
Analyzing the Effect of Anti-Abortion U.S. State Legislation in the Post-Casey Era

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Abstract

Much of the academic literature that analyzes U.S. state-level restrictions on abortion focuses on parental involvement laws and the extent to which abortion is publicly funded through Medicaid. However, one shortcoming common to all of these studies is that they fail to analyze informed consent laws and other types of anti-abortion legislation that received constitutional protection through the U.S. Supreme Court's decision in *Planned Parenthood of Southeastern Pennsylvania v. Casey* (1992). In this study, a series of regressions on a comprehensive time series cross-sectional data set provides evidence that several types of state-level anti-abortion legislation result in statistically significant declines in both the abortion rate and the abortion ratio. Furthermore, a series of natural experiments provide further evidence that abortion restrictions are correlated with reductions in the incidence of abortion.

Keywords

abortion, pro-life legislation, anti-abortion legislation, informed consent laws, parental involvement laws

Introduction

Even though abortion opponents have been unsuccessful in their efforts to overturn *Roe v. Wade* (1973) they have enjoyed some incremental policy success in recent years. Surveys indicate that more Americans are willing to describe themselves as “pro-life” (*The Washington Post* 2009) and a higher percentage of people are willing to support

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restrictions on abortion (*Pittsburgh Post-Gazette* 2009). Additionally, the number of abortions has been declining. For the forty-seven states reporting data to the Centers for Disease Control and Prevention in both 1990 and 2005¹ the number of abortions fell from 1,054,719 to 820,151, a decline of 22.2 percent (Gamble et al. 2008; Koonin, Smith, and Ramick 1993).²

What is the reason for this decline in abortions? The economy might be partly responsible. The economy grew at a brisk rate during the mid to late 1990s and some studies indicate that abortion rates decline during periods of strong economic growth (Blank, George, and London 1996). Additionally, fertility rates started to fall during the 1990s (Hamilton 2004; Ventura et al. 2001). This means that a higher percentage of pregnancies were intended and fewer women were facing crisis pregnancies.

Furthermore, starting in the 1990s there was a renewed emphasis on reducing teen pregnancy rates. A number of school districts adopted sex education curricula that emphasized abstinence. The effectiveness of these programs is disputed. However, evidence exists that starting in the 1990s, minors became less likely to engage in sexual activity (Brener et al. 2002). Other research indicates that minors became more likely to use contraceptives (Santelli et al. 2007). It is also possible that there were improvements in the reliability of contraceptives or that adults used contraceptives more consistently. Finally, some evidence suggests that fewer physicians were willing to perform abortions (Bazelton 2010; Doan 2007), and this decline in the number of abortion providers (Jones et al. 2008) might have also contributed to this reduction in the abortion rate.

However, another reason for the abortion decline might be the effect of the state-level anti-abortion laws that were enacted during this period. Indeed, U.S. state legislators enacted a considerable amount of anti-abortion legislation during the 1990s. For instance:

- In 1992, virtually no states had informed consent laws.³ By 2005, thirty-three states had informed consent laws in effect (National Abortion Rights Action League [NARAL] 1992, 2005).
- In 1992, no states had waiting periods. By 2005, twenty-two states required women to wait a specified period before obtaining an abortion (NARAL 1992, 2005).
- In 1992, only twenty states were enforcing parental involvement laws. By 2005, thirty-four states were enforcing these laws (NARAL 1992, 2005).

There are two major factors that led to this increase in anti-abortion legislation during the 1990s. The first was a change in jurisprudence. When *Roe v. Wade* was handed down in 1973 the U.S. Supreme Court established a trimester framework that allowed for greater state regulation of abortion in later trimesters (Wetstein 1996). However, many abortion opponents argue that the health exemptions that the Supreme Court required in *Roe's* companion case *Doe v. Bolton* (1973) placed a serious imposition on the ability of states to restrict abortion. With the exception of public funding restrictions⁴ and parental involvement laws,⁵ courts declared most other types

of anti-abortion legislation unconstitutional in the years following *Roe v. Wade* (Americans United for Life 2007).

However, in 1989 the Supreme Court in *Webster v. Reproductive Health Services* found constitutionally permissible some additional state restrictions on abortion. For instance, the court did not strike down the preamble to a Missouri law that declared that human life begins at the moment of conception. The court also approved provisions that both restricted the performance of abortions in public hospitals and required physicians to perform a number of tests of fetal viability before performing an abortion. In *Webster*, the Supreme Court did not directly reconsider the central holdings of the *Roe v. Wade* decision. However, their ruling invited state legislatures to write restrictive abortion laws (E. Cook, Jelen, and Wilcox 1992) and raised the salience of the abortion issue in subsequent elections (Carsey 2000).

In 1992, the Supreme Court granted states additional latitude to regulate abortion through their decision in *Planned Parenthood of Southeastern Pennsylvania v. Casey*. In *Casey* the Supreme Court abandoned the trimester framework established in *Roe v. Wade* in favor of a doctrine of "undue burden." This allowed states to regulate abortion as long as the regulations did not pose an "undue burden" to the woman seeking an abortion. As such, the Supreme Court found constitutional many of the policies contained in Pennsylvania's Abortion Control Act, including a waiting period and an informed consent law (Wetstein 1996). Abortion opponents were disappointed that the Supreme Court used neither the *Webster* nor the *Casey* decision as an opportunity to overturn *Roe v. Wade*. However, both decisions gave state legislators more freedom to regulate abortion (Americans United for Life 2007).

For instance, prior to the *Webster* and *Casey* decisions, the only common forms of state-level legislation that consistently withstood constitutional scrutiny were parental involvement laws and restrictions on Medicaid funding of abortions (Wetstein 1996). However, after *Casey* state legislators could regulate abortion in a variety of other ways. For instance, they could pass informed consent laws. These laws require abortion providers to inform pregnant women about any health risks associated with an abortion, fetal development, and public and private resources for pregnant women and young mothers (Americans United for Life 2007). Additionally, waiting periods received constitutional protection (Americans United for Life 2007). Finally, partial birth abortion bans were upheld in a number of states before being ruled unconstitutional by the Supreme Court in *Stenberg v. Carhart* in 2000 (NARAL 2000).

The second factor that led to an increase in anti-abortion legislation is that anti-abortion legislators made considerable and lasting gains at the state level during the 1990s. While it is well known that Republicans obtained control of both the U.S. House and the U.S. Senate in the 1994 election, the gains they made in the state legislatures have received considerably less attention. Still, Republicans obtained majority control of both chambers of the state legislature in eleven additional states in 1994 (U.S. Census Bureau 1996). Overall, the number of states where Republicans controlled both chambers of the state legislature increased from six in 1990 (U.S. Census Bureau 1996) to eighteen in 2000 (U.S. Census Bureau 2001).

Since Republicans tend to be more sympathetic to restrictions on abortion than their Democratic counterparts, their gains at the state level during the 1990s have led to the enactment of more anti-abortion laws. For instance, between 1990 and 2000, Republicans gained control of both chambers of the state legislature in thirteen additional states.⁶ At some point during the 1990s, nine of these thirteen states enacted an informed consent law (NARAL 2000).⁷ Between 1990 and 2000, the number of these states with a parental involvement law increased from one⁸ to nine⁹ (NARAL 1990, 2000). Finally, by 2000 four of these states banned partial birth abortion¹⁰ and seven enacted waiting periods¹¹ (NARAL 1990, 2000). While there were a variety of factors that resulted in the passage of more anti-abortion laws, the gains that Republicans made in the state legislatures certainly played a role.

Other Research on the Effects of Anti-Abortion Legislation

What impact has all of this legislation had? Some academic studies provide insights. Much of the academic literature that analyzes the effect of state abortion restrictions focuses on the extent to which states fund abortion through Medicaid and parental involvement laws. There exists a broad consensus among scholars that state restrictions on public funding of abortions through Medicaid reduce the incidence of abortion (Blank, George, and London 1996; P. Cook et al. 1999; Donovan 1983; Haas-Wilson 1993, 1996; Matthews, Ribar, and Wilhelm 1997; Medoff 2002; Ohsfeldt and Gohman 1994).

Similarly, a number of studies have found that parental involvement laws reduce the number of abortions being performed on minors within the boundaries of a given state. Studies using time series cross-sectional data find that parental involvement laws reduce in-state abortion rates for minors anywhere from 13 percent to 19 percent (Haas-Wilson 1993, 1996; New 2007; Ohsfeldt and Gohman 1994). Case studies of individual states also find that parental involvement laws are correlated with declines in in-state abortion rates (Cartoof and Klerman 1996; Ellertson 1997; Joyce, Kaestner, and Colman 2006; Rogers et al. 1991).

However, no consensus exists about whether these parental involvement laws cause overall reductions in the number of abortions performed on minors. Some studies find that minor abortion trends in states that enacted these laws are similar to minor abortion trends in other states (Joyce and Kaestner 1996). Similarly, other studies find evidence that in-state abortion declines are offset by out-of-state increases (Ellertson 1997). However, there exist other case studies that find that relatively few minors circumvent these laws by obtaining abortions in nearby states (Blum, Resnick, and Stark 1987; Joyce, Kaestner, and Colman 2006). Some studies also find short-term increases in the minor birth rate after these laws go into effect (Cartoof and Klerman 1986; Joyce, Kaestner, and Colman 2006).

While there has been a considerable amount of research on the effects of public funding of abortion and parental involvement laws, very little analysis has been completed of other types of abortion regulations. In their respective analyses of differences in state abortion rates, Medoff (2002) and Wetstein (1996) each utilize an index that

measures the restrictiveness of state abortion policy. Medoff finds that state abortion restrictions have no statistically significant impact on state abortion rates, but Wetstein does find evidence that more restrictive policies are correlated with reductions in the incidence of abortion. However, both authors fail to examine the effects of individual types of anti-abortion laws in their analysis.

Meier et al. (1996) examine the collective impact of twenty-three different types of anti-abortion laws in their study. Their results indicate that the passage of additional anti-abortion laws does not reduce the incidence of abortion. However, some of the laws they examine are symbolic in nature and would be unlikely to have a serious effect on the incidence of abortion. Furthermore, since they only analyze data up to 1992 they are unable to examine the effects of informed consent laws and other laws that gained constitutional protection in the *Casey* decision.

Overall, many of these studies are insightful. However, some shortcomings are prevalent within this academic literature. First and foremost, most of these studies focus on either public funding restrictions or parental involvement laws. As such, they neglect other common types of anti-abortion legislation such as informed consent laws. Now, some of the earlier studies examine a timeframe where few, if any, states had these laws in effect. However, even some of the later studies neglect to analyze their impact (Medoff 2002; Pritchard and Parsons 1999).

Second, state abortion data come from two sources, the Centers for Disease Control and Prevention (CDC) and the Alan Guttmacher Institute (AGI). Most studies utilize only one of these data sources. This is unfortunate because there are advantages and disadvantages to each. Finally, many of these studies are very limited in their scope. They only examine a small number of states that have enacted these anti-abortion laws (Blum, Resnick, and Stark 1987; Cartoof and Klerman 1986; Donovan 1983; Ellertson 1997; Henshaw 1995; Joyce, Kaestner, and Colman 2006; Rogers et al. 1991). Still others only consider data from a relatively narrow range of years (Haas-Wilson 1993; Pritchard and Parsons 1999).

This study seeks to overcome the aforementioned shortcomings. Specifically, the study analyzes data on abortion rates and ratios from nearly every state from 1985 to 2005. The data are drawn from two reputable data sources: the Centers for Disease Control and the Alan Guttmacher Institute. The study highlights the effect of informed consent laws, Medicaid funding restrictions, and parental involvement laws across a wide sweep of years, controlling for rival variables. In the end, the research provides an important contribution to the abortion politics literature because of its sophisticated treatment of these policies and their relative impact on state-level abortion rates and ratios.

Methodology

The empirical test of the effectiveness of anti-abortion legislation involves a regression analysis on a data set that includes abortion data from nearly every state between the years of 1985 and 2005. Regression analysis is well suited for this type of research because

it allows one to simultaneously examine the effects of various factors on the central concern of this research, the number of abortions that takes place at the state level.

Dependent Variables

When researching state abortion trends, both the abortion rate and the abortion ratio should be analyzed. Both measures provide useful information about the incidence of abortion. The abortion rate measures the number of abortions that occur per 1,000 women between the ages of fifteen and forty-four. As such, the measure provides information about the proportion of women of childbearing age who obtain abortions. The abortion ratio measures the number of abortions that take place for every 1,000 births. This measure provides information about the proportion of pregnancies that end in abortion. Analyzing both metrics will prevent sudden changes in either population or fertility from distorting the overall results.

Data from both the Centers for Disease Control and Prevention and the Alan Guttmacher Institute should be used. The Alan Guttmacher Institute obtains abortion data by conducting periodic surveys of abortion clinics. Their data collection mechanism is consistent across time, but unfortunately they do not release data every year.¹² The Centers for Disease Control and Prevention reports abortion data every year. However, since they rely on state health departments for their data, their mechanism for data collection is not consistent from year to year. Furthermore, in some years the CDC is unable to report abortion data from all states. As such, since CDC data are more frequent and AGI data are more consistent, both data sources complement one another nicely.

Overall, AGI reports higher levels of abortion than CDC. Between 1985 and 2005, AGI reported anywhere between 125,000 to 250,000 more abortions per year than the CDC. As Table 1 indicates, the average state abortion rate and ratio reported by AGI is approximately 21 percent higher than the respective figures reported by the CDC. This is partly due to the fact that AGI generally reports more abortions than CDC and also due to the fact that some states with a high incidence of abortion, like California, do not consistently report data to the CDC.¹³ However, as Table 2 indicates, a strong correlation exists between AGI and CDC data.

As such, regressions are run on four separate dependent variables, each of which measures the incidence of abortion at the state level. The first set of dependent variables measures the state abortion ratio as indicated by the CDC and AGI, respectively. The second set of dependent variables measures the state abortion rate as indicated by the CDC and AGI. Combined, these four dependent variables provide a good indication about the effects of various types of anti-abortion legislation.

Independent Variables

Different types of anti-abortion laws may reduce in-state abortion rates and ratios. They would do so by either increasing the costs of obtaining an abortion in state or reducing the perceived costs of carrying a pregnancy to term. However, different anti-abortion

Table 1. Summary State-Level Statistics on the Incidence of Abortion: 1985 to 2005

	Abortion ratio	Abortion rate	Abortion ratio	Abortion rate
Data source	CDC	CDC	AGI	AGI
Number of observations	933	933	432	432
Mean	245.71	15.96	300.65	19.63
Standard error	120.58	7.89	147.09	9.85

Note: CDC = Centers for Disease Control and Prevention; AGI = Alan Guttmacher Institute.

Table 2. Correlation Table for State Abortion Rates and Ratios

	CDC abortion ratio	CDC abortion rate	AGI abortion ratio	AGI abortion rate
CDC abortion ratio	1.000***	0.974***	0.870***	0.830***
CDC abortion rate	0.974***	1.000***	0.856***	0.864***
AGI abortion ratio	0.870***	0.856***	1.000***	0.977***
AGI abortion rate	0.830***	0.864***	0.977***	1.000***

Note: AGI and CDC data have 397 common observations. CDC = Centers for Disease Control and Prevention; AGI = Alan Guttmacher Institute.

*** $p < .01$.

laws would affect the incentives of women with unplanned pregnancies in different ways. As such, it seems likely that the various laws would have disparate effects on different subsets of the population.

For instance, public funding restrictions would increase the monetary costs of obtaining an abortion for low-income women. Nearly all states fund abortions through Medicaid when the pregnancy either is the result of rape or threatens the life of the mother. However, states differ as to whether their Medicaid programs fund abortions that are considered therapeutic (NARAL 2000). Public funding restrictions could cause significant reductions in both the abortion rate and abortion ratio since a disproportionately high number of abortions are performed on low-income women (Jones, Darroch, and Henshaw 2002). Furthermore, if public funding restrictions reduce the incidence of abortion among low-income women, this might reduce the number of abortion clinics. Fewer clinics might raise the monetary and nonmonetary costs of obtaining an abortion, reducing abortion rates even further.

Parental involvement laws would primarily affect minors since they require that minors either receive permission from or notify one or both parents before obtaining an abortion. Previous research indicates that a significant percentage of pregnant minors wish to have abortions without their parents' knowledge (Henshaw and Kost 1992; Torres, Forrest, and Eisman 1980). Parental involvement laws would increase the difficulty of concealing an abortion and in some cases would give parents legal rights to

prevent abortions from taking place. As such, parental involvement laws would reduce in-state abortion rates and ratios in one of two ways. First, they give minors an incentive to obtain abortions in states with less restrictive laws. Second, if the costs of traveling to such a state are prohibitive, a minor may have to inform her parents of her pregnancy. Parents who disapprove of abortion may be able to use a combination of coercion and persuasion to prevent the abortion from taking place.

Finally, informed consent laws require women seeking abortions to receive information about the abortion procedure. This can include information about fetal development, information about potential health risks involved with obtaining an abortion, or information about the public and private sources of support for pregnant women and single mothers (Americans United for Life 2007). Some of these laws require women to view color photos of fetuses in different stages of development. This may increase the psychological costs of obtaining an abortion, particularly among women who have moral qualms about abortion. Furthermore, the information about sources of support for pregnant women and single mothers might reduce the perceived costs of carrying the pregnancy to term. This might affect the decisions of women who are seeking abortions because of financial hardship.

In the regression analysis, I include three separate variables that respectively indicate the presence or absence of a public funding restriction, a parental involvement law, and an informed consent law.¹⁴ The effects of informed consent laws are of particular interest. Between 1992 and 2005, thirty-four states enacted informed consent laws (NARAL 1992, 2005) and their effects have largely gone unexamined.¹⁵

A number of other factors besides the presence of anti-abortion legislation might influence the incidence of abortion at the state level. For instance, some evidence exists that a significant percentage of women seek abortions partly because of financial pressures (Finer et al. 2005). As a result, it seems likely that the incidence of abortion may decline during times of economic prosperity. To capture the impact of the economy, I include each state's real per capita personal income growth in the regression models. I also include each state's unemployment rate and each state's annual change in the unemployment rate. Furthermore, since low-income women obtain a disproportionately high number of abortions (Jones, Darroch, and Henshaw 2002), a variable measuring the state poverty rate is also included in the regression models.

Evidence also exists that a disproportionately high percentage of abortions are performed on African American, Hispanic, and Asian women (Elam-Evans et al. 2003; Jones, Darroch, and Henshaw 2002). As such, I include a series of variables measuring the racial composition of women between the ages of fifteen and forty-four in each state in the regression.

Trends in fertility would also likely have a substantial effect on the incidence of abortion. Reductions in the fertility rate would reduce the abortion rate because there would be fewer pregnancies and thus fewer women making the decision to either carry a pregnancy to term or seek an abortion. Reductions in the fertility rate would also decrease the abortion ratio because a higher percentage of pregnancies would likely be intended and thus carried to term. Furthermore, some observers have argued that declines

in the fertility rate have been a factor in the 1990s abortion decline (Jones et al. 2008). As such, each state's fertility rate is held constant in the regression model. Also, the percentage of women who are married is included in the regression model as well. Since single women are disproportionately likely to seek abortions, states with a higher percentage of married women would likely have lower abortion rates.

I also include separate variables measuring the percentage of women of childbearing age¹⁶ who are between the ages of 20 to 24, 25 to 29, 30 to 34, 35 to 39, and 40 to 44, respectively.¹⁷ Some studies indicate that younger women tend to be more likely to seek abortion than their older counterparts (Jones, Darroch, and Henshaw 2002). However, it is also possible that as women get older, their demand for abortion may increase. Older women may have greater concerns about birth defects or the health risks involved with carrying a pregnancy to term. Overall, more details about the age distribution of women of childbearing age might provide additional insights about state abortion trends.

Another set of independent variables measures the relative ease with which state residents can access abortion providers. The percentage of state residents living in a metropolitan area is included in the model. Most abortion clinics are located in cities. As such, more urbanized states will have a higher percentage of residents with relatively easy access to an abortion provider. Also, the number of abortion providers per capita and the number of abortion providers per capita squared are included in the model. Reductions in the number of abortion providers would increase the monetary and travel costs involved with obtaining an abortion.

Corrections to the Regression Model

Time series cross-sectional data pose a unique set of problems. Some panels may have greater error variance than others. Additionally, it is possible that the errors of one panel may be contemporaneously correlated with those of another panel. Furthermore, it is also possible that autocorrelation within the panels may bias the regression results. A Bruesch Pagan Godfrey test provides statistically significant evidence of differing error variance across panels. Also, a Durbin Watson test provides evidence of first-order autocorrelation among the residuals.

As such, the best solution appears to be running a regression with panel-corrected standard errors and a correction for autocorrelation. The panel-corrected standard errors will correct for both differing error variance within the panels and contemporary correlation of errors across panels. The autocorrelation correction will ensure that autocorrelation does not bias the results.

Note that these regression results are not at all sensitive to type of corrections performed. Models run using ordinary least squares (OLS), OLS with robust standard errors, generalized least squares (GLS) with a correction for autocorrelation, and regressions with panel-corrected standard errors and no correction for autocorrelation all produce similar outcomes.¹⁸ The estimated effects of each of the four policies can be found in Table 3.

Table 3. The Impact of Abortion Restrictions

Variable	Abortion ratio	Abortion rate	Abortion ratio	Abortion rate
Data source	CDC	CDC	AGI	AGI
Number of observations	933	933	432	432
Parental involvement	-6.47	-0.46	-5.72	-0.54
Informed consent	-10.04*	-0.74*	-16.71**	-1.10*
Medicaid funding restrictions	-20.82*	-1.54*	-19.37**	-1.44*

Note: Full regression results can be found in Appendix B. CDC = Centers for Disease Control and Prevention; AGI = Alan Guttmacher Institute.

* $p < .05$. ** $p < .01$.

Discussion

The regression results provide solid evidence that some types of state-level anti-abortion legislation reduce in-state abortion rates and ratios. The findings for Medicaid funding restrictions are the most consistent. When data from the CDC are used, the model predicts that Medicaid funding restrictions reduces the abortion rate and the abortion ratio by 20.82 and 1.54, respectively. These results are statistically significant. The findings are similar when AGI data are used. For the years studied, the average abortion ratio is approximately 250 and the average abortion rate is approximately 16. As such, these results indicate that Medicaid funding restrictions reduce the incidence of abortion by between 8 percent and 9 percent. Overall, these findings are consistent with the academic literature that examines the impact of public funding restrictions on the incidence of abortion (Blank, George, and London 1996; Haas-Wilson 1993, 1996).

Of particular interest in this study is the effect of informed consent laws because they are a recent policy innovation and none of the other academic studies examines their impact. When the CDC data are used, the regression indicates that the passage of an informed consent law reduces the abortion ratio by 10.04 and the abortion rate by 0.74. When AGI data are used, the results indicate that informed consent laws have an even greater effect, reducing the abortion ratio by 16.71 and the abortion rate by 1.10. All of these results are statistically significant. These findings are particularly interesting because thirty-four informed consent laws took effect between 1992 and 2005 (NARAL 1992, 2005).

Finally, while the coefficient for parental involvement laws is negative in all four regressions, it never reaches conventional levels of statistical significance. However, parental involvement laws only directly affect minors. Since less than 25 percent of all abortions are typically performed on minors (Gamble et al. 2008; Koonin, Smith, and Ramick 1993),¹⁹ it is unsurprising that parental involvement laws only have a marginal

effect on the overall incidence of abortion. I analyze the effects of parental involvement laws on the abortion rate for minors in the following.

Resolving Endogeneity Problems Part I: Separately Analyzing the Abortion Rate for Minors and the Abortion Rate for Adults

These regression results indicate that the passage of state-level anti-abortion legislation is associated with declines of in-state abortion rates and ratios. However, some observers might question whether these declines are actually being caused by the legislation. The enactment of anti-abortion legislation is not a random occurrence. Indeed, possibly states that are passing anti-abortion legislation are states with changing values or mores. As a result, these shifts in values, and not the legislation itself, might be producing the abortion declines.

One solution to this endogeneity problem is to compare the impact of different types of legislation on both the abortion rate for minors and the abortion rate for adults. Suppose legislation is responsible for declines in the incidence of abortion. Then, possibly some types of legislation would have a larger impact on the abortion rate for minors than the abortion rate for adults and vice versa.

For instance, since parental involvement laws only directly apply to minors, they would very likely have a larger impact on the abortion rate for minors than the abortion rate for adults. Conversely, informed consent laws would likely have a larger impact on the adult abortion rate. Many minors are seeking abortions because they wish to conceal their pregnancy or their sexual activity from their parents (Henshaw and Kost 1992). Hence, presenting the minors information about fetal development, sources of support, or health risks might not influence their decisions. However, since many adults are seeking abortions due to financial pressures (Finer et al. 2005), the additional information might have a greater effect on their decisions.

However, suppose abortion declines are not produced by legislation, but are instead a result of changes in values that correlate with the passage of anti-abortion legislation. Then both parental involvement and informed consent laws would likely correlate with similar declines in the abortion rate for adults and the abortion rate for minors.

To help resolve this endogeneity problem, I run separate regressions on the abortion rate for adults and the abortion rate for minors²⁰ using CDC data.²¹ Like the first set of regressions, these regressions are fixed effects models with both state and year indicator variables. The same set of independent variables that were included in the first of regressions is included in these regression models as well.²² Table 4 presents respective summary statistics obtained from the CDC for the abortion rate for adults and the abortion rate for minors. Table 5 compares the effects of informed consent laws and parental involvement laws on both the abortion rate for minors and the abortion rate for adults.²³

Table 4. Summary Statistics on the Abortion Rate for Adults and the Abortion Rate for Minors: 1985 to 2005

Dependent variable	Abortion rate for minors females (13–17)	Abortion rate for adults females (18–45)
Data source	CDC	CDC
Number of observations	834	834
Mean	8.63	15.02
Standard error	5.11	6.83

Note: CDC = Centers for Disease Control and Prevention; AGI = Alan Guttmacher Institute.

Table 5. Comparing the Impact of Legislation on the Abortion Rate for Minors to the Abortion Rate for Adults

Dependent variable	Abortion rate for minors females (13–17)	Abortion rate for adults females (18–45)
Data source	CDC	CDC
Number of observations	834	834
Parental involvement	-1.33**	0.07
Informed consent	-0.06	-0.41*

Note: Full regression results can be found in Appendix C. Fewer data points are analyzed here than in the previous regressions using CDC data. This is because some states do not release data on the incidence of abortion among women of various age groups. See Appendix E for additional information. CDC = Centers for Disease Control and Prevention; AGI = Alan Guttmacher Institute.

* $p < .05$. ** $p < .01$.

Discussion

The results in Tables 4 and 5 clearly indicate that different types of anti-abortion laws have disparate effects on different subgroups of the population. The coefficient for parental involvement laws is close to zero when the adult abortion rate is the dependent variable. However, the coefficient is large, negative, and statistically significant when the abortion rate for minors is the dependent variable. This finding is unsurprising considering that parental involvement laws only directly affect minors.

For the years studied, the average abortion rate for minors is approximately nine abortions per thousand females between the ages of thirteen and seventeen. As such, the regression model predicts that parental involvement laws reduce the in-state abortion rate for minors by approximately 15 percent. This finding is broadly consistent with other studies that use time series cross-sectional data to analyze anti-abortion parental involvement laws (Haas-Wilson 1993, 1996; New 2007; Ohsfeldt and Gorman 1994).

Similarly, the regression findings indicate that informed consent laws have a significantly larger effect on the abortion rate for adults than the abortion rate for minors. When the abortion rate for adults is the dependent variable, the coefficient for the informed consent laws is both negative and statistically significant. However, when the abortion rate for minors is the dependent variable, the coefficient for informed consent law variable is close to zero.

Once again, this finding is consistent with expectations. Minors often seek abortions because they do not want to reveal their pregnancy or sexual activity to their parents (Henshaw and Kost 1992). As such, laws that give them information about fetal development and alternative sources of support may have little impact on their decisions. However, adults often seek abortions for other reasons, such as financial hardship (Jones, Darroch, and Henshaw 2002). Since these types of laws typically provide information about sources of support for single mothers, they would have a larger impact on adults.

Overall, these regressions provide solid evidence that anti-abortion legislation has an impact on the childbearing decisions of women. If shifts in values were responsible, then parental involvement laws and informed consent laws would likely have similar effects on the abortion rate for minors and the abortion rate for adults. However, the fact that these types of laws have disparate and predictable effects on different subsets of the population provides additional evidence of the effect of anti-abortion legislation.

Resolving Endogeneity Problems, Part 2: Comparing the Abortion Rate for Minors to the Abortion Rate for Adults

A second solution to the endogeneity problem is to compare the effects of enacted anti-abortion laws to the effects of nullified anti-abortion laws. In many states, anti-abortion laws are nullified by state or federal judicial rulings. Now, if the passage of anti-abortion legislation reflects a shift in values, then one might assume that all of these states that passed anti-abortion legislation experienced a similar shift in values. However, in some states the legislation took effect, whereas in other states it was nullified by the judiciary.

If value shifts are responsible for the abortion declines, I would expect similar abortion declines in states where the legislation was upheld and in states where the legislation was nullified. However, if the legislation is having the effect, then states whose legislation was upheld would have significantly larger abortion declines than states where the laws were struck down.

In recent years, on six occasions judges have blocked or delayed the enactment of parental consent laws (Table 6) and on four occasions judicial rulings prevented informed consent laws from going into effect (Table 7). To compare the effects of nullified laws to enacted laws, I run another pair of regressions. The first regression compares the effects of nullified and enacted informed consent laws on the overall (CDC) abortion rate.

Table 6. Recent Judicial Nullifications of Parental Involvement Laws^a

State	Dates
Georgia	July 1987 to September 1991
Minnesota	November 1986 to October 1990
Mississippi	July 1986 to July 1993
South Dakota	July 1993 to July 1997
Tennessee	October 1989 to February 1992
Tennessee	July 1996 to July 1999

a. Data obtained from Merz, Jackson, and Klerman (1995) and National Abortion Rights Action League (1989-2005).

Table 7. Recent Judicial Nullifications of Informed Consent Laws^a

State	Dates
Indiana	1995–2005
Michigan	1995–1999
Ohio	1991–1994
Pennsylvania	1989–1994

a. Data obtained from National Abortion Rights Action League (1989-2005) and the Michigan Right to Life Web site http://www.rtl.org/html/legislation/woman_t_right_to_know.html.

Table 8. Examining the Impact of Informed Consent Laws

Status of law	Enacted	Nullified	Difference
Abortion rate (CDC)	-0.76	-0.21	0.55 ^{a#}

Note: The complete regression results can be found in Appendix D. There were 923 observations in the regression. When abortion data from the Alan Guttmacher Institute were used, the results were broadly similar. However, since the Alan Guttmacher Institute does not release data every year, there were not enough data points to make meaningful comparisons. CDC = Centers for Disease Control and Prevention.

a. Indicates a statistically significant difference.

[#]p < .10.

The second regression compares the effects of nullified and enacted parental involvement laws on the minor (CDC) abortion rate. The independent variables that were included in previous regressions are included in these models as well. The results are as follows.

Tables 8 and 9 provide further evidence that enacted anti-abortion laws result in statistically significant abortion reductions. More importantly, both regressions indicate that nullified laws only have a marginal effect on state abortion rates. This indicates

Table 9. Examining the Impact of Parental Involvement Laws

Status of law	Enacted	Nullified	Difference
Abortion rate for minors (CDC)	-1.33	0.06	1.39 ^{a#}

Note: The complete regression results can be found in Appendix D. There were 834 observations in the regression.

a. Indicates a statistically significant difference.

[#]p < .10.

that any shifts in values that are correlated with the passage of anti-abortion laws have very little effect on the incidence of abortion. As such, these regressions provide additional evidence that anti-abortion legislation is responsible for declines in in-state abortion rates and ratios.

Conclusion

The number of abortions that were performed consistently increased throughout the 1970s and the 1980s (Brener et al. 2002). However, between 1990 and 2005, the number of legal abortions declined by 22.22 percent (Gamble et al. 2008; Koonin, Smith, and Ramick 1993). A number of different reasons for this decline are possible. However, one factor that played a role was the increased amount of anti-abortion legislation that was passed at the state level.

Indeed, the Supreme Court's decisions in both *Webster* and *Casey* and the electoral success of anti-abortion candidates at the state level resulted in a substantial increase in the number of restrictions on abortion. By 2005, more states had adopted parental involvement laws and informed consent requirements (NARAL 1992, 2005). A comprehensive series of regressions provides evidence that these laws are correlated with declines in in-state abortion rates and ratios.

Furthermore, a series of natural experiments provides even more evidence about the effects of these restrictions on abortion. States where judges nullified anti-abortion legislation were compared to states where anti-abortion legislation went into effect. The results indicate that enforced laws result in significantly larger in-state abortion declines than nullified laws. Other regression results indicated that various types of legislation had disparate and predictable effects on different subsets of the population. For instance, parental involvement laws have a large effect on the abortion rate for minors and virtually no effect on the abortion rate for adults. These results provide further evidence that anti-abortion legislation results in declines in the number of abortions that take place within the boundaries of a given state.

This study is unable to provide a clear rationale as to why in-state abortion rates and ratios decrease after states enact anti-abortion laws. Public funding restrictions, parental involvement laws, and informed consent laws would, respectively, increase the costs of obtaining an abortion, place legal restrictions on abortion, and require that

alternatives be presented to women seeking abortions. As such, these laws might increase the likelihood that women facing crisis pregnancies would give birth. Parental involvement laws might increase the likelihood that minors will obtain abortions in states where the laws are less restrictive. Anti-abortion laws might increase the likelihood of unreported or illegal abortions. Finally, anti-abortion laws might also give individuals a greater incentive to use contraceptives or engage in less sexual activity. These subjects will be explored in future research.

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Notes

1. California, Louisiana, and New Hampshire did not report abortion data in 2005.
2. The Alan Guttmacher Institute, which also collects data on the incidence of abortion, reports a similar decline during the same period of time.
3. Prior to 1992, courts struck down most informed consent laws, however, a few fairly weak laws remained in effect.
4. The Supreme Court upheld state restrictions on the public funding of abortions in *Maher v. Roe* (1977) and *Beal v. Doe* (1977). The Hyde Amendment, which restricts federal funding of Medicaid abortions, was found constitutional in *Harris v. McRae* (1980).
5. In *Planned Parenthood of Missouri v. Danforth* (1976) and *Belotti v. Baird* (1979), the Supreme Court ruled that parental involvement laws were constitutional as long as they contained a judicial bypass provision.
6. Between 1990 and 2000, Republicans lost control of the state legislature in Colorado but gained control of both chambers of the state legislatures in AK, FL, ID, IA, KS, MI, MT, ND, OH, OR, PA, SC, VA.
7. FL, ID, KS, MI, MT, ND, OH, PA, SC, VA.
8. ND.
9. ID, IA, KS, MI, ND, OH, PA, SC, VA.
10. KS, ND, SC, VA.
11. ID, KS, MI, ND, OH, PA, SC.
12. Between 1985 and 2000 the Alan Guttmacher Institute has reported data in 1985, 1987, 1988, 1991, 1992, 1995, 1996, and 2000.
13. Both California and New Hampshire failed to report data to the Centers for Disease Control and Prevention (CDC) every year from 1998 to 2005.
14. In the 1990s, a number of states also enacted partial birth abortion bans and waiting periods. However, neither will be analyzed in this study. All state partial birth abortion bans were enacted in the late 1990s, then nullified by the Supreme Court's ruling in *Stenberg v.*

Carhart in 2000. As such, there is insufficient data to properly analyze these laws. Waiting periods are typically enacted in conjunction with other types of anti-abortion laws, making them difficult to properly analyze.

15. A complete listing of the public funding provisions, parental involvement laws, and an informed consent laws that were in effect between 1985 and 2005 can be found in Appendices F, G, and H, respectively.
16. Women between the ages of 15 and 44 are considered to be of childbearing age.
17. No variable measuring the percentage of women of childbearing age who are between the ages of 15 and 19 is included because of multicollinearity problems.
18. The data sources can be found in Appendix A and the complete regression results can be found in Appendix B.
19. Overall and minor abortion data is obtained from the CDC. Calculations by author.
20. The abortion rate for minors is calculated as the number of abortions performed on females younger than age 18 per thousand females between the ages of 13 and 17. The adult abortion rate is the number of abortions performed on females 18 and older per thousand females between the ages of 18 and 44.
21. CDC data are used because the Alan Guttmacher Institute does not consistently release state data on either the number of abortions performed on minors or the number of abortions performed on adults.
22. When the abortion rate for minors is the dependent variable, the variables that measure the percentage of women of childbearing age who are between the ages of 20 to 24, 25 to 29, 30 to 34, 35 to 39, and 40 to 44 are not included in the regression model. The age distribution of adult women would have no bearing on abortion rates for minors.
23. The full regression results can be found in Appendix D.

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Bio

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