation of America and the Robert Sterling Clark Foundation. The conclusions and opinions expressed in this publication are those of the authors.

The Guttmacher Institute gratefully acknowledges the general support it receives from individuals and foundations, including major grants from the William and Flora Hewlett Foundation, the David and Lucile Packard Foundation and the Ford Foundation, which undergirds all of the Institute's work.

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Suggested citation: Joyce TJ et al., *The Impact of State Mandatory Counseling and Waiting Period Laws on Abortion: A Literature Review*, New York: Guttmacher Institute, 2009.

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# Background

Many states require a waiting period between the time a woman has been counseled about her abortion and the actual procedure. As of January 2009, 21 states required a mandatory waiting period of 24 hours, one state required a waiting period of 18 hours and another a period of one hour; one state required that counseling take place on a day prior to the abortion, but did not specify the length of the waiting period.<sup>1</sup> Four other states had mandatory counseling and waiting period laws whose enforcement had been enjoined (i.e., that were legally prohibited from taking effect). These laws specify that certain information must be given or offered to the women at the initial visit. The required counseling usually includes, among other things, the gestational age of the fetus, information about fetal development, the risks of abortion and childbirth, and resources available for pregnant low-income women. Some mandatory counseling and waiting period laws stipulate or have been interpreted to mean that a woman can be counseled via mail or phone about her procedures; others require that the woman be counseled in person, which usually means she must visit the facility twice—once for counseling and again for the procedure. Moreover, the content and the complexity of mandatory counseling laws have changed over time and may continue to evolve. For example, beginning in 1996, providers in some states\* have been required to give women information about the option to view an ultrasound as part of the verbal or written materials given during the mandated counseling session.<sup>2</sup>

Proponents of mandatory counseling and waiting period laws argue that the state has a duty to ensure that before a woman decides to terminate a pregnancy she has been given ample time, after having been given information about her pregnancy and abortion, to weigh her options. Those opposed to these laws argue that such statutes are unneeded because physicians are required to obtain informed consent before all procedures (including abortion), that the laws impose an unnecessary burden on

women who are seeking abortions and that women are able to make informed decisions about terminating a pregnancy without the imposition of a state-mandated waiting period. Opponents further argue that mandatory counseling and waiting period laws serve no medical purpose and are a ruse to decrease the accessibility of abortion.

Because no other common medical procedure has a legally mandated waiting period of this kind, the potential impacts of these waiting periods are unique to abortion provision.<sup>†</sup> Mandatory counseling and waiting period laws are relatively new, and were declared constitutional by the Supreme Court in 1992 in the landmark case *Planned Parenthood of Southeastern Pennsylvania v. Casey*. What impacts do mandatory counseling and waiting periods have on the financial and emotional states of women seeking abortions? Do they force women to have abortions at a later stage in pregnancy or block access to abortion services? Does mandatory counseling dissuade women from having an abortion? Are women traveling out of their home state for abortions when counseling and waiting period laws are enforced in their state of residence? Furthermore, what impacts do these laws have on abortion providers?

Efforts to address these questions have proven difficult. Evaluators of mandatory counseling and waiting period laws face many of the same challenges that confront researchers of other state policies that affect access to abortion services, such as parental involvement laws and Medicaid financing of abortions.<sup>‡</sup> For instance, national data on abortion compiled by the Centers for Disease Control and Prevention are collected by state of occurrence and not by state of residence. Using abortion data by state of occurrence to evaluate a mandatory

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\*As of early 2009, six states—Georgia, Indiana, Michigan, Oklahoma, Utah and Wisconsin—have enacted such laws (source: reference 2).

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†An exception is Medicaid-funded female contraceptive sterilization, which cannot be performed until at least 30 days after informed consent is obtained.

‡Dennis et al. present a detailed overview of the methodological challenges associated with the evaluation of parental involvement laws; issues related to data and research design pertain equally to the evaluation of mandatory counseling and waiting period laws (source: Dennis A et al., *The Impact of Laws Requiring Parental Involvement for Abortion: A Literature Review*, New York: Guttmacher Institute, 2009).

counseling and waiting period law can lead to spurious findings if women leave their state of residence for an abortion, and if nonresidents stop coming into a state for the procedure, once the law is enforced. The problem is exacerbated by the relatively few states (seven\*) that enforce the strictest form of a mandatory waiting period law—requiring in-person counseling at least 18 hours prior to the procedure—since women can travel to nearby states if they want an abortion without a required delay. In addition, mandatory counseling and waiting period laws affect women of all ages and incomes, not just minors or those eligible for Medicaid. However, older, nonpoor women have more education and are more likely to have independent income, their own means of transportation and other resources that could make accessing services in other states a more feasible option. For the results of an evaluation to be valid, therefore, researchers should demonstrate that few women left their state of residence to obtain an abortion in response to laws of this kind, or if they did, the researcher must be able to include in the analysis abortions obtained by a state’s residents in other states.

There are, however, important differences between mandatory counseling and waiting period laws and parental involvement laws that should be considered by analysts. First, some states require that counseling be given in person by the physician who will perform the procedure or by a designated staff person. Other states allow the material to be read over the phone, or delivered via a recorded message, by mail or, more recently, over the Internet. The in-person requirement is a potentially important distinction, for it increases the cost of an abortion if a woman has to take off from work, arrange child care or stay overnight when the distance to the clinic is too great. Thus, it is important for researchers to analyze states that have an in-person requirement separately from those that do not. The two-visit requirement increases not only the cost of the abortion, but also the likelihood that a woman will travel to a nearby state to avoid compliance with the law. The issue is further complicated because some abortion clinics may provide a way for women to receive face-to-face counseling from a physician near their homes, thus avoiding a trip to the clinic. It is difficult for researchers to determine the extent of these arrangements.

Another difference between parental involvement laws and mandatory counseling and waiting period laws is that all women in the state are subject to the latter. This makes it difficult to find a comparison group within the state. Parental involvement laws, by contrast, affect

only minors, which leaves older teens within the same state as a plausible comparison group. The advantage of a “within-state” comparison group is that those exposed or unexposed to the law are all subject to the same political, social, cultural and economic conditions. Comparisons across states require careful analysis, since large differences in states’ abortion rates may reflect profound differences not only in attitudes toward abortion but also in prelaw trends in abortion, birth and pregnancy rates. Finally, the most likely effect of mandatory counseling and waiting period laws is on the timing of an abortion. Numerous studies have evaluated whether such laws are associated with an increase in second-trimester abortions or in mean gestational age. These analyses require information on gestational age, which is available only from the Centers for Disease Control and Prevention and state health departments. The other major source of abortion data, the Guttmacher Institute, estimates abortions by state of residence and woman’s age, but not by gestational age. Thus, abortion data from the Guttmacher Institute cannot be used to analyze the effect of these laws on the timing of abortion.

The research designs used to evaluate mandatory counseling and waiting period laws are very similar to those used in studies of parental involvement statutes. The most effective designs use a pre-post analysis with a comparison group, and are referred to as difference-in-differences estimators. The change in the abortion rate or in the rate of second-trimester abortions from before to after the law went into effect in a state (the experimental state) is compared to changes in rates in states without such statutes (the comparison states). Such comparisons attempt to ensure that any variation in the abortion rate associated with the law is not confounded by ongoing trends in the abortion rate that reflect broader unrelated changes.

As straightforward as this design appears, it rests on the credibility of the comparison group. Both the prelaw trend and the abortion rate, as well as the characteristics of the women themselves in experimental and comparison states, should be as similar as possible. Differences in the rate or trend would suggest potential confounding factors. However, few studies present plots of trends in the outcomes in the experimental and comparison states. Instead, researchers typically rely on regression analysis to control for observable differences between states. Yet common factors used as controls—such as race, per capita income and even the number of abortion providers—tend to change relatively slowly over time. These factors may be correlated with differences in the abortion rate between states, but they often have little ability to explain changes over short periods of time.

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\*Indiana, Louisiana, Mississippi, Missouri, Ohio, Utah and Wisconsin (source: reference 1).

A common regression technique is to include a dichotomous indicator for each state in the sample. Because there are 50 states, the researcher would include 49 dummy variables. This set of state indicators is referred to as state fixed effects, and their inclusion removes any variation between states in the abortion rate and the included covariates that is fixed over time. For example, if the difference in abortion rates between California and Utah partly reflects long-standing differences in religiosity, then the state fixed effect will remove this source of between-state variation in the abortion rate. As a result, it can be concluded that the association between mandatory counseling and waiting period laws and the abortion rate is based solely on changes in the dependent and independent variables within each state. Similarly, the inclusion of year fixed-effects variables (i.e., a dummy variable for each year) adjusts for variation over time in the dependent and independent variables that is common to all groups and states.

State and year fixed-effects models are now commonly used, particularly by economists, in evaluations of abortion laws. This approach is a powerful way to reduce confounding from hard-to-measure variables, and allows researchers to use all 50 states to maximize the number of “experiments.” However, when doing so, researchers implicitly assume that variation in the abortion rates of states without counseling and waiting period laws, such as California, New York and Illinois, is a good counterfactual for trends in states with such laws, such as Utah, South Carolina and Mississippi. This is a dubious assumption, since state and year fixed effects do not control for differences in trends in the abortion rate or other outcomes *within* states.

Distinguishing short-term from longer-term effects of a law is another challenge. A mandatory counseling and waiting period law may cause an initial drop in abortion rate or a rise in the rate of second-trimester abortions. However, as more women become aware of the law and as more clinics improve scheduling and administration of the counseling, the “costs” associated with compliance may fall, along with the law’s impact on outcomes. In any case, it is very difficult to credibly link longer-term declines in abortion or the timing of abortion to the impact of a law, given the likelihood of confounding from other factors that influence abortion rates.

In the end, the best research designs are the most transparent. Prelaw trends in the abortion rate or in the rate of second-trimester abortions in experimental and comparison states are key factors to review. If mandatory counseling and waiting period laws have a substantial effect on abortion rates, then there should be an obvious discontinuity in the time series. Future researchers should

consider plotting abortion rates for groups of states that changed their laws in the same or nearly the same year and comparing them with plots of states with similar abortion rates but whose laws did not change. This approach would allow for the examination of differences in levels and trends of abortion rates between experimental and comparison states. If the natural experiment afforded by these laws is truly exogenous (i.e., the changes in laws are not associated with other state-level factors that may also affect the outcome of interest), and changes in the abortion rate among the comparison groups effectively capture ongoing trends, then estimated effects based on simple difference-in-differences estimators should not change when additional factors are added to the model. As in randomized designs, adjustment for other factors will be needed in such models to improve the precision of the estimates and not to control for confounding.

# Methods

We identified published research on the impact of mandatory counseling and waiting period laws using four search engines: Google Scholar, PubMed, Popline and Web of Science. We used the search terms “abortion AND mandatory delay,” “abortion AND waiting periods” and “abortion AND required counseling,” and searched for all articles published after 1900.

We scanned the titles of the articles returned from the database searches and eliminated ones that were obviously not relevant. We then collected and reviewed abstracts of the remaining articles to identify those that were eligible for inclusion in the review. To be eligible, articles had to be published in English and focused on the United States, and had to present original research and provide details on the impact of mandatory counseling and waiting period laws on reproductive behavior or other outcomes. We examined the citations in the articles selected to identify additional papers to consider for inclusion. We also consulted with experts in the field and gathered articles that received media attention during the time of our review (September 2007–December 2008).

Our initial search of PubMed, Popline and Web of

Science yielded 50 potentially eligible papers. Thirty-eight of these were excluded because they focused on historical overviews of mandatory counseling and waiting period legislation or rights-based discussions of the theory of mandatory counseling and waiting periods, or were reviews of legal cases regarding this issue. A search using Google Scholar returned 3,610 hits; many of these were repeats or were not selected for the reasons cited above, or because they did not discuss these laws in relation to abortion. One additional study from Google Scholar was included in this literature review and two additional studies were contributed by experts. We thus reviewed 15 articles and eliminated three articles that were reviews of these laws but that did not measure their impact, leaving 12 studies for inclusion in our review. All 12 studies evaluated waiting period laws; no studies were found that focused specifically on counseling laws, though one study evaluated waiting period and counseling laws separately. A summary of these articles is presented in Table 1. In addition to describing the data, methods and results, we include an evaluation based on our judgment of the quality of the overall approach and the credibility of the findings.

# Studies of Reproductive Outcomes

Researchers have examined the impact of mandatory counseling and waiting period laws on a number of reproductive outcomes: abortion rates and ratios, birthrates, the proportion of abortions among state residents performed out of state and the gestational age of fetuses at abortion. We examine researchers' findings and the context of their work, and provide detailed information on the full requirements of the law in the state of interest for each study that focuses on individual states. The specific requirements of these state laws are constantly reinvented or reinterpreted; it is important to note that many changes in the laws may have occurred since these articles were published.

## Reproductive Outcomes Among Women of Childbearing Age

Six studies evaluated changes in abortion rates and ratios following the implementation of mandatory counseling and waiting period laws. One study also assessed the impact on birthrates, four studies analyzed changes in the timing of abortion and three examined the impact of laws on changes in where abortions occurred. Four of the six studies found a statistically significant association between mandatory counseling and waiting period laws and abortion rates; three of these studies focused on Mississippi. The studies are presented chronologically. Two studies, which are presented last, found no impact of these laws on reproductive health outcomes.

Althaus and Henshaw<sup>3</sup> examined detailed abortion data from the Mississippi State Department of Health's Division of Public Health Statistics to determine the effect of the state's 1992 mandatory counseling and waiting period law on abortion trends. The researchers used state-collected information on residents who had abortions in Alabama and Tennessee to examine the effect of the law on women traveling out of state. The bordering state of Louisiana does not collect abortion data on out-of-state residents, and the authors did not gather data from Arkansas.\*

Typical of other mandatory counseling and waiting pe-

riod laws, Mississippi's statute required that a woman be given information at least 24 hours prior to the abortion regarding the name of the physician who would perform the procedure, the medical risks associated with abortion, the probable gestational age of her pregnancy and the medical risk of continuing her pregnancy. In addition, a woman was required to be informed about medical assistance benefits available to her if she continued the pregnancy, the father's liability for child support, the availability of pregnancy prevention services, her right to review state-produced materials that listed services to assist a woman through pregnancy and childbirth, and a brochure that described fetal development. All of this information had to be delivered by the referring physician or the physician performing the abortion. In Mississippi, the law requires a woman to hear the information in person, which clinics have interpreted as face-to-face; this necessitates two in-person visits to the clinic.

In a before-and-after analysis of state-level abortions, the researchers found that the actual number of abortions performed in Mississippi was 22% lower than expected based on previous years. They also found that the number of abortions provided to nonresidents fell 30%, while the number of Mississippi residents who obtained an abortion in Tennessee or Alabama increased by 17%. Overall, the researchers concluded that, among women who would have had abortions, the law prevented approximately 11–13% of them from obtaining one. The law was also associated with women having abortions later in pregnancy: The proportion of Mississippi women who obtained an abortion after more than 12 weeks of gestation increased by 17% in the five-month period after the law was enforced compared with the seven-month period prior to enforcement. In addition, the decline in abortions was greater for women with less than 12 years of education than for more educated women.

This was the first study to use data on abortions to evaluate the impact of mandatory counseling and waiting period laws. A strength of the study is its use of abortion data by state of residence. The data show that not only did women leave the state to obtain an abortion, but fewer women came into the state for an abortion. The major limitation of the study is the lack of a control group other than Mississippi in the months before the law took

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\*It is unlikely that many women went to Arkansas, since in 1991 only nine Mississippi residents had abortions there (source: reference 4).

effect. Although the number of abortions fell sharply in the months right after the law's enforcement, abortions might have fallen somewhat in the absence of the law. Thus, we don't doubt that the waiting period requirement had a statistically significant effect on the number of abortions in Mississippi, but the exact size of the decline is uncertain because of trends in abortion that may have existed prior to the law.

Joyce, Henshaw and Skatrud<sup>4</sup> extended the work of Althaus and Henshaw<sup>3</sup> by analyzing the effect of Mississippi's mandatory counseling and waiting period statute on abortion rates and birthrates, as well as on the timing and location of abortions for the period 1989–1994. They used Georgia and South Carolina as comparison states, since neither state enforced a mandatory waiting period during these years. This enabled the researchers to use a difference-in-differences methodology. The authors also estimated a regression model using monthly abortion rates in the three states over this period.

The authors reported that the abortion rate in Mississippi dropped by 16% in the year following enforcement of the mandatory counseling and waiting period law; in the same period, the abortion rate fell by 5% in South Carolina and by 3% in Georgia. Thus, they estimated that Mississippi's law was associated with a 12–14% decline in the abortion rate among residents. The authors concluded that they likely overestimated the decline since they lacked data on Mississippi residents who obtained abortions in Louisiana. To adjust for this, they estimated the likely number of abortions that residents obtained in Louisiana based on that state's 1988 data. After adjustments, they concluded that Mississippi's mandatory counseling and waiting period law was associated with approximately a 10% decline in the resident abortion rate. The authors also found that the number of abortions obtained out of state rose in absolute and relative terms, as did the number of abortions performed after 12 weeks of gestation. The authors reached no conclusion regarding the impact of the law on birthrates because of a lack of statistical power.

This study underscores the strengths and limitations of individual-state analyses. First, the authors' ability to measure changes in where abortions occurred was critical. Without resident abortion rates, there would be no way to accurately assess the impact of a law on the incidence of abortion. The quality of the resident abortion data appears to be good, as comparisons with data obtained by the Guttmacher Institute's independent survey of abortion providers indicate that Alabama, Tennessee and Mississippi have relatively complete abortion reporting. Thus, the authors were able to assess the extent to which women left Mississippi to obtain abortions in these

other two states, which turned out to be substantial. The proportion of abortions obtained by Mississippi residents outside the state increased 42%.

Another strength of the study is the selective use of comparison states. Georgia and South Carolina are demographically and politically similar to Mississippi. Indeed, both of these states went on to enforce mandatory counseling and waiting period laws. Finally, the authors presented the data in a transparent manner. They showed trends in abortion rates and birthrates in Mississippi and the two comparison states both before and after the law. The regression results simply confirmed statistically what was apparent from the time-series plots.

However, the authors did not adjust for serial correlation in the residuals\* and likely underestimated the standard errors on the regression coefficient that measured the impact of the law. In addition, as in all case studies, the magnitude of the effect may be different in other states. Mississippi is a poor, rural state that has one of the lowest numbers of abortion providers per capita in the country. Furthermore, Mississippi's law is stricter than those in most states, since it is interpreted to mean that the preabortion counseling must be conducted in person. Other states that mandate counseling and a 24-hour delay permit information to be delivered over the phone, by mail and over the Internet. The authors argued that their results were unlikely to be generalizable to states that did not have an in-person requirement, which effectively requires at least two visits to the clinic. Despite these limitations, the work by both Althaus and Henshaw<sup>3</sup> and Joyce, Henshaw and Skatrud<sup>4</sup> underscores the need to interpret results cautiously from studies that evaluate mandatory delay laws using abortions measured by state of occurrence.

Joyce and Kaestner<sup>5</sup> returned to Mississippi to evaluate in more detail the effect of that state's mandatory counseling and waiting period law on the timing of abortion. Again, the appeal of Mississippi as a case study is the strictness of the law (a two-visit in-person require-

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\*Serial correlation refers to the association in the error terms from period to period in a regression in which the unit of analysis is defined by time. For instance, the unexplained variation in the Mississippi abortion rate in a given month (i.e., the residual in that month) may be correlated with the unexplained variation in the previous month or even the month before that. As one goes further back in time, the correlation tends to be weaker. Nevertheless, correlation over time violates one of the assumptions of ordinary least-squares regression, which in this case is that a given month's residual is independent of the residuals from previous months. If Joyce, Henshaw and Skatrud<sup>4</sup> had corrected for serial correlation in the residuals, the standard error of the regression coefficient of the mandatory counseling and waiting period law would likely have been larger, which would have diminished the statistical significance of the coefficient.

ment) and the quality of the resident abortion data. The study was unique because the authors created a within-state comparison group of women who lived closer to abortion providers in Tennessee and Alabama than to providers in Mississippi. They hypothesized that these women would have been more likely to have gone to providers in Tennessee and Alabama in years prior to enforcement of the law, and thus would have been less affected than women whose nearest abortion provider was within Mississippi.

Their results bore this out. They found that the proportion of second-trimester abortions rose by 45% and the mean gestational age at abortion increased by four days among women whose closest provider was in state compared with women whose closest provider was out of state. These results were consistent with those of Althaus and Henshaw<sup>3</sup> and Joyce, Henshaw and Skatrud,<sup>4</sup> which should not be surprising, since all three studies focused on Mississippi. However, each study used a different counterfactual or comparison group, which makes the consistency more compelling. Nevertheless, the three studies pertain to one state and one specific type of law, and thus their generalizability should be viewed with caution.

Using data from the Centers for Disease Control and Prevention on abortions by state of occurrence, Bitler and Zavodny<sup>6</sup> conducted a pooled time-series analysis for 29–40 states for the period 1974–1997; not all 40 states reported abortions by gestational age each year. Their goal was to assess how policies that restrict access to abortion services affect the timing of abortions and the abortion rate among women aged 15–44. One policy they analyzed was mandatory counseling and waiting period laws. They used regression analysis to control for demographic characteristics and state economic conditions; they also included proxies for the political climate, as well as state and year fixed effects. By 1997, 11 states had begun enforcing mandatory counseling and waiting period statutes, but these state-year observations accounted for only 3% of the overall sample.

In models without state-specific trend terms, these laws were associated with a 2.3 percentage point increase in the proportion of abortions occurring in the second trimester and with a 41% increase in the rate of second-trimester abortions. Laws had no statistically significant effect on the overall abortion rate.

A strength of the study is the analysis of both the proportion and the rate of second-trimester abortions. It is possible for the proportion to rise but the rate to remain unchanged or even fall following implementation of a mandatory counseling and waiting period law if the overall abortion rate declines because of a decrease in first-trimester abortions. The results regarding the association

between the timing of abortion and the state's law appear to be in approximate agreement with those of Althaus and Henshaw<sup>3</sup> and Joyce, Henshaw and Skatrud.<sup>4</sup> However, Mississippi's law was associated with a significant decrease in the abortion rate, whereas Bitler and Zavodny found no such association. This is an important difference, since the decline in the abortion rate in Mississippi associated with the law would have been much larger if the studies by Althaus and Henshaw and by Joyce, Henshaw and Skatrud had measured abortion by state of occurrence. Many residents of Mississippi left the state for an abortion in the year immediately after the law was implemented, and fewer nonresidents came into the state to obtain an abortion. In other words, by analyzing abortions by state of occurrence, Bitler and Zavodny's study was biased toward finding a decline in the abortion rate. Since by 1997 only Louisiana, Mississippi, Pennsylvania and Utah required two in-person visits, this study suggests that mandatory counseling and waiting period laws that do not require two clinic visits have little effect on abortion rates, but may cause delay in terminating a pregnancy. However, the increase in the second-trimester abortion rate was greater than could plausibly be caused by counseling and waiting period laws.

Meier et al.<sup>7</sup> used a pooled time-series design and data from all 50 states for the period 1982–1992 to estimate the effect of a waiting period law and an informed consent statute (which did not necessarily mandate a waiting period) on the abortion rate of all women aged 15–44. These laws were among 23 policies related to abortion that were included simultaneously in the analysis. Results indicated that neither the waiting period nor the informed consent statute had an impact on the abortion rate.

This study is unique in that the researchers did not account for state fixed effects, but instead included the previous year's abortion rate to control for hard-to-measure determinants of abortion. In theory, the lagged abortion rate was an effective way to control for these determinants between states; however, the coefficient on this rate was close to 1.0 (0.94). In essence, the authors were trying to correlate one-year changes in the abortion rate with the level of the other covariates.\* A more appropriate approach would have been to regress changes in the abortion rate on changes in the covariates and policy

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\*For example, assume that the coefficient on the abortion rate lagged one year was exactly 1.0. The regression model could then be written as  $A_t = A_{t-1} + \beta X_t + e_t$ , where  $A_t$  is the abortion rate in year  $t$ ,  $A_{t-1}$  is the abortion rate in the previous year,  $X_t$  represents other covariates in year  $t$ ,  $\beta$  is the coefficient on  $X_t$  and  $e_t$  is the residual. However, this model can be rewritten as  $A_t - A_{t-1} = \beta X_t + e_t$ , where  $A_t - A_{t-1}$  is the first difference, or annual change, in the abortion rate.

variables. Any association using this approach could have been interpreted as the effect of a change in an abortion policy on the change in the abortion rate.

Another problem with this study is that few states enforced waiting period laws before 1992, and many were waiting for the Supreme Court to decide *Planned Parenthood of Southeastern Pennsylvania v. Casey* before enforcing their laws. In sum, the finding that waiting period and informed consent laws had no effect on the state abortion rate could be due to the weak design of the study.

Medoff<sup>8</sup> analyzed the determinants of the ratio of abortions to pregnancies using state-level data from the Guttmacher Institute for the years 1982, 1992 and 2000. He focused on three abortion policies: mandatory counseling and waiting periods, parental involvement laws and Medicaid financing of abortions. He considered the price of abortion, other socioeconomic characteristics of the state time trend variables, opportunity costs, the policies of neighboring states and proxies for state sentiment toward abortion (e.g., percentage of the population affiliated with an evangelical Christian denomination) that have been found to be determinants of abortion demand. Mandatory counseling and waiting period laws had no statistically significant impact on abortion ratios among all women or among minors aged 15–17, or on whether abortions were performed out of state.

This study is unique in that it explicitly included the price of an abortion in the abortion demand equation. However, including all mandatory counseling and waiting period laws with differing specifications might have masked the impact of the most restrictive laws. In addition, this was a weak design because the effect of the law was identified mainly by cross-sectional variation in a single year, 2000 (few states had such laws in 1992). The potential for confounding is great given that these laws are not randomly distributed, but instead reflect political sentiment toward abortion.

## **Reproductive Outcomes Among Minors**

Using individual-level data, another Joyce and Kaestner study<sup>9</sup> compared abortion measures among minors with those among older teenagers and young adult women living in Mississippi and South Carolina before and after the implementation of each state's mandatory counseling and waiting period law, which took effect in 1992 and 1995, respectively. One difference between the two laws was that in Mississippi a woman was required to wait 24 hours before the procedure could be performed, but in South Carolina a woman was required to wait only one hour. As a result, a termination in South Carolina could be completed in one visit.

The researchers analyzed data on abortions obtained by women in their state of residence and in border states, but information on the number of Mississippi residents who obtained abortions in Louisiana was unavailable, which could potentially affect the results. They then compared teenagers whose nearest provider was in state with teenagers whose nearest provider was out of state. The researchers also conducted a multivariate analysis that evaluated the probability of a woman having a second-trimester abortion, of having an abortion out of state and of the mean gestational age at abortion. Controls for race, marital status, previous live births, previous induced abortions and distance to the nearest provider were included in the model.

The researchers found that the probability that a teenager in Mississippi went out of state for an abortion after implementation of the mandatory counseling and waiting period law was 26 percentage points lower for those whose nearest abortion provider was in state than for minors whose nearest provider was out of state. They also determined that mean gestational age at abortion increased by more than half a week for teenagers whose nearest abortion provider was out of state, and by almost a week for teenagers whose nearest abortion provider was in state. The results for South Carolina were markedly different: That state's one-hour waiting period statute had no effect on either the timing of abortion or the probability that a teenager went out of state for an abortion. They concluded that this lack of effect may have been due to the relatively minor inconvenience of a one-hour waiting period. The results also suggested that counseling alone was not a significant deterrent to women seeking an abortion.

The study is noteworthy because the researchers used teenagers whose nearest abortion provider was in another state as a comparison group for teenagers whose nearest provider was in state. However, there were relatively few minors in the comparison group, which diminished the ability to detect statistically significant changes in abortion rates. In addition, recent statistical research suggests that the authors likely underestimated the standard errors in the multivariate analysis, and thus the statistically significant findings should be interpreted with caution.<sup>10</sup>

# Studies of Other Outcomes

Researchers have also examined the impact of mandatory counseling and waiting period laws on the cost of an abortion, a woman's emotional and physical experience in obtaining an abortion, providers' experiences regarding the laws, infant and child health outcomes, the financial cost for providers and female suicide rates. Two studies examined the qualitative experiences of abortion providers and their patients. Three studies evaluated the impact of mandatory counseling and waiting period laws on infant health outcomes, and one study investigated the relationship between such laws and suicide rates.

## Qualitative Experiences of Patients and Providers

Lupfer and Silber<sup>11</sup> interviewed more than 300 women at three clinics in Tennessee about their experiences obtaining abortions following the implementation of a mandatory counseling and waiting period law in 1979. The law required that a woman wait at least two days after being examined in person by her physician and being informed about the benefits and risks of pregnancy and abortion before having her abortion. Counselors or research staff asked women questions about their perceptions of the benefits and costs of the law either after completing the mandatory waiting period or both before and after the period. Interviews took place from October 1979 through January 1980, starting just one month after the law was implemented.

The researchers found that the cost of an abortion increased for the majority of women: Sixty-two percent reported that the required second visit increased the cost because of lost wages and additional transportation and child-care expenses. The study found that the second visit elevated costs by 48% for low-income women and by 14% for women with higher income (fees were often scaled according to ability to pay), and the amount of the increase was associated with a woman's distance from the clinic and the number of hours she was employed per week. Seventy-seven percent of women were unable to name a benefit of the waiting period, and some women reported negative mental, physical and social consequences: Twenty-nine percent experienced mental anguish; 24% incurred extra transportation costs; 19% experienced additional nausea that they attributed to the delay; 15% missed time at work and another 15% had to make excuses to

explain their absence; 8% said that others missed time at work to transport them; 5% had to arrange for a babysitter; and 1% may have entered into the fourth month of pregnancy because of the imposed waiting period. The authors found that the cost of compliance did not differ by race, age, income level or student status of the women.

Although Lupfer and Silber tried to limit interviewer bias during the patient interviews, more than 200 of the sessions were conducted by counselors employed at the clinics; this may have biased responses, since the counselors had relationships with the patients, who may have answered in ways that they believed the counselors would approve of. However, as an early study that looked at the impact of a mandatory counseling and waiting period law immediately after implementation, this study provided excellent first-hand data on patient experience. But because the data were collected nearly three decades ago, a new survey would be valuable since these kinds of laws are now widespread, and women and providers may have adjusted to the laws in ways that might mitigate some of their impact on access to abortion services.

Examining the other side of service provision, Althaus and Henshaw<sup>3</sup> interviewed clinic administrators in two clinics in Ohio and Pennsylvania from August to December 1992 to assess how mandatory counseling and waiting period laws affected them and their practice. At the time, Ohio law dictated that information about the methods and risks of the abortion procedure, the probable gestational age of the woman's pregnancy, the medical risks associated with a continued pregnancy and other information had to be provided in person, by telephone or by mail at least 24 hours prior to an abortion. Pennsylvania's mandatory counseling and waiting period law required that a physician verbally inform a woman of the nature of the abortion procedure, the risks involved in abortion and childbirth, and the probable gestational age of the pregnancy at least 24 hours before the procedure. The woman was also offered information about the availability of state-produced written materials describing the fetus and medical assistance for continuing the pregnancy, the father's liability for child support and agencies that could provide alternatives to abortion. The law was interpreted to mean that this information must be given in person, hence requiring two trips to the clinic for an abortion.

At the time of data collection, the Pennsylvania law had been in effect for only four months. Although neither clinic had yet conducted a formal analysis of the effect of the law on their service provision or fiscal outcomes, providers did note a sudden “scheduling nightmare” for patients, a decrease in the number of appointments made and an increase in required staff and staff time. Furthermore, the authors were told that costs associated with staffing, printing extra consent forms, purchasing the state-prepared brochures and mailing the brochures to patients had become a financial burden for some clinics in these states; for example, the costs at one clinic in Ohio rose by 10%.

The authors noted that the experiences of providers may change over time as they learn to adjust to the requirements of mandatory counseling and waiting period laws. The study was limited by the small number of providers surveyed and an inability to follow providers over time to see if they adjusted to the laws. Nevertheless, their data provide valuable direct information on the immediate burden that such laws place on abortion providers.

### **Infant and Child Health Outcomes**

Two papers by Bitler and Zavodny<sup>12,13</sup> used annual state-level data on indicators of child maltreatment. In the first paper, the authors analyzed reports of child abuse and neglect between 1976 and 1996 to assess the possible correlation between mandatory counseling and waiting period laws and these outcomes. In the later paper, they expanded the outcomes to include the receipt of children’s social services and the rate of child mortality attributed to possible abuse and murder. They also assessed the effect of abortion legalization in the early 1970s on these outcomes.

The researchers found that both enforced and enjoined mandatory counseling and waiting period laws were associated with a 5–23% decline in child abuse reports in the year the law was either enforced or enjoined.<sup>12,13</sup> Their results varied by outcome and by when the law was assigned to the outcome. For instance, coefficients changed from positive to negative when the laws were assigned to the year of conception rather than the year of receipt of social services or of death.<sup>13</sup> In the second paper, the results were also inconsistent as associations varied with different measures of abuse. For example, the authors determined that enjoined mandatory counseling and waiting period laws were strongly associated with an increased number of abuse reports, but with a decreased number of substantiated victims (the latter were analyzed only for the period 1990–1996). When they analyzed relative changes in the outcomes using logarithms, the estimated effects were substantial: 32–63% declines in the number of substantiated victims.<sup>13</sup> Enjoined laws were also associated with a 45% increase in the rate of murder of a child by a

relative or unknown person, but were unrelated to murder by a parent.

Bitler and Zavodny’s results for mandatory counseling and waiting period laws strain credulity. First, the estimates fluctuate dramatically depending on the outcome and years. This is not surprising, given that the laws were not consistently enforced until the Supreme Court decided *Planned Parenthood of Southeastern Pennsylvania v. Casey* in 1992, and also because, according to the authors’ own assessment, few individuals in their sample were exposed to the laws. For instance, they report that only 0.1% of the sample was subject to an enforced mandatory counseling and waiting period law between 1979 and 1996, and only 0.3% was exposed between 1990 and 1996. The proportion of their sample exposed to an enjoined law was also never greater than 1%. Furthermore, effects as large as 30–60% probably indicate omitted-variable bias, as does their finding that enjoined laws often had larger effects than laws that were enforced. Finally, the relationship between mandatory counseling and waiting period laws and child abuse is purportedly attributed to an increase in unintended childbearing associated with these laws. But there is no evidence that such laws have had a statistically significant effect on birthrates, even in Mississippi, where the results appear to be most robust. Without this connection, there is no compelling explanation for how the laws could influence child abuse.

Sen<sup>14</sup> tested the hypothesis that state-level restrictions on abortion were linked to increases in children’s rates of fatal injuries. She analyzed three restrictive policies: mandatory counseling and waiting period statutes, Medicaid financing of abortion and parental involvement laws. Her reasoning, similar to that of Bitler and Zavodny,<sup>12,13</sup> was that abortion restrictions might disproportionately increase births of unwanted children, as well as births to young, single and low-income women, which might in turn lead to adverse child outcomes. The author analyzed state-level data on fatal injuries among children aged 0–4 for all 50 states for the period 1981–2002. She chose this age range because she argued that past analyses have suggested that children in this group are the most vulnerable to fatal injuries associated with abuse or neglect. Three causes of injury-related deaths were considered: homicide, unintentional causes of any type and unintentional causes other than motor vehicle crashes in which the child was a passenger. A count data model with state and year effects was used for estimation,\* and results for each cause were presented for white and black children.

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\*Count data models are used when the outcome consists of generally rare events that are nonnegative integers, such as the number of infanticides.

The author found that mandatory counseling and waiting period laws were associated with a 24% increase (though not statistically significant) in homicide deaths and a statistically significant 9% increase in unintentional fatal injuries among white children. Among black children, homicides were 30% higher in states with enforced laws. All other results were not statistically significant. Sen also conducted falsification tests, in which she regressed fatal injury rates among adults aged 25–64 on indicators of abortion restrictions. Any association among adults would be considered spurious and would call into question similar associations with fatal child injury rates. Indeed, Sen found that such laws were correlated with higher rates of homicide among black and white adults and with a higher rate of unintentional fatal injuries among black adults.

Sen's study suffers from the same deficiencies as do the Bitler and Zavodny studies.<sup>12,13</sup> First, there is no evidence that mandatory counseling and waiting period laws cause a meaningful increase in unwanted childbearing, which is a seemingly necessary condition for an association with measures of child abuse. Second, Sen makes no distinction between such laws that require two in-person visits and those that do not. Third, only 6% of her sample was exposed to these laws, and substantially fewer were exposed to the strictest form of the law. Finally, since mandatory counseling and waiting period laws were correlated with fatal injuries among adults, they failed Sen's falsification tests, which is a strong indication that her model did not control adequately for other determinants of fatal injury rates.

## Suicide Rates

One study in our review measured the effect of mandatory counseling and waiting period laws on female suicide rates. Klick<sup>15</sup> examined suicide rates among women aged 25–64 in all states using a pooled time-series analysis of data from 1981 to 1998. In a multivariate model, he included the proportion of the year in which a Medicaid funding restriction was in place, as well as controls for other potential confounders, such as women's labor force participation, the unemployment rate, average state income, proportion of the state's population living in rural areas, education levels and religious identification. In some cases, he included male suicide rates to control for unobservable variables that might affect female rates.

In the most basic regression, Klick found that mandatory counseling and waiting periods were associated with 10% reductions in female suicide rates. These estimates were robust to the inclusion of state-specific linear trends, as well as to the male suicide rate. He noted that laws that restrict abortion access were more likely to be implemented in more politically conservative states, and

thus may be correlated with unmeasured changes that caused suicide rates to fall. To purge his estimates of this potential omitted-variable bias, he used an instrumental-variables approach and found that such laws were associated with a 30% decrease in suicide rates.\* The author concluded that waiting periods "induce a more reasoned approach to the abortion decision."

Despite the apparent thoroughness of the regression analysis, Klick's findings lack transparency and plausibility. First, if mandatory waiting periods are indeed associated with a 30% decline in suicide rates, then such large discontinuities should be apparent in the time series of suicide rates in the states that have enforced these laws. Klick provided no such figures or even simple difference-in-differences of suicide rates in states with counseling and waiting period laws and neighboring states without them. Second, it is unclear why Klick included suicide rates from 1981, when the first laws were not enforced until 1992. Nor did he analyze the association between suicide rates and mandatory counseling and waiting period laws in this earlier period, which accounts for over 60% of the sample; such an analysis could have served as a check for spurious associations.

Third, Klick found that mandatory counseling and waiting period laws were protective against suicide, but that Medicaid financing restrictions increased suicide rates. Yet he did not provide a convincing explanation for these seemingly contradictory results, given that both types of restrictions decrease women's access to abortion. Klick speculated that Medicaid restrictions reduce the number of abortions, but that the resulting unwanted births among relatively poor women lead to depression and suicide. In contrast, he suggested that mandatory counseling and waiting period laws may also reduce abortions and increase unwanted births, but that nonpoor women may respond to unintended childbearing with greater acceptance of the child, and so suffer less depression and be less likely than poor women to take their own lives. Klick

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\*Instrumental-variables analysis is a two-step procedure. In the first stage, the state mandatory counseling and waiting period law variable was regressed on a set of variables or "instruments" that are strongly correlated with such laws but that have no direct effect on suicide rates independent of these laws. In the second stage, suicide rates were regressed on the predicted value of the laws obtained in the first stage. Klick used three instruments: an indicator for whether the state's governor was from the Republican Party, and the proportions of seats in the state's lower and upper legislative bodies held by Republicans. The validity of the procedure rests on the assumption that the instruments have no association with suicide rates except through mandatory counseling and waiting period laws. This seems doubtful, since it is unlikely that political sentiment would be completely uncorrelated with suicide rates except through such laws. For instance, more conservative states may be less likely to fund suicide prevention programs or to have strong support for mental health policies.

further argued that if these laws have no effect on abortion rates, they may still reduce suicide rates by helping women become more comfortable with their decision to terminate the pregnancy, thus reducing postabortion regret and depression. He provided little support for these various speculations.

Finally, Klick included women aged 25–64 and excluded those aged 18–24. The latter age-group has the highest abortion rate, while many of the older women that he included were beyond their reproductive years. A test of the effect of enjoined mandatory counseling and waiting period laws would have helped to determine whether unmeasured confounding variables were influencing the results.

# Discussion

Early qualitative assessments of experiences with mandatory counseling and waiting period laws found that abortion patients and providers were burdened in multiple ways by the legislation.<sup>3,11</sup> Women who had obtained an abortion described negative physical and mental health consequences, such as physical discomfort and mental distress.<sup>11</sup> Women also reported increased burdens from having to visit clinics multiple times and having to travel out of state to a provider who was not affected by such laws. Interviews with providers suggested that many struggled to adjust to the laws immediately after implementation.<sup>3</sup> These early findings make intuitive sense, as any change in this type of regulation will have some effect on providers and patients, particularly as the logistics of meeting the new requirements are being worked out. But it is important to note that these studies were conducted in a limited geographic area and included a relatively small number of women and providers. Despite the limited generalizability of these qualitative studies, they are valuable because they are the only ones to evaluate mandatory counseling and waiting period laws using such methods.

The remaining research on mandatory counseling and waiting period laws fell into two groups: case studies that focused almost exclusively on Mississippi,<sup>3-5,9</sup> and state-year analyses that examined changes in reproductive outcomes,<sup>6-8</sup> infant or child outcomes,<sup>12-14</sup> or suicide<sup>15</sup> across all or almost all states over time. The results from Mississippi were the most convincing. Overall, the state's mandatory counseling and waiting period statute—with its requirement that all counseling be done in person 24 hours prior to an induced termination—was associated with a decline in the abortion rate, a rise in abortions obtained out of state and an increase in the proportion of second-trimester abortions.<sup>3-5</sup> These findings were consistent across three studies, each with a distinct research design.

The other convincing aspect of the Mississippi studies was the nature of the data. For each study, researchers had collected information about abortions obtained by Mississippi residents in that state, as well as in Tennessee and Alabama. This proved critical, as the number of women who left Mississippi for an abortion in a neighboring state was substantial. Finally, the outcomes analyzed were affected immediately by the law, and the statistical approaches were simple and transparent, which made

the results easier to evaluate. Because Mississippi differs somewhat from other states demographically, economically and politically, it is unclear whether the effect of an equally restrictive law in other states would be greater or less than in Mississippi. Unfortunately, few other states have collected the necessary data to allow analysis of the impact of mandatory counseling and waiting period laws.

The broader analyses that included data from all available states found that counseling and waiting period laws had no impact on abortion rates or birthrates.<sup>6-8</sup> Most laws are less demanding than that of Mississippi, and it is probably safe to conclude that if they affect reproductive outcomes, the effect is not large. However, the possibility of unmeasured confounding variables and other limitations of the studies preclude ruling out small effects. A corollary finding is that mandatory counseling also has little effect on women's abortion decisions. Since states require that specific information be provided to the woman before the waiting period, if the delay has no effect, then neither does the mandated counseling. Finally, the studies of impact on child abuse and mortality, and on women's suicide rates, are unconvincing because of anomalous findings and the lack of evidence that the laws increased unintended childbearing enough to account for the results.<sup>12-14</sup>

We conclude that mandatory counseling and waiting period laws that require an additional in-person visit before the procedure likely increase both the personal and the financial costs of obtaining an abortion, thereby preventing some women from accessing abortion services. If neighboring states have similar laws, so that access to an abortion provider who does not require this strict form of waiting period requires extensive travel, then such laws are likely to lower abortion rates, delay women who are seeking abortions and result in a higher proportion of second-trimester abortions. Laws that allow mandatory counseling to be delivered over the Internet or by mail or telephone impose lower costs on both patients and providers, and neither the waiting period requirement nor the counseling appears to have a large impact on reproductive outcomes. However, by definition such statutes do cause some delay, and the one study that addressed this issue found a 41% increase in the rate of second-trimester abortions.<sup>6</sup> While this might not be an accurate measure of the magnitude of the effect, it is likely that some abortions are delayed to the second trimester.

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**TABLE 1. Selected characteristics of studies of the effects of laws mandating counseling or a waiting period before obtaining an abortion, 1981–2007**

Authors/ year	Area/study period	Outcome variables and their sources	Key findings	Summary assessment
Althaus and Henshaw, 1994 <sup>3</sup>	Mississippi, Ohio and Pennsylvania; 1992	Number of abortions (by gestational age) and births, and providers' experiences; data from state health departments and provider interviews	<ul style="list-style-type: none"> <li>The number of abortions performed in Mississippi fell by 22%, 17% more residents had abortions in Tennessee or Alabama and 30% fewer out-of-state residents had abortions in Mississippi.</li> <li>The proportion obtaining an abortion at more than 12 weeks of gestation increased by 17%.</li> <li>The law prevented 11–13% of women who would have had abortions from doing so.</li> <li>Ohio and Pennsylvania clinics experienced increased costs from the mandatory counseling and waiting period laws.</li> </ul>	<ul style="list-style-type: none"> <li>This study was the first to use data on abortions to evaluate the impact of a mandatory counseling and waiting period law.</li> <li>A strength of the study is the information on abortions by state of residence.</li> <li>The major limitation of the study is lack of a control group other than the period before the law took effect.</li> <li>The exact size of the decline in abortions may vary because of trends in abortion that may have existed prior to the law.</li> </ul>
Bitler and Zavodny, 2001 <sup>6</sup>	All states with data; 1974–1997	Abortion rate, and proportion and rate of abortions occurring after 12 weeks' gestation among women aged 15–44; CDC data	<ul style="list-style-type: none"> <li>There was a 2.3 percentage point increase in the proportion of abortions performed in the second trimester.</li> <li>There was a 41% increase in the rate of second-trimester abortions, but laws had no statistically significant effect on the overall abortion rate.</li> </ul>	<ul style="list-style-type: none"> <li>A strength of the study is the analysis of both the proportion and the rate of second-trimester abortions.</li> <li>By measuring abortions by state of occurrence, the results were biased toward finding a decline in the abortion rate.</li> </ul>

\* Laws whose enforcement is enjoined are legally prohibited from taking effect and hence are not enforced. Notes: Superscript numbers refer to the reference list (see page 16). CDC=Centers for Disease Control and Prevention.

Authors/ year	Area/study period	Outcome variables and their sources	Key findings	Summary assessment
Bitler and Zavodny, 2002 <sup>12</sup>	All states; 1976–1996	Rates of child abuse and neglect reports; data from American Humane Association and National Committee to Prevent Child Abuse	<ul style="list-style-type: none"> <li>Both enforced and enjoined* mandatory counseling and waiting period laws were associated with a 5–23% decline in child abuse reports in the year the law was either enforced or enjoined.</li> <li>Coefficients changed from positive to negative when the law was assigned to the year of conception rather than the year of receipt of social services or of death.</li> </ul>	<ul style="list-style-type: none"> <li>The estimates fluctuated dramatically depending on the outcome and years.</li> <li>The large effects and lack of robustness probably point to omitted-variable bias.</li> <li>The hypothesized link between child abuse and mandatory counseling and waiting period laws was not supported by an actual increase in unintended childbearing.</li> <li>The finding that nonenforced laws had an impact is implausible.</li> </ul>
Bitler and Zavodny, 2004 <sup>13</sup>	All states with data; 1976–1996, excluding 1988 and 1989	Rates of child abuse and neglect reports, proportion of children receiving social services, and rates of child deaths and murders; data from federal agencies and national organizations	<ul style="list-style-type: none"> <li>Enjoined* mandatory counseling and waiting period laws were strongly associated with an increased number of abuse reports, but the association was negative when the outcome was the number of substantiated victims between 1990 and 1996.</li> <li>The estimated effects showed declines of 32–63% in the number of substantiated victims.</li> <li>Enjoined* laws were also associated with a 45% increase in the rate of murder of a child by a relative or unknown person.</li> </ul>	<ul style="list-style-type: none"> <li>The estimates fluctuated dramatically depending on the outcome and years.</li> <li>The effects were implausibly large given the lack of association between unintended childbearing and mandatory counseling and waiting period laws, a seemingly necessary condition for an association with child abuse.</li> </ul>

Authors/ year	Area/study period	Outcome variables and their sources	Key findings	Summary assessment
Joyce and Kaestner, 2000 <sup>5</sup>	Mississippi; 1989–1995	Number and timing of abortions by county or state of residence; data from Mississippi vital statistics agency	<ul style="list-style-type: none"> <li>The proportion of second-trimester abortions rose by 45% and mean gestational age at abortion increased by four days among women whose closest provider was in state compared with women whose closest provider was out of state.</li> </ul>	<ul style="list-style-type: none"> <li>The study is noteworthy because researchers used women whose nearest abortion provider was in another state as a comparison group for women whose nearest provider was in state.</li> <li>The results were consistent with those of Althaus and Henshaw<sup>3</sup> and Joyce, Henshaw and Skatrud<sup>4</sup>; each study used a different counterfactual or comparison group, which makes the consistency more compelling.</li> <li>Nevertheless, results from one state may not predict the magnitude of the effect in another state and should be viewed with caution.</li> </ul>
Joyce and Kaestner, 2001 <sup>9</sup>	Mississippi, 1991–1993; South Carolina, 1994–1995	Percentage distribution of abortions by age, race, state of occurrence and gestational age; individual records from state vital statistics agencies	<ul style="list-style-type: none"> <li>The probability that a teenager in Mississippi went out of state for an abortion after implementation of the mandatory counseling and waiting period law was 26 percentage points lower for those whose nearest abortion provider was in state than for minors whose nearest abortion provider was out of state.</li> <li>The mean gestational age at abortion increased by more than half a week for all teenagers.</li> <li>South Carolina's one-hour counseling and waiting period statute had no effect on either the timing of abortion or the probability that a teenager went out of state for an abortion.</li> </ul>	<ul style="list-style-type: none"> <li>The authors used the same comparison group as in their previous study (Joyce and Kaestner<sup>5</sup>); however, there were relatively few minors in this group, which diminished their ability to detect statistically significant changes in abortion rates.</li> <li>Recent statistical research suggests that they likely underestimated the standard errors in the multivariate analysis, and thus the statistically significant findings should be interpreted with caution.</li> </ul>

Authors/ year	Area/study period	Outcome variables and their sources	Key findings	Summary assessment
Joyce, Henshaw and Skatrud, 1997 <sup>4</sup>	Mississippi, Georgia and South Carolina; 1989–1994	Number and timing of abortions and births by age and race; individual records from state vital statistics agencies	<ul style="list-style-type: none"> <li>• After adjustments, Mississippi's mandatory counseling and waiting period law was estimated to be associated with an approximately 10% decline in the abortion rate among state residents.</li> <li>• The number of abortions obtained out of state rose in absolute and relative terms, as did the number of abortions performed after 12 weeks of gestation.</li> <li>• The authors reached no conclusion regarding the impact of the law on birthrates because of a lack of statistical power.</li> </ul>	<ul style="list-style-type: none"> <li>• The study underscores the strengths and limitations of individual-state analyses.</li> <li>• The authors were able to accurately determine the state of residence of women obtaining an abortion.</li> <li>• Another strength was the selective use of appropriate comparison states.</li> <li>• The data were presented in a transparent manner; however, the generalizability of the results is not apparent.</li> </ul>
Klick, 2006 <sup>15</sup>	All states; 1981–1998	Suicide rate among females aged 25–64; data from National Center for Health Statistics' Compressed Mortality File	<ul style="list-style-type: none"> <li>• Adoption of a mandatory counseling and waiting period law in a state reduced the female suicide rate by 10–30% depending on statistical methodology and control variables.</li> </ul>	<ul style="list-style-type: none"> <li>• The study's findings lack transparency and plausibility.</li> <li>• The author included suicide rates from 1981, whereas the first mandatory counseling and waiting period laws were not enforced until 1992; furthermore, there was no analysis of the association between suicide rates and such laws during this period, which accounts for over 60% of the sample.</li> <li>• The author failed to reconcile the findings that Medicaid financing restrictions for abortion increased suicide rates but mandatory counseling and waiting period laws prevented suicide.</li> <li>• The sample included women aged 25–64 and excluded those aged 18–24, even though the latter group has the highest abortion rate and many of the older women were beyond their reproductive years.</li> </ul>

<b>Authors/ year</b>	<b>Area/study period</b>	<b>Outcome variables and their sources</b>	<b>Key findings</b>	<b>Summary assessment</b>
Lupfer and Silber, 1981 <sup>11</sup>	Tennessee; 1979–1980	Women's attitudes toward and experiences with mandatory counseling and waiting period law; patient interviews	<ul style="list-style-type: none"> <li>Sixty-two percent of women reported that the required second visit increased their cost because of lost wages and higher transportation and child-care expenses.</li> <li>Costs rose by 48% for low-income women and by 14% for women with higher income.</li> <li>The amount of the increase in cost of the second visit was positively associated with distance from the clinic and the number of hours employed per week.</li> <li>Seventy-seven percent of women were unable to name a benefit of the waiting period; 29% experienced mental anguish, 24% incurred extra transportation costs, 19% experienced additional nausea, 15% missed time at work and 15% had to make excuses to explain their absence.</li> </ul>	<ul style="list-style-type: none"> <li>More than 200 of the interviews were conducted by counselors employed at the clinics, which may have led to bias in patients' responses.</li> <li>As an early study that looked at the impact of a mandatory counseling and waiting period law immediately after implementation, the study provides excellent first-hand data on patients' attitudes and experiences.</li> </ul>
Medoff, 2007 <sup>8</sup>	All states with data; 1982, 1992 and 2000	Abortion ratio among women aged 15–44; Guttmacher data	<ul style="list-style-type: none"> <li>Mandatory counseling and waiting period laws had no effect on abortion ratios.</li> </ul>	<ul style="list-style-type: none"> <li>The study has a weak design because the effect of the laws was identified mainly by cross-sectional variation in a single year (2000), and few states had mandatory counseling and waiting period laws in 1992.</li> <li>The potential for confounding is great given that these laws are not randomly distributed, but instead reflect political sentiment toward abortion.</li> <li>The author did not distinguish between laws that require two in-person visits and those that do not.</li> </ul>

Authors/ year	Area/study period	Outcome variables and their sources	Key findings	Summary assessment
Meier et al., 1996 <sup>7</sup>	All states; 1982–1992	Abortion rate among women aged 15–44; Guttmacher and CDC data	<ul style="list-style-type: none"> <li>Mandatory waiting period laws had no effect on abortion rates.</li> <li>Mandatory counseling laws had no effect on abortion rates.</li> </ul>	<ul style="list-style-type: none"> <li>The design of the study was flawed; the authors essentially regressed one-year changes in the abortion rate on the level of the covariates, whereas a more appropriate approach would have been to regress changes in the abortion rate on changes in the covariates and policy variables.</li> <li>The first mandatory counseling and waiting period law was not enforced until after the U.S. Supreme Court decision in <i>Casey</i> in June 1992, the last year of the study period, which makes it difficult to detect changes.</li> </ul>
Sen, 2007 <sup>14</sup>	All states; 1981–2002	Number and rate of deaths of children aged 0–4 from accidents and homicide; National Center for Health Statistics data	<ul style="list-style-type: none"> <li>Mandatory counseling and waiting period laws were associated with a 24% increase (not statistically significant) in homicide deaths and a statistically significant 9% increase in unintentional fatal injuries among white children.</li> <li>Among black children, homicides were 30% higher in states with enforced mandatory counseling and waiting period laws.</li> </ul>	<ul style="list-style-type: none"> <li>There is no evidence that mandatory counseling and waiting period laws cause a meaningful increase in unwanted childbearing, a seemingly necessary condition for an association with measures of child abuse.</li> <li>The author did not distinguish between laws that require two in-person visits and those that do not.</li> <li>Only 6% of the sample was exposed to such laws, and substantially fewer were exposed to the strictest form of the law.</li> <li>The model likely did not control adequately for other determinants of fatal injury rates.</li> </ul>

<sup>7</sup>Laws whose enforcement is enjoined are legally prohibited from taking effect and hence are not enforced. Notes: Superscript numbers refer to the reference list (see page 16).  
CDC=Centers for Disease Control and Prevention.





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