ADVOCACY, ABORTION AND PUBLIC POLICY: TOWARDS A BETTER UNDERSTANDING OF THE DETERMINANTS OF ABORTION IN THE AGGREGATE

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ABSTRACT

This paper examines the effect of restrictive public policies on aggregate abortion rates controlling for the role of both pro-choice and pro-life advocacy organizations. While multiple studies examine the effect of public policy on aggregate abortion incidence, none control for the role of advocates. My research, employing data from 1991-2004, and controlling for multiple sources of endogeneity, empirically demonstrates findings that differ for women according to the point in pregnancy at which restrictive public policies are implemented. Simply enacting, not implementing, informed consent laws results in a significant decline in aggregate abortion rates for women late in pregnancy. Yet, there is no independent effect of enforcing the law itself. On the other hand, when women are exposed to parental consent laws early in pregnancy, I detect a significant and negative effect on aggregate abortion rates attributable to enforcing the law. In neither case do advocates have an independent effect on aggregate abortion rates, although they do dampen the impact of enforcing restrictive policies early in pregnancy. My findings suggest a narrative in which restrictive abortion policy acts as a signal of cultural changes that decrease aggregate abortion rates. The law itself affects behavior only for women who interact with the policy early in pregnancy. By adding advocates to the current models, my findings demonstrate more robust conclusions than the current literature and suggest multiple implications for both policymakers and researchers alike.
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Chapter 1. Introduction

Abortion remains a major factor in our politics today. Although Supreme Court precedents impose strict limits on the regulation of abortion by state legislatures, and though research examining their efficacy has been mixed, various statutes remain on the books. What remains unexplored is the role of both pro-choice and pro-life advocacy organizations in shaping these outcomes. Each year, abortion advocacy organizations spend large sums of money, almost $250 million nationally in 2004 alone, targeted at both lawmakers and individual women. While we have some insight into the impact of advocacy groups on legislative outcomes, investigators have not examined whether and how advocates’ activities influence the impact of public policy on aggregate abortion behavior.

This paper will address this knowledge gap. First, to build upon the current literature, I formulate a comprehensive empirical model specifying the relationship between aggregate abortion incidence and legislators’ public policy choices. This model must consider not only the standard determinants of aggregate abortion policy but also the collective effects of advocates, by state and year. My model will use a Two-Stage Least Squares (2SLS) estimation technique to control for endogeneity in abortion advocates’ expenses.

As with many other issues, any study of the relationship between government policy and abortion rates must employ a strategy capable of distinguishing between the

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1 Unless otherwise noted sums expended by advocacy organizations are calculated by the author using data from the National Center for Charitable Statistics. This database, which forms part of the dataset used to calculate my results, contains expense data as reported by non-profits on their IRS Form 990. Nationally, in 2004, organizations identified by NTEECC codes R61, R62 and E40 spent $249,334,114.
impact of a law and the impact of the cultural factors that brought the law about. I employ a variety of techniques to parse out the independent effect of the law.

In addition, my data is an improvement on much of the relevant literature because it has been collected between 1991 and 2004. Much of the prior literature relies on observations antecedent to a widespread decline in aggregate abortion rates observed in the late 1980s and early 1990s.

While doubtless much of the early literature applies today, there exists a second knowledge gap to the extent that the context of abortion in the late 1970s and early 1980s differs from the context of today. Such questions create doubt about the veracity of inferences based on old data. Finally, since I have panel data spanning fourteen years and 49 states, I am able to employ state and year fixed-effects to control for time-invariant unobserved variables unique to states and years.

To the extent that this study contributes to an improved understanding of the relative importance of the various levers that affect abortion incidence in society, it will not only elucidate important structural realities for advocates on both sides of the abortion debate, but also advance our conversation about the importance of public policy for issues in which government options are relatively proscribed. The extent to which government policy remains important, or impotent, holds powerful implications for not only advocates and policy makers, but also society as a whole. As society continues to grapple with its role in influencing a woman’s legal right to choose, the relative importance of its various levers will serve to advance an important part of an ongoing national debate.
Chapter 2. The Policy and Politics of Abortion Regulation in the United States

The role of the state in regulating abortion has evolved over time, driven by changing norms about the proper demarcation of the line defining under what conditions a woman, and not society, may choose the outcome of her pregnancy. As with other issues at the intersection of deeply held social mores and interests, private groups have played a role in shaping the debate. In the next section, I discuss the roles of the state and advocacy groups in turn.

Abortion in American Jurisprudence and Trends Following Legalization

Although Supreme Court precedent has an impact on the relative freedom of lawmakers to act, the actual legislation of abortion regulation has historically fallen, and still remains, largely under the jurisdiction of state legislatures. Following Independence, the American states accepted Common Law, which defined quickening – the point at which a woman can detect fetal movement and an intellectual descendent of Aquinas’ belief that movement was one of the first two principles of life – as the line demarking the proper point for government intervention (Roe v. Wade). Additionally, legal penalties for prohibited abortion were far smaller than is often thought; pre-quickening abortion was not even an indictable offense (Roe v. Wade).

In the 1800s, states began to tighten abortion laws within the quickening framework. Connecticut, the first American state to prohibit abortion, did so only in the case a woman was “quick with child” and abortion before quickening was not criminal
until 1860 (Roe v. Wade). In fact, as late as 1840, only eight American states prohibited abortion (Roe v. Wade). Later in the Nineteenth Century, and into the Twentieth, the line demarking government intervention gradually shifted from quickening to conception. By the 1950s, a large majority of states banned abortion whenever and wherever performed except to save the life of the mother (Roe v. Wade).

After 1950, with the rise of improved abortion techniques and equipment, states gradually loosened restrictions. By the time of Roe only three states, Louisiana, New Hampshire and Pennsylvania prohibited abortion without exception and four – Alaska, Hawaii, New York and Washington – permitted abortion for any reason (Wetstein, 1996, 16). In a now famous case, “Jane Roe,” a Texas resident, argued that a Texas statute prohibiting abortion was vague, abridged her right to liberty as defined by the Fourteenth Amendment and abridged personal privacy said to be protected by the Bill of Rights (Roe v. Wade). The case, first heard in 1971 but not decided until 1973, and whose intellectual history of abortion in the United States framed this review, created a new “trimester” formulation that became a new paradigm defining the point at which women maintained the legal right to choose.

Under the trimester construct, the Supreme Court weighed the relative importance of three interests: the woman’s right to privacy, the state’s interest in protecting the health of the woman late in pregnancy, and, late in pregnancy, the state’s interest in protecting the “potentiality” of human life (Wetstein, 1996, 14). Under the trimester framework, states were only able to regulate abortion in order to protect the health of the mother until the third trimester at which point the state could completely prohibit abortion except in the case of a threat to the life and health of the mother (Wetstein, 1996, 15).
As one might suspect, disagreement erupted over what constitutes protecting the health of the mother. Later rulings by the Court found that states could license abortion providers, but not restrict their provision only to hospitals. States were permitted to require parental notification – as long as there was a judicial bypass – but prohibited from requiring spousal notification (Wetstein, 1996, 17). In 1977, the Court found that states maintain the right to prohibit government funding of abortion.

Subsequently, the Court’s trimester formulation came under attack and, in 1989, the Court abandoned the trimester in Webster vs. Reproductive Health Services. Later, in Planned Parenthood of Southeastern Pennsylvania vs. Casey (Casey), announced in 1992, the Court adopted a new standard known as “undue burden.” In its ruling, the Court held that states had an interest in promoting childbirth at any point during pregnancy as long as their actions do not pose an “undue burden.” Thus, post-Casey, states may intervene until the point they create a “substantial obstacle in the path of a woman seeking an abortion of a non-viable fetus (Wetstein, 1996, 24).”

Though on the surface Casey creates the possibility for far wider government regulation of abortion, it is important to note that in Casey the Supreme Court upheld the central findings of Roe and simply widened the scope of what is permissible for state governments seeking to further regulate abortion. Following Casey, Pennsylvania legally implemented a twenty-four hour informed consent waiting period and a parental notification requirement for minors with a judicial bypass. As before, the Court overturned a spousal notification provision as unconstitutional (Wetstein, 1996, 25).

Thus, allowing for an increase in state discretion following Casey, options for abortion regulation in the United States remain relatively minimal. In essence, states may impose a waiting period for women or require parental consent – with a judicial bypass –
for minors, but in no instance may a state prohibit abortion, or even regulate, to the point of adding an “undue burden” to any woman wishing to exercise her legal right to choose.

The Trends of Legalized Abortion

As depicted in Figure 1, there are clear trends in the national abortion rate post-Roe. Following legalization, legal abortion rates rose rapidly to a peak of 29 per 1,000 women aged 15-44 in 1980 and then began a gradual descent that accelerated in the latter part of the decade and into the 1990s. By 2004 the national abortion rate was 20 per 1,000 women aged 15-44; a decline of 33%.^2

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^2 The above statistics are quoted from data published by the Alan Gutmacher Institute (AGI). See below for a discussion of the individual merits of the two available data sources for aggregate abortion trends. There is a mistake on Figure 1. The data is from AGI information between 1973 and 2004.
A Broad History of Advocacy

Since before the Supreme Court’s decision to legalize abortion nationwide, advocacy organizations in the United States have established themselves broadly as “pro-choice” or “pro-life.” Within the context of this paper, I use pro-life to describe organizations generally opposed to legal abortion rights, and pro-choice to describe those supportive of legal abortion rights. This definition is generally consistent with the organization’s self-identification and common usage of the terms, though due to its simplicity it lacks nuance. It must be noted, for example, that pro-life organizations may approve of abortion in the case of a threat to the life of the mother, and that pro-choice organizations do not advocate for increased abortion, but instead advocate for its availability as one of many fertility choices for women.

Within this broad typology, advocacy has taken three forms. First, advocacy organizations directly intervene in the political process to create and reform public policy along the lines of their core beliefs. These organizations are political in nature and focus on changes in public policy as their outcome. Second, some organizations target individual women in order to influence their fertility decisions. These organizations may be broadly pro-life or pro-choice but their target audience is individual women and they are generally less interested in directly influencing the policy process. The third organizational form is a hybrid of the earlier two.

Public Policy Advocacy

Public policy advocacy is best represented by prominent organizations such as the National Abortion Rights Action League (NARAL), a pro-choice organization, and the
National Right to Life Committee (NRLC), a pro-life organization. NARAL, a descendent of the National Association for the Repeal of Abortion Laws, contributed to legalizing abortion in New York and played a part in the Supreme Court’s hearing of Roe (Staggenberg, 25).

Today NARAL is “committed to protecting the right to choose and electing candidates who will promote policies to prevent unintended pregnancy (NARAL).” According to NARAL’s 2008 IRS filings, the national organization had $4 Million in program expenses; NARAL has state-level affiliates that report their results independently. NRLC, a pro-life organization, has nearly opposite goals, but similar organization and in 2008 had almost $5 Million in national program expenses.

**Individually Targeted Advocacy**

This second form of advocacy is less national because of its inherently individual focus. One prominent pro-life organization, Care Net, runs pregnancy centers designed to convince women to carry to term by “offering hope to women facing unplanned pregnancies by providing practical help and emotional support (Care Net).” This network of “Crisis Pregnancy Centers” typically offers free pregnancy tests and pregnancy information, medical services including STD tests, early ultrasounds, and confidential pregnancy counseling. In the financial year ending October 1, 2008 the National Affiliate for Care Net had program expenses of more than $4 Million.

**Hybrid Advocacy**

The analogous pro-choice organization, Planned Parenthood, represents the hybrid organizational form. Planned Parenthood of America, which does do legislative
advocacy, also runs clinics which provide testing and counseling, as well as sometimes
direct access, or at least referral, to abortion services. In the financial year ending
October 1, 2008, Planned Parenthood had national expenses of almost $53 Million. As
with NARAL and NRLC, both Care Net and Planned Parenthood have affiliates that
report income and expenses separately. While many other organizations exist on both
sides of the issue, other prominent organizations include the National Organization for
Women, and the Roman Catholic Church.

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3 It is important to note that since Planned Parenthood provides abortion services in some cases stated
expenses also include monies generated from service provision.
Chapter 3. Theoretical Framework and Related Research

Becker’s 1981 theory of family economics provides a theoretical foundation for viewing abortion as the result of individual- and family-level choice. Under Becker’s framework, the decision to have an abortion, like the decisions to marry and have children, is seen as one made by rational individuals who seek to balance costs and benefits. The calculus of the cost of children is considered fundamental in the determination of optimal family size and includes not only formal costs like child bearing and forgone earnings, but also “quality” costs like schooling, care, clothing, etc. (Becker, 1991).

One criticism of Becker’s model is its assumption that rational actors have access to perfect information in their decision-making calculus. Levine argues that when we relax this assumption, abortion is the ultimate “insurance policy” against unwanted pregnancy (Levine 2005). Given legal abortion, women may accept higher levels of “fertility risk” when insured than otherwise.

Cost and Income

When examined in the aggregate, it is important to consider how macro-level factors such as female and male employment rates affect the opportunity cost of child-bearing and abortion. In recent research, Wright and Bailey estimate that a 3.87% increase in male employment decreases abortion ratios by 23% while a 3.87% increase in female employment increases abortion ratios by 28%. Increasing income by two standard deviations decreases the ratio by 27% (Bailey et. all).
Given an economic construct, we should expect a rise in the monetary cost of services to weaken demand. Medoff tests this assumption empirically using cross-sectional data across three years and an instrumental variable to account for endogeneity in price determination. He demonstrates that a 10% increase in the cost of abortion is associated with a roughly 11.6% decrease in abortion rates. Medoff’s earlier work suggested that demand is inelastic with respect to cost (Medoff 2008, Medoff 1988).

Research on the “net” cost of abortion, which includes offsetting programs like Medicaid, has returned mixed results. Theoretically, programs that lower individual costs should increase demand, a premise supported empirically by Haas-Wilson. According to her results, the elimination of Medicaid funding decreases abortion demand by 17% (Haas-Wilson 1996). Findings from several other studies lend support (Levine 1996, Trussell 1980, Medoff 2007, Lundberg et. all 1990).

In contrast, a study by Joyce and Kastener reveals a positive relationship between Medicaid restrictions and abortion rates (Joyce et. all 1996). It is possible that changes in Medicaid policy merely proxy for unobservable social characteristics. For example, Blank finds that Medicaid restrictions in one state raise abortions in the next by 5%. Since Medicaid eligible women from State A would not qualify for funding in State B, the increase suggests that non-Medicaid eligible women are crossing state borders for reasons other than Medicaid coverage (Blank 1996). Existing research also examines the links between abortion rates and other social welfare policies, such as differentials in public assistance levels and the institution of family caps.

In a 1995 paper, Lundberg and Plotnick find, using individual data, that increasing state welfare payments by 20%, one standard deviation, should decrease the probability of abortion by 3.6 percentage points (Lundberg et. all 1995). Lundberg and
Plotnick’s research is weakened by an absence of state fixed effects; later work by Argys finds that the effects of public assistance programs disappear with state fixed effects (Argys et. all 1999). Matthews and colleagues find no significant effect for welfare payments (Matthews et. all 1997).

In recent research, Bailey and Wright demonstrate that welfare generosity leads to a statistically significant decline in aggregate abortion rates. Bailey and Wright find that a two-standard deviation increase in welfare benefits ($850) would decrease the abortion ratio, abortions per 1000 pregnancies, by 16% (Bailey et. all).

The effect of family caps, designed to restrict or deny additional welfare benefits for a welfare recipient’s future child, should decrease fertility, by abortion perhaps, by raising the opportunity cost of additional children. Using a case study of New Jersey welfare policy, Jagannathan and Camasso find that family caps correlate with a 32% increase in abortion for African American women (Jagannathan, et. all, 1998).

Recently, the New Jersey study has been subject to criticism for both implementation errors and contradictory results, for example finding increased births simultaneous with increased contraception intensity. The only other study to tackle the issue, conducted by Joyce, finds no significant effect of family caps on abortion rates (Joyce et. all, 2004). Nonetheless, while these studies consider how public policy impacts aggregate abortion rates indirectly by manipulating relative costs, they do not address the primary question driving this paper, the effect of policies explicitly aimed at influencing aggregate behavior.
Access to Abortion Services and the Influence of Public Policy

An obvious starting point to understanding the effect of public policy on aggregate abortion rates is to examine their change following the legalization of abortion by Roe. One mechanism by which legalization may work is by increasing or decreasing women’s access to abortion services. As early as 1979, Borders, using a natural experiment created by Roe, demonstrates the importance and impact of access on abortion rates; Matthews and colleagues use longitudinal data ending in 1988 to reinforce Border’s findings (Borders 1979, Matthews et. all 1997).

Later research has dealt with the endogeneity problem created by the possibility of abortion demand, in a post-Roe world, driving access instead of vice versa. In a 1996 study, Blank and colleagues instrument for availability but find using a Hausman test that the effects of provider availability on the abortion rate are not due to endogeneity (Blank et. all 1996). Brown, in a 2001 study using individual data and controls for endogeneity, finds that a 10% increase in distance to the provider should decrease the probability of abortion by 5.36% for Hispanic women (Brown 2001). Most models include measures of provider availability in their explanatory variables. (Haas-Wilson 1996, Joyce et. all 2000, Blank et. all 1996).

Academic research on the effect of less global changes than the blanket legalization granted post-Roe has returned inconsistent results. In the post-Roe world, these restrictions are generally limited to late-term abortion bans as well as parental and
informed consent laws. In one of the primary studies of parental consent restrictions, Blank and colleagues found no effect on abortion rates (Blank et. all 1996).

Other research, Cartoof and Klerman (1986), Medoff (2008) and Wright and Bailey, find similar results. However, there has been criticism of these studies. Scholars, to include Haas-Wilson as well as Ohsfeld and Graham find a lower abortion rate following implementation of parental consent laws in the 1980s; Ohsfeld estimates a reduction in minor abortion rates of 18% (Haas-Wilson 1994, Ohsfeld et. all1994).

According to recent research by New (2009), both parental and informed consent laws have negative and statistically significant effects on aggregate abortion rates for both minors and adults respectively. A notable limitation of existing studies of policy effectiveness is the absence of measures for abortion advocates’ intensity.

**The Role of Advocacy Organizations**

Research into the role of advocacy organizations is limited to the impact of policy advocacy organizations on legislative outcomes. Medhoff, in a 2002 paper, using cross-sectional data, demonstrates that a larger NARAL membership decreases the restrictiveness of a state’s abortion laws and that the opposite is true for states with larger percentages of Roman Catholics (Medhoff, 2002). To my knowledge no scholarly work considers the impact of advocacy on aggregate abortion trends.

While there is no empiric literature to explicitly test my expectations, plausible mechanisms exist for advocates to influence aggregate abortion incidence absent changes in the legal infrastructure. Recall that one form of active advocacy noted above directly targets women. Activity of this nature may be completely ineffective.
However, given that individual-level targeting produces relatively concrete results, women either choose abortion or an alternative, there is a reasonable expectation that donors have sufficient information to judge program effectiveness. Under the assumption that donors provide funding only to effective programs, then the fact that many organizations receive continued funding suggests that some advocates experience a degree of success that is apparent to donors and represents a real impact on abortion incidence.

If advocates do matter, abortion spending may be highly correlated with social or cultural effects observed in prior research. In addition, given the simultaneous legal efforts of many organizations, it is also possible that measures of advocacy are highly correlated with changes in public policy. To the extent this correlation exists, including advocates may increase or decrease, dependent upon the correlation, both the estimated coefficients and the statistical significance of legal restrictions established by prior research.

Finally, the absence of empirical data makes it difficult to hypothesize the nature of the correlation between advocates and aggregate abortion rates. Nevertheless, since pro-life advocacy represents an attack on the status quo, whereas, arguably, pro-choice spending represents a defense of the status quo, I hypothesize a negative correlation between increased spending and aggregate abortion incidence based on the assumption that it is relatively more difficult to defend than attack.
Chapter 4. Conceptual Framework

The conceptual framework guiding the present study draws from the existing literature and employs an economic model of fertility decision consistent with Becker (1981). It posits that the determinants of abortion trends can be roughly divided into six categories: access, demographics, economics, passive social climate, public policy choices and active advocacy (See Figure 2).\(^4\)

The Relationship Between Determinants and Aggregate Abortion Incidence

![Diagram showing the relationship between determinants and aggregate abortion incidence.]

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\(^4\) In Figure 2, conceptual variables appear in bold, example operationalized constructs appear in italics below. Italicized operationalizations are presented only for explanatory purposes. Actual operationalizations, and their construction, will be presented later in the section defining the data constructs employed. Double arrows represent cases of possible endogeneity.
Access and Demographics

Given the overwhelming nature of research demonstrating the importance of access to aggregate abortion rates, it is safe to say that there is a positive correlation between access and aggregate abortion rates. Prior research has also demonstrated the salience of racial composition and other demographic factors on aggregate abortion trends. Researchers find a higher prevalence of abortion in African American communities (Jagannathan et al. 2003, Jones et al. 2002). Racial differences are likely to proxy to some extent for cultural differences between racial groups. Thus effects may be observed not just for distinct racial identities but also ethnicities.

Economic Conditions and the Passive Social Climate

The third and fourth domains in my conceptual framework, economics and passive social climate, describe the larger economic and cultural context of each state in each year. Economic conditions are held to comprise current and future income as well as future costs. Measures of current income are likely to impact aggregate abortion rates. According to Wright and Bailey, 26% of all abortions in 2000 were to women below the poverty line (Bailey et al).

While current income may impact aggregate rates, expectations of future income are also likely to have significance. Bailey and Wright find employment levels by gender, possible proxies for future income, significant to aggregate abortion rates. Finally, according to the Becker construct, “quality” costs comprise many non-monetary expenses such as time spent and emotional investment. Research demonstrates that one
proxy, length of relationship, is a significant determinant of the abortion decision (Henshaw et. all 1988).

Passive social climate is seen as comprising the characteristics of the cultural context that are not the product of actively orchestrated efforts to affect women’s individual abortion decisions; social disapproval of abortion as opposed to active opposition from Care Net for example. Changes within this larger construct affect relative costs for women considering abortion. For example, it stands to reason that women in a strongly pro-life state could suffer increased emotional cost if their decision to abort is known to the community.

**Public Policy Choices**

The fifth domain, public policy choices, describes those policies variously designed to target aggregate abortion rates – via individual women’s decisions – directly. Examples include parental and informed consent laws and Medicaid funding restrictions on the provision of abortion. Family caps, restrictions on additional welfare payments beyond a defined threshold family size, are included due to the possibility that women facing the increased relative costs of child birth after family caps may consider abortion. As described above, the research on their efficacy has been mixed.

**Active Advocacy**

Active advocates, distinct from passive social forces, are those organizations actively involved in influencing women’s behavior either directly through individual intervention or indirectly through public policy advocacy. Given their monetary impact, over $250 Million was spent in just 2004, and their various methods of engagement, they
target both policymakers and individual women. They are likely significant determinants of aggregate abortion incidence. As noted above, prior research has demonstrated their salience to the *legislative* success of abortion restrictions.
Chapter 5. Estimation Strategy

The objective of this study is to isolate the unique impact of government restrictions from other factors hypothesized to influence aggregate abortion incidence. Several sources of endogeneity complicate the estimation process. I discuss my statistical remedies below beginning with the primary variable of interest – restrictive abortion policies.

**Endogeneity of State-Level Abortion Policies**

To the extent that passing restrictive abortion legislation reflects important, yet difficult to measure normative characteristics of a state, any state-level abortion policy would be endogenous to the empirical model. A typical strategy for addressing this would be to estimate a model that controls for state fixed effects. The requisite assumption of a fixed effects framework, that state differences are static over time, makes this an inadequate strategy. It is reasonable to imagine, for example, that a large increase in aggregate abortion rates may cross a social threshold that results in increased condemnation and social pressure to avoid abortion. Thus, passing this threshold may both permit the passage of restrictive abortion policy and decrease incidence of abortion independent of the effect of the law.

To address this problem, I use a natural experiment originally employed by Blank, New, Bailey and Wright. The natural experiment exploits the opportunity provided when laws passed in state legislatures are later challenged in court and enjoined, preventing their enforcement, by judges. These rulings, varying in time by state, and absent in some
states, isolate the effect of the law from the unobserved social characteristics simultaneously present.

If abortion incidence in one state, in which the law is enforced, is significantly different from a state in which the law is enjoined, then we can attribute the difference to legal effect. On the other hand, if measures of abortion incidence are significantly different for states that have not passed restrictive legislation, then we can attribute this change to social or demographic trends that drove the change absent legal effect.

**Endogeneity of the Role of Advocacy Organizations**

Similar to my policy variable, a clear potential for endogeneity exists in measures of activity by advocacy groups. Not only might advocacy initiatives potentially shape aggregate behavior, changes in abortion trends may motivate increased advocate activity. As an example, one might imagine that rapidly increasing aggregate abortion incidence directly contributes to increased resources for – and therefore expenses from – pro-life organizations. The classic solution to this problem is to identify a suitable instrument and, using Two-Stage Least Squares (2SLS), estimate a model with predicted values of active advocacy. This is the strategy that I pursue.

The instrument I employ, the expenses of all non-profits by state and year, is likely positively correlated with spending by sub-groups of nonprofits such as abortion advocates. It is plausible that, for example, economic trends and other structural changes create similar pressures and opportunities for donations to both abortion clinics and food-banks. The availability of donations should directly impact expenses.
Conversely, it is unlikely that changes in aggregate abortion incidence are likely to impact macro-level giving to all non-profit organizations for any state in any year due to the far wider scope of issues with which non-profits engage. It is unlikely that, for example, giving to veteran’s organizations or food banks would be highly correlated with changes in aggregate abortion incidence. Abortion advocacy organizations make up only a very small part of overall non-profit expenses. To take just one example, 2004 California, spending by abortion advocates represented .022% of spending for all non-profit organizations.

My assumptions regarding the appropriateness of my instrument are supported by the fact that the correlation between my instrument – contributions to all non-profit organizations – and the measure of contributions made to abortion advocacy organizations is high and positive (r = .72). Further details regarding the construction of my instrument are included in the mathematical presentation of my model below.

Endogeneity of the Passive Social Climate

I first parse passive social climate into three constituent parts: “legal culture,” addressed via the natural experiment discussed above, abortion sentiment, and religious cultural context. Abortion sentiment is unlikely, as Wetstein demonstrates, to vary significantly within a generation. Using data from 1972-1976, a period which includes Roe and during which we should therefore expect a dramatic change in public opinion, Wetstein demonstrates that abortion sentiment remained remarkably stable (Wetstein 1996, 73).
The explanation advanced, and supported by other research, is that major public issues, such as abortion, obtain sufficient prominence that most Americans are forced to form an opinion early that they subsequently hold firmly. If abortion approval rates remain relatively static throughout the time period of my study, state-level fixed effects will remove the unobserved differences between states and their absence should not materially affect my model.

The third measure of the passive social climate, religious cultural context, is unlikely to have a material effect on my model. Individual-level research by Adamczyzck demonstrates that religious cultural context is an insignificant predictor of the abortion decision (Adamczyzck, 2008). Given that abortion approval rates remain static, the possibility that religion contributes to the formation of these opinions is unlikely to have a significant impact on my model. To the extent these influences exist, they are likely invariant within the fourteen years of this study and will therefore be removed by state fixed effects.

**Endogeneity of Service Availability**

As noted in prior research, there exists a probability that access to services drives demand instead of vice versa. As before, this condition suggests the need to control for endogeneity. I choose not to instrument for two reasons. First, if I model the immediate effect on aggregate abortion incidence of access, short-term barriers to entry and exit preclude endogeneity. Basic economics suggests that irrespective of the magnitude of change in demand, in this case aggregate abortion incidence, clinicians will require time to detect the change and shut-down operations.
The short-term relationship between access and aggregate abortion incidence is therefore unlikely to be two-way. Second, in 1996 research, Blank and colleagues employ instruments for access; their results suggest that endogeneity is not a problem (Blank et. al 1996, 531-532). To the extent endogeneity exists, it may bias my reported coefficients and levels of statistical significance.

**The Timing of Policy Effects**

A final component of my estimation strategy is the need to account for lagged effects on aggregate abortion incidence. Given the consistent ten month process from conception to childbirth it is possible to model the effect of a determinant on women early versus late in pregnancy by introducing a lag of one year. Non-lagged variables represent the effect of the determinant on women when changes occur late in pregnancy. Lagged variables represent the effect on women when changes occur early in pregnancy.

It is thoroughly possible that long terms of exposure to restrictive public policy changes or measures of economic well-being have an effect on aggregate abortion incidence different from that observed after short-term exposure. It is a common pro-life argument that abortion restrictions require time during the pregnancy to affect aggregate abortion rates. Economic fortunes, which may change rapidly, may affect the “mood” of women differently over a longer period of time.

Nevertheless, demographic variables, such as racial composition, fertility and marriage rates, change too gradually to affect women differently early in pregnancy versus late. It is unlikely that women could even identify these changes within ten months let alone react to them. Additionally, given the long lead-times necessary to close
and open a clinic, lagged values for access are not included in my model. I therefore include no lags for demographic values.

However, changes in social culture, economic condition and public policy are all reasonably posited to affect women within a ten month window. I therefore include lagged measures of parental consent provisions to control for changes in the cultural and legal context. Second, I include a lagged measure of employment irrespective of gender to capture society-wide changes in economic conditions.\(^5\)

**Formal Model**

Thus, using 2SLS, for any state and year:

\[
\text{AbortionRate}_{st} = \pi + \beta_1 AC_{st} + \beta_2 D_{st} + \beta_3 C_{st} + \beta_4 E_{st} + \beta_5 P_{st} + \beta_6 \hat{A}_{st} + \beta_7 C_{st-1} + \beta_8 P_{st-1} + \rho_t + \sigma_s + \mu
\]

Equation 1 Aggregate Abortion Rates as a Function of Control Variables

Where \(\pi\) is an intercept, \(AC\) is a vector of access attributes, \(D\) is a vector of demographic attributes, \(C\) is a vector of passive social climate variables, \(E\) is a vector of economic characteristics, \(P\) is a vector of public policy variables, and \(\hat{A}\) are the predicted values of active advocate’s participation defined below. \(C_{st-1}\) represents the lagged effects for a vector of social and policy variables and \(P_{st-1}\) represents lagged effects for

\(^5\) To consider the effect of lagging both informed consent and parental consent laws on my model. Results, not reported here, demonstrated no significant differences in sign or significance but instead a decreased amount of overall variance was explained by the model. For this reason I determine lagging parental consent laws to be sufficient.
economic measures. $\rho$ represents state fixed-effects, $\sigma$ represents year-specific fixed effects and $\mu$ represents an error term. $S$ and $T$ index by state and year respectively.

The state fixed effects control for permanent differences, including unobserved differences, between states; year fixed effects control for permanent differences, including unobserved differences characteristic of each year. It must be noted that a fixed effects model cannot control for any time-variant characteristics.

As noted above, my model employs measures of advocates’ activity predicted by instrumenting for the expenses of all charities by state and year. This equation, the first step in 2SLS modeling, is defined:

$$\hat{A}_{st} = \tau + \gamma_1 AC_{st} + \gamma_2 D_{st} + \gamma_3 C_{st} + \gamma_4 E_{st} + \gamma_5 P_{st} + \gamma_6 EX_{st} + \gamma_7 C_{st-1} + \gamma_8 P_{st-1} + \nu_t + \psi_s + \mu$$

Equation 2: Predicted Values of Advocacy Organizations' Expense

Where $\tau$ is an intercept, $AC$ is a vector of access attributes, $D$ is a vector of demographic and access attributes, $C$ is a vector of passive social climate variables, $E$ is a vector of economic characteristics, $P$ is a vector of public policy variables, and $EX$ are the expenses of all charities by state and year. $C_{st-1}$ represents the lagged effects for a vector of social and policy variables and $P_{st-1}$ represents lagged effects for economic measures. $\nu$ represents state fixed-effects, $\psi$ represents year-specific fixed effects and $\mu$ represents an error term. $S$ and $T$ index by state and year respectively. State and year fixed effects, as noted above control for time invariant characteristics for each state and year.
Chapter 6. Data and Operationalization

Dependent Variable: Pooled-Time Series Data Capabilities and Limitations

Given the range of factors that may contribute to aggregate abortion rates, one challenge inherent in my study, as with most research of this type, is the possibility that structural differences between states may contaminate results. If these unobserved differences correlate with controls in the model, the obtained estimates are likely to either overestimate or underestimate, dependent upon the correlation, the true results. Estimation strategies that fail to account for this may suffer from omitted variable bias.

I thus utilize data that will permit me to control for these differences. The classic technique to control for this possibility is to employ fixed effects and so I employ pooled time-series data, panel data, with observations by both state and year. Data of this form will permit me to control for time invariant unobserved characteristics that would otherwise contaminate results. However, panel data also presents at least two primary weaknesses.

First, I must consider the possibility of heteroskedasticity. If present, my standard errors will require a correction for accuracy. Reporting robust standard errors will increase their magnitude and decrease the statistical significance of estimated coefficients. As described below, I will employ the Breusch-Pagan (1979) test to evaluate the null hypothesis that my error terms demonstrate homoskedasticity as described by Wooldridge (2009, 273).
Second, I must consider the probability that my data demonstrates serial- or autocorrelation. In this condition, error terms are correlated across time periods. One example of autocorrelation is in measures of inflation. In that case, errors introduced in time period T will compound in time period T+ 1. If autocorrelation is present, I must employ a correction to properly report my results.

My data is unlikely to demonstrate autocorrelation because of the relationship between measurements by state and year. Unlike inflation, for example, abortion rates are reported annually from a fresh baseline, zero. Thus, errors are unlikely to compound over time. Future research should employ a Durbin-Watson test to confirm the absence of autocorrelation.

**Data Sources**

Panel aggregate abortion information is available from two sources: the Centers for Disease Control (CDC), and the Alan Guttmacher Institute (AGI). AGI information is collected directly through surveys of all known abortion facilities, while CDC data relies of self-reporting from state departments of health. Given funding requirements for AGI and differing reporting standards by state for the CDC, data is unavailable from some states in some years. Figure 3 reports years, beginning in 1992 and ending in 2004, for which aggregate abortion information is unavailable.

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6 The Alan Guttmacher Institute (AGI) is an independent, non-profit organization known for its scholarly work, its data have been used as the basis for much of the academic work cited above. However, it must be noted that AGI, though known for its scientific expertise, is generally aligned with pro-choice principles and is a descendent of the Planned Parenthood Foundation of America. No Author. “The History of the Guttmacher Institute.” Accessed 12 January 2010, from http://www.guttmacher.org/about/history.html.
FIGURE 3: MISSING AGGREGATE ABORTION DATA BY STATE AND YEAR

<table>
<thead>
<tr>
<th>Year</th>
<th>AGI</th>
<th>CDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>ALL 50</td>
<td>NONE</td>
</tr>
<tr>
<td>1997</td>
<td>ALL 50</td>
<td>NONE</td>
</tr>
<tr>
<td>1998</td>
<td>ALL 50</td>
<td>AK, CA, NH, OK</td>
</tr>
<tr>
<td>1999</td>
<td>NONE</td>
<td>AK, CA, NH, OK</td>
</tr>
<tr>
<td>2000</td>
<td>NONE</td>
<td>AK, CA, NH</td>
</tr>
<tr>
<td>2001</td>
<td>ALL 50</td>
<td>AK, CA, NH</td>
</tr>
<tr>
<td>2002</td>
<td>ALL 50</td>
<td>AK, CA, NH</td>
</tr>
<tr>
<td>2003</td>
<td>ALL 50</td>
<td>CA, NH, WV</td>
</tr>
<tr>
<td>2004</td>
<td>NONE</td>
<td>CA, NH, WV</td>
</tr>
</tbody>
</table>

Figure 3 Missing Aggregate Abortion Data by State and Year

Though AGI numbers are generally regarded as more complete due to their collection method (Blank 1996, Medoff 2007), AGI/CDC data are historically highly correlated. In their research, Blank and colleagues find a correlation of .988 while Wright and Bailey find when the variables are logged, and for a different time period, a correlation of .87 (Blank et. al 1996, Bailey et. al). I find a correlation of .80 for the fourteen years of my study.

Therefore, given the larger number of observations afforded by CDC data – AGI data is missing for all 50 states during six of my fourteen years – I employ CDC data in my analysis. To further improve the veracity of the CDC data, additional measures, as originally noted by New (2007), are employed to account for known problems.²

² New’s analysis, also employed by Wright and Bailey (Forthcoming) eliminates the above observed omissions due to non-report to the CDC. In addition, New eliminates all reporting from Alaska due to data collection problems as well as from Kansas due to the abnormally high number of out of state abortions. Given the focus of this paper on jurisdictional influence, I have chosen to include Kansas, but continue to exclude Alaska from my measures. Additionally, most CDC information was obtained from state departments of health but in some cases information is collected from hospitals and other providers. Due to the possibility of different reporting methods influencing the results data from hospitals has been left out of the dataset. Years and states for which data does not originate at the State Department of Health: Iowa 1991-1997, New Hampshire 1991-1997, West Virginia 1991-1997, Oklahoma 1991-1997.
Additionally, due to a unique jurisdictional and cultural environment, data from Washington, DC is excluded.

Next, I must choose whether to employ abortion rates measured by state of occurrence or residence. Given the strict jurisdictional boundaries of state legislatures – state policy is only relevant within the boundary of any individual state – my dependent variable must be a measure of abortion incidence by state of occurrence. It is worth noting that the choice to employ data measured by state of occurrence necessarily limits the opportunity to make inference about aggregate abortion trends for abortion by state of residence. Women, unlike state policy, can easily cross state borders.

Finally, to operationalize abortion incidence, I employ the abortion rate, the number of abortions per 1000 women aged 15-44. Some of the research noted above has employed the abortion ratio, the number of abortions per 1000 live births, as an alternative measure of incidence intended to simultaneously control for fertility. However, given observations by state of occurrence, simply dividing by any given state’s number of live births will not control for fertility (Blank et. all, 1996). Instead, fertility is one of my independent demographic controls.

While the same problem exists for abortion rates, the denominator is resident women aged 15-44, the abortion rate simply provides a means to weight by population and has no secondary interpretation as a separate control for fertility (Bailey et. all). Numbers of women aged 15-44 are obtained from census population estimates by state and year. To minimize the effect of outliers, I employ the log of aggregate abortion rates by state and year.8

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8 The author is grateful for assistance from Michael Bailey, PhD. As noted in the acknowledgements, Dr. Bailey provided access to data that enabled this research to be accomplished.
Explanatory Variables

Access to Service

Access is a measure of proximity to abortion providers for the average women in any given state. In this research, as with many prior studies, access is operationalized using population density to account for the fact that 97% of non-metropolitan counties are without a provider as opposed to only 69% of metropolitan counties (Bailey et. all). Thus as population density increases, average proximity to abortion providers should increase. I therefore expect a positive relationship between population density and aggregate abortion rates. Population density is calculated as a ratio of Census Bureau population estimates to state square mileage. Recall that no additional methods are employed to control for endogeneity.

Demographics

Racial breakdown is operationalized from population estimates from the Census Bureau. As noted above, earlier research has identified a relationship between African American populations and abortion rates. To control for this possibility, I include the percentage white and black for each state in each year. Recall, Census Bureau definitions consider Hispanic to be an ethnicity and not a race. Since impacts on aggregate abortion trends are likely to work through cultural and not genetic factors, percent Hispanic is included to control for the possibility that Hispanic cultural factors impact aggregate abortion trends.
Since the abortion decision is conditional upon pregnancy, fertility is included to account for its impact on aggregate abortion trends. Research has demonstrated that fertility varies between states, generations and years based upon multiple factors to include cultural expectations and pressures. Fertility is reported by the National Center for Health Statistics (CDC), I use the fertility rate for women between the ages of 15 and 44. All else equal, rising fertility rates should correlate with increased abortions.

**Economic Conditions**

Economic conditions are captured in four constituent parts, expected income, future costs, expectations of assistance and current wealth. The first factor, expected income, is operationalized through the employment rate. While job-status may change at anytime, holding a job indicates an expectation of future wages. I operationalize expected income by gender specific employment-to-population ratios published by the Bureau of Labor Statistics.

For reasons discussed previously, I must lag one measure of economic well-being. Since I intend to capture the social “mood” throughout the cycle of pregnancy, I lag the employment rate for all adults irrespective of gender. Given the availability of data, numbers are imputed for 1991 to equal the reported values for 1992. Official employment ratios consider only civilian non-institutionalized Americans.

Future costs, which may include non-monetary outlays, are operationalized using marriage rates. In American society, marriage provides a legally durable context for long-term relationship. Even in the context of divorce, marriage indicates a likely
paternity trial and, on average, should decrease the absolute amount of future costs borne by the mother.

I thus employ the marriage rate as published by the National Center for Health Statistics. Increasing marriage rates are expected to lower costs and thus decrease aggregate abortion rates. Marriage rates are not reported for Oklahoma from 2000-2003. In this case, Oklahoma’s rates have been imputed to equal the average of Oklahoma’s border states for each year between 2001-2003.

The third element, expectation of assistance, represents the relative generosity of public support for mothers of children. Since AFDC/TANF programs are targeted to families with children, as opposed to food stamps for example, measures of AFDC/TANF generosity proxy for the effect of public assistance on women’s expectations. My operationalization also includes a measure for Supplemental Security Income, a disability payment made by the Social Security Administration that is available to disabled children. The data are drawn from the 2007 Indicators for Welfare Dependence report submitted by the US Department of Health and Human Services. To minimize the effect of outliers, I employ logged values in my calculations.

The final measure of economic conditions, current wealth, may affect aggregate abortion trends if women are unable to afford abortion services or have fewer resources for the immediate costs of pregnancy. Current wealth will be operationalized by including data for both median income as provided by the Census Bureau.

Since women with higher incomes will have to dedicate a smaller proportion of their income to child bearing and other costs, all else equal, increases to median income are expected to decrease aggregate abortion rates. All dollar values are inflated to 2004
levels using the Consumer Price Index-Urban Consumer produced by the Bureau of Labor Statistics with 1982-1984 as a base period. Finally, to decrease the effect of outliers in the distribution, I employ logged measures of these dollar values.

**Passive Social Climate**

As noted above, I would ideally parse passive social climate into three parts; “legal culture,” abortion sentiment by state and year, and religious cultural context. Unfortunately, suitable data is only available for one measure, “legal culture.” To operationalize legal culture, I employ the natural experiment outlined above to separate the social and legal outcomes of restrictive policy and construct three mutually exclusive variables for all three measures of public policy, parental consent, lagged parental consent and informed consent. Each observation can only have a value of enjoined, nullified or no law for any state and year combination. Enjoined parental consent laws reflect the passive social climate.

To account for the possibility that effects may vary over time, I lag states’ parental consent status by one year. Given data availability, I impute values for 1991 to be the same as observed in 1992. Measures of legal status, whether passed, enjoined or enforced are consistent with New and Wright/Bailey and are sourced originally from NARAL data. As noted above, the other two measures of social culture are unlikely to vary over the research period and thus will be controlled by state-level fixed effects.

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9 During construction of my models, I consider the effect of lagging both parental consent and informed consent laws. My conclusions are robust to both specifications, but lagging both variables decreases reported R-Squared overall, likely due to the amount of variation preserved by my instrument. I thus employ only one lag in my results.
Public Policy Choices

Public Policy Choices are operationalized by state specific occurrences of informed consent laws, parental consent laws, Medicaid reimbursement policies, and family caps. In general, parental consent laws require minors to obtain consent from a parent or judge prior to receipt of service. The intention, and expectation, of these laws is that they should decrease aggregate abortion rates. However, it must be noted that parental consent laws only apply to minors. Thus, since my dependent variable measures abortions for women aged 15-44, I am likely to underestimate the effect of parental consent laws on the intended target population.

Informed consent laws, on the other hand, require all women to wait for a prescribed period after initial counseling before receiving services. In some states first contact can be made over the phone, in others the two periods require two physical visits. To code the effect of these two laws, I construct three mutually exclusive variables. These variables describe every state and year as having either no law, a law that is enjoined, or a law that is enforced.

If a law is on the books but has not been challenged, it is coded as enforced. When a judge permits enforcement of a previously enjoined law, the law is not coded as enforced until the following year. Legal status is consistent with New and later updated from Bailey and Wright with information from NARAL. Policy status was determined from a NARAL report.

Two additional public policy measures may impact aggregate abortion trends, Medicaid coverage for abortion and family caps. To measure their effects, I employ a
binary variable to indicate the policy status of each state and year. If family caps are significant, they are expected to increase aggregate abortion rates. If Medicaid coverage for abortion is significant, it is expected to increase aggregate abortion rates.

**Active Advocacy**

To operationalize the role of advocates, I employ expense measures for non-profit organizations in the United States. Non-profit organizations with greater than $25,000 in gross receipts that are non-religious in nature, with a few non-germane exceptions, are required to file an IRS Form 990 annually. The information has been gathered into a single database by the National Center for Charitable Statistics (NCCS) and then stratified by organizational function within the typology of the National Taxonomy of Exempt Entities Codes (NTEEC). Some NTEE Codes are inputted by NCCS partners. These codes provide the ability to select only those organizations with abortion related activity.

There are two primary weaknesses of NCCS data. The first, input errors, reflects the generally enforcement oriented, and not academically focused, purpose of the original IRS database; input speed is prioritized over accuracy. While NCCS has verified a large number of Form 990 entries within its database with a scanned 990, not all entries have been verified. The second primary weakness with NCCS data results from exclusions to the types of organizations required to file an IRS Form 990.

The first exclusion, non-profit organizations with less than $25,000 gross receipts, is unlikely to provide a material impact on this research because of the modest size of the excluded organizations. The second exclusion, the absence of religious organizations is
likely to have a more significant impact. By omitting religious organizations, many churches, both Catholic and Protestant, do not appear in my data. Some of these organizations likely interact with the abortion issue, mostly in support of the pro-life community.

Fortunately, many if not most, of these organizations do relatively little advocacy “in-house” and instead donate to larger community based organizations such as Care Net, etc. Given the large size of these third-party budgets, the effect of religious organization’s exclusion is likely to be minimal, but to the extent that bias remains, it should decrease the amount of advocacy money in my model and bias my results against significance.

To best capture organizational impacts on the implementation of state policy, I select total expenses reported on IRS Form 990. NCCS data stratifies these organizations as Public Charities or Private Foundations. Two sums are collected from the database, first the sum of all expenditures by state and year. Second, the sums of those with NTEEC codes R61, R62 and E40. These three codes describe organizations involved in abortion advocacy, respectively, for pro-life and pro-choice legislation, and reproductive health. Table 1 presents descriptive statistics for my data.

**The Effect of Logging Advocates’ Expenses**

One final note is relevant regarding my operationalization of abortion advocates’ expenses. As noted above, researchers often include logged measures of dollar values to normalize the distribution and reduce the effects of outliers. Recall I employ this technique for median income and per capita income assistance.
However, unlike the above, with regard to advocates’ expenses I use non-logged measures and choose to employ a different technique to control for outliers. I make this choice because I am only interested in diminishing the effect of states to the extent that they are structural, or time-invariant, outliers. Change in advocates’ expense within a state, but across years, contains valuable information that I need in order to model aggregate abortion rates.

Figure 4 presents the pooled distribution of all observations of advocates’ expenses for all fourteen years and 49 states included in my study. It is apparent that logging this data would dramatically alter the observed distribution and result in a significant loss of information. Therefore, to account for outlying states only in the regard that their differences are time-invariant, I include state-level fixed effects. This technique accounts for the persistent size differences between Wyoming and California, for example, but allows for changes unique to either state in any year.

Figure 4: Abortion Advocacy Spending

Figure 4: Abortion Advocacy Spending
Descriptive Statistics

Table 1 presents means and standard deviations for the data I employ in my model. I use a panel dataset that includes 49 states across fourteen year.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log CDC Abortion Rate</td>
<td>14.968</td>
<td>7.27</td>
</tr>
<tr>
<td>CDC Abortion Rate</td>
<td>2.58</td>
<td>0.5342</td>
</tr>
<tr>
<td>Predicted Advocacy Expenses</td>
<td>4487572</td>
<td>5569102</td>
</tr>
<tr>
<td>Population Density</td>
<td>180.05</td>
<td>242.55</td>
</tr>
<tr>
<td>Percent White</td>
<td>0.8514</td>
<td>0.1146</td>
</tr>
<tr>
<td>Percent Black</td>
<td>0.1049</td>
<td>0.0987</td>
</tr>
<tr>
<td>Percent Hispanic</td>
<td>0.0657</td>
<td>0.0836</td>
</tr>
<tr>
<td>Marriage Rate</td>
<td>10.223</td>
<td>10.565</td>
</tr>
<tr>
<td>Fertility Rate</td>
<td>64.127</td>
<td>6.720</td>
</tr>
<tr>
<td>Male Employment Rates</td>
<td>0.7106</td>
<td>0.0391</td>
</tr>
<tr>
<td>Female Employment Rates</td>
<td>0.5752</td>
<td>0.0476</td>
</tr>
<tr>
<td>Log Per Capita Public Assistance</td>
<td>7.4802</td>
<td>0.4307</td>
</tr>
<tr>
<td>Log Median Income</td>
<td>11.030</td>
<td>0.1451</td>
</tr>
<tr>
<td>Lagged Employment Rate</td>
<td>0.6398</td>
<td>0.0425</td>
</tr>
</tbody>
</table>

Table 1: Descriptive Statistics
Chapter 7. Results

Recall that the fundamental hypothesis of this paper is that estimates of the efficacy of public policies are biased if researchers fail to control for the role abortion advocacy organizations play in shaping public attitudes and behaviors. To investigate, I estimate a series of multivariate models each designed to explore particular aspects of my conceptual framework.

The data used to empirically test my models includes observations from 49 states over a period of 14 years. Unless noted above, I do not impute values for missing observations in any state and year but instead treat them as missing. The minimum number of observations for any state in the model is seven, the average is 13.5 and the maximum is fourteen. All models are estimated with state and year fixed effects and, with the exception of the bivariate relationship, all models use a Two-Stage Least Squares (2SLS) estimation methodology.

What is the Relationship Between Abortion Advocacy and Abortion Rates?

Before moving to multivariate analysis, I must test whether or not there is a relationship between abortion advocacy and aggregate abortion rates. In the absence of a clearly demonstrable bivariate relationship, there is little reason to consider advocates’ efficacy as controls in a comprehensive model. Recall that this relatively simple analysis is complicated by the possibility of endogeneity between abortion advocates’ expenses and aggregate abortion rates. I therefore measure the bivariate relationship between the instrument and aggregate abortion rates.
As the results from my first model, presented in Table 1, demonstrate, there is both a negative and highly statistically significant relationship between the instrument and aggregate abortion rates. This is remarkable when one considers that by instrumenting for endogeneity I remove a significant amount of variation that would be observed in the original explanatory variable.

The p-value returned, .013, is well within conventional levels of significance and this single predictor succeeds in explaining 19% of the overall variance in the log of abortion rates in the U.S. over time. In real terms, we can expect a 53.9% decrease in log abortion rates with a one standard deviation increase in advocacy spending.

**To What Extent Are Aggregate Abortion Trends Driven by Socio-Economic and Structural Factors Outside Policymakers’ Control?**

Recall that some determinants empirically tested in the literature such as population composition, economic factors and the availability of abortion services are outside of policymakers’ control. In the case of the first two, policymakers are unable to alter entire populations or economies. In the case of service availability, the undue burden standard employed by the Court prevents legislation inhibiting access to women.

Model 2 presents a specification that controls for demographic, access and economic factors to explore the effect of determinants outside the scope of public policy. As reported in Table 2, I return results broadly consistent with prior research in both direction and significance. Specifically, I find that racial or ethnic composition contributes significantly to aggregate abortion rates. The relative size of the Hispanic population has the greatest effect on aggregate abortion rates. Recall that in this
<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Advocacy Expenses</td>
<td>-8.28 E-8** (3.19 E-8)</td>
<td>1.85 E-8</td>
<td>1.85 E-8</td>
<td>1.24 E-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>0.0011</td>
<td>0.0014 *</td>
<td>0.0011</td>
<td>0.0011</td>
<td>0.0078</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0010)</td>
<td>(0.0007)</td>
<td>(0.00074)</td>
<td>(0.00074)</td>
<td>(0.0140)</td>
<td></td>
</tr>
<tr>
<td>Percent White</td>
<td>-1.293 *** (0.4358)</td>
<td>-1.283 *** (0.4899)</td>
<td>-1.617 *** (0.5724)</td>
<td>-1.617 *** (0.5724)</td>
<td>-14.29 *  (7.845)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.19 E-8)</td>
<td>(1.99 E-08)</td>
<td>(1.99 E-08)</td>
<td>(2.92E-7)</td>
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<td></td>
</tr>
<tr>
<td>Percent Black</td>
<td>-1.184 *** (0.3437)</td>
<td>-1.150 *** (0.3178)</td>
<td>-1.094 *** (0.3472)</td>
<td>-1.094 *** (0.3472)</td>
<td>-12.07 *** (4.316)</td>
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<tr>
<td></td>
<td>(0.3178)</td>
<td>(0.3472)</td>
<td>(0.3472)</td>
<td>(0.3472)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Hispanic</td>
<td>-2.289 ** (1.080)</td>
<td>-2.467 *** (0.5922)</td>
<td>-3.330 ** (1.518)</td>
<td>-3.330 ** (1.518)</td>
<td>-63.10 *** (18.19)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.080)</td>
<td>(0.5922)</td>
<td>(1.518)</td>
<td>(1.518)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marriage Rate</td>
<td>0.0046</td>
<td>0.0033</td>
<td>0.0051</td>
<td>0.0051</td>
<td>-0.0412</td>
<td></td>
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<tr>
<td></td>
<td>(0.0100)</td>
<td>(0.0038)</td>
<td>(0.0084)</td>
<td>(0.0084)</td>
<td>(0.0684)</td>
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<tr>
<td>Fertility Rate</td>
<td>0.1052 ** (0.0049)</td>
<td>0.0101 *** (0.0030)</td>
<td>0.0121 ** (0.0052)</td>
<td>0.0121 ** (0.0052)</td>
<td>0.2980 *** (0.0671)</td>
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<tr>
<td></td>
<td>(0.0049)</td>
<td>(0.0030)</td>
<td>(0.0052)</td>
<td>(0.0052)</td>
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<tr>
<td>Male Employment Rates</td>
<td>0.5263</td>
<td>0.0833</td>
<td>0.2420</td>
<td>0.2420</td>
<td>-2.049</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.8189)</td>
<td>(0.4880)</td>
<td>(0.8143)</td>
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<tr>
<td>Female Employment Rates</td>
<td>0.0323</td>
<td>0.5171</td>
<td>0.1151</td>
<td>0.1151</td>
<td>7.293</td>
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<tr>
<td></td>
<td>(0.8790)</td>
<td>(0.5326)</td>
<td>(0.8888)</td>
<td>(0.8888)</td>
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</tr>
<tr>
<td>Log Per Capita Public</td>
<td>-0.0210</td>
<td>-0.0251</td>
<td>-0.0321</td>
<td>-0.0321</td>
<td>0.2850</td>
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<tr>
<td>Medicaid Assistance</td>
<td>(0.0327)</td>
<td>(0.0277)</td>
<td>(0.0345)</td>
<td>(0.0345)</td>
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<tr>
<td>Log Median Income</td>
<td>-1.006 *** (0.2100)</td>
<td>-0.8049 *** (0.142)</td>
<td>-0.7325 *** (0.2493)</td>
<td>-0.7325 *** (0.2493)</td>
<td>-7.023 ** (2.956)</td>
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<tr>
<td>Lagged Employment Rate</td>
<td>-1.050</td>
<td>-0.8723</td>
<td>-1.102</td>
<td>-1.102</td>
<td>-7.792</td>
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<tr>
<td></td>
<td>(0.7671)</td>
<td>(0.5921)</td>
<td>(0.8763)</td>
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<tr>
<td>Medicaid Coverage</td>
<td>0.0167</td>
<td>0.0279</td>
<td>0.0279</td>
<td>0.8188 *</td>
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<td></td>
<td>(0.0299)</td>
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<tr>
<td>Family Cap</td>
<td>-0.0367 * (0.0209)</td>
<td>-0.0203 (0.0392)</td>
<td>-0.0203 (0.0392)</td>
<td>-0.5291 (0.5329)</td>
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<td>Parental Consent Nullified</td>
<td>0.0096</td>
<td>0.0119</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>(0.0469)</td>
<td>(0.0534)</td>
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<tr>
<td>Parental Consent Enforced</td>
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<td>-0.0023</td>
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<td>-0.3303</td>
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<td></td>
<td>(0.0339)</td>
<td>(0.0492)</td>
<td></td>
<td></td>
<td>(0.5713)</td>
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<td>0.0023</td>
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<td></td>
<td>-0.4290</td>
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<td></td>
<td>(0.0352)</td>
<td>(0.0492)</td>
<td></td>
<td></td>
<td>(0.6048)</td>
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<tr>
<td>Lag Parental Consent Nullified</td>
<td>0.0108 (0.0427)</td>
<td>0.0586 * (0.0300)</td>
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<tr>
<td>Lag Parental Consent Enforced</td>
<td>-0.0701 ** (0.0331)</td>
<td>-0.0478 (0.0526)</td>
<td>-0.5517 * (0.3252)</td>
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<tr>
<td>Lag Parental Consent No Law</td>
<td>-0.0285 (0.0361)</td>
<td>0.0478 (0.0526)</td>
<td>-0.2857 (0.05084)</td>
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<td>Informed Consent Nullified</td>
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<td>-0.0422 (0.0519)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Informed Consent Enforced</td>
<td>-0.0035 (0.0319)</td>
<td>-0.0518 ** (0.0216)</td>
<td>0.3168 (0.7547)</td>
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<td>Informed Consent No Law</td>
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<td>0.0518 ** (0.0216)</td>
<td>0.8473 (0.7159)</td>
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<tr>
<td>Overall R-Squared</td>
<td>0.1947</td>
<td>0.0298</td>
<td>0.0791</td>
<td>0.0902</td>
<td>0.0902</td>
<td>0.0036</td>
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<td>Observations</td>
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<td>663</td>
<td>663</td>
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</table>

*** p. <.01, ** p. <.05, * p. <.10. Robust standard errors. State and year fixed effects included but not reported.
construction, Hispanic proxies for an ethnicity. Thus, these results should proxy for the effect of affinity groups and should not be used for inference about race specific effects in any state or year.

Additionally, consistent with expectations and prior research, fertility rates are significant and positive predictors in Model 2. I find that a one standard deviation increase in fertility rates results in a 7.1% increase in aggregate abortion rates. As expected, the log of median income is negatively correlated with aggregate abortion rates. A one standard deviation increase in log median income results in a 14.6% decrease in aggregate abortion rates.

What Is the Influence of Public Policy on Abortion Rates?

After demonstrating with Model 2 that my dataset returns results in line with prior research and expectations, I consider the more contentious effects of public policy variables. Recall that to separate legal effect from social factors, I take advantage of a natural experiment to create three mutually exclusive operationalizations for informed and parental consent laws. Model 3 presents the results of this test and measures the effect of parental consent and informed consent laws relative to a baseline condition in which the law is nullified.

My first observation of Model 3 is that including public policy controls results in a marked increase in the amount of variance explained by the model. Model 3, using the same number of observations, explains 165% more variance than Model 2. Second, no significant variables change sign between Models 2 and 3. It is interesting to note that there is a marked decline in the magnitude of the effect attributed to log median income with the inclusion of public policy variables. Given the likely positive correlation between political activity and income, it is consistent that controlling for public policy should dampen its effect.
The consistency of these results gives me confidence to next explore the effect of public policy. Recall that lags are included in the model to differentiate the effect of exposing women to restrictive public policy early in pregnancy as opposed to late. As the results in Table 2 indicate, I find significant differences for women late in pregnancy when states have an informed consent law on the books versus when they do not. However, I do not find a simultaneous effect that suggests that states enforcing the law are significantly different from those that are not.

A finding of this nature suggests that cultural factors, perhaps those that permitted passage of the law, are actually responsible for the observed decline in abortion rates. This is thoroughly intuitive for two reasons. First, women exposed late in pregnancy are more likely to have already considered their pregnancy outcomes and some women have already chosen abortion and thus censored themselves from the sample. Second, those that remain are exposed for less time to the new legal environment than those exposed early in pregnancy. It thus makes sense that observed declines are due to external social factors.

This finding supports the suggestion often made by pro-choice advocates that restrictive abortion policies signal a “chilling” effect that makes it more difficult for women to choose abortion. The coefficient returned in Model 3 suggests that states with informed consent statutes on the books will experience a 6.24% decline in aggregate abortion rates.

My second finding deals with women exposed to parental consent laws early in pregnancy. That I find any significant results for parental consent restrictions is remarkable given that parental consent laws only apply to minor women but the data I employ measures abortion rates for women 15-44. Given that women aged 15-18 make up only a small proportion of women aged 15-44 their contribution should be relatively muted. However, as reported in Table 2 I find that enforcing rules that require women to seek parental consent early in
pregnancy has an independent effect on aggregate abortion rates. States that enforced a parental consent law demonstrate a 7.01% lower aggregate abortion rate for women who experienced its enforcement early in pregnancy.

These two findings create an internally consistent narrative that may partially explain the effect of public policy on aggregate abortion rates. According to my results, women exposed to restrictive public policies late in pregnancy respond to larger cultural factors independent of the actual legal effect of new regulations. However, when women are exposed to restrictive policy early in pregnancy aggregate abortion rates decline due to the impact of the legislation. As a note of caution, recall that I can only make inference about abortions by state of occurrence. My model does not explain whether the observed decline in abortion simply represents a geographic relocation of occurrence or real decline.

**What is the Effect of Adding Advocacy Organizations to My Public Policy Findings?**

Having suggested a narrative explaining the role of public policy on aggregate abortion rights that is consistent with the stories suggested by both pro-life and pro-choice actors, I now consider the effect of adding an additional control for advocacy organizations’ expenses. Recall that due to endogeneity problems, I am forced to employ an instrument in my model. Model 4 presents my results employing a state of no law as the baseline. Model 5 presents them with enforced law as the baseline.

As before, my additional controls explain a greater proportion of the variance in my data. In this case, with the same number of observations, controls for advocacy organizations increase R-squared by 14%. In addition, no variables consistently observed as significant in Models 3 and 4 either lose significance or change signs.
One change in estimates that is worthy of note is the estimate for median income. After including controls for advocacy intensity, log median income becomes less negative which is consistent with the assumption that increased log median income is positively correlated with increased donations to, and thus expenses from, advocacy organizations. With these consistencies, I proceed to analyze the effect of advocacy organizations on the model.

In Model 1, I estimated the simple bivariate relationship between the efforts of advocacy groups and abortion rates. Although the results revealed that the two are negatively correlated, whether this relationship will hold up net of other factors associated with spending is an open question. The results show that when I account for other factors associated with abortion rates, the effect of advocacy expenses is no longer statistically significant. The p-value reported, .356, is far outside of conventional levels of significance.

The p-value reported for Model 6, which calculates the model absent logs on CDC abortion rates, is even further from significance, returning a value of .67 although the estimate is also positive. This finding is significant in and of itself and is more interesting when one notes that the reported estimated value has also changed sign from the initial bivariate estimate. The new estimate reported, which may have occurred by chance, is positive whereas the bivariate estimate is negative.

Having established the independent role of advocate spending on aggregate abortion rates, I now consider observed changes to public policy indicators. As Model 4 demonstrates, I still find significant results for women exposed late in pregnancy to informed consent laws. After controlling for advocates’ expenses, I find that aggregate abortion rates decrease by between 5.18% and 9.4% for states with an informed consent law on the books. Model 5 demonstrates that, as before, there is no difference between enforced and nullified informed
consent laws. This range of values is consistent with the effect observed from Model 3 and the findings support the concept that the declines observed have more to do with cultural trends than legal effect.

Next, I consider the effect of controlling for advocacy expenses in states where restrictive public policies impact women early in pregnancy. As before, I find a significant effect for parental consent laws enforced versus nullified. However, it is worth noting that while there is no change in sign or significance, including controls for advocates’ intensity results in a 19.6% decline in the magnitude of the predicted effect of enforcement. This is significant because it demonstrates further consistency with Model 3.

Recall that we have identified two different models of advocate activity, legislative advocacy and individual-targeting, and a third hybrid of the earlier two. The first model, legislative advocacy, is controlled for in this equation. The second, individual-targeting, is not. Advocates that individually target women are likely to experience a far higher probability of success with increased time for repeat interactions. It therefore stands to reason that advocacy organizations do not substantially alter the magnitude of contemporaneous change but do diminish the effect of policy on women exposed early in pregnancy.
Chapter 8. Implications

Relative to the literature as a whole, this study is simultaneously consistent with consensus findings and fundamentally broader in its theoretical construct. By including the role of advocates, major players in our national debate, in a comprehensive model my research accounts for a major gap in our knowledge prior to this investigation. Additionally, by including recent data, from 1991 to 2004, I demonstrate empirical results that are more relevant to today. These observations should impact both future research and the policy debate. Following, I present implications first for future research and second for policymakers, advocates and the public alike.

Implications for Research

How do Conclusions about Restrictive Policy Impact Future Research?

The answer to my central research question – how effective is restrictive government policy at impacting aggregate abortion rates – should have significant impact on our collective understanding of aggregate abortion rates. Recall that there has been recent empirical evidence from New and others of a statistically significant decline attributable to the imposition of restrictive policies. New’s findings are in contrast to inconclusive, and sometimes contrary, results reported by other academics. At first glance, the conclusions of my more comprehensive model add weight to the spirit of New’s conclusions that law does matter.

However, unlike New, I do not find an explicit relationship between the law and aggregate abortion rates per se. Instead, I find that states that pass laws, whether or not they are enforced, see declines in abortion. One of the major differences in our models is my inclusion
of measures of advocacy intensity and lags of parental consent laws. That my findings differ from New prior to controlling for advocates’ intensity suggests that the decline may be attributable to lagging the effect of parental consent laws. Juxtaposing my conclusions with those reported by New suggests a new line of inquiry for future research.

Recall that one weakness of this research is an inability to infer whether observed declines represent actual decreases in aggregate abortion rates or simply the geographic relocation of abortions. To the extent such data becomes available, future research should empirically test this observed decline in abortions.

**How Else Should we Investigate the Role of Advocates?**

Including the effect of advocates in this study has provided vital insight into macro-level contributors such as public policy, economic trends and demographics. However, important research, like that referenced above by Adamczyck, has been done to test the impact of these, and other, determinants using individual level data. Given the evidence presented above for the bivariate relationship between advocacy and aggregate abortion rates, future research should employ individual-level data to empirically test these determinants in models including measures of advocacy intensity.

**How Should we Resolve the Effect of Medicaid Coverage?**

Differences in statistical significance for Medicaid coverage between Models 4 and 6 suggest a continued ambiguity with regard to the true effects on aggregate rates. Earlier research has sometimes found a significant effect, but on other occasions none. This study reports similarly conflicted results. However, since my findings differ in significance between Models 4
and 6 they suggest a strategy for further research. Given that Models 4 and 6 differ only in the log of the dependent variable, they suggest that these conflicts arise from the effect of outliers in the dependent variable and that future research must more adequately investigate the characteristics reported by outlying states for clues into research strategies to conclusively demonstrate the effect of Medicaid coverage on aggregate abortion rates.

**Implications for Policymakers**

**How does this Study Impact Lawmakers’ Decisions?**

As noted in the opening paragraph, the effect of the law on aggregate abortion rates has direct implications for legislators considering real public policy choices in our legislatures today. First, my findings suggest that pro-life advocates are right to suggest that there is a relationship between the imposition of legal restrictions and declining abortion rates on women exposed early in pregnancy.

However, in some respect legal changes do not matter per se but simply signal cultural trends that contribute to decreased aggregate abortion rates on their own when we consider the effect of law on women exposed late in pregnancy. Thus, as pro-choice advocates warn, the law signals a chilling effect for women in the state. Thus, my study suggests some level of veracity to the claims of both sides. Knowing these consequences may not make the decision any easier for policymakers, but it should create the context for more coherent and nuanced law making.
How Well are Advocacy Organizations Using their Resources?

The narrative demonstrated above suggests the possibility that advocacy organizations are inefficiently targeting funds. Recall that the basic bivariate relationship between advocacy organizations and aggregate abortion rates is both negative and strongly significant. This indicates that increases in advocacy intensity should result in declining aggregate abortion rates, a target generally, if crudely, associated with pro-life organizations. However, when advocates are introduced into the overall model, the reported estimate is both positive and not statistically significant at conventional levels.

This result is possibly due to weaknesses in the instrument or omitted variable bias, but the changes between models suggest a more likely reason. A close examination of the results demonstrates that the intensity of advocacy efforts becomes insignificant in models which control for multiple variables, but notably legal restrictions. This is notable for while it is unlikely that the intensity of efforts are highly correlated with racial or individual economic well-being, to the extent that advocates work to directly influence legislatures or the voting public, their activity should be correlated with public policy decisions.

To the extent that this relationship holds true, we should expect to see the significance of advocacy intensity fall when additional measures are included to account for policy activity. In Model 6 this is in fact the effect we observe and perhaps explains the loss of statistical significance. However, to the extent that the underlying bivariate relationship is instructive, it also suggests that advocacy organizations in general, and pro-life organizations in specific, may be focusing too many resources on policy debates.
Arguably, if advocates were targeting resources in the most effective manner, controlling for policy should certainly not change the sign, and perhaps not the significance, for estimates of the relationship between advocacy intensity and aggregate abortion rates. While further research must be done to better understand this phenomenon, my conclusions suggest that pro-life advocates may be “overinvesting” in political efforts contributing to a net loss in impact on aggregate abortion rates.

**How Important is Government Policy Collectively?**

To extend the logic from the opening paragraph of this study, if we grant that any individual legal change is necessarily marginal, it is reasonable to expect only minimal, if any, affects on outcomes. Nevertheless, that is not to say that the cumulative effect of many tiny levers may sum to a size sufficient to dominate the other contributors to aggregate abortion rates. In that sense the absolute number of policy levers that are independently effective, even to small degrees, is of fundamental import to answering the overall question of policy’s importance or impotence.

On this note my findings suggests relative impotence. Though I consider the effects of four policies, only two achieve conventional levels of statistical significance. In fact there is evidence to suggest that even in the case of statistical significance some of the effect is transmitted through cultural mechanisms and does not directly result from imposition of the law.

Not only are they limited, but the effects, about 5% each, are small relative to the effects reported for one standard deviation changes in demographic or economic factors. While these results do not change the fact that public policy levers are some of the few that can be altered by
lawmakers, it is not feasible to change the racial makeup of a state for example, they do suggest the relative inadequacy of policy in the face of much larger trends.
Chapter 9. Conclusion

At the beginning of this study, I observed that abortion matters to our national polity today. Indeed, more than three decades after the Supreme Court’s decision to legalize abortion in Roe vs. Wade, abortion still affects our politics in a very visceral way. Not only does the legality of abortion remain a contentious issue for many, but the very act of applying “status quo” policies to new law has been so contentious as to nearly derail truly major pieces of legislation. With so much at stake, the outcomes of these policy debates clearly matter in some way. With this research, I sought to investigate whether these effects were empirically demonstrable by observations of aggregate abortion rates or whether they simply represent ideological victories for the winning “side.”

A review of the academic literature demonstrated not only a clear lack of consensus and clarity but also a glaring omission in theoretical construction. By considering the role of outside advocates, I present a more comprehensive model than was available before. In addition, I exploit recent data to verify the applicability of old trends, observed prior to a widespread decline in abortion rates, to today.

Surprisingly, the results of my empirical tests suggest that the effects of restrictive laws differ relative to exposure during pregnancy. For women affected by legal changes early in pregnancy, I find evidence that the law itself does impact aggregate abortion trends, but for those late in pregnancy, the effect is attributable not to law but instead to cultural trends. I also demonstrate the insignificance of family caps and, unfortunately, find no conclusive results for the effect of providing Medicaid funding on aggregate abortion rates.

Perhaps the most important contribution of this research is to not only control for, but also study the effect of, advocacy organizations. I uncover evidence that advocates are
insignificant contributors and suggest the possibility that this might be due to an overemphasis on political advocacy. Most importantly, I discover important new areas for future research into the mechanisms by which advocacy organizations impact aggregate abortion rates.

To the extent that these findings contribute to a better understanding of the individual determinants of aggregate abortion trends they speak not only to an ongoing and vital national debate but also to the very importance, or impotence, of the actors themselves. Given that abortion is certain to continue to play a role in future policy decisions, it is of the utmost importance that politicians, and the public, not only have a clear understanding of the ideological implications for “their side” of our policy debate, but also the real impacts on the women these policies are intended to serve.


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