Roe v Wade and American Fertility

ABSTRACT

Objectives. This article examines the effect of abortion legalization on fertility rates in the United States.

Methods. Fertility rates were compared over time between states that varied in the timing of abortion legalization.

Results. States legalizing abortion experienced a 4% decline in fertility relative to states where the legal status of abortion was unchanged. The relative reductions in births to teens, women more than 35 years of age, non-White women, and unmarried women were considerably larger. If women did not travel between states to obtain an abortion, the estimated impact of abortion legalization on birth rates would be about 11%.

Conclusions. A complete recriminalization of abortion nationwide could result in 440 000 additional births per year. A reversal of the *Roe v Wade* decision leaving abortion legal in some states would substantially limit this impact because of the extent of travel between states. (*Am J Public Health.* 1999;89:199–203)

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January 1998 marked the 25th anniversary of the Supreme Court decision in *Roe v Wade* (410 US 113) that legalized abortion nationwide. Since that decision, abortion policy has remained one of the most contentious of issues in American politics; as recently as 1992, the Supreme Court came within 1 vote of reversing the *Roe* decision (*Planned Parenthood of Southeastern Pennsylvania v Casey*, 505 US 833).[1] Although positions are largely developed on philosophical and moral grounds, the empirical magnitude of the effect of legal access to abortion is both important and rarely studied. Our purpose in this article is to estimate the effects of abortion legalization on fertility rates in the United States.

Surprisingly, little research has looked directly at the impact of *Roe v Wade* on births. The work that has been done has focused on the experience in those states that legalized abortion prior to *Roe*.[2–7] However, the experience of these states may result in a misleading impression of the impact of *Roe* for several reasons. First, since abortion was already effectively legalized in a handful of states, the effect of *Roe* may have been less pronounced than the effect of initial legalization because many women were already traveling across state lines to receive abortions.[8,9] Second, women in states where abortion was not legalized until the 1973 court decision may have been less likely to make use of abortion services, even if they were available, than women in states that chose to legalize abortion earlier. Third, many of the evaluations of legalization simply compared birth rates before and after legalization, thereby conflating the effect of abortion legalization with ongoing declines in fertility around that time that may have been attributable to changes in the availability of contraception, shifts in social attitudes, improved labor market opportunities for women, and the like.

In this study, we applied quasi-experimental methods to estimate the effects of initial abortion legalization in a handful of states and the later *Roe v Wade* decision that legalized abortion nationwide. We used variation in the timing of abortion liberalization across states to create (pseudo) control and treatment groups and compare birth data between groups. Our findings indicate that states that legalized abortion prior to the 1973 *Roe v Wade* Supreme Court ruling experienced a 4% decline in fertility rates relative to other states. Following the *Roe* decision, fertility rates in these other states fell by a similar magnitude relative to fertility rates in states that had legalized abortion earlier. The relative reductions in births to teens, women more than 35 years of age, non-White women, and unmarried women were considerably larger. In addition, we found that travel between states to obtain an abortion was significant. Estimates obtained from comparisons between early repeal states and distant states (where travel to obtain an abortion was least likely) indicate that abortion legalization reduced births by 11%. These findings imply that a nationwide prohibition of abortion would have a considerably larger impact on

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births than would a repeal of *Roe v Wade* in which abortion remained legal in a handful of states.

Data and Methods

We used the legislative history of abortion legalization across states (summarized in Levine et al.[10]) to identify the effects of policy changes on fertility rates. Before 1967, abortion was illegal nationwide except when necessary to save the life of the mother. Between 1967 and 1970, 12 states implemented modest reforms legalizing abortions under special circumstances such as rape or incest. Abortion was fully legalized in 4 states (New York, Washington, Alaska, and Hawaii) in 1970 and became widely available in California at about that time after a 1969 state supreme court ruling.[1,9] Following the 1973 US Supreme Court decision in *Roe v Wade*, abortion became legal in all states.

This legislative history enabled us to categorize states by abortion legality in different years and provided the means to estimate the nationwide impact of legalization. We used a quasi-experimental design and analyzed 3 different quasi-experiments. First, the effects of changes in state abortion laws prior to *Roe* were identified through comparison of fertility rates in these states before and after these changes with fertility rates in states where the legal status of abortion was unaltered before 1973. Second, in 1973 the effect of *Roe v Wade* was identified through comparison of fertility rates after 1973 in states that had not previously legalized abortion with fertility rates in states that had legalized earlier. In our empirical specifications, we also estimated whether this effect took place immediately or gradually.

The results of these analyses may understate the impact of abortion legalization if, prior to the *Roe* decision, birth rates fell in all states as women traveled to early legalization states to have an abortion. Therefore, we considered a third quasi-experiment comparing fertility rates in states that legalized abortion before 1973 with rates in other states that varied by their distance to a legalization state. Since women could travel to a state where abortion was legal (and were more likely to do so if they were closer), such comparisons allowed us to address the extent to which fertility rates in the control group states also declined. Among states that had not legalized abortion before 1973, we calculated whether the state was within 250 miles of, within 250 to 750 miles of, or more than 750 miles from a repeal state. These distances were chosen to roughly divide control group states into thirds, but one could interpret them according to the length of time it might take to drive to a repeal state (a half day or less, 1 day or less, or more than 1 day).

Within this quasi-experimental framework, we used regression analysis to estimate the differences in log fertility rates (the number of births observed per 1000 women of childbearing age) between groups of states following liberalization and whether these differences dissipated after abortion was legalized in all states in 1973. These regressions controlled for factors that could influence fertility, including demographic characteristics, the socioeconomic environment, state-specific indicator variables (to control for time-invariant differences in birth rates across states), year indicator variables (to control for national trends in birth rates), and interaction terms between state-specific indicators and a linear time trend (to control for differences in linear trends in birth rates across states). We also estimated comparable models for subgroups of women differing in terms of age, race, and marital status. Regressions were weighted by state population and involved more than 800 observations.

Most of the birth data for this analysis were obtained from *Vital Statistics of the United States*.[11] Fertility rates for each group were calculated via population estimates obtained from the US Bureau of the Census. We also used the 1980 census to estimate fertility rates by marital status. Using vital statistics data for this purpose was not possible, because administrative birth records in California and New York did not include marital status at that time. From the census data, we identified a "nonmarital" birth as one in which the child was born before the mother's first marriage. In comparison with the available data from *Vital Statistics of the United States*, these census estimates tend to understate the number of nonmarital births, particularly later in the sample period. Although they represent the best available data, some caution should be used in interpreting the results.

Results

Nationwide Patterns

Figure 1 displays the difference in fertility rates between repeal states and states with no law change. The pattern shows that differences were roughly constant through 1970. A sharp drop of about 6% observed in 1971 remained through 1973, indicating that fertility rates fell in repeal states relative to states with no law change during this period. Through 1974/75, the difference narrowed, and beginning in 1976 there were few differences between the states. The relative decline in fertility rates in repeal states occurred in exactly the years in which abortion was legal only in repeal states. The partial rebound in 1974/75 may indicate that abortion access in states affected by *Roe v Wade* increased less quickly following this decision relative to the rapid introduction of abortion services in repeal states in 1970. (A corresponding figure for reform states vs states with no legal changes showed no obvious difference in fertility rates over time and for purposes of brevity is not displayed here.)

Regression results are reported in Table 1, where the dependent variable is the log fertility rate. The coefficients shown are for a series of dummy variables indicating whether the state was a repeal or reform state during the years of abortion liberalization before *Roe* (e.g., 1971–1973 in repeal states), in one of the years immediately following *Roe* (1974/75), or in a later year (1976–1980). The omitted category is that comprising states with no law change prior to *Roe*; thus, all estimates are relative to these states.

The results reported in Table 1 indicate that abortion legalization had an effect on fertility rates among all women. Overall, births in repeal states fell by 4% relative to states with no law change between 1971 and 1973. No statistically significant difference in births between the 2 sets of states was observed in 1974/75 or from 1976 to 1980. In addition, these results provide no evidence that modest abortion reforms reduced birth rates, since the estimated differences between fertility rates in reform states and states with no law change were small in magnitude and imply that, if anything, modest reforms were associated with increased birth rates.

Table 1 also reports estimates from similar models for fertility among women in different population subgroups. Results indicate that abortion legalization reduced the relative fertility rates of teens and women 35 years of age and older by 12% and 8%, respectively, but only by 2% for women between 20 and 34 years of age. Estimates show that births to non-White women in repeal states (vs states with no law change) fell by 12% just following repeal, more than 3 times the effect on White women's fertility. Nonmarital births fell by almost twice the rate of marital births (5.5% [significant at the 10% level] vs 3.1%) in repeal states between 1971 and 1973 relative to states with no law change. All of these differences disappeared in the years following *Roe v Wade*.

Geographic Patterns

If women traveled to repeal states, the relative decline in fertility in repeal states

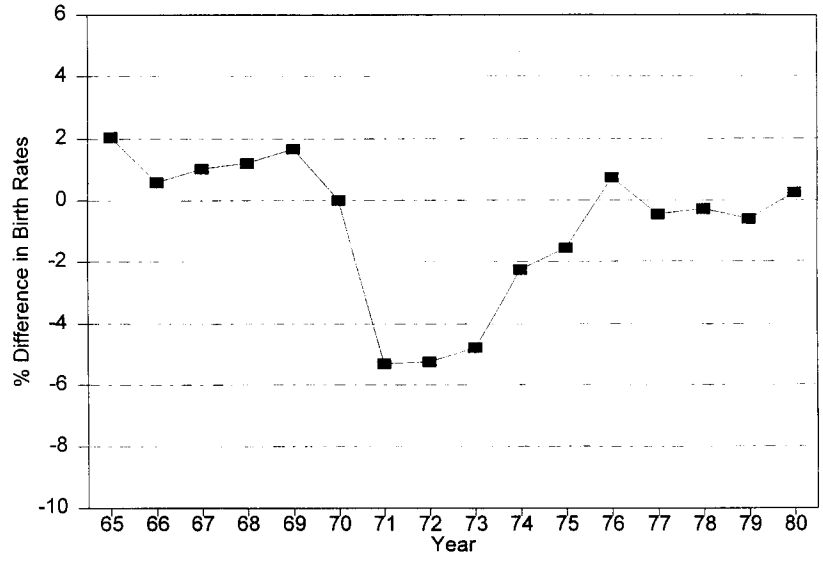

FIGURE 1—Normalized percentage differences in birth rates between repeal states and states with no law change (percentage differences were normalized to equal zero in 1970).

would understate the true effect of abortion legalization. To examine this hypothesis, we estimated models (see Table 2) analogous to those reported in Table 1, except that separate regressions were used, each including repeal states and one subgroup of nonrepeal states (including reform states) varying in their distance to a repeal state. Coefficient estimates represent the difference in birth rates between repeal states and nearby (less than 250 miles from a repeal state), middle-distance (between 250 and 750 miles), and distant (greater than 750 miles) nonrepeal states in the 3 time periods considered here. If travel occurred, then the relative decline in births in repeal states should be greater when compared with distant nonrepeal states than when compared with those less distant.

The results indicate that travel between states to obtain abortions was important. Births in repeal states fell by almost 11% relative to births in nonrepeal states more than 750 miles away but only by 4.5% relative to births in states less than 250 miles away and those in states between 250 and 750 miles away. Although not reported here, similar evidence was obtained indicating that travel was roughly equally common across all age groups, including teens. Assuming that no travel took place from distant states, these estimates for all births indicate that abortion legalization in New York, California, and a few other states in 1970 reduced the fertility rate in these states by almost 11%. The *Roe v Wade* decision had a similar effect on births in this group of distant states in the years following 1973.

These estimates can also be used to examine the extent to which birth rates fell between 1971 and 1973 in nonrepeal states as the result of travel to repeal states to obtain an abortion. To do so, we again assumed that women in states more than 750 miles away from repeal states did not travel to obtain abortions. Then the difference between the estimated reduction in birth rates in repeal states relative to that in states less than 250 miles away and states more than 750 miles away (6.32%) represents the extent to which births fell in the closest nonrepeal states owing to travel. A similar exercise for nonrepeal states between 250 and 750 miles away indicated that birth rates fell in those states by 6.25%. Taking a weighted average of all women by their distance from a repeal state, these estimates imply that travel to obtain an abortion led to a 4.5% decline in births to women in all nonrepeal states following legalization of abortion in repeal states.

Another interesting pattern in the results reported in Table 2 involves the rate at which the difference in fertility rates converged between early legalization states and states legalizing in 1973. In the set of states closest to early legalization states, there was no statistically significant difference in fertility rates as of the 1974/75 period. In the set of states farthest from early legalization states, a smaller but still statistically significant difference in fertility rates was observed during the 1974/75 period before convergence was observed by the 1976 to 1980 period. This pattern is consistent with slower growth in abortion access in these states. As reported in Table 3, states farther from repeal states still

TABLE 1—Effect of Abortion Legislation on Birth Rates

	Coefficient (× 100) (SE)							
		Age, y			Race		Marital Status	
Type of State	All Women of Childbearing Age	15–19	20–34	35–44	White	Non-White	Nonmarried	Married
Repeal								
1971–1973	−4.13 (0.81)	−12.08 (1.18)	−2.05 (0.79)	−7.86 (1.38)	−3.38 (0.90)	−11.63 (1.53)	−5.49 (3.12)	−3.05 (1.12)
1974/75	−0.14 (1.16)	−9.40 (1.68)	2.23 (1.13)	−1.64 (2.00)	−0.06 (1.30)	−3.16 (2.15)	4.90 (4.55)	−0.80 (1.71)
1976–1980	2.31 (1.60)	−4.25 (2.33)	3.74 (1.56)	3.65 (2.76)	2.49 (1.78)	4.91 (3.03)	8.23 (6.17)	2.59 (2.32)
Reform								
Enactment–1973	1.59 (0.51)	1.39 (0.72)	1.50 (0.50)	0.28 (0.88)	2.60 (0.57)	−2.21 (0.98)	−0.75 (1.85)	1.85 (0.70)
1974/75	1.59 (0.85)	1.33 (1.20)	1.44 (0.82)	1.56 (1.51)	1.82 (0.96)	1.93 (1.54)	1.24 (3.11)	0.95 (1.17)
1976–1980	0.14 (0.85)	0.06 (1.21)	0.66 (0.82)	3.95 (1.52)	−1.02 (0.96)	0.50 (1.57)	1.95 (3.09)	−1.09 (1.16)

Note. Dependent variables in these models were the natural logarithms of birth rates; thus, all coefficients can be interpreted as percentage changes. All specifications included the following control variables: share of women aged 15 to 19, 20 to 24, and 25 to 34 among women of childbearing age; share of state population that was non-White; per capita income; crime rate; insured unemployment rate; state and year fixed effects; and state-specific trends. Coefficients for repeal and reform state variables were estimated relative to states with no legislative change in abortion policies.

TABLE 2—Effect of Abortion Legislation on Birth Rates, by Year and Distance From Repeal State

Year of Repeal	Coefficient (× 100) (SE) Distance Less Than 250 Miles	Distance Between 250 and 750 Miles	Distance Greater Than 750 Miles
1971–1973	−4.45 (0.82)	−4.52 (1.04)	−10.77 (1.34)
1974/75	−1.70 (1.20)	−0.63 (1.44)	−5.50 (1.72)
1976–1980	−0.59 (1.64)	2.05 (1.94)	−0.60 (2.22)

Note. Dependent variables in these models were the natural logarithms of birth rates; thus, all coefficients can be interpreted as percentage changes. All specifications included the following control variables: share of women aged 15 to 19, 20 to 24, and 25 to 34 among women of childbearing age; share of state population that was non-White; per capita income; crime rate; insured unemployment rate; state and year fixed effects; and state-specific trends. Coefficients for repeal state variables were estimated relative to nonrepeal states, including those that instituted modest abortion reforms.

had lower abortion rates in 1976, along with a lower percentage of women in counties with abortion providers and a much larger fraction of women living more than 50 miles from the nearest abortion provider.

Discussion

What do these results reveal about the potential effects on birth rates if *Roe v Wade* were ever to be overturned? The answer depends on the uniformity of the ban on abortions across states. If *Roe* were supplanted by a constitutional amendment outlawing abortion nationwide, we might expect an 11% rise in fertility rates based on the experience of the early 1970s. Applying this estimate to the current level of births (roughly 4 million per year), we estimate that a complete recriminalization of abortion would result in perhaps as many as 440 000 additional births per year.

On the other hand, the effect might be considerably smaller if a future Supreme Court decision returned to states the authority to determine the legality of abortion. The increase in births would then depend on the number of states in which abortion remained legal and their geographic distribution (currently, 13 states have laws on the books to recriminalize abortion if *Roe v Wade* is overturned[12]). If the 5 repeal states were to maintain the legality of abortion, then our findings indicate that birth rates might still increase by perhaps 4.5% in the remaining states that recriminalize abortion. This would result in an increase in births on the order of 135 000 per year (4.5% of the roughly 3 million births in those states that recriminalize). If more states were to keep abortion legal, the effect on births probably would be smaller since interstate travel to obtain abortions would increase.

While our results provide a useful frame of reference, they have important limitations. Changes since 1973 in contraceptive technology, employment opportunities for women, social attitudes, and other factors have altered the environment in which fertility decisions are made. Moreover, a complete evaluation of the impact of overturning *Roe v Wade* would require consideration of other social, health, and demographic effects. Nevertheless, our results suggest that if *Roe v Wade* were overturned today, one of the effects would be a substantial rise in American fertility. □

Contributors

All authors conceived and designed the study and contributed to the construction of the data set. Drs Levine and Staiger analyzed the data and wrote the paper. Drs Kane and Zimmerman edited the final manuscript. All authors are guarantors of the integrity of the research.

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TABLE 3—Abortion Use and Access After *Roe v Wade*, by Distance From Repeal State

	Repeal States	Nonrepeal States: Less Than 250 Miles From a Repeal State	Nonrepeal States: Between 250 and 750 Miles From a Repeal State	Nonrepeal States: More Than 750 Miles From a Repeal State
Abortions per 1000 women aged 15–44 years, 1976	37.3	25.5	19.1	17.8
Women aged 15–44 years in 1976 living in counties with an abortion provider, %	96.8	77.0	52.1	55.9
Women aged 15–44 years in 1976 living in counties more than 50 miles from nearest county with an abortion provider, %	0.2	2.2	8.8	20.6

Note. Abortion rates by state of residence and data on counties with an abortion provider were provided by the Alan Guttmacher Institute. For each county, miles to nearest county with an abortion provider were calculated as straight-line distance between county population centroids. Population estimates for 1976, by county, were obtained from the National Cancer Institute.

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