

# Did Abortion Legalization Reduce the Number Of Unwanted Children? Evidence from Adoptions

**CONTEXT:** The legalization of abortion in the United States led to well-known changes in reproductive behavior, but its effect on adoptions has not been investigated.

**METHODS:** Variation across states in the timing and extent of abortion legalization is used to identify the effects of changes in the legal status of abortion on adoption rates from 1961 to 1975. These effects are estimated in regression analyses that control for states' economic, demographic and political characteristics, as well as for health care availability within states.

**RESULTS:** The rate of adoptions of children born to white women declined by 34–37% in states that repealed restrictive abortion laws before *Roe v. Wade*. The effect was concentrated among adoptions by petitioners not related to the child. Legal reforms resulting in small increases in access, such as in cases of rape and incest, were associated with a 15–18% decline in adoptions of children born to nonwhite women; however, this decline may have been due to other changes in the policy environment for such adoptions. Rates of adoption of children born to white women appear to have declined after *Roe v. Wade*, but this association is not statistically significant.

**CONCLUSIONS:** The estimated effect of abortion legalization on adoption rates is sizable and can account for much of the decline in adoptions, particularly of children born to white women, during the early 1970s. These findings support previous studies' conclusions that abortion legalization led to a reduction in the number of "unwanted" children; such a reduction may have improved average infant health and children's living conditions.

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By Marianne Bitler and Madeline Zavodny

Marianne Bitler is NICHD (National Institute of Child Health and Human Development) postdoctoral fellow at RAND, Santa Monica, CA. Madeline Zavodny is an economist in Atlanta.

The legalization of abortion in the United States is well known to have led to changes in reproductive behavior. Birthrates declined by about 5–8% as a consequence of abortion legalization, with the largest declines occurring among teenagers, women older than 35, unmarried women and nonwhite women.<sup>1</sup> Abortion legalization is believed to have affected women's willingness to have sex, women's contraceptive behavior and men's willingness to marry in the event of an unplanned pregnancy.<sup>2</sup> It also is associated with an improvement in birth outcomes, such as neonatal mortality.<sup>3</sup> Furthermore, abortion legalization may have led to an improvement in the average living conditions of children, probably by reducing the numbers of youngsters who would have lived in single-parent families, lived in poverty, received welfare and died as infants.<sup>4</sup>

Abortion legalization may have also affected adoptions. In a given year, children (of any age) may become available for adoption because their parents do not want to raise them or because the state has removed them from their parents' households. The number of children adopted in a given year is therefore a rough proxy for the number of newly available "unwanted" children. Legal access to abortion would be expected to reduce the number of unwanted children and thus the supply of children available for adoption and the number of adoptions.

Previous research suggests that abortion restrictions less

onerous than outright prohibition reduce the number of infants relinquished for adoption in the United States. A study using state-level data from three years in the 1980s found that restrictions on Medicaid funding of abortions and enforcement of laws mandating parental involvement when minors seek abortions are negatively associated with the number of infants relinquished relative to both the total number of pregnancies and the number of nonmarital pregnancies.<sup>5</sup> Another study did not find a statistically significant relationship between Medicaid funding restrictions and adoptions in state-level data from 1980.<sup>6</sup> These findings call into question whether increased access to abortion leads to fewer adoptions and raise the possibility that abortion laws may affect sexual and contraceptive behavior, as other research concluded.<sup>7</sup>

Our study examines an issue that has not been previously investigated: whether abortion legalization led to a decline in the number of children adopted. Using data from 1961–1975, we test whether adoption rates declined in states that granted women access to abortion prior to the 1973 *Roe v. Wade* decision and whether they declined in other states after the U.S. Supreme Court ruling. We use an empirical methodology that incorporates fixed effects and state-specific time trends to control for unobserved differences across states in adoption behavior. This approach has not been used before in studies of the linkage between adoption and abortion accessibility.

**TABLE 1. Classification and year of abortion legalization before *Roe v. Wade*, by state**

Classification	Year
<b>Repeal†</b>	
Alaska	1970
California	1969
Hawaii	1970
New Jersey	1972
New York	1970
Vermont	1972
Washington	1970
<b>Reform‡</b>	
Arkansas	1969
California	1967
Colorado	1967
Delaware	1969
District of Columbia	1969
Florida	1972
Georgia	1969
Kansas	1970
Maryland	1968
Massachusetts	pre-1961
New Mexico	1969
North Carolina	1967
Oregon	1969
South Carolina	1970
Virginia	1970

†Repeal of a restrictive law made abortion legal in most circumstances. ‡Reform of a restrictive law made abortion legal in some circumstances. Sources: Levine PB et al., 1999 (reference 1); Lucas R, 1968 (reference 8); Merz JF, Jackson CA and Klerman JA, 1995 (reference 8); and Angrist JD and Evans WN, 1999 (reference 9).

### ABORTION AND TRENDS IN ADOPTIONS

The Supreme Court handed down the *Roe v. Wade* decision, giving women across the country legal access to abortion, in January 1973. However, several states had already made abortion legally available (Table 1). In 1970, Alaska, Hawaii, New York and Washington repealed laws declaring abortion illegal or had such laws struck down by their state supreme court; New Jersey and Vermont followed in 1972.<sup>8</sup> California did not formally repeal its law declaring abortion illegal before *Roe*, but abortion was widely available in that state by 1969.<sup>9</sup> Fourteen other states and the District of Columbia reformed their abortion laws in the late 1960s or early 1970s to allow for legal abortion in cases such as rape and incest; abortion became legally available to all women in these states after *Roe*. Abortion did not become legally widely available in the other 29 states until after *Roe*.<sup>†</sup>

Before the availability of legal abortion became wide-

\*Doctors in California apparently interpreted the state's reform law more liberally than did doctors in other states, since the number of abortions performed in California hospitals rose considerably during the late 1960s. (Source: Potts M, Diggory P and Peel J, *Abortion*, Cambridge, UK: Cambridge University Press, 1977.)

†Our coding of changes in abortion law before *Roe* differs from that in several previous studies, such as Levine PB et al., 1999 (reference 1). However, it is consistent with the chronologies in Merz JF, Jackson CA and Klerman JA, 1995 (reference 8) and Lucas R, 1968 (reference 8). The sensitivity of the results to using the same coding as Levine et al. is discussed later. Other recent articles, such as Joyce T, 2001 (reference 30), have also used different coding from Levine et al., citing reports from the Centers for Disease Control and Prevention that abortion rates were higher in some states that Levine et al. designated as having neither repealed nor reformed their laws before *Roe* than in some states where laws were repealed during the late 1960s and early 1970s.

‡The data were collected by the National Center for Social Statistics, an executive branch center that was disbanded in 1976; no data were collected by the government from 1975 until the mid-1990s.

spread, relinquishing children for adoption was one of few options open to women with unwanted or mistimed births. The number of adoptions rose from 91,000 in 1957 to 175,000 in 1970, then fell to 130,000 by 1975; the decline of the early 1970s coincided with the legalization of abortion.<sup>10</sup> During this period, the population of women of child-bearing age (15–49) grew steadily, birthrates among unmarried women rose and total birthrates fell.<sup>11</sup> The decline in adoptions appears most dramatic among unmarried teenagers.<sup>12</sup> Although few reliable statistics are available on the number of abortions performed before legalization, the numbers performed between the late 1960s and mid-1970s are believed to represent substantial increases.<sup>13</sup>

The above statistics on total adoption petitions granted include placements with both relatives of the child and unrelated petitioners. Adoptions granted to unrelated petitioners generally represent unwanted or mistimed births, whereas adoptions granted to relatives often involve a child's stepparent (in some states) and therefore may not represent undesired children. The proportion of adoptions that were by related petitioners rose from 49% in 1970 to 63% in 1975.<sup>14</sup> An increase in the fraction of adoptions granted to relatives would be expected if abortion legalization affected primarily decisions made by women whose relatives would not want to adopt or care for a child they bore.

Because adoptions are infrequent, most individual-level data sets do not contain large enough samples for analysis of the factors that cause women to put their children up for adoption. A study that used the 1982 and 1988 National Surveys of Family Growth, which together included only 124 reports of children placed for adoption, found that unmarried white women were much less likely to place their children for adoption in the 1980s than in the early 1970s, when abortion was illegal in many states.<sup>15</sup> Before 1973, 9% of children born to never-married women were placed for adoption, whereas from 1982 to 1988, only 2% of such children were placed for adoption. During 1989–1995, fewer than 1% of children born to never-married women were relinquished for adoption.<sup>16</sup> Most of the decline occurred among white women. Black and Hispanic women were less likely than non-Hispanic white mothers to place their children for adoption prior to abortion legalization, and their rates of relinquishment changed little, if at all, over time.

### DATA

Our data on adoptions are from U.S. government annual statistics during the period 1961–1975. They were collected by states from court records and were reported to the federal government on a voluntary basis.<sup>‡</sup> The number of states reporting adoptions ranged from 30 to 39 plus the District of Columbia over the years in this study; as a result, the panel data set is unbalanced. In all, we analyze 521 annual state-level observations that had data available on adoptions and on the determinants of adoptions.

The data available on adoptions include the total number of adoptions in the state, the number of adoptions by the birth mother's race (classified as white or nonwhite)

**TABLE 2. Means (and standard deviations) of adoption rates for the period 1961–1975 and for 1970 and 1975, by birth mother's race and type of petitioner**

Mother's race and type of petitioner	Adoptions per 1,000 women			Adoptions per 1,000 births		
	1961–1975 (N=521)	1970 (N=36)	1975 (N=36)	1961–1975 (N=521)	1970 (N=36)	1975 (N=36)
<b>White</b>	<b>2.74 (1.03)</b>	<b>3.16 (1.15)</b>	<b>1.83 (0.99)</b>	<b>37.55 (14.42)</b>	<b>42.93 (14.40)</b>	<b>33.21 (17.65)</b>
Unrelated	1.50 (0.60)	1.75 (0.50)	0.65 (0.27)	20.25 (8.37)	23.92 (6.52)	11.84 (5.24)
Related	1.24 (0.80)	1.41 (0.89)	1.14 (0.80)	17.18 (11.35)	19.01 (11.49)	20.62 (14.23)
<b>Nonwhite</b>	<b>2.53 (1.90)</b>	<b>2.92 (2.16)</b>	<b>2.86 (2.98)</b>	<b>26.36 (20.25)</b>	<b>28.96 (19.42)</b>	<b>38.67 (33.39)</b>
Unrelated	1.37 (1.62)	1.66 (1.93)	1.50 (2.52)	14.22 (16.80)	16.54 (17.52)	20.26 (27.54)
Related	1.16 (0.83)	1.26 (0.84)	1.27 (1.18)	12.01 (9.20)	12.42 (8.31)	17.13 (14.53)

Notes: The type of petitioner refers to the petitioner's relationship to the child. The denominator for the rate of adoptions per 1,000 women is women aged 15–49. Observations are weighted by the population of women aged 15–49 in the relevant population group in each state and year. Total rates may exceed the sum of the subtotals because adoptions for which the type of petitioner was unknown are included in the totals but not in the subtotals.

and marital status (married or unmarried), and the relationship of the petitioner to the child (related or unrelated). Not all of these data are available in all years; the number of adoptions by marital status is available only for 1961–1973. We focus on adoptions by the mother's race and the relationship status of the petitioner.

Table 2 presents mean rates of adoptions per 1,000 women aged 15–49 for the entire study period, for 1970 (the peak year for adoptions) and for 1975. The data are disaggregated by race; therefore, for each racial group, the denominator is the population of women aged 15–49 in that group. Among white women, the adoption rate dropped 42% between 1970 and 1975—from 3.16 to 1.83 per 1,000.\* Adoptions by petitioners unrelated to the child accounted for the bulk of the decline: These adoptions fell 63% between 1970 and 1975, whereas adoptions by relatives per 1,000 white women declined by 19%.

The overall rate of adoptions fell only 2% among nonwhite mothers, and the rate of unrelated adoptions declined by 10%, between 1970 and 1975. The number of adoptions by related petitioners per 1,000 nonwhite women was essentially unchanged. Moreover, the number of adoptions per woman was lower for nonwhites than for whites before 1970. Previous research found similar differences across racial groups.<sup>17</sup>

Table 2 also presents the mean rates of adoptions per 1,000 live births. Here the data by race are based on the number of births to women in a given racial group. The data again suggest that adoptions of children born to white women declined between 1970 and 1975. When viewed relative to births, the decline occurred solely in adoptions by unrelated petitioners of children born to white women; all other rates of adoptions per 1,000 births were higher in 1975 than in 1970.† In our sample, the average birthrate per 1,000 women aged 15–49 was 74 among whites and 101 among nonwhites. The average ratio of adoptions to 1,000 live births was 38 among whites and 26 among nonwhites.

## EMPIRICAL METHODOLOGY

We employed an estimation strategy that models adoptions per 1,000 women or per 1,000 births in a state as a function of various characteristics of the state: whether abortion is legally available and under what circumstances, the

availability of health care, demographic characteristics of the population, economic conditions, welfare generosity and the political climate. Each set of variables and its expected effect on adoptions is discussed below.

## Measures

• *Legal status of abortion.* We used three dummy variables to measure the legal status of abortion in states. The first of these, repeal, applies to states where a law declaring abortion illegal was repealed by the legislature or invalidated by state courts prior to *Roe v. Wade*; this variable is equal to one after the year of repeal and zero otherwise.‡ For example, repeal is set equal to one for Alaska, Hawaii, New York and Washington in 1971 and thereafter because women gained access to legal abortion in these states in 1970. The one-year lag allows sufficient time for changes in the law to have affected fertility decisions. For example, New York legalized abortion in July 1970; if a woman living there who became pregnant in the fall of 1970 would, in the absence of legalization, have given her child up for adoption but instead chose to have an abortion, the adoption rate in 1971 would reflect her decision.

The second variable related to the legal status of abortion, reform, applies to states that changed their laws to allow for legal abortion in cases such as rape and incest; the variable is equal to one after the states instituted these reforms and zero otherwise. The last variable reflecting abortion's legal status, *Roe v. Wade*, applies to states that had not already repealed their laws before the 1973 Supreme Court decision; it is equal to one in 1974 and 1975, and zero for the earlier years. Both the reform and the *Roe v. Wade* variables are lagged one year.

\*T-tests of the equality of means in 1970 and 1975 rejected equality of means for all three measures of adoptions per 1,000 white women ( $p=.00$  for total adoptions and adoptions by nonrelatives,  $p=.05$  for adoptions by relatives). Equality of means for adoptions per 1,000 nonwhite women could not be rejected for any of the three measures.

†Equality of means was rejected for total adoptions per 1,000 births to white women ( $p=.05$ ) and for unrelated adoptions per 1,000 births to white women ( $p=.00$ ). Equality of means could not be rejected for any of the other measures.

‡In the first year after the abortion law changed, we code the variable as the proportion of the year that the change was in effect.

**TABLE 3. Means (and standard deviations) of variables used in regression analyses of factors influencing adoption rates**

Variable	Mean
<b>Health care availability</b>	
Doctors per capita	1.41 (0.35)
Hospitals per capita	0.04 (0.01)
Hospital beds per capita	7.91 (1.59)
<b>Demographic and other</b>	
Marriages per capita	10.15 (10.65)
Divorces per capita	3.31 (1.80)
Incarceration rate	95.65 (37.19)
H.S. graduates (% of population)	0.45 (0.08)
College graduates (% of population)	0.09 (0.02)
<b>Economic</b>	
Employment per capita	0.33 (0.05)
Unemployment rate	5.01 (1.75)
Real personal income per capita (000s)	3.23 (0.63)
Real hourly manufacturing wage (\$)	2.86 (0.42)
Real avg. monthly AFDC benefits for family of four (\$)	145.95 (48.53)
<b>Political</b>	
Republican governor	0.39 (0.49)
Republicans in state senate (%)	0.35 (0.21)
Republicans in state house (%)	0.35 (0.20)

Notes: Observations are weighted by the total population in each state in that year. The sample is an unbalanced panel of 521 state-level observations during 1961–1975. Real variables are deflated by the consumer price index for urban consumers. Per capita variables are per 1,000 persons in the total population (the incarceration rate is per 100,000 persons).

This estimation strategy of using differences in the timing and extent of abortion legalization across states has also been used in earlier research. Previous studies found differences in birthrates and child outcomes between states that repealed their abortion laws in 1970 and states that did not make legal abortion widely available until after *Roe v. Wade*.<sup>18</sup> These findings suggest that women responded to differences across states in abortion access before *Roe v. Wade* when making fertility decisions.

• **Control variables.** The models included a variety of health care, demographic, economic and political controls (presented, along with their mean values, in Table 3). To control for the availability of medical services, we used the numbers of physicians, hospitals and hospital beds (all per 1,000 people in the state population in a given year). Previous research suggests that variables measuring the availability of facilities that offer family planning and abortions should be positively associated with abortion rates.<sup>19</sup> Under our hypothesis that greater access to abortion implies fewer unwanted children, more access to abortion providers should lead to lower rates of relinquishment.

The demographic variables included the number of marriages and divorces per 1,000 people in a state in a given year, because adoption and abortion behavior are likely to differ between unmarried and married women. In addition, following previous literature,<sup>20</sup> we used a variable measuring the incarceration rate in a given state and year. The proportions of the adult population who had completed high

\*The choice to define these variables in terms of Republicans was arbitrary and does not affect the results.

†By influencing a woman's current reproductive choices, abortion availability could also affect relinquishment of children she has already had.

school and college were included to control for possible effects of educational attainment on fertility behavior.

We also controlled for several variables that reflect women's opportunity costs of children and that measure economic conditions: the employment-to-population ratio in the state (i.e., the number of people employed divided by the number aged 16 and older), unemployment rate, real per capita personal income, real manufacturing wage and real average Aid to Families with Dependent Children (AFDC) benefit per recipient family (included as a measure of welfare generosity). The wage, income and welfare variables were deflated using the consumer price index for urban consumers and were measured in natural logs in the regressions.

We expected variables measuring the opportunity costs of keeping a child to be positively related to the adoption rate, but were uncertain about the signs of most of the economic controls. For example, in states with high unemployment rates, the likelihood of not working may have made women feel financially unable to support a child and therefore more likely to place a child for adoption, or it may have made them feel better able to care for a child and thus less likely to relinquish a child. We expected higher real AFDC benefits to be associated with a lower rate of relinquishment, because higher welfare benefits lower the cost of keeping a child. Previous studies have reported conflicting results for the relationship between welfare payments and adoptions.<sup>21</sup>

Finally, the model included three variables that measure political conditions in states: a dummy variable that is equal to one if a state's governor is a Republican and variables measuring the proportion of the state senate and house composed of Republicans.\* The political variables may capture state attitudes toward adoption and abortion, in addition to controlling for the political climate.

### Analytic Approach

Underlying our analysis is an economic model of fertility and adoption behavior. The number of children adopted reflects both the supply of and the demand for relinquished children. If the supply of children available for adoption is always less than the demand—as appears to be the case in the United States, particularly for healthy white infants—then our data on the number of children adopted reflects the supply of relinquished or unwanted children. The supply of relinquished children depends on the costs, both direct and indirect, to birth parents and their families of raising children. Economic conditions may therefore affect the number of adoptions. The availability and cost of abortion also may affect the number of adoptions if prospective mothers view birth, adoption and abortion as imperfect substitutes for each other.† Abortion legalization made abortion more accessible and lowered its cost, making it a more attractive option than adoption to some women. However, legalization also may have affected the number of pregnancies by changing the cost to women of becoming pregnant.

The signs of the variables measuring legal availability of abortion were difficult to predict. If legalization did not lead to changes in sexual activity or contraceptive use, and if women considered adoption and abortion equally acceptable options, then we would expect more liberal laws to be associated with lower adoption rates, lower birthrates and higher abortion rates. If legalizing abortion also caused changes in women's contraceptive choices, the predicted effects are not clear. Women may view abortion as insurance in the event of an undesired pregnancy, so abortion legalization could have made them more willing to have sex and could have resulted in more women's becoming pregnant. This could have led to constant or increased birthrates; constant, increasing or decreasing adoption rates; and increased abortion rates. If abortion legalization reduced men's willingness to take part in shotgun weddings, then increased abortion access could have led to higher non-marital birthrates and higher adoption rates.<sup>22</sup>

Depending on the magnitude of these changes, any change in direction could have been possible in the number of adoptions relative to population and relative to births. We expected the reform laws that reduced the barriers to abortion only for women facing exceptional circumstances to have smaller effects than either the repeal laws enacted in several states or *Roe v. Wade*, because few women were affected by these reforms.

Our regressions used two dependent variables: the natural log of adoptions per 1,000 women aged 15–49 and the natural log of adoptions per 1,000 live births. Because the dependent variables are in logs, the coefficients measure the estimated percentage change in the adoption rate for a one-unit change in the covariates. (The exceptions are the wage, income and welfare variables, which are also in logs; their coefficients indicate the effect of a percentage change in those variables.) The 521 annual state-level observations included in the analyses were weighted by the white or nonwhite population of women aged 15–49 in a given state and year.

In all regressions, we used the Prais-Winsten method of correcting for autocorrelation in errors in panel data, because statistical tests rejected the hypothesis that the error terms were not autocorrelated.<sup>\*23</sup> The standard errors were White-corrected for heteroscedasticity. We estimated race-specific models for whites and nonwhites because the determinants of relinquishment behavior may differ across races.<sup>†</sup>

Our inclusion of state and year fixed effects and state-specific time trends has several advantages. The state fixed effects capture unobservable time-invariant factors common across all years in a given state, and the state time trends control for any state-specific trend in adoptions. The regressions measure the relationship between the dependent variable and the covariates within a state rather than across states. The year fixed effects capture time-varying factors common to all states in a given year, such as the national business cycle. In effect, the regressions measure the effect that legalization of abortion had on adoptions in a given state after controlling for the trend over time in adoptions in that state. Previous research that examined the re-

lationship between abortion restrictions and adoptions used a cross-sectional or pooled time-series approach and did not include fixed effects or time trends because of data limitations; as a result, it has been difficult to determine whether unobserved state-specific factors underlay the estimated correlations between adoptions and abortion laws.

However, this estimation approach also has disadvantages. The use of the various fixed effects can increase the bias associated with measurement error in righthand-side variables in a panel data setting.<sup>24</sup> In addition, this identification strategy makes it difficult to identify the effects of variables that change slowly.<sup>25</sup> This problem is exacerbated in regressions that include state-specific time trends. We present results with fixed effects and state time trends despite these disadvantages because these variables are jointly significant in the regressions, indicating that they capture a portion of adoption behavior and should be included. Results without the state-specific time trends are similar to those presented here.<sup>‡</sup>

## RESULTS

Table 4 (page 30) reports the estimation results for all adoptions, by the birth mother's race.<sup>§</sup> Relative to other states, states that repealed their abortion restrictions before *Roe v. Wade* saw significant declines in adoption rates for children born to white women; these declines were 34–37%, depending on whether adoptions are measured per 1,000 births or 1,000 population. The effect of repeal was not significant for adoptions of children born to nonwhite women. Reforms that legalized abortion in certain circumstances lowered adoption rates of children born to nonwhite women by 15–18% but did not have a significant effect among whites. Adoption rates did not change significantly after *Roe v. Wade* for states that had not repealed restrictive laws, but the estimates for whites suggest a negative effect similar in magnitude to the effects of repeal prior to *Roe*.

Economic conditions also influenced adoption rates. Adoption rates of children born to white women declined by 16–17% as the employment rate increased. Adoptions of children born to nonwhite women more than tripled with each percentage increase in the manufacturing wage rate and rose by 59–71% with each percentage increase in welfare benefits, the opposite of the predicted effects. The economic variables are jointly significant at the 10% level or lower in the regressions (not shown).

\*The Prais-Winsten method involves estimating a weighted least-squares regression (where the weights are the female population aged 15–49 in a state), estimating the autocorrelation parameter for an AR(1) process in the error terms, transforming the data using the autocorrelation parameter and then reestimating the regression using the transformed data.

†The different rates of relinquishment among nonwhites and whites before 1970 suggest that this may be the case. The mother's race was not reported for 14% of adoptions in our sample; data on these adoptions were excluded from the analyses.

‡Results without state-specific time trends (and all other results discussed but not presented in tables) are available from the authors upon request.

§One concern about our results is that they may be driven by the unbalanced nature of the panel. If all state-year combinations for states missing data for 1961 (the first year in our sample) are dropped, the results are qualitatively similar to those reported in Tables 4 and 5.

**TABLE 4. Coefficients (and standard errors) from Prais-Winsten regressions reflecting the influence of state-level variables on adoption rates, by race of birth mother**

Variable	Total adoptions per 1,000 women		Total adoptions per 1,000 births	
	White	Nonwhite	White	Nonwhite
<b>Abortion legalization</b>				
Repeal	-.372 (.112)**	-.089 (.129)	-.344 (.113)**	-.017 (.118)
Reform	-.081 (.082)	-.175 (.076)*	-.046 (.080)	-.150 (.067)*
<i>Roe v. Wade</i>	-.369 (.205)	.030 (.149)	-.364 (.206)	.045 (.142)
<b>Economic</b>				
Employment per capita/100	-.160 (.063)*	.051 (.043)	-.173 (.063)**	.055 (.042)
Unemployment rate	-.040 (.029)	.008 (.033)	-.033 (.030)	.017 (.034)
Ln (personal income per capita)	-.110 (.271)	-.493 (.323)	.165 (.262)	-.288 (.307)
Ln (manufacturing wage)	-.915 (1.547)	3.255 (1.469)*	-.707 (1.504)	3.508 (1.449)*
Ln (average AFDC benefits)	.368 (.251)	.712 (.266)**	.365 (.247)	.591 (.256)*
<b>Health care availability</b>				
Doctors per capita	-.127 (.207)	-.153 (.204)	-.084 (.204)	-.126 (.200)
Hospitals per capita/100	.128 (.135)	-.158 (.156)	.176 (.137)	-.056 (.153)
Hospital beds per capita	.003 (.022)	-.001 (.030)	-.000 (.024)	.015 (.023)
<b>Political</b>				
Republican governor	.003 (.024)	.000 (.054)	.006 (.024)	-.004 (.055)
Republicans in state senate (%)	.084 (.146)	.231 (.232)	.060 (.143)	.390 (.230)
Republicans in state house (%)	-.217 (.137)	-.154 (.241)	-.186 (.135)	-.279 (.239)
<b>Demographic and other</b>				
Marriages per capita	.023 (.026)	-.017 (.029)	.016 (.025)	-.026 (.030)
Divorces per capita	.056 (.054)	.027 (.057)	.062 (.053)	.013 (.054)
Incarceration rate	2.732 (1.775)	.220 (1.036)	2.614 (1.784)	-.177 (1.005)
H.S. graduates	-2.660 (2.298)	-1.490 (2.151)	-2.837 (2.394)	-1.851 (2.040)
College graduates	11.550 (6.601)	8.613 (7.774)	13.220 (6.798)	8.759 (7.462)
<i>Adjusted R</i> <sup>2</sup>	.919	.915	.992	.993

\*p<.05. \*\*p<.01. Notes: The dependent variables are natural logs. Regressions include state and year fixed effects and state-specific linear time trends. Observations are weighted by the population of women aged 15–49 in the relevant population group in each state and year. Regressions account for AR(1). The sample is an unbalanced panel of 521 state-level observations during 1961–1975. Real variables are deflated by the consumer price index for urban consumers. Per capita variables are per 1,000 persons in the total population (the incarceration rate is per million persons). Standard errors are White-corrected for heteroscedasticity.

Access to health care providers, partisan control and state demographics did not influence adoption rates. These variables were neither jointly nor individually significant.

Table 5 presents results for rates of adoption by relatives and others, according to the birth mother’s race. Only the coefficients on the abortion law variables are reported, but the regressions also included all of the variables listed in Table 3. Differentiating between adoptions by relatives and by individuals not related to the child offers a specification check on the econometric model, because the effects of abortion legalization on adoptions by nonrelatives should be substantially larger than the effects on adoptions by relatives.

The results indicate that abortion legalization indeed affected adoptions by unrelated petitioners but had no effect on adoptions by related petitioners. Adoptions by unrelated petitioners of children born to white women fell by 37–40% in states that repealed abortion restrictions, relative to other states. Adoptions by nonrelatives of children born to nonwhite women fell by 19–22% in states that reformed their abortion restrictions. The effect of the *Roe v. Wade* decision was not significant in any of the regressions.

The absence of significant effects of *Roe v. Wade* might reflect that before *Roe*, some women who wished to have an abortion but lived in states with restrictive abortion laws traveled to states that had already eased access to abortions; such travel would have muted the effect of any eventual change in the law in those states. We created a set of vari-

ables measuring the fraction of neighboring states that had repealed their abortion laws by a given year, reformed their laws or were affected by *Roe*, and included these in regressions along with the same variables as applied to women’s own state. Table 5 also reports these results.

The relationship between adoption rates and abortion policy within states was unaffected when we included controls for abortion policies in nearby states. The results are robust to using a measure of abortion laws in neighboring states that is weighted for distance or for the size of the female population, instead of using a simple average. We also did not find that being closer to any state that repealed abortion restrictions prior to *Roe* lowered adoption rates in a given state. Access to legal abortion in neighboring states did not significantly lower adoption rates within states. Paradoxically, adoption rates of children born to nonwhites were positively associated with the fraction of neighboring states that repealed their abortion restrictions prior to *Roe*.

**Robustness of Results**

We performed several specification checks to examine the robustness of the results presented above. First, to investigate the effect of abortion legalization on adoptions without controlling for other state-level factors that might have affected adoption rates, we estimated regressions that included only our measures of abortion laws and the fixed effects and state time trends. The results were similar to those present-

**TABLE 5. Coefficients (and standard errors) from Prais-Winsten regressions reflecting the influence of changes in abortion laws on adoption rates, by type of adoption petitioner and abortion policy in a woman's own state and in neighboring states, according to race of birth mother**

Variable	Adoptions per 1,000 women		Adoptions per 1,000 births	
	White	Nonwhite	White	Nonwhite
<b>ADOPTION PETITIONER</b>				
<b>Nonrelative</b>				
Repeal	-.396 (.112)**	-.144 (.159)	-.367 (.113)**	-.066 (.150)
Reform	-.067 (.079)	-.217 (.095)*	-.034 (.078)	-.189 (.087)*
<i>Roe v. Wade</i>	-.279 (.218)	.130 (.174)	-.265 (.220)	.136 (.168)
<b>Relative</b>				
Repeal	-.108 (.186)	-.009 (.203)	-.081 (.185)	.072 (.193)
Reform	-.156 (.209)	-.206 (.170)	-.121 (.208)	-.149 (.148)
<i>Roe v. Wade</i>	-.295 (.305)	-.190 (.233)	-.292 (.304)	-.192 (.243)
<b>ABORTION POLICY</b>				
<b>In own state</b>				
Repeal	-.382 (.116)**	-.198 (.115)	-.351 (.116)**	-.116 (.114)
Reform	-.084 (.086)	-.242 (.072)**	-.047 (.084)	-.219 (.073)**
<i>Roe v. Wade</i>	-.209 (.137)	.010 (.122)	-.188 (.137)	.017 (.127)
<b>In neighboring states</b>				
Repeal	-.124 (.300)	.823 (.277)**	-.061 (.289)	.900 (.282)**
Reform	-.068 (.188)	-.140 (.215)	-.053 (.189)	-.047 (.218)
<i>Roe v. Wade</i>	-.549 (.455)	-.122 (.306)	-.592 (.460)	-.023 (.316)

\*p<.05. \*\*p<.01. Notes: The type of petitioner refers to the petitioner's relationship to the child. The dependent variables are natural logs. The data represent results of three sets of regressions for the sample and outcome identified in the column headings: one for nonrelative petitioners (first three rows), one for relative petitioners (next three rows) and one controlling for abortion policy in neighboring states (last six rows). Each regression accounts for AR(1) and includes state and year fixed effects, state-specific linear time trends and the variables listed in Table 3. Observations are weighted by the population of women aged 15–49 in the relevant population group in each state and year. The sample is an unbalanced panel of 521 state-level observations during 1961–1975. Standard errors are White-corrected for heteroscedasticity.

ed above, with one notable exception. In the regressions for children born to white women, there was a significant (1% level) negative relationship between adoption rates and abortion reforms. In the regressions for nonwhite women's children, the negative relationship between adoption rates and abortion reforms shown in Tables 4 and 5 also became significant at the 1% level when the other covariates were not included. This difference in the results suggests that other factors in states that reformed their abortion laws also contributed to lower adoption rates in those states.

Several of the variables in the regressions might be viewed as endogenous, or associated with changes in abortion availability. In particular, marriage and divorce rates and women's educational attainment might have been influenced by whether abortion was legal. For our second check of robustness, we therefore omitted these variables from the regressions. This modification yielded results similar to those in the tables presented here, suggesting that potentially endogenous variables did not underlie our results.

Finally, we investigated the robustness of our results to using alternate coding of when states changed their abortion laws. We classified New Jersey and Vermont as having repealed their abortion laws in 1972, whereas several other studies classified these states as having legalized abortion only after *Roe*.<sup>26</sup> We also differed from several previous researchers in classifying California as having reformed its abortion law in 1967 (prior to widespread access to legal abortion in 1969), Massachusetts as having reformed its abortion law before 1961 and the District of Columbia as having reformed its law during 1969. Using other studies' classification of when states changed their abortion laws affected the results for nonwhites but not for whites: In the

regressions for children born to nonwhite women, the negative relationship between adoption rates and abortion reforms was no longer statistically significant, and the coefficient became positive in some specifications.

## DISCUSSION

Our results indicate that adoptions, particularly of children born to white women and by petitioners unrelated to the child, decreased in the 1960s and early 1970s when states repealed their laws restricting access to abortion. *Roe v. Wade* also may have lowered rates of adoption of children born to white women. Legal reforms allowing small increases in access to abortion, such as allowing the procedure for women who became pregnant as a result of rape or incest, did not affect adoption rates of children born to white women.

The estimated effect of abortion legalization on adoption rates is sizable and can account for much of the decline in adoptions during the early 1970s. In our sample, the number of adoptions of children born to white women was 42% lower in 1975 than in 1970.\* Our estimates in Table 4 indicate that these adoptions fell by 34–37% in states that repealed abortion laws; a similar decline may have occurred in other states after *Roe v. Wade*, but this effect is imprecisely estimated and not statistically different from zero.† Abortion legalization therefore appears to account for much of the decline in adoptions of children born to white women between 1970 and 1975.

Our results also indicate that allowing legal abortion

\*Maza PL, 1984 (reference 10), indicates that the total number was 26% lower in 1975 than in 1970 but does not give data by race.

†About one-fifth of women of childbearing age lived in states that repealed abortion laws prior to *Roe v. Wade*.

under certain circumstances prior to *Roe* led to a 15–18% decline in adoptions of children born to nonwhite women. This result is surprising, because relatively few women were covered by such exceptions, which were limited largely to rape, incest and serious risks to the mother’s health. In addition, rates of adoptions of children born to nonwhite women were slightly higher in 1975 than in 1970,<sup>27</sup> suggesting that the negative relationship indicated by the econometric model was counterbalanced by other factors. However, the negative relationship between adoptions and abortion reforms is sensitive to the coding of when states changed their abortion laws, suggesting that there may not have been any effect. Our failure to find significant effects of abortion law repeals and *Roe* may be due in part to the low rate of relinquishments among nonwhites, as it may be difficult to quantify an effect, even one of the magnitude estimated for white adoptions, on such a small base.

Changes in adoption policies concerning children who were not of the same race as their adoptive parents also may have contributed to the results for nonwhites. Support for adoptions of black children by nonblack parents weakened considerably after 1972 in response to a position paper from the National Association of Black Social Workers opposing such adoptions. The number of adoptions of black children by nonblacks rose during the late 1960s, peaked in 1971 and declined steadily through 1975.<sup>28</sup> This time frame coincides with the period when states were repealing their abortion laws and when *Roe* was handed down, possibly confounding our attempts to find an effect of changes in abortion law on adoptions of children born to nonwhite women.

We do not find that *Roe v. Wade* had a significant effect on adoptions, although our results suggest there may have been a negative effect on adoptions of children born to white women. One potential explanation for the model’s failure to precisely estimate the impact of *Roe* is that some states affected by the ruling moved quickly to restrict access to abortion in the post-*Roe* period. In 1975, for example, seven states enacted or began enforcing restrictions on Medicaid funding for abortions, and 14 states put into effect parental involvement laws.<sup>29</sup> In addition, our data extend through 1975, only two years after *Roe*, and it may have taken several years for the ruling’s full impact on adoptions to emerge. Furthermore, previous research has noted that *Roe* may not have had as large an effect on fertility as earlier repeal of state abortion laws had, possibly because women traveled to states that legalized abortion in the early 1970s.<sup>30</sup>

Our finding that access to legal abortion in the early 1970s, particularly before *Roe v. Wade*, had a large negative effect on adoption rates is in contrast to findings on the effects of post-*Roe* abortion restrictions. One study found that adoption rates were negatively associated with Medicaid funding restrictions and parental involvement laws, while another study did not find conclusive effects.<sup>31</sup> This suggests that the effect of a substantial change in abortion access, such as legalization, may differ considerably from the effect of changes that affect subgroups of women. Indeed,

we find that relaxing abortion laws to allow for abortion in cases of rape and incest did not lower rates of adoptions of children born to white women during the late 1960s and early 1970s, although it had an effect on adoptions of children with nonwhite mothers.

We do not find that higher welfare benefits lowered adoption rates during the period 1961–1975. Rather, average AFDC benefits were positively associated with adoption rates of children born to nonwhite women. One previous study that used cross-sectional data from 1980 found, in contrast, a negative association between AFDC benefits and adoptions.<sup>32</sup> Another study, using panel data from the 1980s, did not find a significant relationship between welfare and adoptions.<sup>33</sup> Our failure to find a negative relationship between welfare generosity and adoption rates may be surprising, but our models included a large number of covariates that may be collinear with welfare benefits.

The relationship between adoption and abortion has public policy implications both because of the large, unmet demand for children available for adoption and because of concerns about the living circumstances of unwanted children. In 1995, for example, 9.9 million ever-married women aged 18–44 had ever considered adopting a child, 1.6 million had taken steps to adopt a child and 487,000 had actually adopted a child. Almost a half million women were planning or seeking to adopt a child in 1995.<sup>34</sup> Consistent with findings from prior studies, our results suggest that abortion legalization led to a decline in the adoption rate and a reduction in the number of “unwanted” children relinquished and available for adoption. This reduction may have improved average infant health and childhood living conditions.

#### Appendix: Data Sources

**Total number of adoptions and number of adoptions by race and relationship to petitioner:** Children’s Bureau, *Child Welfare Statistics*, Washington, DC: U.S. Department of Health, Education and Welfare, various years.

**Population of women aged 15–49 and by race:** Linearly interpolated based on 1960, 1970 and 1980 decennial data from the Bureau of the Census.

**Abortion restrictions:** Levine PB et al., 1999, op. cit. (see reference 1); Lucas R, 1968, op. cit. (see reference 8); and Merz JF, Jackson CA and Klerman JA, 1995, op. cit. (see reference 8).

**Physicians:** American Medical Association, *Physician Characteristics and Distribution in the United States*, Chicago: American Medical Association, various years.

**Hospitals and hospital beds:** American Hospital Association, *Hospital Statistics*, Chicago: Healthcare InfoSource, various years.

**Employment, manufacturing wage and unemployment rate:** Bureau of Labor Statistics, *Employment and Earnings*, Washington, DC: U.S. Department of Labor, various years. Manufacturing wage is deflated by the consumer price index for urban consumers, which is from the same source.

**Per capita personal income:** Bureau of Economic Analysis, *Survey of Current Business*, Washington, DC: Bureau of Economic Analysis, various editions. This measure was deflated using the consumer price index for urban consumers.

**Average AFDC benefits for a four-person family with one adult:**

U.S. Bureau of the Census, *Statistical Abstract*, Washington, DC: U.S. Government Printing Office, various years. This measure was deflated using the consumer price index for urban consumers.

**Party of governor and state legislature:** Council of State Governments, *Book of the States*, Lexington, KY: Council of State Governments, various years.

**Births, marriages and divorces:** National Center for Health Statistics, *Vital Statistics of the United States*, various years.

**Number of state and federal prisoners:** Department of Justice, Bureau of Prisons, *Prisoners in State and Federal Institutions*, Leavenworth, KS: U.S. Penitentiary, various years; and Bureau of the Census, *Statistical Abstract*, Washington, DC: U.S. Government Printing Office, various years.

**Percentage of population graduated from high school and college:** Bureau of the Census, *Statistical Abstract*, Washington, DC: U.S. Government Printing Office, various years. Data for 1960 are used for 1961–1969, and data for 1970 are used for 1970–1975. Data are for population aged 25 and older.

## REFERENCES

1. Levine PB et al., *Roe v. Wade* and American fertility, *American Journal of Public Health*, 1999, 89(2):199–203.
2. Akerlof G, Yellen J and Katz M, An analysis of out-of-wedlock child-bearing in the United States, *Quarterly Journal of Economics*, 1996, 111(2):277–318.
3. Grossman M and Jacobowitz S, Variations in infant mortality rates among counties of the United States, *Demography*, 1981, 18(4):695–713.
4. Gruber J, Levine P and Staiger D, Abortion legalization and child living circumstances: who is the “marginal child”? *Quarterly Journal of Economics*, 1999, 114(1):263–291.
5. Gennetian LA, The supply of infants relinquished for adoption: did access to abortion make a difference? *Economic Inquiry*, 1999, 37(3):412–431.
6. Medoff MH, An empirical analysis of adoption, *Economic Inquiry*, 1993, 31(1):59–70.
7. Kane TJ and Staiger D, Teen motherhood and abortion access, *Quarterly Journal of Economics*, 1996, 111(2):467–506.
8. Lucas R, Federal constitutional limitations on the enforcement and administration of state abortion statutes, *North Carolina Law Review*, 1968, 46:730–778; and Merz JF, Jackson CA and Klerman JA, A review of abortion policy: legality, Medicaid funding, and parental involvement, 1967–1994, *Women’s Rights Law Reporter*, 1995, 17(1):1–61.
9. Angrist JD and Evans WN, Schooling and labor market consequences of the 1970 state abortion reforms, in: Polachek SW, ed., *Research in Labor Economics*, Vol. 18, Greenwich, CT: JAI Press, 1999.
10. U.S. Department of Health, Education and Welfare, Children’s Bureau, Welfare Administration, *Child Welfare Statistics*, Washington, DC: U.S. Government Printing Office, 1961; and Maza PL, Adoption trends: 1944–1975, *Child Welfare Research Notes*, 1984, No. 9.
11. Levine PB et al., 1999, op. cit. (see reference 1).
12. Kalmuss D, Namerow PD and Cushman LF, Adoption versus parenting among young pregnant women, *Family Planning Perspectives*, 1991, 23(1):17–23.

13. Akerlof G, Yellen J and Katz M, 1996, op. cit. (see reference 2).

14. Maza PL, 1984, op. cit. (see reference 10).

15. Bachrach CA, Stolley KS and London KA, Relinquishment of premarital births: evidence from national survey data, *Family Planning Perspectives*, 1992, 24(1):27–32 & 48.

16. Chandra A et al., Adoption, adoption seeking, and relinquishment for adoption in the United States, *Advance Data from Vital and Health Statistics*, 1999, No. 306.

17. Bachrach CA, Stolley KS and London KA, 1992, op. cit. (see reference 15).

18. Levine PB et al., 1999, op. cit. (see reference 1); Angrist JD and Evans WN, 1999, op. cit. (see reference 9); and Gruber J, Levine P and Staiger D, 1999, op. cit. (see reference 4).

19. Blank RM, George CC and London RA, State abortion rates: the impact of policies, providers, politics, demographics, and economic environment, *Journal of Health Economics*, 1996, 15(5):513–553.

20. Gennetian LA, 1999, op. cit. (see reference 5).

21. Ibid.; and Medoff MH, 1993, op. cit. (see reference 6).

22. Akerlof G, Yellen J and Katz M, 1996, op. cit. (see reference 2).

23. Bhargava A, Franzini L and Narendranathan W, Serial correlation and the fixed effects model, *Review of Economic Studies*, 1982, 49(4):533–549.

24. Hsiao C, *The Analysis of Panel Data*, Cambridge, UK: Cambridge University Press, 1985.

25. Matthews S, Ribar D and Wilhelm M, The effects of economic conditions and access to reproductive health services on state abortion rates and birthrates, *Family Planning Perspectives*, 1997, 29(2):52–60.

26. Levine PB et al., 1999, op. cit. (see reference 1); and Angrist JD and Evans WN, 1999, op. cit. (see reference 9).

27. Maza PL, 1984, op. cit. (see reference 10).

28. Eskay B, H.B. 2168—codifying a shift in social values toward trans-racial adoption, *Arizona State Law Journal*, 1996, 28:711–733.

29. Merz JF, Jackson CA and Klerman JA, 1995, op. cit. (see reference 8).

30. Joyce T, Did legalized abortion lower crime? National Bureau of Economic Research Working Paper, Cambridge, MA: National Bureau of Economic Research, 2001, No. 8319.

31. Gennetian LA, 1999, op. cit. (see reference 5); and Medoff MH, 1993, op. cit. (see reference 6).

32. Medoff MH, 1993, op. cit. (see reference 6).

33. Gennetian LA, 1999, op. cit. (see reference 5).

34. Chandra A et al., 1999 op. cit. (see reference 16).

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**Author contact:** bitler@rand.org