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WHOSE CHOICE? STATE LEGISLATION AND THE INCIDENCE OF ABORTION

A THESIS APPROVED FOR THE
DEPARTMENT OF SOCIOLOGY

BY

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TABLE OF CONTENTS

Acknowledgements.....v

Abstract.....vi

Introduction.....1

Background.....4

Data and Methodology.....14

Results.....21

Sensitivity Analyses.....23

Discussion and Conclusion.....25

References.....30

Appendix.....36

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Research on abortion, social policy, and gender inevitably invites a variety of opinion, solicited or not. As I've been asked to repeatedly explain what exactly I'm studying and others have asked, "what's your story?" I've tried to explain that this piece is really an attempt to explore reproductive autonomy. I first heard the stories of women who were impacted by policies that coerced them into making reproductive choices against their wishes in an undergraduate philosophy course, and have been fascinated ever since. However, tackling an issue at the forefront of the current political landscape requires great care. A thesis is the culmination of years of study, and as such it requires a team of support.

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ABSTRACT

Whose Choice: State Legislation and the Incidence of Abortion

Although the incidence of abortion in the U.S. has declined, laws restricting abortion access have grown more prevalent. At the same time, laws meant to categorize fetuses in utero as victims of crime have increased and been at the center of contentious political discourse. There is a depth of research on individual predictors of abortion and the impact abortion restrictions have on state abortion rates. However, there is a lack of analysis that evaluates the influence of fetal protection laws on abortion. This study examines the impact of state fetal protection legislation and abortion restrictions on state abortion rates. Using original panel data from all 50 states for 2001-2015, I test whether changes in state policy are associated with changes in state abortion rates. Using fixed- and hybrid-effect models, I find that implementation of certain fetal protection policies (those that require women suspected of using drugs during pregnancy be reported) are associated with decreases in the abortion rate within states. In contrast, increases in policy restricting abortion access are associated with increases in abortion within states. This analysis suggests current state policies have unintended consequences, and may push women into making decisions they might otherwise forego rather than protecting them from harm.

Keywords
fetal homicide, personhood laws, abortion, substance abuse, panel models

Introduction

In 2015, Indiana resident Purvi Patel visited the emergency room for excessive bleeding and reported having a miscarriage. She admitted to disposing of the fetal remains, which authorities were able to recover. Texts were later discovered on Patel's phone in which she discussed ordering and taking abortion pills from Hong Kong. Although there was no physical evidence she had taken any drugs (Chowdhury 2015), she was charged with feticide and felony child neglect for taking the drug and allegedly letting the fetus die after delivery. The prosecution relied in part on an outdated "lung float" test to argue that the fetus had been born alive. Although the Indiana feticide law excludes legal abortions, ordering medication online and self-inducing an abortion is still illegal. Patel was found guilty and sentenced to 20 years in prison. Although her feticide conviction was later overturned and her prison sentence downgraded (Cooney 2016), this is the first case in which a woman was charged with a crime under a state-level feticide law for attempting an abortion (Bazelon 2015).

While Patel's case is perhaps the most extreme yet, it is part of a wider trend in which women are increasingly being prosecuted for actions undertaken while pregnant. While some cases involve illicit drug use, others have centered on more innocuous behavior. In 2010, twenty-two year old Christine Taylor fell down the stairs after an argument with her husband. She was pregnant, and visited the emergency room after the incident to ensure that the fetus wasn't harmed. A nurse claimed that Christine said she "did not want the baby" (ACLU Maine 2010). In contrast, Christine stated that she said she had considered abortion or adoption and wasn't sure that she wanted to continue the pregnancy. After she was released from the hospital, Christine spent two days in jail and prosecutors ultimately determined not to prosecute her under an Iowa

feticide statute, in part because Christine was in her second trimester and the legislation applied to pregnancies in the third trimester (Hayes 2010).

Under the landmark decision of *Roe v. Wade (1973)*, the Supreme Court determined that a woman's access to an abortion fell under the right to privacy. While this decision represented a defining moment in women's reproductive autonomy, the right to legalized abortion remains contentious. An enduring facet of this debate centers on defining the start of human life, which has been left to legal interpretation. In *Planned Parenthood v. Casey (1992)* the Supreme Court ruled the State could implement restrictions on abortion for health and safety reasons as long as these policies did not impose an undue burden on the woman obtaining the procedure.

Reflecting this contentious political discourse, anti-abortion legislation has increased markedly over the past several decades. Of all restrictions passed since *Roe*, one-third has been enacted since 2011 (Guttmacher 2018b). Recently fetal protection laws--which seek to protect unborn fetuses from harm ranging from maternal substance abuse to homicide--have also been at the center of this debate. Differentially defined state-to-state, fetal protection laws vary greatly in the scope and protection of fetuses, with some states conferring rights to fetuses equivalent to those of birthed persons (Murphy 2014). These laws, which often pertain to fetal homicide, classify the fetus as an entity separate from the mother and its death can be classified as a homicide (Murphy 2014). While fetal protection laws may have initially been enacted with intent to prosecute individuals who harmed pregnant women (and thereby causing injury and/or death to the fetuses they were carrying), they have increasingly come under scrutiny for being used as a back-door approach to further limit access to abortion (Ziegler 2018). While some states prohibit these laws from targeting pregnant women and abortion, in other states fetal protection laws have been used to punish, and at times incarcerate, women for actions taken during their

pregnancy (Paltrow and Flavin 2013). Furthermore, these laws are consistent with an ideology that treats all women as potential mothers responsible for the health of current or future fetuses (Waggoner 2015).

Although fetal protection laws may intend to protect fetuses or provide for restitution in the case of a nonconsensual termination of a pregnancy, these policies likely have unintended consequences that are not well understood. For example, women who are both pregnant and dependent upon illicit substances might avoid medical care in instances where they fear criminal prosecution and/or other action (e.g., loss of parental rights), which in turn may be negatively associated with both maternal and fetal outcomes (Stone-Manista 2009). Similarly, facing consequences for maternal substance use, pregnant women who use illegal substances may simply elect to terminate the pregnancy. These laws could also theoretically be extended beyond gestation and used to prosecute women for engaging in behavior that may be harmful to a future fetus. For example, Waggoner (2017) found that a number of health professionals held the belief that a woman should act as if she is pregnant in the period before conception, which she terms the "zero trimester", in order to ensure the health of a future pregnancy. Despite potentially important implications of these types of policies, there is scant empirical research on the relationship between fetal protection laws and maternal and fetal outcomes, and the extant research is primarily descriptive in nature.

Understanding the impact of changes in state legislation is important because the state environment defines the scope and context of a woman's reproductive choices. In this analysis, I take a first step toward unpacking the relationship between fetal protection laws and maternal and fetal outcomes, namely by investigating the relationship between these policies and abortion rates at the state level. Due to the fact there is substantial state-level variation in fetal protection

laws over time, I analyze a state-level longitudinal panel from 2001-2015 to better understand how changes in this type of legislation are associated with changes in state-level abortion rates.

Background

Individual Correlates of Abortion

One vein of existing empirical research focuses on the individual as the unit of analysis and attempts to explain correlates of individuals' decisions to terminate a pregnancy. The U.S. abortion rate peaked in the late 1970s after the *Roe* decision (Henshaw and Kost 2008) and declined thereafter until it reached its lowest recorded point in 2014 (Guttmacher 2018a). Although abortion has decreased among all women, the extent of change has varied both within and between groups (Jones and Jerman 2017). Studies have documented racial/ethnic differences in unintended pregnancy and contraceptive use, which are directly linked to abortion rates. In 2008, 70 percent of pregnancies among black women were unintended, followed by 57 percent of pregnancies to Hispanic women, and 42 percent of pregnancies to white women (Dehlendorf, Harris, and Weitz 2013). Women who are poor and have lower educational attainment have higher rates of unintended pregnancy, but are also less likely to obtain an abortion (Finer and Zolna 2016). The incidence of unintended pregnancy declined across all demographics by 2011, although the percentage that ended in abortion changed little and 42 percent (excluding miscarriages) were terminated (Finer and Zolna 2016).

Part of the decline in both unplanned pregnancy and abortion demand has been driven by increased contraceptive prevalence. Data from the CDC indicates that between 2006 and 2013, an overwhelming majority (roughly 90 percent) of women who wanted to avoid pregnancy utilized contraception of some form (Guttmacher 2014). Among those who use contraception, the utilization of long-acting reversible methods, such as IUDs and hormonal implants, increased

significantly from 2.4 percent in 2002 to 8.5 percent in 2009 (Finer et al. 2012) to 11.6 percent in 2012 (Kavanaugh et al. 2015). However, while the prevalence of these methods increased among women as a group, use among black women in particular did not increase between 2009 and 2012 (Kavanaugh et al. 2015). While changes in contraception usage vary by race/ethnicity, socio-economic background (as captured by poverty status) was not associated with likelihood of using long-acting contraceptive measures (Kavanaugh et al. 2015).

Abortion is highly racialized, and historically black women have the highest abortion rates followed by Hispanics, other races, and whites[1] (Guttmacher 2017a). From 2008 to 2014, white women accounted for 38% of abortions; however, they had the lowest abortion rate while black women had the highest (Jones and Jerman 2017). Age also influences the likelihood of obtaining an abortion. Over this same period, women between the ages of 20 and 24 had the highest abortion rates followed by those ages 25 to 29 (Jones and Jerman 2017). The drop in abortion rates was greatest for women aged 15-19 (Jones and Jerman 2017). Because they are minors in the eyes of the law, adolescent women are also the population most likely to be affected by laws that mandate parental involvement before obtaining an abortion.

The reasons that individual women give for obtaining an abortion have remained stable over time, with the majority reporting economic circumstances or responsibility to other individuals (Finer et al. 2005). For example, in 2014, the majority of women obtaining an abortion previously had at least one birth (Jones and Jerman 2017). Qualitative research on low-income abortion clients found the most-cited reasons for obtaining an abortion were financial concerns and lack of a supportive partner (Nickerson, Manski, and Dannis 2014). Abortion demand is also patterned along socio-economic lines. In 2000 over half of all abortions were

[1] Hispanics and other races have very similar abortion rates. From 2000 to 2014 the incidence of abortion for these two categories were parallel to one another and in 2014 Hispanics had an abortion rate of 18.1 followed by other races at 16.3.

obtained by women below the federal poverty line, due in part to higher pregnancy rates among this population (Jones et al. 2002). More recent data from 2014 suggests that about three-fourths of those who obtained an abortion were low-income (Jerman et al. 2016). Poor women had the highest abortion rate out of all groups, and the likelihood of obtaining an abortion decreases as income levels increase (Jones and Jerman 2017). Access to abortion is important for upward mobility, and analysis has shown that women who were denied abortions were more likely to be in poverty four years later (Foster et al. 2018). At the same time, women who experience intimate partner violence may be more likely to seek an abortion (Saftlas et al. 2010), and those who do experience reduced physical violence (Roberts et al. 2014). Although this research is not focused on individual predictors of the decision to end a pregnancy, this line of research suggests that studies examining the effect of legislation on state-level variation in abortion rates should control for both the racial/ethnic composition and socio-economic profile of the state.

Attitudes Toward Abortion

The choice of an individual woman is also influenced by whether she is embedded in a social context characterized by negative abortion attitudes. Since its legalization, American attitudes toward abortion have remained surprisingly consistent and it is one of few issues on which opinions have not grown more liberal over time (Jones 2018). Disapproval of abortion is highly aligned with religious belief, and counties with greater levels of Christian engagement had higher disapproval of abortion among both religious and secular residents (Adamczyk and Valdimarsdóttir 2018). Yet opinions on abortion are highly divided along denominational lines. The most recent estimates indicate 61 percent of white evangelical Protestants believe abortion should be illegal in most/all cases, while two-thirds of white mainline Protestants indicate it should be legal in most/all cases (Pew Institute 2018). Catholics, in contrast, are more evenly

divided; 51 percent indicate abortion should be legal, while 42 percent indicate it should be illegal (Pew Research Center 2018). Over time, evangelicals have become more opposed to abortion in comparison to other groups, including in their opposition to abortion for traumatic reasons such as in the cases of rape, incest, or when the mother's health is at risk (Hoffman 2005).

Over the past few decades, data from Gallup has shown little difference between men and women's support for legal abortion (Saad 2010a). Once religiosity is accounted for, however, women tend to indicate greater support for legal abortion than men (Barkan 2014). Research has shown those with direct abortion experience have more pro-choice attitudes than those without such experience (Carlton, Nelson, and Coleman 2000). However, other analysis found that 1 in 20 abortion patients indicated abortion should be illegal, and the odds were higher for women who tried to self-induce an abortion (Thomas, Norris, and Gallo 2017).

Aside from religious participation, education is one of the best predictors of abortion attitudes (Petersen 2001) and higher levels of educational attainment are associated with a lower motivation to have children and a greater approval of abortion (Wang and Buffalo 2004). College graduates are more likely to support abortion in any circumstance, and the effect is even greater for women (Saad 2010a). Those with more education are likely to be better at obtaining accurate information concerning abortion, and this is linked to pro-choice attitudes (Mollen et al. 2018). Furthermore, generational differences in abortion attitudes have narrowed over time. Although in the mid-1970s elders were the least supportive of abortion, since the early 1990s, 18-to-29-year-olds have held similar anti-abortion attitudes (Saad 2010b).

Public opinion can significantly influence governmental decisions, and a constituency with conservative attitudes on abortion increases the likelihood that conservative abortion policy

will be implemented (Kreitzer 2015). Negative pressure can also work to limit abortion, and anti-abortion activity is associated with decreases in the number of abortion providers (Medoff 2009b). While this analysis is not focused on abortion attitudes it is important to understand how social context shapes the choices of an individual woman, particularly in states characterized by a high degree of religious participation and anti-abortion sentiment.

State-Level Variation in Abortion Rates

Research focused on state-level variation in abortion--traditionally housed within the disciplines of economics, geography, and political science--is more germane to my research question. For abortion in particular, state governments play an important part in influencing supply conditions (Gober 1994). Previous analysis has found that more liberal, or "blue" states, tend to have higher abortion rates, while more conservative, or "red" states tend to have lower abortion rates (Kimball and Wissner 2015). Whether a state is restrictive or permissive on abortion is a function of its legislative environment. For example, states that are more rural and have a higher percentage of Protestants and Catholics are more likely to have pro-life policies that aim to restrict abortion, while states with more professional women and a higher number of Democratic female legislators have more pro-choice policies, which make abortion more accessible (O'Conner and Berkman 1995). More recent analysis indicates that as the proportion of female Democratic legislators increases, the probability of adopting anti-abortion policy decreases (Kreitzer 2015).

Since *Roe v. Wade* in 1973, over one thousand laws restricting abortion have been passed at the state level (Guttmacher 2018b). Around one-third were enacted between 2011 and 2017 alone (Guttmacher 2018b). The *Planned Parenthood v. Casey (1992)* decision focused on four key types of legislation limiting abortion access: requiring parental notice or consent before a

minor may obtain an abortion; requiring married women to notify their spouse prior to the procedure; requiring counseling on abortion and its effects; and instituting a mandatory waiting period between the counseling and abortion. The Supreme Court upheld all of these restrictions with the exception of the spousal notification requirement, which was seen as placing an undue burden on women seeking abortions (Oyez 2018). Since the constitutionality of these restrictions was upheld, there has been substantial state-variation in these policies over time. Restricting access to abortion can serve to increase both the monetary and psychic cost of the service, and price is negatively associated with demand (Medoff 2008).

Restrictions to Medicaid funding have been consistently linked to abortion demand, and this legislation varies at the state level. In 1976 Congress passed the Hyde Amendment, which prohibited the use of federal funding to pay for abortions through Medicaid with the exception of cases in which the woman's life was threatened by the pregnancy (Gerals 2017). The Supreme Court upheld the Hyde Amendment in 1980, and later versions included exceptions for abortion in the case of rape or incest (Gerals 2017). Medicaid is jointly funded by both federal and state governments, and individual states have the choice whether or not to fund abortions in other circumstances as long as they only use state revenue to do so (Salganicoff, Rosenzweig and Sobel 2017). Living in a state that restricts Medicaid funding of abortion to cases of rape, life, or incest has been associated with decreases in abortion (Medoff 2010; Medoff 2009a; Matthews et al. 1997), and the availability of Medicaid funding for abortion is positively associated with abortion demand (Hussey 2010; Medoff 2007; Medoff 2002; Medoff 1988; Meier et al. 1996). Furthermore, Hispanic women are more sensitive to Medicaid restrictions than white or black women (Medoff 2014). The cost of the abortion procedure, which is of course related to state-level variation in Medicaid funding and related restrictions on abortion, is inversely associated

with abortion, and increases in the cost of abortion lead to decreases in demand (Medoff 2010; Medoff 2009a; Medoff 2007; Medoff 1988).

In contrast, there is less consensus on the impact other types of abortion policy have on abortion rates. On average, teenagers have higher rates of unplanned pregnancies and abortions than any other group (Medoff 2007) and as minors they are subject to additional legislation, such as laws mandating parental notification or consent, which further restricts their access to abortion in comparison to other age groups. Yet parental involvement laws may only be binding for around 40% of minors who do not involve their parents in their decision (Joyce and Kaestner 1996). Parental involvement laws have been associated with decreases in state abortion rates (Medoff 2009a; Medoff 2008; Medoff 2007; Matthews, Ribar, and Wilhelm 1997), and abortions to minors are lower in states that have these laws (Haas-Wilson 1996). Other analysis has shown that parental involvement laws increase the fetal loss ratio (which measures the number of fetal losses of unintended pregnancies per 1,000 unintended pregnancies) (Medoff 2012). In contrast, other research suggests laws requiring parental involvement have been shown to not impact the abortion rates of white, Hispanic, and black women (Medoff 2014). This may be dependent on the share of minors obtaining abortions, and Levine (2003) found that parental involvement laws reduce abortions to minors, but did not decrease the number of those obtained by older women.

Legislation that requires counseling before an abortion often involves false information that links abortions to adverse outcomes--such as mental health issues, infertility, breast cancer, and fetal pain--and these policies do not significantly impact the abortion demand of pregnant women (Medoff 2009b). Furthermore, other research has consistently shown that mandatory counseling laws do not significantly impact abortion rates (Medoff 2012; Medoff 2007). Multiple states also require a mandatory waiting period between counseling and the procedure,

but this has been shown to not be effective in reducing abortions (Medoff 2014; Medoff 2010; Medoff 2008; Medoff 2007). One unexpected externality of abortion restrictions may be to change the timing of abortions rather than reduce them. States with parental involvement laws and mandatory waiting periods have a higher percentage of abortions that occur after the first trimester (Joyce and Kaestner 2001), regardless of whether the laws are currently enforced or enjoined (Bitler and Zavodny 2001).

Access to abortion also varies state to state, and women's decisions to terminate pregnancies are influenced by whether abortion clinics are reasonably accessible (e.g., without having to travel a long distance). Access to abortion clinics is positively associated with abortion rates (Matthews, Ribar & Wilhelm 1997; Henry & Harvey 1982). In addition, differences in abortion rates between states may be due in part to the number of abortion providers (Kimball and Wissner 2010), and laws restricting abortion decrease the quantity of abortion providers (Medoff 2009b). In 2014, while over half of women lived within 15 miles of an abortion clinic, 27% lived at least 30 miles from these services (Guttmacher 2017b). Furthermore, harassment at abortion clinics is associated with a reduction in the number of abortions performed in a state (Medoff 2003). However, research examining distance from abortion clinics found that more variation exists between counties than between states (Bears, Lagasse, and Jones 2017). One analysis found that women living in counties in Texas with greater distance to abortion clinics were less likely to obtain an abortion, regardless of race (Brown, Jewell and Rous 2001). However, Medoff (2010) found that the costs of travel-time to abortion clinics did not increase between 1982-2005 due to the fact most abortion clinics that closed performed a small number of abortions. In addition, other spatial analysis demonstrates abortion access remained largely unchanged from 2000-2015 (Bearak et al. 2017).

Fetal Protection Laws

Over this same period, one form of fetal protection legislation--fetal homicide laws--was enacted in part in response to violence directed against pregnant women. During the 1990s, approximately one-third of all injury deaths that occurred during pregnancy resulted from homicide (Chang et al. 2005). Subsequently, some states enacted fetal homicide laws that identify fetuses in utero as potential crime victims by either including them legally as "persons" under existing state law, or creating a separate offense entirely (Murphy 2014). Prior to fetal homicide laws, states relied primarily on the "born alive rule" originating in English common law that held a fetus must be born alive before succumbing to its injuries to be counted as a victim of homicide (Murphy 2014)

As of 2018, approximately 38 states have passed fetal homicide laws and 29 states have laws that apply to any stage of pregnancy including fertilization (National Conference of State Legislatures 2018). It is important to note that not all states with homicide legislation exempt a pregnant woman or an abortion from prosecution. Even when those exemptions are in place, there are cases in which the exemption for the woman offers legal protection that is incomplete (Murphy 2014). For example, a study conducted by the National Advocates for Pregnant Women (Paltrow and Flavin 2013) identified 413 instances from 1973 to 2005 in which state action was taken against pregnant women using laws on homicide, child abuse, drug possession/use, and drug distribution as the basis for prosecution. Were it not for the fact they were pregnant, many of these women would have avoided prosecution entirely (Goodwin 2016). Incidents such as these prioritize the fetus itself rather than the health of the mother and ultimately her unborn child (Bird 2014).

These prosecutions overwhelmingly target women in marginalized groups. In Paltrow

and Flavin's (2013) analysis, 59 percent were women of color, and 71 percent qualified for indigent defense, meaning that they could not afford to pay for a lawyer. Just over half of these cases occurred in southern states (Paltrow and Flavin 2013). An earlier analysis found that, despite similar rates of drug use, black women were 10 times more likely to be reported than white women for substance abuse during pregnancy (Chasnoff 1990). A more recent examination found that even when universal screening was in place, black women were still four times more likely than white women to be reported to Child Protective Services after delivery (Roberts and Nuru-Jeter 2011). As fetal protection legislation becomes more prevalent, its enforcement may complicate women's reproductive choices and willingness to seek help during pregnancy. For example, qualitative research on women who used drugs indicated they felt isolated from supportive networks and were afraid of Child Protective Services, even while acknowledging the risks drug use posed in pregnancy (Roberts and Pies 2011).

Fetal protection laws could theoretically impact abortion by influencing the reproductive decisions of women in states that are known for taking punitive action against pregnant women who use drugs, alcohol, plan to undergo a home birth, or experience a miscarriage. The American Medical Association, for example, released a statement that argued the threat of punishment might push some woman to obtain an unwanted abortion rather than risk criminal prosecution (Paltrow and Flavin 2013). There are also legal implications because if the state becomes invested in the health of fetuses to the point of monitoring the behavior of pregnant women, then this poses the risk of compromising women's constitutional rights (Sandstad 2008). The growing prevalence of fetal protection laws, their increasing enforcement, and concerns about how they may alter the context within which women make reproductive decisions warrants

empirical investigation. Yet to date, there is a lack of quantitative analysis that seeks to determine whether there is an association between this legislation and state abortion rates.

This study adds to existing research by evaluating the impact of fetal protection laws (those pertaining to both fetal homicide and drug use while pregnant) on state-level abortion rates. To date, I am only aware of one analysis (Meier et al. 1996) that incorporated fetal homicide laws in an analysis to predict abortion rates. While the authors found no association between feticide laws and state abortion rates, there has been substantial change in the prevalence and scope of fetal protection legislation across states over the past few decades. This indicates the need for a more recent investigation on the impact state-level changes in fetal homicide legislation has on state abortion rates.

This study uses a panel of 15 years to examine between- and within-state variation over time to analyze how legislative changes pertaining to fetal protection laws and abortion restrictions affect changes in state abortion rates. I investigate the time period 2001-2015, which includes expansions in legislation both broadening fetal protection, as well as restricting abortion. The use of panel methods allows for a better understanding of how these relationships evolve over time rather than at just one point, as well as enhance claims to causality. In addition, this analysis utilizes all 50 states. Therefore I am able to compare how changes in fetal protection laws are associated with changes in abortion rates across the United States.

Data and Methodology

Data

To investigate whether changes in fetal protection laws (e.g., laws pertaining to fetal homicide and drug use during pregnancy) and state-level abortion restrictions are associated with

abortion rates, this study incorporates data from all 50 states over the years 2001 to 2015, compiled from multiple sources.

Dependent Variable

The dependent variable is the abortion rate, which is calculated as the number of abortions per 1,000 women aged 15-44 in a given state per year. Abortions are classified by the state in which they are performed, and refer to legally-induced abortions only.[2] Complete state-level annual data on abortions is difficult to obtain due to privacy concerns and the lack of standard reporting procedures. To address this limitation, I utilize two different sources. The abortion rates were collected from the Centers for Disease Control and Prevention (CDC) Abortion Surveillance System and the Guttmacher Institute. Each of these data sources has unique strengths that complement each other, as well as offer distinctive insight into my research question.

The CDC data is collected from public health agencies in each state from 2000-2015, but is incomplete in states in which not all providers report this information to the agency. For example, California and New Hampshire do not report data on abortion rates to the CDC, and Wyoming is missing for all years except 2006 and 2015 due to the low number of abortions performed. In addition, data is also missing for Alaska from 2000-2002, Delaware in 2009, Florida in 2015, Louisiana from 2005-2006, Maryland from 2007-2015, and West Virginia from 2003-2004. Thus, although this data provides one of the most reliable population-level measures of abortion, the omission of states that do not report is problematic, particularly in reference to California which accounts for nearly one-fifth of all abortions in the U.S. (Jones and Jerman

[2] State residents obtain the majority of abortions that occur within a state (CDC 2014). However, it is also true that some women travel over state lines to obtain abortions in states with fewer restrictions or to access clinics that are in closer proximity. The proportion of out-of-state residents obtaining abortions is not relevant to this research question because this analysis is concerned with the influence of state-level legislative changes on the abortion rate within states, rather than who is obtaining abortions.

2014).

In comparison, the Guttmacher Institute collects data on abortion rates by directly surveying abortion providers, and thus may offer a more comprehensive count of abortions. The Guttmacher Institute calculates the abortion rate using Census Bureau estimates of the female population aged 15-44 in each state but, on average, the abortion rate reported by Guttmacher exceeds that reported by the CDC. This is likely due to the fact that Guttmacher contacts abortion providers directly. However, while data on abortion rates from the Guttmacher Institute are more complete from the standpoint of state coverage, abortion providers are only surveyed in nine years of the CDC panel: 2000, 2004, 2005, 2007, 2008, 2010, 2011, 2013, and 2014. To capitalize on the relative strengths of both sources of data and provide the most complete assessment of the relationship between fetal homicide legislation and abortion rates, I run parallel analyses using data from both the CDC and Guttmacher Institute.

Independent Variables

Information on state-level policy pertaining to fetal protection laws and abortion restrictions was acquired from several sources. Changes in states' fetal protection legislation pertaining to fetal homicide were identified using data from the National Conference of State Legislatures, which was then cross-referenced using Westlaw, an online service that offers comprehensive legal information and up-to-date information about state laws. Changes in legislation concerning abortion restrictions and substance abuse during pregnancy were obtained from the Guttmacher Institute.

States with fetal protection legislation pertaining to fetal homicide were first identified through the National Conference of State Legislatures, which provides a summary of statutes and case law by state. Next, I utilized Westlaw to verify the year each statute became effective in a

given state. I then constructed a fetal homicide scale and coded it as follows: 0 = no fetal homicide law in place in a state in a given year; 1 = a fetal homicide law is in place in a state in a given year but there is an exemption for the mother, an abortion, or both; 2 = a fetal homicide law is in place in a state in a given year and applies to any stage of pregnancy, including fertilization and conception; 3= a fetal homicide law is in place in a state in a given year but there are no exemptions[3]. Changes in each statute were assessed in January of a given state-year to assure temporal ordering. Data on states with fetal protection legislation pertaining to drug use during pregnancy comes from Guttmacher. This analysis focuses on policy that mandates suspected substance abuse during pregnancy be reported. Years for which a state had this measure in place in January were coded 1, and 0 otherwise.[4]

State legislation pertaining to abortion restrictions, which could make abortion more difficult to access, also utilizes data from the Guttmacher Institute. The following abortion restrictions in each state were examined: public funding of abortion is limited to cases of rape, incest, or life endangerment; parental notice or consent is required for minors; counseling on the procedure and its effects is required; and there is a mandatory waiting period before the procedure. Years for which the state had these measures in place were coded 1, and 0 otherwise. These four abortion restrictions were summed into an ordinal yearly index ranging from 0 to 4 where 0 = no abortion restrictions are in place in a given year and 4 = all four abortion restrictions are in place. This scale indicates the intensity of abortion restriction legislation in each state over time, and has a Cronbach's alpha of 0.84.

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[3] Originally, this measure consisted of four binary variables that were summed into an index. However, coding it as a scale is a more appropriate way to gauge the intensity of fetal homicide legislation in a state. It is important to note that when these four variables were used as an index it had a Cronbach's alpha of 0.91.

[4] Initially, this analysis focused on two additional categories of substance abuse during pregnancy: whether a state requires testing if substance abuse is suspected, and whether drug use during pregnancy is considered child abuse. However, these two laws were not significantly associated with abortion, and when all three variables were summed into an index the Cronbach's alpha was only 0.40.

Control Variables

I also control for whether the state legislature is controlled by Republicans, as well as state racial demographics and the percent of state residents in poverty. Data on the partisan composition of the state legislature was obtained through the National Conference of State Legislatures (NCSL).[5] The NCSL categorizes states as Republican if both legislative chambers have Republican majorities, Democrat if both legislative chambers have Democratic majorities, and split if neither party had majorities in both legislative chambers. The data is biannual and assessed in January when changes to legislature composition occur, and is carried through the next election cycle. Since previous research indicates that conservative states have lower abortion rates on average (Kimball and Wissner 2015) and red states are also likely to have more policies in place to restrict abortion, I constructed a dummy variable for whether a state legislature is controlled by Republicans. States that had a Republican majority in both legislative chambers in a given year were coded 1, and 0 otherwise.

Population data was collected from the U.S. Census Bureau's (U.S. Census) Population Division intercensal estimates. Since the Census classifies Hispanic origin as an ethnicity rather than a race, respondents may indicate both a Hispanic and racial identity. This analysis distinguishes between racial groups as follows: white, non-Hispanic and black, non-Hispanic. Previous research indicates that abortion is highly stratified along both racial and ethnic lines, with non-Hispanic black women having the highest rate of abortion and non-Hispanic white women having the lowest rate of abortion (Guttmacher 2017a). Each group is measured as the number of individuals within the state who identify as that racial/ethnic category per 1,000 individuals in a given state per year.

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[5] Nebraska is unique because it has a unicameral legislature. Therefore to determine partisan control, I utilized Ballotpedia, an encyclopedia of American politics and elections, to view the history of party control in Nebraska over the period examined. Over the entire panel, the Nebraska legislature was controlled by Republicans.

The poverty rate is obtained from the U.S. Census Current Population Survey Annual Social and Economic Supplements. It is calculated by comparing a family's total income to poverty thresholds for a family of the same size. If the total income of a family is lower than the official poverty threshold for a family of the same size and composition, they are classified as being in poverty. The poverty variable indicates what percentage of the state population is classified as being in poverty in a given year.

Sample

My total sample consists of 750 state year observations across all 50 states. The panel consists of 15 waves that each covers a one-year period starting in 2001 and ending at 2015. The panel is mostly balanced, due to missing cases. Data that is missing includes years for which abortion data is unavailable (as discussed above), and is handled through list-wise deletion. The analytical sample with the CDC abortion rate is 690. The analytical sample with the Guttmacher abortion rate is 400. Table 1 presents the descriptive statistics for all variables used in the analysis.

[TABLE 1 ABOUT HERE]

Analysis

The strength of using panel data comes from the fact that it enables the examination of both within- and between-state variation over time. The abortion rate is an interval-ratio variable and my dataset consists of multiple observations for different states from 2001-2015. Fixed-effects models address unobserved heterogeneity between states by focusing on within-state variation (Cameron 2009). The strength of a fixed effects model is that it controls for time-invariant variables that might influence the outcome. Since these do not change over time, their

effect is controlled even though these variables are not explicitly included in the model. In essence, each state acts as its own control (Allison 2009).

Fixed effects models are estimated using the equation: $\Delta y = \Delta\alpha + \beta\Delta x_i + \Delta\varepsilon_i$ in which Δ indicates a difference score[6] and the outcome is a function of α (an intercept that may vary at each point in time), ß (the vector of coefficients), and the error term, which measures random variation at each point in time. The first set of analyses utilizes fixed-effects regressions to establish whether changes in state-level legislation are associated with changes in abortion rates within states.

Utilizing a fixed-effects model alone raises concerns due to the fact it does not account for differences between states. This is problematic because I am also interested in whether changes in fetal protection and abortion legislation results in states having lower or higher abortion rates in comparison to other states. Therefore, I pursue a between-within (hybrid) model[7] (Allison 2009) to measure both within- and between-state variation simultaneously using the equation: $y_{it} = \alpha_i + (x_{it} - \bar{x}_i)\beta_1 + \bar{x}_i\beta_2 + \nu_{it} + \bar{\varepsilon}_i$.

In this case, each time-varying variable is transformed into a deviation from its state-specific mean in order to measure within-state variation (as in the fixed-effects model). However, the hybrid model also includes the state-specific mean for each time-varying variable in order to measure between-state variation. The outcome variable is not transformed in this case. This model also allows a direct test of whether the between- and within- effects are equal (Allison 2009).

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[6] Each time-varying variable is transformed into a deviation from its state specific mean.

[7] A Hausman test indicates the data is not suited for a random-effects model. That is, within- and between-state effects are not the same.

Results

Fixed-Effect Models

Table 2 presents results from the fixed-effects regressions of state legislation on state abortion rates. As a reminder, fixed effects models include within-state variation only. Each model examines the relationship between fetal protection laws and abortion restrictions on abortion rates with all controls. Later tables will present results from the more complex hybrid modeling strategy.

Table 2 indicates that changes in legislation are significantly associated with changes in abortion rates. I first turn to the results using the CDC abortion rate. Model 1 indicates that there is a statistically significant association between the passage of fetal protection laws (specifically a policy that requires drug reporting of pregnant women) and changes in that state's abortion rate. For every increase in drug reporting (in this case, as states implement this policy), the abortion rate is predicted to decrease within the state by 1.32, and is significant. None of the other policy variables reach statistical significance. Contrary to expectation, poverty is negatively associated with the abortion rate and every increase in the percent of state residents in poverty is associated with a 0.34 decrease in the abortion rate within states.

Turning to the results with the Guttmacher abortion rate in Model 2, drug reporting no longer reaches statistical significance as a predictor of abortion rates, although the direction of the relationship remains the same. However, abortion restrictions are significantly associated with increases in abortion. That is, as states pass laws that make abortion more difficult to access, the abortion rate within the state is predicted to increase. Although changes in abortion restrictions were not significantly associated with changes in a state's abortion rates in Model 1 using the CDC data, the direction of the relationship remains consistent across models. Poverty is

again significantly associated with decreases in abortion rates within states. Although the two samples may differ in terms of individual variables' statistical significance, the fact that the direction of the relationships remains consistent is reassuring. Differences between the two samples in terms of statistical significance is likely due in part to differences in sample size (Guttmacher only contains nine of the years observed in the CDC data). Differences in statistical association may also be observed due to the fact that the Guttmacher sample is more comprehensive in terms of state coverage, and includes California and New Hampshire while the CDC excludes these two states.

[TABLE 2 ABOUT HERE]

Hybrid

Table 3 presents results from the hybrid models, which measure within- and between-state variation simultaneously. Since the results from the within-effects models mirror results from the fixed-effects models, I will focus my discussion on between-state variation. However, both sets of results are presented for reference.

[TABLE 3 ABOUT HERE]

From the between-effects results presented in Model 1 (using CDC data), we can see that abortion restrictions are significantly and negatively associated with abortion rates. That is, states that implement abortion restrictions are predicted to have lower abortion rates than states without these policies. This stands in contrast to the positive association observed between abortion restrictions and abortion rates in both my fixed effects and within-states analysis. In this case, drug reporting does not appear to significantly impact abortion rates between states, nor is poverty a significant predictor of abortion rates between states.

I find similar policy results from my between-effects models with the Guttmacher data. In fact, with this sample the negative effect of abortion legislation is greater, even with reduced sample size. As a reminder, the Guttmacher sample includes several states (California, New Hampshire, and Wyoming) that the CDC sample does not. It is likely that the inclusion of these states in the analysis helps to better account for between-state variation. In this model, poverty is negatively associated with abortion rates and is significant. That is, states with higher levels of poverty are predicted to have lower abortion rates in comparison to states with less poverty[8].

To make these relationships easier to visualize, Figure 1 presents the predicted abortion rate by type of legislation from the full hybrid model using the CDC abortion data. The abortion rate between states is presented on the top, while the rate within states is presented on the bottom. Since the fetal homicide variable was not significant in any models, it is excluded. As the results indicated, states that have abortion restrictions in place are predicted to have lower abortion rates in comparison to states without these policies. Drug reporting has little effect between states. Within states, drug reporting is associated with a decrease in abortion rates. In contrast, every additional law implemented restricting abortion is associated with an increase in abortion rates within states.

[FIGURE 1 ABOUT HERE]

Sensitivity Analyses

Out-of-State Abortions

When examining abortion rates by state of occurrence, it is possible the estimates might be upwardly biased if there are a significant number of women coming to obtain an abortion within the state from neighboring states. Therefore, it is necessary to ensure the key results hold

[8] Since the abortion index includes a measure for restrictions to Medicaid funding of abortions, this analysis controls in part for abortion access among poor women.

after accounting for this phenomenon. To determine this, Table 4 presents results from a hybrid model of the relationship between fetal protection laws, abortion restrictions, and abortion rates with an additional control for the percent of abortions within a state obtained by out-of-state residents. The data on out-of-state abortions comes from the CDC.

[TABLE 4 ABOUT HERE]

The results indicate the percentage of abortions obtained by out-of-state residents is positively associated with abortion rates, and is significant between states. This indicates that states with a high percentage of abortions obtained by out-of-state residents are predicted to have higher abortion rates in comparison to other states. However, the relationships with the key variables of interest hold. Both the CDC and Guttmacher data indicate that states with policies restricting abortion access are predicted to have significantly lower abortion rates than states without this legislation. Moreover, within states, fetal protection laws pertaining to drug reporting are significantly associated with decreases in the abortion rate, while abortion legislation is significantly associated with increases in the abortion rate in Model 2 (using Guttmacher data). Model 1, which uses CDC data, indicates that the direction of the relationship between changes in abortion restrictions within a state and abortion rates remains consistent, but falls short of statistical significance. Overall, these findings demonstrate the relationship between state legislation and state abortion rates is not due to women from other states obtaining abortions within the state.

County Access

It is also important to ensure that changes in abortion are not associated with other factors, such as access to abortion services. To investigate this, Table 5 presents results from a hybrid model of the relationships between fetal protection laws, abortion restriction, and abortion

rates with an additional control for county access to abortion. Access is measured as the percent of women aged 15-44 who reside in a county without an abortion provider and comes from Guttmacher. One downside to this measure is that it is only available for five years of the panel (2000, 2005, 2008, 2011, and 2014) and therefore reduces sample size substantially, but this analysis still serves as a robustness check.

[TABLE 5 ABOUT HERE]

The results indicate that county access is negatively associated with the abortion rate between states. That is, as the percent of women residing in a county without an abortion provider increase, a state is predicted to have lower abortion rates in comparison to other states. However, this measure is not significant within states. The only key variable that is significant in this case is drug reporting in Model 1. In this case, even after controlling for access to abortion services and reducing the sample, drug reporting is significantly associated with a decrease in the abortion rate within states. However, while the relationship between changes in abortion restrictions and within state abortions fall short of statistical significance, the direction and size of the coefficient remain similar as in the other models presented, suggesting that the lack of statistical significance is due to much smaller sample size. In order to determine whether the relationship between abortion legislation and the abortion rate holds with an increased sample size, further research is needed.

Discussion and Conclusion

Over the past few decades legal and medical communities, as well as activist groups, have paid increasing attention to the role state policy plays in influencing reproductive decision-making, with particular concern for the role that fetal protection legislation and abortion restrictions may play in limiting women's reproductive choices. At the same time, an extensive

body of research has demonstrated enduring racial and economic disparities in individual predictors of abortion. However, what has been lacking is an empirical investigation of the role that such state policies play in women's reproductive choices. While research at the individual level is important, state-level analysis provides the opportunity to evaluate the structural conditions that help to shape individual choices. This analysis is the first I am aware of to utilize longitudinal data to evaluate the relationship between state-level changes in fetal protection legislation, abortion restrictions, and state abortion rates.

My results suggest that some types of fetal protection legislation are significantly associated with abortion rates within states (e.g., drug reporting), while other types of fetal protection laws are not significantly associated with abortion rates (e.g., fetal homicide laws). Passage of fetal protection laws pertaining to reporting suspected substance abuse is associated with decreased abortion rates within states. Furthermore, this relationship holds even after controlling for the level of abortion access and the percentage of abortions within a state that are obtained by out-of-state residents. Interestingly, this runs counter to concerns expressed by the American Medical Association and other legal and sociological scholars who have speculated that increased surveillance of women's pregnancies may hasten termination of pregnancy among women who are dependent on illicit substances. It is possible that in states that are known for taking punitive action against pregnant women, individuals may be motivated to use more consistent contraception to avoid pregnancy. Although it was not possible to test this theory in the current analysis, other work has shown that increases in the price of an abortion motivate women to better utilize birth control and thus reduce the number of unintended pregnancies (Medoff 2012). If the perceived cost of becoming pregnant while using drugs, or engaging in

other behavior that could warrant prosecution, is too high then women may take steps to avoid becoming pregnant entirely.

My findings concerning legislation restricting abortion are more complicated. While passage of abortion legislation may have a significant and negative association with abortion rates between states, this analysis suggests that implementing increasingly stringent abortion legislation is associated with increases in abortion rates within the state. While this initially seems counterintuitive, previous research has shown that abortion restrictions, such as requiring parental involvement or a mandatory waiting period, may actually delay abortions rather than prevent them (Joyce and Kaestner 2001; Joyce and Kaestner 2000). At the same time, women who live in states that are more hostile toward abortion may be motivated to terminate their pregnancies earlier rather than risk being unable to do so at a later date (e.g., a harvesting effect). Previous analysis has found that abortion restrictions have little impact on the unintended birth rate (Medoff 2016), and that restrictions to abortion are associated with an increase in the proportion of unmarried teen births (Kane and Staiger 1996). Therefore it is unlikely that women in states with restrictive abortion access are avoiding pregnancy entirely. However since this is a state-level analysis, inferences to the individual-level must be made cautiously.

Also contrary to expectation is the finding poverty is inversely associated with abortion rates within the state. However, a further investigation of the data indicates that states with a higher prevalence of poverty are also those that elect to restrict Medicaid funding of abortion, which my analysis takes into account via the variable pertaining to abortion restrictions. In these states, women in poverty may lack the resources to pay for the procedure. In fact, research has suggested that poor women lack the resources to pay for all wanted abortions (Kelly and Grant 2007). Conversely, women in poverty may take steps to decrease chance of pregnancy and delay

pregnancy, as is done when the price of an abortion increases. Yet earlier analysis found that cuts to public assistance did not affect birthrates (Matthews, Ribar and Wilhelm 1997) and states that spend less on public welfare programs have more teenage births in comparison to other states (Williams 1988). Future analysis should determine whether access to contraception is driving part of this relationship, or if women in poverty choose to carry to term if they cannot afford an abortion.

While this study makes an important contribution to the sociological understanding of the relationship between fetal protection legislation, abortion restrictions, and abortion rates, it has limitations. First, both the data from the CDC and Guttmacher provide information on legally-induced abortions only, and we cannot be sure whether these policies are motivating women to terminate their pregnancies on their own. Nationally representative samples have found that approximately 1.4% of women reported ever attempting to self-induce an abortion (Grossman et al. 2018). Two of the most common reasons for doing so were that it was an easier option, or abortion in a facility was too expensive. If abortion becomes more difficult to access, or women fear punitive measures, the attempt to self-induce abortions may potentially increase. However, for obvious reasons, data on this phenomenon is incredibly hard to gather. Conversely, since women have been sentenced to prison for illegally inducing their own abortion (Bazelon 2015), knowledge of these laws may prevent others from doing so. In addition, this data set does not provide information on timing of abortion, as well as other state indicators such as access to healthcare, contraceptive prevalence, or state-level religiosity. It is likely these variables may be able to further explain the relationship both within and between-states. Finally, this is a state-level analysis, and therefore results are at the aggregate and cannot necessarily be inferred to apply to all individuals within the state.

Future research should further examine within-state variation. There are likely even greater differences within states at the county level, or between rural and urban areas. Other analysis should also investigate the impact these policies have on other outcomes, such as infant and maternal mortality, or timing of prenatal healthcare. The key take away from this analysis is that states should consider the effects of legislation on maternal decision-making and evaluate whether such laws push women to make reproductive decisions that they otherwise might forego (such as terminating a pregnancy) rather than protecting them.

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Appendix

Table 1. Descriptive Statistics for the Analytical Sample

CDC Data	Mean	SD	Min	Max	Observations
Abortion Rate	12.18	5.95	0.10	31.40	690
Legislation					
Homicide Laws	1.15	1.07	0	3	690
Drug Reporting	0.25	0.43	0	1	690
Abortion Laws	2.49	1.59	0	4	690
Republican	0.37	0.48	0	1	690
Race					
White	3710.61	2877.41	31.41	11838.58	690
Black	706.00	825.09	2.87	3271.39	690
Poverty	12.94	3.28	6.50	23.10	690
Guttmacher Data	Mean	SD	Min	Max	
Abortion Rate	14.12	7.66	0.70	42.60	400
Legislation					
Homicide Laws	1.17	1.04	0	3	400
Drug Reporting	0.25	0.43	0	1	400
Abortion Laws	2.44	1.60	0	4	400
Republican	0.36	0.48	0	1	400
Race					
White	3809.43	3255.99	295.88	15759.04	400
Black	731.50	853.41	3.48	3271.39	400
Poverty	13.05	3.36	5.50	23.10	400

Table 2. Fixed Effects Regression of Legislation on Abortion Rates

	Model 1		Model 2	
	CDC Abortion Rate		Guttmacher Abortion Rate	
Legislation				
Fetal Homicide	-0.3153	(0.31)	-0.3909	(0.32)
Drug Reporting	-1.3223***	(0.34)	-0.9563	(0.76)
Abortion	0.4334	(0.37)	0.6816†	(0.36)
Republican	-0.2336	(0.39)	-0.8150*	(0.38)
Race				
White	-0.0009	(0.00)	-0.0002	(0.00)
Black	-0.0041**	(0.00)	-0.0033	(0.00)
Poverty	-0.3408**	(0.10)	-0.5311***	(0.10)
Intercept	22.4616***	(5.02)	23.6158**	(7.18)
N	690		400	

Standard errors in second column

† p<0.10* p<0.05 ** p<0.01 *** p<0.001

Table 3. Hybrid Regression of Legislation on Abortion

	Model 1		Model 2	
	CDC Abortion Rate		Guttmacher Abortion Rate	
Between Effects				
Legislation				
Fetal Homicide	-0.2057	(1.02)	-0.3987	(1.09)
Drug Reporting	0.4581	(1.05)	-0.0760	(1.47)
Abortion	-1.2237*	(0.56)	-1.5171*	(0.70)
Republican	-1.9453	(2.34)	-5.0825†	(2.73)
Race				
White	0.0001	(0.00)	-0.0002	(0.00)
Black	0.0036*	(0.00)	0.0062***	(0.00)
Poverty	-0.3557	(0.28)	-0.7939***	(0.23)
Within Effects				
Legislation				
Fetal Homicide	-0.3129	(0.31)	-0.4035	(0.32)
Drug Reporting	-1.3061***	(0.34)	-0.9169	(0.76)
Abortion	0.4264	(0.37)	0.6720†	(0.36)
Republican	-0.2330	(0.39)	-0.8202*	(0.39)
Race				
White	-0.0009	(0.00)	-0.0002	(0.00)
Black	-0.0041**	(0.00)	-0.0033	(0.00)
Poverty	-0.3402***	(0.10)	-0.5287***	(0.10)
Intercept	17.5747***	(4.30)	26.8080***	(3.62)
N	690		400	

Standard errors in second column

† p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Table 4. Hybrid Regression of Legislation on Out-of-State Abortions

	Model 1		Model 2	
	CDC Abortion Rate		Guttmacher Abortion Rate	
Between Effects				
Out of State	0.1409*	(0.06)	0.2443***	(0.07)
Legislation				
Fetal Homicide	0.1708	(0.85)	-0.0822	(0.97)
Drug Reporting	0.2743	(1.04)	-0.3930	(1.73)
Abortion	-1.2165*	(0.49)	-1.7068**	(0.64)
Republican	-3.7794†	(1.98)	-6.7916**	(2.24)
Race				
White	0.0004	(0.00)	0.0000	(0.00)
Black	0.0027†	(0.00)	0.0059***	(0.00)
Poverty	-0.3560	(0.27)	-0.9040***	(0.22)
Within Effects				
Out of State	0.1564	(0.12)	0.1909	(0.17)
Legislation				
Fetal Homicide	-0.2848	(0.32)	-0.2533	(0.36)
Drug Reporting	-1.5450***	(0.46)	-1.7178**	(0.53)
Abortion	0.5354	(0.36)	0.9205*	(0.42)
Republican	-0.4260	(0.41)	-1.2294*	(0.53)
Race				
White	0.0019	(0.00)	0.0040	(0.00)
Black	-0.0097**	(0.00)	-0.0126**	(0.00)
Poverty	-0.2817**	(0.10)	-0.4773***	(0.09)
Intercept	15.6851***	(3.97)	25.8569***	(3.36)
N	660		359	

Standard errors in second column

† p<0.10 * p<0.05 ** p<0.01 *** p<0.001

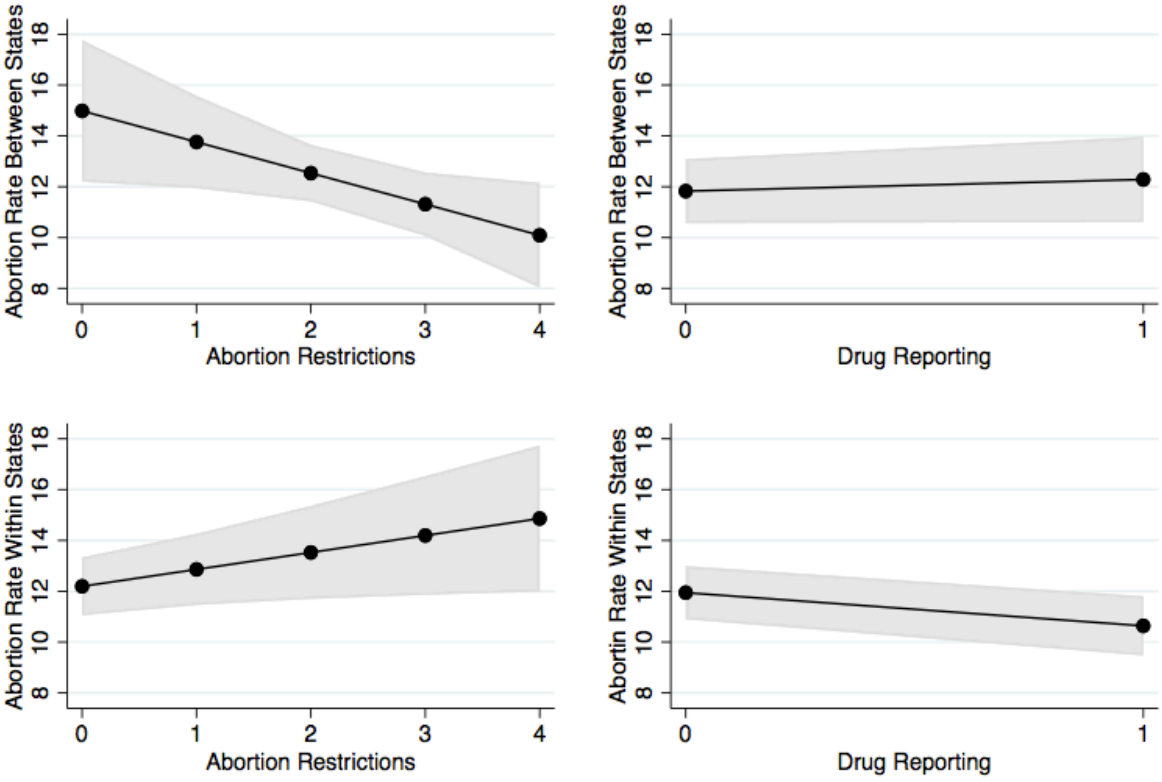
Table 5. Hybrid Regression of Legislation on County Access

	Model 1		Model 2	
	CDC Abortion Rate		Guttmacher Abortion Rate	
Between Effects				
County Access	-0.1360**	(0.04)	-0.2031***	(0.03)
Legislation				
Fetal Homicide	0.3523	(0.76)	0.5096	(0.64)
Drug Reporting	0.2215	(1.03)	-0.7029	(1.00)
Abortion	-0.2158	(0.56)	-0.0663	(0.60)
Republican	-0.0657	(1.75)	-2.3400	(1.73)
Race				
White	-0.0002	(0.00)	-0.0006**	(0.00)
Black	0.0033*	(0.00)	0.0052***	(0.00)
Poverty	-0.0075	(0.29)	-0.2012	(0.20)
Within Effects				
County Access	-0.0040	(0.04)	-0.0077	(0.04)
Legislation				
Fetal Homicide	-0.2076	(0.34)	-0.2926	(0.34)
Drug Reporting	-1.6750*	(0.70)	-1.2726	(1.16)
Abortion	0.7813	(0.49)	0.7677	(0.49)
Republican	-0.6186	(0.71)	-0.8616†	(0.52)
Race				
White	-0.0023*	(0.00)	-0.0017	(0.00)
Black	-0.0055***	(0.00)	-0.0049*	(0.00)
Poverty	-0.3325**	(0.11)	-0.4858***	(0.11)
Intercept	16.8335***	(3.84)	24.8300***	(3.10)
N	182		198	

Standard errors in second column

† p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Figure 1. Predicted Abortion Rate Between and Within States by Legislation



Source: CDC N=690