
The Impact of State Abortion Restrictions on Minors' Demand for Abortions

Author(s): Deborah Haas-Wilson

Source: *The Journal of Human Resources*, Vol. 31, No. 1 (Winter, 1996), pp. 140-158

Published by: University of Wisconsin Press

Stable URL: <http://www.jstor.org/stable/146045>

Accessed: 27/10/2009 12:13

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=uwisc>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



University of Wisconsin Press is collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Human Resources*.

The Impact of State Abortion Restrictions on Minors' Demand for Abortions

Deborah Haas-Wilson

ABSTRACT

Many states restrict the access of minors to abortion services. By October 1995, 27 states had enacted and begun to enforce parental consent or notification laws for minors and 34 states restricted Medicaid funding for abortions. This paper includes estimates of the impact of these enforced abortion restrictions on minors' demand for abortions between 1978 and 1990. Using four estimation methods that account for difficult-to-measure variables, such as anti-abortion sentiment, the results suggest that parental involvement laws decrease minors' demand for abortions by 13 to 25 percent and state restrictions on Medicaid funding of abortions decrease minors' demand for abortions by 9 to 17 percent.

I. Introduction

In 1973 the United States Supreme Court ruled in *Roe v. Wade* (410 U.S. 113) that a right of personal privacy exists under the Constitution and this right includes a woman's decision whether or not to terminate her pregnancy. The court also ruled that the right of personal privacy is not unqualified and must be considered against state interests in regulation. The court's decision did not end the public policy debate concerning abortion. At both the federal and state levels, this debate centers on whether taxpayer dollars should be used to pay for

Deborah Haas-Wilson is an associate professor of economics at Smith College. The author thanks Randall Bartlett, John Cochrane, Roger Kaufman, Elizabeth Savoca, James Stock, and two anonymous referees for helpful ideas and comments. The author also thanks Nicole McLaughlin and Marcy Wilder for their time and effort to collect the data on the parental involvement restrictions. The data used in this article can be obtained beginning August 1996 through July 1999 from the author, Smith College, Department of Economics, Northampton, Massachusetts 01063.
[Submitted July 1993; accepted December 1994]

abortion services and the extent to which states can regulate women's abortion decisions.¹

Since 1973, the Supreme Court has permitted enforcement of certain state restrictions on abortion and prevented states from enforcing other restrictions. The enforceable abortion restrictions include parental involvement restrictions and restrictions on public funding for abortion. Parental involvement restrictions or state requirements of parental consent or notification for unmarried minors (women under the age of 18) are enforceable if the state provides a judicial bypass mechanism.² By October 1995, 27 states had enacted and begun to enforce parental consent or notification laws for minors.³

With respect to the public funding issue, in 1976 the U.S. Congress passed the Hyde Amendment prohibiting the expenditure of federal funds for abortion services except in cases where continuation of the pregnancy threatens the pregnant woman's life. The Hyde Amendment restricts federal funding of abortion services through the Medicaid program; however, it does not prohibit states from paying for abortions. As of September 28, 1995, abortions to save the life of the pregnant woman were the only abortions funded in four states.⁴ In 16 states and the District of Columbia Medicaid paid for all medically necessary abortions.⁵

Very little is known about the impact of these enacted, and in some cases enforced, abortion restrictions. To address this issue two models, a weighted least squares model and a fixed-effects model, are estimated using annual, state data on abortions obtained by minors from 1978 to 1990. The paper focuses on minors because the parental involvement laws have a direct impact only on women under 18 years of age. Further, the problem of unintended pregnancies is particularly evident for this age group. By age 20, approximately 40 percent of all teenage women have been pregnant and of these pregnancies, approximately 84 percent were unintended (U.S. Department of Health and Human Services

1. At the state level, 294 abortion-related bills were introduced in 47 states in 1993. These bills included 54 bills requiring mandatory counselling or waiting periods prior to obtaining an abortion, 53 bills addressing clinic access or protection, 42 bills relating to parental involvement for minors, 31 addressing the legality of abortion, and 29 bills related to public funding of abortions (telephone call with Terry Sollom, Editor of *State Reproductive Health Monitor*, January 25, 1995).

2. The judicial bypass mechanism permits a minor to petition a judge to authorize an abortion without parental involvement.

3. This information about the number of states that have enacted and begun to enforce parental consent or notification laws was given to the author via a memorandum from the National Abortion and Reproductive Rights Action League (NARAL), dated October 17, 1995. Sixteen of the state laws that are enforced require parental consent and eleven mandate parental notification. The law in Wyoming requires both consent and notification. The laws in Arkansas, Idaho, Massachusetts, Minnesota, Mississippi, and North Dakota require that both parents be involved.

4. Prior to March 31, 1994, the effective date of the federal agency order directing states to fund abortions for low-income women who are survivors of rape or incest, 30 states did not provide Medicaid funding for abortions unless the woman's life was in danger (Alabama, Arizona, Arkansas, Colorado, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Michigan, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Ohio, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, West Virginia, and Vermont).

5. October 17, 1995, memorandum from NARAL. The states were Alaska, California, Connecticut, Hawaii, Idaho, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, New Mexico, New York, Oregon, Vermont, Washington, and West Virginia.

1990). Abortions obtained by minors represented 12 percent of total legal abortions in 1987 (Henshaw, Koonin, and Smith 1991).

II. The Market for Abortion Services and the Literature on Abortion Restrictions

The U.S. abortion rate or the number of abortions per 1,000 women aged 15–44 has remained relatively constant since the late 1970s.⁶ In 1978, 1988, and 1992 the abortion rates were 27.7, 27.3, and 25.9 respectively (Henshaw and Van Vort 1994). However, there is tremendous variation in abortion rates by state of occurrence. In 1992 abortion rates ranged from 46.2 abortions per 1,000 women aged 15–44 in New York to 4.3 abortions per 1,000 women aged 15–44 in Wyoming (Henshaw and Van Vort 1994). Further, state legislative opposition to liberalized abortion policies has varied widely across states. Between 1973 and 1989 state legislators in Connecticut and Alaska did not enact any abortion restrictions, while state legislators in North Dakota enacted 15 abortion restrictions (Halva-Neubauer 1990).

These statistics raise many interesting questions. Are the states with the lowest abortion utilization rates also the states that enforce abortion restrictions? Does state-level abortion legislation simply confirm statewide sentiment toward abortion and thus would abortion utilization rates be lower in the most restrictive states even in the absence of the restrictions? Or does statewide sentiment toward abortion determine the extent of abortion restrictions,⁷ and then both sentiment and restrictions affect abortion utilization rates?

Previous research has focused on addressing the first question, and the results are mixed.⁸ The results of Singh (1986), Garbacz (1990), Lundberg and Plotnick (1990), and Haas-Wilson (1993) suggest that Medicaid funding restrictions have a negative impact on minors' demand for abortion. However, Blank, George, and London (1994) found an insignificant effect of Medicaid funding restrictions on teen abortion rates.

With respect to parental involvement restrictions, the results of Donovan (1983), Cartoof and Klerman (1986), Haas-Wilson (1993), Ohsfeldt and Gohmann (1994), and Blank, George, and London (1994) suggest that these restrictions have

6. Between 1978 and 1988, the abortion rate for women aged 15–17 increased by approximately 13 percent, from 26.9 in 1978 to 30.3 in 1988 (Henshaw and Van Vort 1992).

7. There is empirical support for the hypothesis that residents' ideological preferences on abortion influence the restrictiveness of state abortion policies. For example, Meier and McFarlane (1992) found that states with a higher representation of pro-choice advocates among residents have a higher probability of funding Medicaid abortions. Medoff (1989) and Conway and Butler (1992) found that characteristics of the electorate have statistically significant impacts on the public demand for abortion legislation.

8. Other empirical evidence also suggests that abortion restrictions do not have a significant impact on abortion utilization. Johnson and Bond (1980) found that 17 abortion restrictions, including requirements for spousal or parental consent, requirements for consultations by more than one doctor, and facility requirements, had a statistically insignificant impact on the number of abortions per 1,000 live births in each state in 1976. Hansen (1990) found that abortion restrictions including requirements for fetal viability tests and prohibitions on the use of public facilities and public employees had a statistically insignificant impact on abortion rates in 1988.

a negative impact on minors' abortion rates. However, the results of Lundberg and Plotnick (1990) suggest that parental involvement restrictions have a statistically insignificant impact on white teenagers' abortion rates.

Three limitations of this previous research on the impact of abortion restrictions on minors' abortion utilization should be noted. First, state abortion policies are continuously changing, and previous empirical analyses of the impact of abortion restrictions cover only a short period of time, in most cases one year.⁹ Between 1978 and 1990 11 states enacted and began to enforce parental involvement laws, and 13 states began or stopped public funding of medically necessary abortions for low-income women. Thus, previous research does not take advantage of this "natural experiment." The research reported in this paper is based on 11 years of state data and thus, the change in abortion demand in states which enacted and began to enforce abortion restrictions can be compared to the change in abortion demand in states which did not.

Second, many states have enacted parental involvement restrictions, but never enforced those restrictions or enforced them for only a short period of time. Previous research does not distinguish between enforced and unenforced restrictions. With the help of the legal department of the National Abortion and Reproductive Rights Action League (NARAL), the exact dates of enactment and enforcement of parental involvement restrictions were collected, and thus this paper includes separate estimates of the impact of enforced and unenforced restrictions.

Third, the published research does not take into account unmeasurable taste factors, such as anti- or pro-abortion sentiment, and thus suffers from omitted-variable bias. Previous research attributes differences in abortion utilization to the presence or absence of abortion restrictions; however, it is possible that the state residents' ideological preferences on abortion determine both the restrictiveness of a state's abortion policies and the abortion utilization rate of the state's residents. In other words, there are fewer abortions in states with abortion restrictions; however, this may be because states that enact restrictions are states in which there would be fewer abortions anyway, such as Utah. In this case, finding a negative relationship between abortion restrictions and abortion rates does not necessarily imply that restrictions reduce demand for abortion. The econometric problem is that the abortion restrictions may be correlated with the residuals in an empirical model that excludes controls for unobserved abortion sentiment.

Accordingly, in this paper the impact of parental involvement laws and restrictions on Medicaid funding of abortion on minors' abortion utilization is estimated using four methods to take account of the potential role of unobserved heteroge-

9. The exceptions are Lundberg and Plotnick (1990), Ohsfeldt and Gohman (1994), and Blank, George, and London (1994). While the Lundberg and Plotnick study followed individuals for eight years, their measure of the restrictiveness of state abortion laws does not vary over time. The Ohsfeldt and Gohmann study includes three years of data, 1984, 1985, and 1988; however, during this period only three states enacted and began to enforce parental involvement laws (Alabama, Missouri, and Ohio), and data on abortions obtained by minors in 1984, 1985, and 1988 are available for only one of these states (Missouri). The Blank, George, and London study includes 17 years of data (1973-90); however, their measure of the parental involvement restrictiveness includes both enforced laws and unenforced laws.

neity. First, proxy measures for abortion sentiment are included in the empirical model.¹⁰ Second, the empirical model includes a variable measuring whether the state has enacted but *not* enforced a parental involvement restriction. One can argue that restrictions that are enjoined or unenforced will have an impact on minors' abortion decisions only indirectly via anti-abortion sentiment. Third, a fixed-effects model with dummy variables for each state is estimated. Finally, older (18 years or more) women are used as a control group. The impact of abortion restrictions on older women's abortion rates is estimated. One can argue that parental involvement restrictions will have an impact on older women's abortion rates (holding constant the availability of abortion providers) only indirectly via anti-abortion sentiment.

III. Data

Data on the timing of enactment and enforcement of the parental involvement restrictions by state were provided by the NARAL Foundation. The NARAL data are the best available data on the dates of actual enforcement of the restrictions and are based on NARAL's tracking of court decisions, attorney general opinions, and other published sources. See Table 1 for a state-by-state description of parental involvement laws.

The Centers for Disease Control (CDC) of the U.S. Department of Health and Human Services is the only organization that collects national data on the number and characteristics of women obtaining legally induced abortions.¹¹ The CDC data on abortions by state of occurrence and age of the woman are obtained from three sources: central health agencies, abortion providers, and the National Center for Health Statistics. A potential problem with the CDC data is that abortions are most likely underreported, and this may produce some biases in the CDC data.

The CDC receives data from all states and the District of Columbia; however, only some states provide information on the characteristics of women obtaining abortions. Thus data on the number of abortions obtained by women by age group are available for selected states. For example, 36 states reported data on the number of abortions obtained by minors in 1988. Table 2 shows that 19 states reported data on the number of abortions obtained by minors for all 11 years, 1978–82, 1984–86, and 1988–90, while six states reported no data on abortions obtained by minors. The remaining 26 states reported these data for some of the eleven years. It appears that states that report these data are more likely to enforce a parental involvement restriction than states that do not report these data. Thirty-two percent of the states that report data for all years enforce a parental involvement restriction, while only 17 percent of the states that do not

10. Very similar strategies were used by Edwards (1978) to estimate the impact of compulsory school legislation and Saffer and Grossman (1987) to estimate the impact of beer taxes and legal drinking age legislation.

11. The Alan Guttmacher Institute collects national data on the number of abortions, but does not collect national data on the age of abortion consumers.

Table 1
State Parental Consent and Notification Laws, 1978–1990

State	Type of Involvement	One or Two Parents	Status	Year Enacted
Alabama	Consent	One	Enforced	1987
Alaska	Consent	One	Not Enforced	1949
Arizona	Notice	One	Repealed ^a	1982
Arkansas	Notice	Two	Enforced	1989
California	Consent	One	Enjoined	1987
Colorado	Consent	One	Enjoined	1963
Delaware	Consent	Two	Not Enforced	1953
Florida	Consent	One	Repealed ^b	1973
Georgia	Notice	One	Not Enforced	1987
Idaho	Notice	Two	Not Enforced	1973
Illinois ^c	Notice	Two	Enjoined	1983
Indiana	Consent	One	Enforced ^d	1974
Kansas	Notice	One	Enforced	1992
Kentucky	Consent	One	Enjoined	1982
Louisiana	Consent	One	Enforced	1978
Maine	Notice		Not Enforced	1979
Maryland	Notice		Not Enforced	1983
Massachusetts ^e	Consent	Two	Enforced	1980
Michigan	Consent	One	Enforced	1991
Minnesota	Notice	Two	Enforced ^f	1981
Mississippi	Consent	Two	Not Enforced	1986
Missouri	Consent	One	Enforced ^g	1979
Montana	Notice	One	Not Enforced	1974
Nebraska	Notice		Repealed ^h	1981
Nevada	Notice	One	Enjoined	1981
New Mexico	Consent	One	Not Enforced	1969
North Dakota ⁱ	Consent	Two	Enforced	1981
Ohio	Notice	One	Not Enforced	1974
Oregon	Consent	One	Repealed	1973
Pennsylvania	Consent	One	Not Enforced	1974
Rhode Island	Consent	One	Enforced	1982
South Carolina	Consent	One	Not Enforced	1974
South Dakota	Consent	One	Not Enforced	1973
Tennessee ^j	Notice	Two	Enforced ^k	1973
Utah	Notice	Two	Enforced	1974
Washington	Consent	One	Repealed	1970
West Virginia	Notice	One	Enforced	1984
Wyoming	Consent	One	Enforced	1989

Source: The NARAL Foundation

- a. Repealed in 1989 and replaced with a consent statute.
- b. Repealed and replaced with another consent statute in 1979.
- c. Also a consent statute was enacted in 1977.
- d. Enforced during parts of 1982, 1983, 1984, and after 1984.
- e. Also a consent statute was enacted in 1974.
- f. Enforced during parts of 1981, 1986, 1988, and between 1982 and 1985.
- g. Enforced during parts of 1983 and after 1983.
- h. Repealed and replaced with another notice statute in 1991.
- i. Also a consent statute was enacted in 1977, amended to be a notice statute in 1979.
- j. Also a consent statute was enacted in 1988.
- k. Enforced during part of 1979.

Table 2
Availability of Centers for Disease Control Data, 1978–1990

Data Availability	Number of States	Percent of States with	
		A Year or More of a Medicaid Restriction	A Year of More of an Enforced Parental Involvement Restriction
All years	19	89	32
Some years	26	77	31
No data	6	83	17

report data enforce a parental involvement restriction. However, states that do and do not report data on abortions obtained by minors appear more similar with respect to restrictions on Medicaid funding of abortions.

Data on the availability of abortion providers by state and by year were obtained from the Alan Guttmacher Institute (AGI). The AGI conducts a periodic national survey of all known abortion providers in the 50 states and the District of Columbia. Abortion providers are identified through queries to the executive directors of all Planned Parenthood affiliates and state coordinators of NARAL; from lists provided by state health departments; through newspaper articles; and by checks of the telephone yellow pages in all U.S. cities. Follow-up letters and telephone calls have enabled the AGI to obtain high response rates. For example, information was obtained for 94 percent of known providers in 1985.

The data sources are further described in Table 3.

IV. Empirical Model and Results

The empirical model is similar to the model used by Grossman and Joyce (1990). They incorporate the decision of a pregnant woman into a model of fertility control and assume the probability of obtaining an abortion depends on the determinants of the optimal number of children and the spacing of births, such as family income, marital status, and the pregnant woman's level of educational attainment. Thus, the demand for abortions by minors in state i and year t ($ABORTION_{it}$) is specified as follows:

$$\begin{aligned}
 (1) \quad ABORTIONS_{it} = & a_0 + a_1 X_{it} + a_2 MINOR-ENFORCED_{it} \\
 & + a_3 MINOR-NOT ENFORCED_{it} \\
 & + a_4 MEDICAID-RESTRICTED_{it} \\
 & + a_5 PROVIDERS/WOMEN_{it} \\
 & + a_6 BORDER_{it} + YEAR_t + STATE_i \\
 & + u_{it} \quad i = 1, \dots, S \text{ and } t = 1978, \dots, 1990,
 \end{aligned}$$

Table 3
Data Sources

Variables	Sources
MINORS' ABORTIONS	Centers for Disease Control's Morbidity and Mortality Weekly Report
BIRTHS TO MINORS	National Center for Health Statistics, <i>Vital Statistics of the U.S.</i> , Volume 1
WOMEN 15-19 PROVIDERS	Bureau of the Census' Current Population Reports
MINOR-ENFORCED	Alan Guttmacher Institute
MINOR-NOT ENFORCED	The NARAL Foundation and Greenberger and Connor (1991)
MEDICAID-RESTRICTED	Gold (1980)
	Gold (1982)
	Nester and Gold (1984)
	Gold and Macias (1986)
	Gold and Guardado (1988)
	NARAL, <i>Who Decides</i>
STATE PER CAPITA INCOME	Bureau of Census
MARRIAGE RATE	<i>Vital Statistics of the U.S.</i>
%HIGH SCHOOL GRADS	1980 Census of Population, Volume 1
LABOR FORCE PARTICIPATION RATE	Bureau of Labor Statistics' Geographic Profile of Employment and Unemployment
BELIEF	Nathanson (1979)
	Quinn et al. (1980)
REGS	Halva-Neubauer (1990)
%WOMEN STATE LEGISLATORS	Center for the American Woman and Politics

where S is the number of states; X_{it} is a vector of state-level variables (per capita income, the labor force participation rate of women, marriage rates, and the percent of women with high school degrees); $YEAR_t$ is a year-specific fixed effect; $STATE_i$ is a state-specific fixed effect; and u_{it} is a random error term.

To determine the impact of the abortion restrictions, three variables (MINOR-ENFORCED, MINOR-NOT ENFORCED, and MEDICAID-RESTRICTED) are included in this equation. MINOR-ENFORCED_{it} takes values between 0 and 1, depending on the share of year_t that state_i enforces a parental notification or consent requirement for minors. MINOR-NOT ENFORCED_{it} takes values between 0 and 1, depending on the share of year_t that state_i does *not* enforce an enacted parental involvement restriction. MEDICAID-RESTRICTED_{it} takes values between 0 and 1, depending on the share of year_t that state_i restricts

Medicaid funding of abortions. In addition, $PROVIDERS/WOMEN_{it}$, the ratio of abortion providers to women of childbearing ages, is included in an attempt to hold constant differences in time and travel costs of obtaining an abortion across states.¹² Shelton, Braun, and Schultz (1976) have shown that the farther a woman has to travel to obtain an abortion, the less likely she is to obtain one. $BORDER_{it}$, the number of states that share a border with state i and that have enacted and begun to enforce a parental involvement law in year t , is included to control for the phenomenon of state border crossing by minors seeking abortions. Demand for abortions by minors in state i may be higher if minors from bordering states with restrictive parental involvement laws are traveling to state i to obtain abortions.¹³ The variables are further defined in Table 4 and descriptive statistics are provided in Table 5.

Equation (1) is estimated in double log form with weighted least squares (WLS) using pooled time-series cross-sectional state data for 11 years: 1978–82, 1984–86, and 1988–90.¹⁴ Minors' demand for abortions is measured in two ways: minors' abortions per births to minors (ABORTIONS/BIRTHS) and minors' abortions per 1,000 women aged 15–19 (ABORTIONS/MINORS). ABORTIONS/MINORS is a measure of the actual demand relative to the pool of potential demanders. ABORTIONS/BIRTHS reflects the decisions of pregnant minors and will be influenced by the proportion of pregnancies that are unintended and how they are resolved. The number of women aged 15–19 is exogenous to the model; however, the number of births to minors (or state differences in fertility) may be endogenous. Posner (1992) argues that abortion is a substitute for contraception and a complement to it: “. . . if abortion is cheap, vaginal intercourse will be more frequent and, depending on people's knowledge of and the efficacy of contraceptive methods, may generate more unwanted pregnancies, not all of which will be aborted” (p. 143). If state restrictions on abortion increase the costs of abortion in that state, then according to Posner, vaginal intercourse may be less frequent in that state and there may be fewer births in that state.

The WLS coefficient estimates are reported in Table 6 and the fixed-effects coefficient estimates are reported in Table 7. Columns 1 and 2 of Table 6 present the results using ABORTIONS/MINORS as the dependent variable, and Columns 3 and 4 of Table 6 present the results using ABORTIONS/BIRTHS as the dependent variable. The proxies used are the number of persons who belong to a religious denomination that has published a restrictive statement on abortion per 1,000 women aged 15–44 (BELIEF),¹⁵ the number of abortion restrictions (not

12. In Connecticut and Massachusetts 88 percent and 86 percent of counties had an abortion provider in 1992, respectively, while in North Dakota and South Dakota only 2 percent of counties had abortion providers in 1992 (Henshaw and Van Vort 1994).

13. Evidence that border crossing occurs is provided in a Massachusetts case study. “These analyses indicate that the major impact of the Massachusetts parental consent law has been to send a monthly average of between 90 and 95 of the state's pregnant minors across state lines in search of an abortion” (Cartoof and Klerman 1986, p. 399).

14. Since the data are grouped by state, the minimum chi-square method or weighted least squares is utilized (Maddala 1983, p. 28–29).

15. Religious denominations that have published restrictive statements on abortion include the Roman Catholic Church, Eastern Orthodox Churches, Churches of Christ, the American Baptist Association,

Table 4
Variable Definitions

Variables	Definitions
ABORTIONS/BIRTHS	Minors' abortions per live births to minors
ABORTIONS/MINORS	Minors' abortions per 1,000 women aged 15–19
PROVIDERS/WOMEN	Number of abortion providers per 1,000 women aged 15–44
MINOR-ENFORCED	Share of year that parental involvement restriction was enforced
MINOR-NOT ENFORCED	Share of year that an enacted parental involvement restriction was <i>not</i> enforced
MEDICAID-RESTRICTED	Share of year that Medicaid funding for abortions was restricted
STATE PER CAPITA INCOME	Per capita income
MARRIAGE RATE	Marriages per 1,000 persons
%HIGH SCHOOL GRADS	Percentage of women who are high school graduates, 1980
LABOR FORCE PARTICIPATION RATE	Labor force participation rate of women
BELIEF	Number of persons who belong to a religious denomination that has published a restrictive statement on abortion, per 1,000 women aged 15–44
BORDER	The number of states bordering each state that have enacted and begun to enforce a parental involvement law
REGS	The number of abortion restrictions and anti-abortion resolutions enacted in each state between 1973 and 1989 (other than MINOR and MEDICAID-RESTRICTED)
%WOMEN STATE LEGISLATORS	Percentage of state legislators who are women

Table 5
Descriptive Statistics

Variable	Mean	Standard Deviation
ABORTIONS/BIRTHS	0.31	1.02
ABORTIONS/MINORS	25.46	61.44
PROVIDERS/WOMEN	0.05	0.23
MARRIAGE RATE	11.88	102.53
%HIGH SCHOOL GRADS	65.89	53.35
LABOR FORCE PARTICIPATION RATE	54.63	31.68
BELIEF	1038.52	4151.19
BORDER	0.62	5.29
REGS	5.61	28.91
%WOMEN STATE LEGISLATORS	12.45	46.37

including MINOR and MEDICAID-RESTRICTED) and antiabortion resolutions enacted by state legislatures in each state between 1973 and 1989 (REGS),¹⁶ and the percentage of female state legislators (%WOMEN STATE LEGISLATORS).

It can be seen that even when proxies for statewide anti-abortion sentiment are included in the empirical model, minors' abortions per 1,000 women aged 15–19 and minors' abortions per births to minors are significantly lower in states that enforce parental consent or notification laws. The estimated coefficients imply a negative 16 to 20 percent difference in ABORTIONS/MINORS in states with enforced parental involvement laws compared to states that are not enforcing these laws. In the empirical model that includes the proxies for abortion sentiment, the estimated coefficient on MINOR-ENFORCED implies a negative 25 percent difference in ABORTIONS/BIRTHS in states with enforced parental involvement laws compared to states that are not enforcing these laws. However, MINOR-ENFORCED appears to have a statistically insignificant impact on ABORTIONS/BIRTHS in the model that does not control for statewide anti-abortion sentiment.

the Lutheran Church–Missouri Synod, African Methodist Churches, Christian Churches, Assemblies of God, and Churches of Jesus Christ of Latter Day Saints (Nathanson 1979). Anti-abortion sentiment may be relatively widespread in states in which religious groups that oppose abortion are prevalent.

16. Halva-Neubauer (1990) counted the state policies designed to regulate the market for abortion services. These state policies include conscience clauses (35 states), fetal experimentation (23 states), post-viability requirements (29 states), post-viability standards of care (29 states), memorials to Congress (25 states), calls for a constitutional convention (19 states), feticide laws (9 states), fetal disposal laws (11 states), informed consent laws (17 states), spousal notification (7 states), second-trimester hospitalization requirements (17 states), and insurance restrictions (10 states). Halva-Neubauer hypothesized that the number of state policies enacted to regulate the market for abortion services is a function of "the strength and professionalization of the state's anti- and pro-abortion organizations, the position of legislative leaders and the governor on the issue. . ." (p. 33) or, in other words, a function of state sentiment or tastes for abortion.

The insignificant coefficient estimates on MINOR-NOT ENFORCED in the WLS model (and the fixed-effects model) provide additional support for the conclusion that enforced parental involvement laws reduce minors' demand for abortion by increasing the costs of obtaining abortions for minors. Both enforced and unenforced parental involvement restrictions may be associated with anti-abortion sentiment, but only enforced parental involvement restrictions can increase the costs of abortions to minors.

The Medicaid funding restriction is associated with lower demand for abortions by minors. The estimated coefficients in Table 5 imply a negative 14 to 16 percent difference in minors' abortions per 1,000 women aged 15–19 and a negative 16 to 17 percent difference in minors' abortions per births to minors in states that restrict Medicaid funding of abortions compared to states that do not restrict funding.

The estimated coefficients on the demographic variables and the provider supply variable are either statistically insignificant or have signs that are consistent with theoretical predictions. Abortions appear to be a normal good. A 1 percent increase in per capita income results in a 1.35 to 2.07 percent increase in minors' demand for abortions. Labor force participation is associated with higher abortion rates. A 1 percent increase in the labor force participation rate of women results in a 0.56 to 1.35 percent increase in minors' demand for abortions. Education is associated with lower abortion rates. A 1 percent increase in the percentage of women who are high school graduates results in a 0.48 to 1.19 percent decrease in minors' demand for abortion. Further, the results suggest that in states with more abortion providers, and thus lower time and travel costs to obtain an abortion, minors demand more abortions. A 1 percent increase in the ratio of abortion providers to women results in a 0.24 to 0.30 percent increase in minors' demand for abortions.

The estimated coefficients on the proxies for abortion sentiment are either statistically insignificant or suggest that abortion sentiment is associated with higher or lower demand for abortions by minors. The proxy measuring the enactment of unenforceable state restrictions, REGS, appears to increase both ABORTIONS/MINORS and ABORTIONS/BIRTHS. Unfortunately, one cannot explain this surprising result by arguing that REGS is measuring state-level pro-abortion sentiment because one would expect there to be more restrictions in states with greater anti-abortion sentiment. The proxy measuring the presence of religious opposition to abortion in the state, BELIEF, appears to decrease ABORTIONS/MINORS, but increase ABORTIONS/BIRTHS. A possible explanation of this result is that increases in BELIEF may be associated with fewer abortions obtained by minors and fewer births to minors, but BELIEF is unrelated to the number of minors in a particular state.

If BELIEF, REGS, and %WOMEN STATE LEGISLATORS are not good proxies for abortion sentiment, then the foregoing analysis can be criticized for failing to take into account tastes and preferences for abortion or abortion sentiment. The third method employed to take account of the potential role of abortion sentiment (or the role of unobserved heterogeneity) in the determination of minors' abortion rates is to estimate a fixed-effects model with dummy variables for each state. These results are reported in Table 7. Due to problems of collinear-

Table 6
Weighted Least Squares Estimates of Minors' Demand for Abortion

Explanatory Variables	Minors' Abortions		Minors' Abortions	
	Women Aged 15-19		Births to Minors	
	(1)	(2)	(3)	(4)
MINOR-ENFORCED	-0.16*** (0.05)	-0.20*** (0.05)	-0.07 (0.07)	-0.25*** (0.07)
MINOR-NOT ENFORCED	0.01 (0.03)	-0.03 (0.03)	0.02 (0.04)	-0.01 (0.04)
MEDICAID-RESTRICTED	-0.14*** (0.04)	-0.16*** (0.04)	-0.16*** (0.05)	-0.17*** (0.05)
MARRIAGE RATE	-0.02 (0.04)	-0.05 (0.04)	-0.27*** (0.05)	-0.22*** (0.05)
LABOR FORCE PARTICIPATION RATE	0.56*** (0.20)	0.60** (0.27)	0.43 (0.29)	1.35*** (0.37)
STATE PER CAPITA INCOME	1.37*** (0.12)	1.35*** (0.13)	2.07*** (0.18)	1.83*** (0.18)

%HIGH SCHOOL GRADS	-1.19***	-0.86***	-0.48**	-1.02***
	(0.13)	(0.19)	(0.20)	(0.27)
PROVIDERS/WOMEN	0.24***	0.25***	0.25***	0.30***
	(0.03)	(0.03)	(0.04)	(0.04)
BORDER	-0.02	-0.01	-0.01	-0.02
	(0.02)	(0.02)	(0.03)	(0.03)
BELIEF		-0.06*		0.16***
		(0.03)		(0.04)
REGS		0.01***		0.02***
		(0.004)		(0.01)
%WOMEN STATE LEGISLATORS		-0.03		-0.02
		(0.04)		(0.05)
INTERCEPT	-5.34***	-6.24***	-17.87***	-18.14***
	(1.11)	(1.30)	(1.58)	(1.81)
	F = 35.58	F = 32.47	F = 31.46	F = 31.11
	N = 380	N = 380	N = 380	N = 380

Note: Standard errors are in parentheses. Year dummy variables are included in the estimation, but not reported in the table.

*** Statistically significant at the 1 percent level.

** Statistically significant at the 5 percent level.

* Statistically significant at the 10 percent level.

Table 7
Fixed-Effects Estimates, 1978–90

Explanatory Variables	Minors'	Minors'
	Abortions	Abortions
	Births to	Women 15–19
	Minors	
MEDICAID-RESTRICTED	–0.15*** (0.07)	–0.09*** (0.03)
MINOR-ENFORCED	–0.17*** (0.05)	–0.13*** (0.04)
MINOR-NOT ENFORCED	0.09** (0.04)	0.09*** (0.03)
MARRIAGE RATE	–0.20 (0.15)	0.17 (0.13)
LABOR FORCE PARTICIPATION RATE	–0.07 (0.39)	0.13 (0.34)
STATE PER CAPITA INCOME	0.38* (0.29)	0.94*** (0.20)
PROVIDERS/WOMEN	0.36*** (0.06)	0.25*** (0.05)
BORDER	0.01 (0.02)	0.02 (0.02)
INTERCEPT	–2.53 (2.22)	–5.13*** (1.95)
	F = 83.25 N = 380	F = 53.76 N = 380

Note: Standard errors are in parentheses. Year and state dummy variables are included in the estimation, but not reported in the table.

*** Statistically significant at the 1 percent level.

** Statistically significant at the 5 percent level.

* Statistically significant at the 10 percent level.

ity, one of the state-level demographic variables, %HIGH SCHOOL GRADS, had to be excluded from the fixed-effects model.

The fixed-effects results concerning the impact of enforced restrictions are very similar to the results of the WLS model with the proxies for abortion sentiment. The results of the fixed-effects model imply a negative 13 to 17 percent difference in minors' demand for abortions in states with enforced parental involvement laws compared to states without enforced laws. Further, the estimated coefficients imply a negative 9 to 15 percent difference in minors' demand for abortion in states that restrict Medicaid funding of abortions compared to states that do not restrict funding. Other similarities in results include the positive association

between abortion demand and income and the positive association between abortion demand and the availability of abortion providers. There is a difference, however, in the estimated impact of MINOR-NOT ENFORCED. In the fixed-effects model MINOR-NOT ENFORCED appears to have a positive and statistically significant impact on minors' demand for abortion.

Table 8 provides a summary of the estimated coefficients on MINOR-ENFORCED and MEDICAID-RESTRICTED. Cases 1 and 2 report the WLS results with and without the three proxies for abortion sentiment, respectively. Case 3 reports the fixed-effects model results using minors' demand for abortion as the dependent variable. Case 4 reports the fixed-effects model results using older women's (18 years or older) demand for abortion as the dependent variable.

The negative impacts of the enforced abortion restrictions on minors' demand for abortion are quite robust. Further, the negative impacts cannot be attributed to unobserved heterogeneity across states. Comparing Case 1 to Case 2 in Table 8, one can see that the signs and magnitudes of the estimated coefficients on the abortion restrictions are not greatly affected by the inclusion of the abortion sentiment proxies. Looking at Case 3, one can also see that the fixed-effects model yields very similar results to the WLS model. MINOR-ENFORCED and MEDICAID-RESTRICTED have negative and statistically significant impacts on minors' demand for abortion. However, comparing Case 4 to Case 3 in Table 8, one can see that these restrictions do not appear to have a statistically significant impact on older women's demand for abortion.

V. Discussion

The impact of state abortion restrictions on the demand for abortions is becoming an increasingly important policy issue as the number and types of state abortion restrictions that can be enforced in the United States are increasing rapidly. In *Webster v. Reproductive Health Services* (109 S. Ct. 3040 [1989]), the Supreme Court upheld the constitutionality of Missouri's abortion-regulation law that bans abortions in public hospitals and bans the involvement of public employees in the performance of abortions, unless the abortion is necessary to save the life of the pregnant woman. The court's *Webster* decision also added mandatory testing for viability after a specified point in the pregnancy to the types of restrictions that states are permitted to enforce.

Then in *Planned Parenthood of Southeastern Pennsylvania v. Robert P. Casey* (112 S. Ct. 2791 [1992]), the Supreme Court ruled that state restrictions generally would be upheld unless the restrictions place "an undue burden" on women seeking abortions. The court's decision added a 24-hour waiting period for women seeking abortions and a state-prescribed talk on abortion to the types of restrictions that states are permitted to enforce.

The results in this paper suggest that the two abortion restrictions that were enforceable during the period 1978–90 decreased minors' demand for abortion services. Using four estimation strategies that correct for the problem of unmeasured state-specific variables, the parental involvement laws appear to decrease minors' demand for abortions by 13 to 25 percent, and state restrictions on Medic-

Table 8
Summary of Estimated Coefficients on Abortion Restrictions

Model and Dependent Variable	Estimated Coefficient on MEDICAID-RESTRICTED	Estimated Coefficient on MINOR-ENFORCED
Case 1: Weighted least squares without sentiment proxies ^a		
Minor abortions/births	-0.16*** (0.05)	-0.07 (0.07)
Minor abortions/minors	-0.14*** (0.04)	-0.16*** (0.05)
Case 2: Weighted least squares with sentiment proxies ^a		
Minor abortions/births	-0.17*** (0.05)	-0.25*** (0.07)
Minor abortions/minors	-0.16*** (0.04)	-0.20*** (0.05)
Case 3: Fixed-Effects—Minors ^b		
Minor abortions/births	-0.15*** (0.04)	-0.17*** (0.05)
Minor abortions/minors	-0.09*** (0.03)	-0.13*** (0.04)
Case 4: Fixed - Effects—Older Women ^b		
Older women abortions/births	-0.02 (0.04)	0.05 (0.05)
Older women abortions/older women	-0.05 (0.03)	0.05 (0.04)

Note: Standard errors are in parentheses.

a. Year dummy variables are included in the estimation.

b. Year and state dummy variables are included in the estimation.

*** Statistically significant at the 1 percent level.

** Statistically significant at the 5 percent level.

* Statistically significant at the 10 percent level.

aid funding of abortions appear to decrease minors' demand for abortions by 9 to 17 percent.

References

- Blank, Rebecca, Christine George, and Rebecca London. 1994. "State Abortion Rates: The Impact of Policies, Providers, Politics, Demographics, and Economic Environment." NBER Working Paper no. 4853.
- Cartoof, Virginia, and Lorraine Klerman. 1986. "Parental Consent for Abortion: Impact of the Massachusetts Law." *American Journal of Public Health* 76(4):397-400.
- Centers for Disease Control and Prevention. Various years. "Abortion Surveillance—United States." *Morbidity and Mortality Weekly Report*. Washington, D.C.: U.S. Government Printing Office.
- Conway, Karen, and Michael Butler. 1992. "State Abortion Legislation as a Public Good—Before and After *Roe v. Wade*." *Economic Inquiry* 30:609-26.
- Donovan, Patricia. 1983. "Judging Teenagers: How Minors Fare When They Seek Court Authorized Abortions." *Family Planning Perspectives* 15(6):259-67.
- Edwards, Linda. 1978. "An Empirical Analysis of Compulsory Schooling Legislation, 1940-1960." *The Journal of Law and Economics* 203-22.
- Garbacz, Christopher. 1990. "Abortion Demand." *Population Research and Policy Review* 9:151-60.
- Gold, Rachael B. 1980. "After the Hyde Amendment: Public Funding for Abortion in FY 1978." *Family Planning Perspectives* 12(3):131-34.
- . 1982. "Publicly Funded Abortions in FY 1980 and FY 1981." *Family Planning Perspectives* 14(4):204-07.
- Gold, Rachael B., and Sandra Guardado. 1988. "Public Funding of Family Planning, Sterilization, and Abortion Services, 1987." *Family Planning Perspectives* 20(5):228-33.
- Greenberger, Marcia D., and Katherine Connor. 1991. "Parental Notice and Consent for Abortion: Out of Step with Family Law Principles and Policies." *Family Planning Perspectives* 23(1):31-5.
- Grossman, Michael, and Theodore Joyce. 1990. "Unobservables, Pregnancy Resolutions, and Birth Weight Production Functions in New York City." *Journal of Political Economy* 98(5):983-1007.
- Haas-Wilson, Deborah. 1993. "The Economic Impact of State Restrictions on Abortion: Parental Consent and Notification Laws and Medicaid Funding Restrictions." *Journal of Policy Analysis and Management* 12(3):498-511.
- Halva-Neubauer, Glen. 1990. "Abortion Policy in the Post-Webster Age." *Publius* 20:327-44.
- Hansen, Susan B. 1990. "State Differences in Public Policies toward Women: A Test of Three Hypotheses." Paper presented at the American Political Science Association Meetings, San Francisco.
- Henshaw, Stanley K., Lisa Koonin, and Jack Smith. 1991. "Characteristics of U.S. Women Having Abortions, 1987." *Family Planning Perspectives* 23(2):75-81.
- Henshaw, Stanley, and Jennifer Van Vort. 1994. "Abortion Services in the United States, 1991 and 1992." *Family Planning Perspectives* 26(3):100-106.
- Johnson, Charles A., and Jon R. Bond. 1980. "Coercive and Noncoercive Abortion Deterrence Policies: A Comparative State Analysis." *Law and Policy Quarterly* 2(1):106-28.
- Lundberg, Shelly, and Robert Plotnick. 1990. "Effects of State Welfare, Abortion, and

- Family Planning Policies on Premarital Childbearing among White Adolescents." *Family Planning Perspectives* 22(6):246-75.
- Maddala, G. S. 1983. *Limited-Dependent and Qualitative Variables in Econometrics*. Cambridge: Cambridge University Press.
- Medoff, Marshall. 1989. "Constituencies, Ideology, and the Demand for Abortion Legislation." *Public Choice* 60:185-91.
- Meier, Kenneth, and Deborah McFarlane. 1992. "State Policies on Funding of Abortions: A Pooled Time Series Analysis." *Social Science Quarterly* 73(3):690-98.
- NARAL Foundation. Various years. *Who Decides? A State-by-State Review of Abortion Rights*. Washington, D.C.
- Nathanson, Bernard N. 1979. *Aborting America*. New York: Pinnacle Book.
- National Abortion Federation. 1991. "Parental Involvement Laws: A Guide for Abortion Providers." Washington, D.C.
- Nestor, Barry, and Rachael Gold. 1984. "Public Funding of Contraceptive, Sterilization, and Abortion Services." *Family Planning Perspectives* 16(3):128-33.
- Ohsfeldt, Robert, and Stephan Gohmann. 1994. "Do Parental Involvement Laws Reduce Adolescent Abortion Rates?" *Contemporary Economic Policy* 12(2):65-76.
- Posner, Richard. 1992. *Sex and Reason*. Cambridge: Harvard University Press.
- Quinn, Bernard, Herman Anderson, Martin Bradley, Paul Goetting, and Peggy Shriver. 1980. *Churches and Church Membership in the United States 1980*. Atlanta: Glenmary Research Center.
- Saffer, Henry, and Michael Grossman. 1987. "Beer Taxes, the Legal Drinking Age, and Youth Motor Vehicle Fatalities." *Journal of Legal Studies* 16:351-75.
- Shelton, J. D., E. A. Brann, and K. F. Schultz. 1976. "Abortion Utilization: Does Travel Distance Matter?" *Family Planning Perspectives* 8.
- Singh, Susheela. 1986. "Adolescent Pregnancy in the United States: An Interstate Analysis." *Family Planning Perspectives* 18(5):210-20.
- U.S. Department of Health and Human Services, Public Health Service. 1990. *Healthy People 2000*. DHHS Publication no. (PHS) 91-50213. Washington, D.C.: U.S. Government Printing Office.