Minors' Behavioral Responses to Parental Involvement Laws: Delaying Abortion Until Age 18

CONTEXT: *Prior research on the effect of laws mandating parental involvement in minors' abortions has failed to examine an important behavioral response to such laws: Older teenagers may delay an abortion until age 18; for some, this may mean terminating a pregnancy after the first trimester.*

METHODS: *Statewide data were obtained on abortions in Texas in 1997–2003. Analysis of relative rate ratios with narrowly defined comparison groups was used to evaluate the association between Texas's parental notification law and the occurrence of second-trimester abortions among minors who have responded to the law by delaying abortion until age 18.*

RESULTS: *In the four years after the law went into effect, the proportion of abortions obtained at age 18 increased by six percentage points among minors who conceived at age 17 years and eight months, and by 13 points among those who did so at 17 years and nine months. As a result, the second-trimester abortion rate of these groups combined increased by 21%; by contrast, there was no evidence of an increase in this rate among younger minors, for whom delaying the abortion until age 18 was not feasible.*

CONCLUSIONS: *Some minors postpone abortion until the second or even third trimester of pregnancy to circumvent parental notification requirements. Given the greater costs of and medical risks associated with late-term abortions, policymakers should not ignore this behavior.*

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Laws in many states require that abortion providers notify parents or obtain written consent from them before an abortion is performed on a minor; these laws are often referred to as parental involvement laws. Evaluation of these laws has focused on changes in the abortion, birth and pregnancy rates after implementation. Relatively few studies, however, have evaluated the effect of these laws on the timing of minors' abortions. There are no studies that specifically evaluate the extent to which these mandates cause minors to delay abortion until age 18 in order to circumvent the parental involvement requirement, or the extent to which this behavior increases the prevalence of late-term abortions among older teenagers. If parental involvement laws cause a delay in abortion among minors, they may increase the clinical and financial burden of the procedure.[1]

Evidence of the effect of parental involvement laws on the timing of abortion is not conclusive. Some studies have shown no change in the proportion of abortions performed in the second trimester or later.[2] Others have suggested a rise in this proportion; however, in most cases, it has not been statistically significant.[3,4] An evaluation in Minnesota showed that after the state's parental notification law went into effect, the proportion of minors' abortions that occurred in the second trimester or later increased significantly.[5] However, it also showed that this increase was the result of a substantial decline in the rate of abortions occurring among minors within 12 weeks' gestation, and not the result of a rise in the rate of abortions occurring after 12 weeks. Researchers reported similar findings in Mississippi.[3,4] Implementation of Mississippi's parental consent law was associated with an increase in mean gestational age at the time of abortion among minors, but not in the rate of second-trimester abortions.[4]

Parental involvement laws can cause minors to delay an abortion for several reasons. Some minors need to seek a judicial bypass to terminate a pregnancy without parental involvement. Others travel out of state for the abortion. Those who involve their parents may delay informing them out of embarrassment or fear of punishment. Each response is likely to vary by the age of the minor. Survey data indicate that younger minors are more likely than older minors to involve their parents in their decision to have an abortion or to obtain reproductive heath services.[6,7] Older minors may be more likely to seek a judicial bypass, since they are more likely to prevail; they may also be more capable of arranging an out-of-state abortion. Finally, some 17-year-olds may delay an abortion until they turn 18. Joyce, Kaestner and Colman reported that after Texas implemented a parental notification law, the likelihood of a second-trimester abortion increased among minors who were between 17 years and six months and 17 years and eight months at the time they conceived.[8] The

authors did not explore whether this intriguing increase represents a conscious decision to delay the termination until age 18.

In this study, we extend the analysis of Joyce, Kaestner and Colman, and evaluate whether Texas's law is associated with a delay in abortion until age 18 among older minors, and whether such delays lead to more second-trimester abortions among older teenagers. We distinguish this type of delay from a general increase in gestational age that might occur among minors of all ages after introduction of a parental involvement law. This behavior has not been studied before, because researchers have lacked detailed information on age and a sufficiently large sample to detect changes among a subgroup of minors.

METHODS

Data

We use individual-level data from induced termination of pregnancy certificates for the years 1997–2003 from the Texas Department of State Health Services. Abortion data from Texas are noteworthy in that they contain the patient's exact date of birth as well as the date of the procedure and the clinician's estimate of gestational age in weeks. With this information, we are able to estimate the teenager's age in months at the time of conception and at the time of the abortion.

Texas's parental notification requirement went into effect in January 2000. We define all abortions occurring among teenagers who conceived between January 1, 2000, and December 31, 2003, as postlaw events, and abortions among those who conceived between August 1, 1997, and July 31, 1999, as prelaw events.* We exclude all abortions among those who conceived between August 1, 1999, and December 31, 1999, since these minors could have been subject to the law, given the time that may elapse between pregnancy recognition and pregnancy resolution. For simplicity, we refer to the prelaw period as 1998–1999.

Changes in the Risk of Second-Trimester Abortion

We analyze the association between Texas's law and the likelihood of minors' delaying abortion until age 18 by evaluating the change between the prelaw and postlaw periods in the proportion of abortions that were obtained at age 18. We limit this analysis to minors who were at least 17 years and six months old at the time they conceived, because it would be virtually impossible for younger minors to delay abortion until age 18. The data confirm that between 1998 and 2003, no abortions occurred at age 18 among minors who conceived at age 17 years and five months. We repeat the analysis for 16-year-olds, evaluating the change in the proportion who terminated their pregnancy at age 17. While 16-year-old minors are also subject to the law, they cannot delay abortion in order to circumvent the law; therefore, we should find no such pattern of delay for this group.

We measure the change in the exposure to the risk of late abortions associated with Texas's law, by evaluating changes in the age-specific rate of second-trimester abortions, defined as the number of abortions performed after 12 weeks' gestation per 1,000 women. Previous studies have tended to focus on the proportion of minors' abortions that occur in the second trimester and mean gestational age among minors obtaining abortions. However, these measures are confounded by changes in the distribution of early and late abortions. Evidence suggests that parental involvement laws reduce the abortion rate among minors if their options for obtaining an abortion in a state without such laws are limited (for example, requiring long-distance travel).[2,5,8–11] If the decline occurs primarily among minors who would have terminated during the first trimester in the absence of the law, then both the proportion of abortions occurring in the second trimester and mean gestational age may rise. This rise, however, would not represent a rise in the exposure to the risk associated with second-trimester abortions.

We perform all analyses by age in months; however, for the calculation of second-trimester abortion rates, we lack population estimates by detailed age. As an approximation, we divide the population of 17-year-olds (obtained from National Cancer Institute data[12]) by 12. As an alternative specification, we calculate minors' age-specific number of second-trimester abortions per 1,000 pregnancies. We use the sum of births and induced abortions as our estimate of pregnancies. Data on teenage births are from the Texas Department of State Health Services, and contain the same detailed information on age as is available on the abortion certificates. Unlike the population data, pregnancy data are available by the minor's age in months at conception. The rate of late abortions per 1,000 pregnancies will yield the same inferences as the rate of late abortions per 1,000 population, provided that the number of pregnancies does not change with the law. Colman, Joyce and Kaestner showed that the pregnancy rate of 17-year-olds remained unchanged after Texas's parental notification statute went into effect;[13] however, the authors evaluated the law's impact only in its first year.

Miscarriages are not included in the count of pregnancies, but they are considered random events and as such should not be influenced by the law. However, the number of self-induced abortions among minors may have increased in the postlaw period. Not counting these pregnancies would bias our postlaw rate of second-trimester abortions per 1,000 pregnancies upward. However, a significant increase in self-induced abortions after Texas's law would reduce the count of pregnancies as measured by the sum of abortions and births, which would lead research-

*We limit our study period to 1997–2003 for two reasons. First, Texas only began collecting patients' date of birth on the abortion certificates in 1997. Second, starting January 1, 2004, as part of the Women's Right to Know Act, Texas required that abortions at 16 weeks' gestation or later be performed in a licensed ambulatory surgical center. This led to a temporary reduction in the availability of late-term abortion services in the state. We excluded from our analysis all abortions obtained in January 2004 or later in order to avoid confounding.

ers to conclude that minors' pregnancy rate declined after the law. Colman, Joyce and Kaestner found no evidence of such a decline among 17-year-olds in Texas, suggesting that self-induced abortions by minors, if they occur, do not occur at a rate that would impact our estimates.[13]

We divide the postlaw abortion rate of a subgroup of 17-year-olds subject to the law by their prelaw rate; we call this the rate ratio. To account for the downward trend in the abortion rate over time, we use the change in the second-trimester abortion rate of teenagers who are not subject to the law as the counterfactual. We divide the rate ratio of the exposed group by the rate ratio of the unexposed group to obtain the relative rate ratio. A relative rate ratio of 1 indicates no association between Texas's parental notification requirement and the second-trimester abortion rate of minors. We use a Poisson regression model to obtain the standard errors of the log of the relative rate ratio.[14]

While most previous studies have analyzed the behavior of minors aged 15–17 using the behavior of 18–19-year-olds for comparison, we focus on the behavior of older 17-year-olds, and use the outcomes of teenagers aged 17 years and 10 months and 17 years and 11 months as the counterfactual. By limiting the analysis to this subgroup, we minimize the bias that stems from large differences in reproductive behavior between minors and older teenagers, and thereby improve the internal validity of our research design.

To demonstrate the importance of a close comparison group, we show changes in the observed characteristics available to us from the abortion certificates by teenagers' age for the period 1998–1999 (Table 1). The differences are striking. For example, only 2% of 15-year-olds who had an abortion were married, compared with 9% of 19-year-olds; only 5% of 15-year-olds had had a previous birth, compared with 39% of 19-year-olds; and 8% of 15-year-olds had had at least one previous abortion, compared with 29% of 19-year-olds. Mean gestational age at the time of abortion declined with age, from 10.3 weeks among 15-year-olds to 9.4 weeks among 19-year-olds. Notable differences are apparent even between 17- and 18-year-olds. The racial composition varies slightly by teenagers' age, with no apparent pattern.

We use minors aged 17 years and 10–11 months at conception as the comparison group because they are the youngest group who are unexposed de facto to the parental involvement law. Survey data indicate that minors aged 17 or younger take, on average, until 54 days after their last menstrual period to recognize a pregnancy. They take another 22 days to obtain an abortion.[15] Thus, minors who are 1–2 months from their 18th birthday at conception are most likely 18 by the time they schedule an abortion. Induced termination files from Texas indicate that in the prelaw period, 92% of teenagers who conceived at ages 17 years and 10–11 months and who had abortions terminated their pregnancy after turning 18. The remaining 8% are potentially subject to Texas's law. In the postlaw period, even if all of this 8% delay the termination until age 18, they will still be in the first trimester of pregnancy at the time of abortion, so the second-trimester abortion rate will not be affected. The other possibility is that minors in this age-group who would have terminated early avoid unwanted pregnancy in response to Texas's law. Again, this alternative would leave the second-trimester abortion rate as measured per 1,000 population unaltered. However, the parental notification statute may still affect minors younger than 18 at conception, no matter how close they are to turning 18, in a manner we cannot foresee. As a robustness check, we repeat the analysis of relative rate ratios using the outcomes of teenagers aged 18 years and 1–2 months at the time of conception as the counterfactual.

TABLE 1. Selected characteristics of teenagers having an abortion, by age at conception, Texas, 1998–1999

Characteristic	15 (N=2,034)	16 (N=3,771)	17 (N=5,732)	18 (N=8,345)	19 (N=9,402)
Married	1.9	2.4	3.9	6.1	9.3
≥1 previous births	5.0	10.8	18.6	28.7	39.0
≥1 previous abortions	7.5	11.4	15.4	21.6	29.1
Gestational age (mean in wks.)	10.3	9.9	9.8	9.5	9.4
Second-trimester abortion	22.8	18.8	18.3	16.6	15.2
Race					
White	42.2	46.3	46.3	43.6	41.6
Black	20.8	18.8	18.1	19.8	21.2
Hispanic	35.3	32.8	32.9	33.8	34.1

Note: Unless otherwise noted, all figures are percentages.

RESULTS

Delay Until Age 18

During the prelaw period, some 0.4% of abortions among minors aged 17 years and six months at conception were performed after their 18th birthday (Figure 1). This proportion rises continuously with age. Eighty-four percent of

FIGURE 1. Among teenagers who conceived before age 18, percentage obtaining an abortion at age 18, by exact age at conception, Texas, 1998–1999

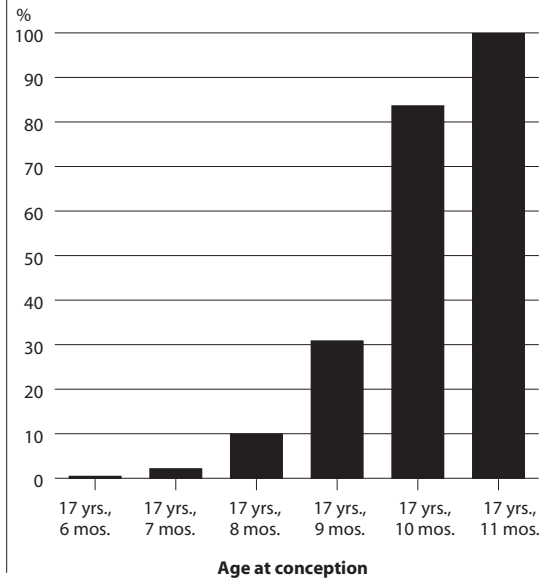
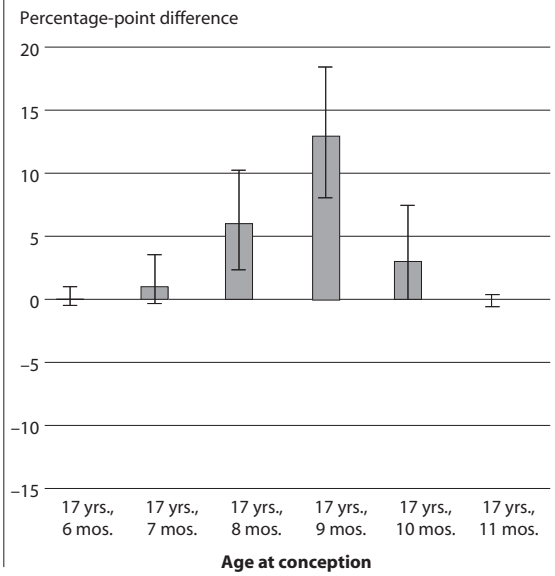


FIGURE 2. Among teenagers who conceived before age 18, percentage-point difference (and 95% confidence intervals) between 1998–1999 and 2000–2003 in the proportion who obtained an abortion at age 18, by exact age at conception



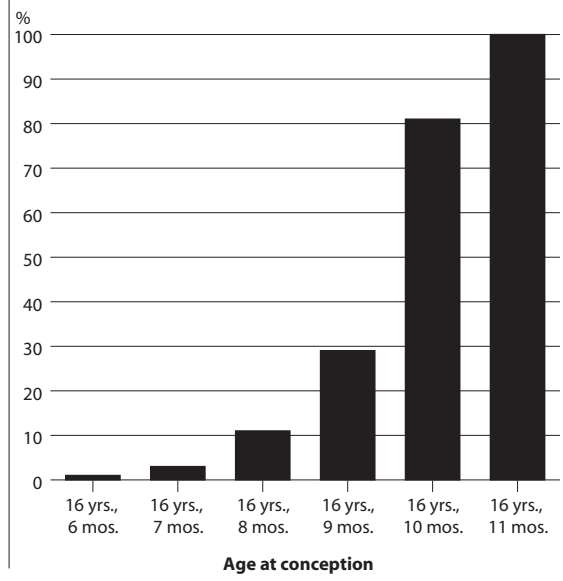
minors aged 17 years and 10 months at conception, and close to 100% of minors aged 17 years and 11 months, were 18 by the time of the procedure. The proportion of abortions that were obtained at age 18 increased for some age-groups between 1998–1999 and 2000–2003 (Figure 2). Minors aged 17 years and eight months at conception experienced a six-point increase between the prelaw and postlaw periods (p<.01).* An even greater increase occurred among minors aged 17 years and nine months at conception—13 points (p<.01). The likelihood of delaying the abortion until age 18 did not change significantly for those in the two youngest or the two oldest groups. This is not surprising: For the younger age-groups, the wait was much less feasible, as it would have entailed having the abortion late in the second trimester, or possibly in the third trimester. The opposite is true for the older age-groups. The great majority of these teenagers were 18 at the time of abortion even in the prelaw years, and were in essence not subject to the law.

During 1998–1999, the proportion of abortions that were obtained at or after age 17 among minors who conceived between age 16 years and six months and age 16 years and 11 months followed a similar pattern to that observed among the older teenagers (Figure 3). This proportion rises gradually from 1% of the youngest group to 100% of the oldest. We find no evidence of an increase between the prelaw and postlaw periods in these minors' likelihood of obtaining the abortion at age 17 (Figure 4). In fact, the proportion of 16-year-olds who have abortions at age 17 mostly declined after implementation of Texas's law. For those aged 16 years and six months and 16 years and 10 months at conception, the declines were statistically significant (p<.05 for both); for those aged 16 years and eight months, the decline was marginally significant (p<.10). Minors aged 16 years and nine months experienced a slight increase in the likelihood of having an abortion at age 17; however, the increase was not significant at conventional levels (p=.35).

The likelihood of delay of abortion until age 18 among minors aged 17 years and 8–9 months increased each year between 2000 and 2003 (Figure 5). The change in the proportion who have abortions at age 18 was an estimated eight percentage points between 1998–1999 and 2000, and it rose to 15 points between 1998–1999 and 2002 (p<.01 for both changes). Although the change between 1998–1999 and 2003 (six percentage points) was the smallest, it was not statistically different from the change in 2000 or 2001 (p=.50 and p=.20, respectively). Thus, we have evidence of an average increase of almost 10 percentage points between 1998–1999 and each postlaw year, but no indication of a change in this behavior over time.

Minors who conceive at age 17 years and 8–9 months have to wait up to four months if they want to schedule an abortion after their 18th birthday. Thus, most of these abortions occur well into the second trimester. Our data reveal that all minors aged 17 years and eight months who delayed until age 18 had their abortion after the 12th week of gestation. The mean gestational age at the time of abortion was 18.2 weeks for this group, as opposed to 8.4 weeks among teenagers of the same age who had their abortion before they turned 18. Among teenagers aged 17 years and nine months at the time of conception who delayed, 50% were in the second trimester by the time the abortion was performed. We calculate that the mean gestational age was 13.3 weeks for them, compared with 7.5 weeks among those in the same age-group who did not delay.

FIGURE 3. Among teenagers who conceived before age 17, percentage obtaining an abortion at age 17, by exact age at conception



*All reported p values are from a two-tailed test, unless otherwise noted.

Change in the Second-Trimester Abortion Rate

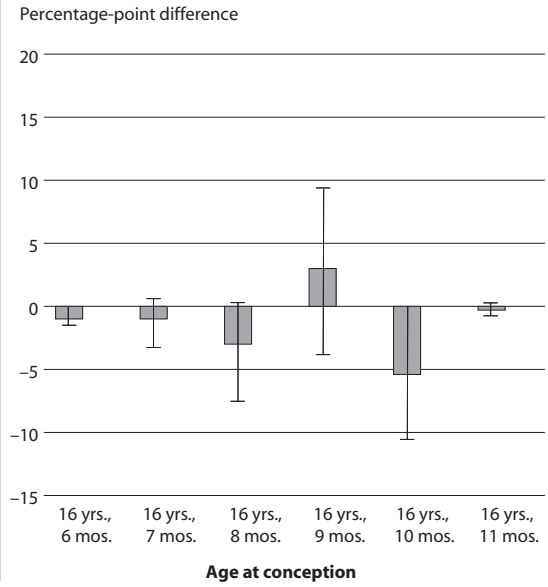
The high proportion of second-trimester abortions among teenagers aged 17 years and 8–9 months who delayed until they were 18 does not necessarily imply that the rate of second-trimester abortions increased among this group. First, the law caused a decrease in the abortion rate among minors, which may have occurred disproportionately among those who would have obtained an abortion in the first trimester in the absence of the law.[8] Second, abortion rates among all teenagers and minors in Texas declined during the 1990s. In other words, even without the law, we would expect a decrease in the rate of second-trimester abortions commensurate with the decline in the overall abortion rate among minors.

To illustrate, we show the number of second-trimester abortions per 1,000 population in 1998–1999 and in 2000–2003 by teenagers' age at conception (Table 2, page 124). Among minors aged 17 years and 10–11 months, the rate fell from 4.0 to 3.2. This is approximately a 22% reduction, as indicated by the rate ratio (0.78). If these oldest minors were unaffected by the law, then the decline in their second-trimester abortion rate was due to ongoing trends in abortions. Minors aged 17 years and 8–9 months at conception also experienced a decline (from 3.7 to 3.5), but it was much smaller (5%). This suggests that Texas's law was associated with a relative increase of 21% in the second-trimester abortion rate of minors aged 17 years and 8–9 months, as indicated by the relative rate ratio (p=.06; one-tailed test).

Our findings that are based on the number of second-trimester abortions per 1,000 pregnancies are very similar. Minors aged 17 years and 8–9 months experienced a 3% increase in the proportion of pregnancies that were terminated in the second trimester, while those aged 17 years and 10–11 months experienced a decline of 16%. In relative terms, the second-trimester abortion rate per 1,000 pregnancies among minors aged 17 years and 8–9 months increased by 22% (p=.06; one-tailed test).

We also compared the change in the second-trimester abortion rate among teenagers aged 17 years and 10–11 months with the change among teenagers aged 17 years and 6–7 months. If we are correct in attributing the increase in the risk of second-trimester abortions among minors aged 17 years and eight 8–9 months to the effort to circumvent Texas's law, then we should find no such increase among the younger 17-year-olds. The estimates support our hypothesis. We found no increase in the second-trimester abortion rate per 1,000 population among minors aged 17 years and 6–7 months. Among the three groups of 17-year-olds, the youngest experienced the largest decline in this outcome (35%). In other words, their second-trimester abortion rate declined by 18% more than the rate of minors aged 17 years and 10–11 months, indicating that Texas's law may have led to a reduction in the risk of second-trimester abortion for this younger group, although this change was not statistically significant (p=.14). The estimates that are based on the number of second-trimester abortions per 1,000 pregnancies yield the same findings (a decline of 18%; p=.14).

FIGURE 4. Among teenagers who conceived before age 17, percentage-point difference (and 95% confidence intervals) between 1998–1999 and 2000–2003 in the proportion who obtained an abortion at age 17, by exact age at conception



Our main conclusion as to the likely impact of Texas's parental notification statute on the second-trimester abortion rate of minors who delay does not change if the outcomes of teenagers aged 18 years and 1–2 months serve as the counterfactual. This group also experienced a decline in the number of second-trimester abortions as measured both per 1,000 population and per 1,000 pregnancies, although the decline was smaller than that experienced by minors aged 17 years and 10–11 months.

FIGURE 5. Among teenagers who conceived at age 17 years and 8–9 months, percentage-point difference (and 95% confidence intervals) between 1998–1999 and each post-law year in the proportion who obtained an abortion at age 18

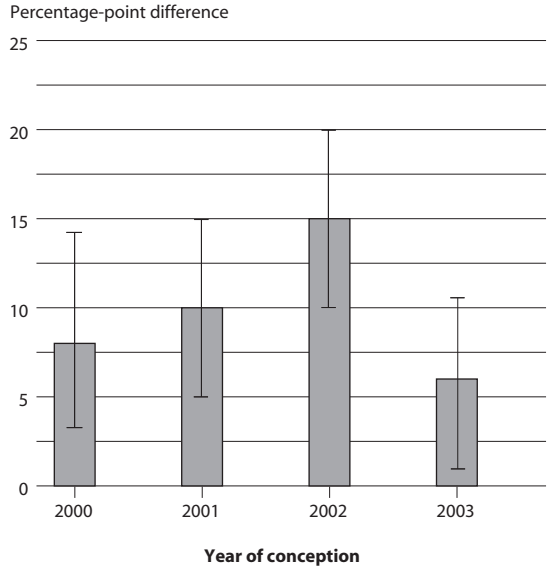


TABLE 2. Selected measures of second-trimester abortion risk among teenagers, by denominator of abortion rate and teenagers' age at conception

Denominator and age at conception	No. of abortions		Rate		Rate ratio‡	Relative rate ratio§	
	1998–1999	2000–2003	1998–1999	2000–2003		Specification 1	Specification 2
1,000 population							
17 years, 6–7 months	180	241	3.5	2.3	0.65	0.82 (0.13)	0.79 (0.13)
17 years, 8–9 months	191	376	3.7	3.5	0.95	1.21 (0.13)†	1.16 (0.12)
17 years, 10–11 months	206	335	4.0	3.2	0.78	1.00	0.96 (0.12)
18 years, 1–2 months	215	372	4.3	3.5	0.82	na	1.00
1,000 pregnancies							
17 years, 6–7 months	180	241	32.9	22.9	0.70	0.82 (0.13)	0.75 (0.13)
17 years, 8–9 months	191	376	32.9	33.9	1.03	1.22 (0.13)†	1.12 (0.12)
17 years, 10–11 months	206	335	33.3	28.1	0.84	1.00	0.92 (0.12)
18 years, 1–2 months	215	372	31.1	28.7	0.92	na	1.00

†p<.10; one-tailed test. ‡The rate ratio is the postlaw rate divided by the prelaw rate. §The relative rate ratio is the rate ratio of minors in the two youngest groups divided by the rate ratio of minors aged 17 years and 10–11 months (specification 1) or of minors aged 18 years and 1–2 months (specification 2). The standard errors of the natural logs of the relative rate ratios are in parentheses. *Note:* na=not applicable.

The relative rate ratios for minors aged 17 years and 10 months and 17 years and 11 months indicate a 4% reduction in the rate per 1,000 population, and a 8% reduction in the rate per 1,000 pregnancies, when the outcomes of 18-year-olds serve as the counterfactual. Neither of these results is statistically significant, however (p=.70 and p=.50, respectively). Because the prelaw to postlaw decline was somewhat smaller among 18-year-olds than among minors aged 17 years and 10–11 months, the relative rate ratios for younger teenagers are slightly altered. For example, the decline in the second-trimester abortion rate among minors aged 17 years and 6–7 months becomes larger (21% vs. 18%), and the rise in the same outcome among minors aged 17 years and 8–9 months is smaller (16% vs. 21%). However, these differences are not statistically significant.

DISCUSSION

Our findings suggest that minors aged 17 years and 8–9 months are the group most likely to delay an abortion until age 18 in response to Texas's parental notification statute. The evidence further suggests that such delay in the timing of abortion leads to an increase in the number of second-trimester abortions among these teenagers. We found no evidence of an increase in the exposure to the risk of second-trimester abortion among younger 17-year-olds, for whom postponing the abortion until age 18 is not feasible.

Study Strengths

Our research design has several strengths. First, we narrow the age difference between those who are subject to the law and those who are not in order to improve the internal validity of the study design. Second, we determine which teenagers are subject to the law using their age at conception instead of their age at the time of pregnancy resolution. Third, we focus on the behavior of 17-year-olds, who account for the largest proportion of pregnancies among minors and therefore are an important group from a policy standpoint.[16,17] Finally, Texas is a populous state with a large number of pregnancies, which gives us the statistical power necessary for this type of analysis.

We limit all analyses to abortions occurring among Texas residents in Texas. We are confident that cross-state travel by minors who want to avoid parental involvement in Texas does not pose a problem for our analysis. Abortion statistics collected by the health departments of neighboring states indicate that very few minors from Texas obtained abortions outside Texas in response to the parental notification law—for example, in 2000, only five in Oklahoma, 13 in New Mexico and five in Arkansas. Data on abortions that Texas residents obtained in Louisiana are not available; however, Louisiana has had a parental consent law in effect since 1978 that is more restrictive than the Texas law, so it is an unlikely destination for minors seeking to avoid parental involvement in Texas.[8]

Abortion was illegal in Mexico during our study period (it still largely is). However, if it is easier for minors to obtain an illegal abortion in Mexico than it is for them to circumvent the parental notification requirement in Texas, then minors may have sought abortions there after 2000. Abortion data from Mexico are not available. However, we are reasonably confident that travel to Mexico for an illegal abortion among minors is not prevalent, and therefore we have an accurate count of second-trimester abortions to Texas minors. The group we identified as the one responding to the law by delaying the abortion until age 18 is minors who conceive at ages 17 years and 8–9 months. If these teenagers obtain an abortion after the 12th week of gestation, they have already turned 18, and are not subject to Texas's law. At that point, they can get a legal abortion in Texas without parental involvement, and therefore have no incentive to go to Mexico for an abortion. On the other hand, if minors who conceive at 17 years and 8–9 months seek an abortion in Mexico before they turn 18, this behavior would affect our estimates of the late-term abortion rate as measured per 1,000 pregnancies, since we would not count these minors' pregnancies. Undercounting the pregnancies in the postlaw period would bias our estimates of the effect

of the law upward. Because our estimates of the effect of Texas's parental involvement statute on the second-trimester abortion rates per 1,000 population and per 1,000 pregnancies are very similar, we are reasonably sure that travel to Mexico, if it occurs, is negligible for the purpose of our analysis.

One limitation of our study is that it pertains to only one state, and therefore the findings may not generalize to all states. Few states, however, are suited for this type of evaluation. There is a need for a large initial sample in order to detect changes in the behavior among a subgroup of 17-year-olds. Furthermore, the behavior at question is most likely to occur in states in which the burden of seeking an abortion outside of one's state of residence is great. The size and geographic location of Texas makes the state well suited for our analysis. Florida would be another candidate for this type of evaluation, given its size and geographic location; however, detailed data on abortions in Florida are not available.

Policy Implications

Advocates of parental involvement laws are likely to dismiss our findings because they pertain to minors aged 17 years and 8–9 months of age at conception, a relatively small group. They also would be quick to point out that there is no increase in the rate of second-trimester abortion among minors who were younger at conception. The argument, however, misses the point that it is physically impossible for younger minors to delay abortion until age 18. What is remarkable is that a relatively large proportion of minors who can delay until they are 18 choose to do so. We estimate that the law caused a 10-percentage-point increase in delay until age 18; this is an approximation of the average delay seen in 2000–2003. Relative to a mean of approximately 20% among minors aged 17 years and 8–9 months, this represents a 50% percent increase in the proportion of abortions that are delayed until age 18. This is most likely a lower-bound estimate. Evidence suggests that approximately 50% of all 17-year-olds involve a parent in their decision to have an abortion even without a parental involvement law in place.[7] It is, therefore, reasonable to assume that prior to the introduction of Texas's law, only 50% of minors who conceived at 17 years and 8–9 months and had an abortion at age 18 did not involve their parents in their abortion decision. If all of the post-law increase in delay occurred among these minors, then our estimates suggest that the proportion of abortions that are delayed until age 18 among the subgroup of minors who do not involve their parents could double. Moreover, the mean gestation among those who delay until age 18 is roughly double that among their peers who do not delay. Thus, a large proportion of minors who are unlikely to involve a parent and who are able to delay their abortion until age 18 incur a substantial increase in the cost and complexity of an abortion to avoid parental involvement.

Proponents of parental involvement laws might also conclude from our findings that the law had few adverse consequences for minors younger than 17 years and eight months at conception, since late abortions did not increase among that group. However, as shown by Joyce, Kaestner and Colman,[8] minors aged 17 years and 6–8 months at conception are more likely to carry a pregnancy to term in response to Texas's law than are slightly older teenagers, who are unaffected by the law. In other words, the rate of second-trimester abortion may not rise among this younger group of 17-year-olds because without the option of delaying until age 18, some end up giving birth, an outcome that would not have occurred in absence of the law.

Some economists argue that by increasing the "cost" of an unwanted pregnancy, parental involvement laws influence minors' decisions about engaging in sexual activity.[10,18,19] They suggest that the high cost of abortion induces forwarding-looking minors to substitute for other forms of fertility control, such as contraception or abstinence, in order to avoid the even higher cost of an unwanted pregnancy. Economists point to a decline in teenage birthrates after the introduction of a parental involvement law as evidence supporting this hypothesis. However, as Colman, Joyce and Kaestner[13] pointed out, studies showing a reduction in teenage birthrates produced biased estimates of the effect of the law because of a flaw in the research design. Our study offers a unique test of forward-looking behavior by minors. Delaying an abortion until one turns 18 is costly. Later term abortions are substantially more expensive and riskier than early abortions.[20] In addition, the longer teenagers carry an unwanted pregnancy, the more difficult the pregnancy is to conceal and the greater the potential stigma. A forward-looking minor, therefore, would be expected to take these costs into account by substituting less sex or more effective contraceptive use. The result would be fewer unintended pregnancies and no need for minors to delay abortions until age 18. We find no evidence of such behavior during the four years after the introduction of Texas's law. The proportion of minors aged 17 years and 8–9 months at conception who delayed until age 18 was the same in 2000 as in 2003.

Contrary to what some economists have argued, results of this study suggest that minors do not respond to parental involvement laws by avoiding unwanted pregnancies. Rather, they seem to respond to such laws after becoming pregnant. We do not know whether legislating involvement with parents improved the situation for some minors. We have evidence, however, that the law induces some minors to have terminations much later in pregnancy than they would have otherwise. Furthermore, prior research suggests that another subgroup of minors responds to a parental involvement law by carrying their pregnancies to term.[8] We view both outcomes as reducing the well-being of teenagers.

A relatively large proportion of minors who can delay [abortion] until they are 18 choose to do so.

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