

Targeted Regulations on Abortion Providers: Impacts on Women's Education and Future Income

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Abstract

In recent years, targeted restrictions on abortion providers (TRAP) laws have been increasingly implemented across the U.S., often resulting in clinics' closures, limiting abortion access. We study how women's exposure to a TRAP law when aged 15 to 23 affects early birth prevalence and measure the resulting impacts on women's economic outcomes at ages 24-40. We find that such exposure reduces educational attainment and future family income. These effects are large and robust for black women; no significant effects are observed among white women. The estimations include both state and year fixed effects so that identification relies on the precise timing of TRAP implementation to estimate causal impacts on economic outcomes. Evidence suggests that pathways of impact include both an increase in early births, as well as other pathways such as changes in expectations and resulting investments.

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1 Introduction

Access to abortion services in the United States has long been a divisive issue and a political flashpoint. When the Supreme Court decision *Roe v. Wade* declared that an individual's right to privacy provided a right to abortion, the national debate only intensified. Since that time, in states where opposition to abortion is strong, various measures have been implemented to restrict abortion access.

Existing evidence suggests that patient-targeted abortion restrictions, such as parental involvement laws, mandatory waiting periods, or reductions in Medicaid funding for abortion, reduce abortion use, delay abortion timing, and increase births, especially among young women.¹ Less is known about the impacts of provider-targeted restrictions, which have been examined only in the contexts of Texas and Pennsylvania, but these studies also suggest impacts on abortion use and births.²

Beyond the impact of restrictions on abortions and births, we hypothesize that restricting access to abortion may additionally impact women's economic outcomes, such as educational attainment and future income. If abortion restrictions prevent the interruption of unwanted pregnancy, this will result in an unwanted birth. For an adolescent or young adult woman, an unwanted birth may interrupt her education, prevent her from pursuing additional education, and/or affect her labor force participation and career choice. As such, abortion access may impact economic outcomes through an increase in early, unwanted births.

Abortion restrictions may also impact economic outcomes via an alternative pathway of expectations and aspirations. If a young woman expects that over her lifetime, she will have full control over whether to have children, when to do so and how many to have, this will impact her vision for her future. Such expectations may lead her to aspire to a professional career, thereby impacting her decisions (and effort) regarding education, training, labor force participation, and career. If a young woman instead observes the onset or presence of regu-

¹See section 2.4 for a review of this evidence.

²Grossman et al. 2017; Quast et al. 2017; Fischer et al. 2018; Lindo et al. 2019; Kelly 2019.

lations that restrict abortion access (or more concretely, observes family members or friends who are unable to obtain wanted abortions), she will likely expect to have imperfect control over her future fertility outcomes. Such expectations may likewise affect her aspirations and investments in her education and career. In this way, restrictions on abortion access may impact the economic outcomes of a woman even if she never experiences an unwanted pregnancy.³

In this study, we estimate the impacts of targeted regulations of abortion providers (TRAP laws) across the twenty-one states that have implemented them since 1973. We focus on TRAP laws specifically, as considerable evidence already exists regarding the impact of patient-targeted abortion regulations, including their impacts on women’s education ((Borelli, 2011). We rely on microdata from the American Community Survey (ACS) and a quasi-experimental approach that allows us to estimate the reduced-form effects of exposure to TRAP laws during the critical period when a woman is aged 15 to 24. We estimate impacts on early births, college completion, and future family income. By employing fixed effects at the state level and birth cohort level, we rely solely on the precise timing of TRAP law implementation to estimate the *causal* impacts on economic outcomes. Our findings suggest that while TRAP laws do not impact early births generally, they significantly increase early births among Black women by 6 to 9 percent.⁴ Consequently, we also estimate significant reductions in Black women’s college completion (5 to 11 percent) and future income (3 to 6 percent) as a result of TRAP law exposure.

The magnitude of the effects on education and income relative to the magnitude of the effects on early births indicates that exposure to TRAP laws affect women’s outcomes not

³A woman’s expectations about her ability to access an abortion may also affect other decisions such as sexual behavior and contraceptive use. While some studies have found that parental involvement laws and Medicaid restrictions do not affect adolescent sexual behavior (Sen, 2006; Coleman, Dee and Joyce, 2013; Sabia and Anderson, 2016), others have documented that parental involvement laws reduce risky sexual behavior among adolescents (Klick and Stratmann, 2008; Meyerhofer, 2020). Such responses would attenuate the impact of abortion restrictions on fertility, suggesting that the effects estimated here are lower bounds.

⁴This is consistent with previous evidence that Black women are disproportionately affected by restrictions to family planning access (Bailey et al. 2014; Bailey et al. 2019; Browne and LaLumia (2014); Myers (2017b); Myers and Ladd (2020)).

only through a *direct effect* but also through an *indirect effect*, via their expectations and aspirations about education and career.

This work contributes to the literature in several ways. Despite a well-established body of evidence on contraception’s economic impacts, the evidence to date on abortion regulations focuses primarily on outcomes such as abortion use and births. To our knowledge, Borelli (2011) is the only existing study on the impact of any abortion restriction – parental involvement laws – on educational attainment. We expand this evidence by examining the impacts on both education and future income. In addition, much of the existing research focuses on patient-targeted regulation. We contribute to the small body of work focused on provider-targeted regulations. Within this growing area of research, this is the first study to explore the effects of restrictions on abortion providers beyond Texas and Pennsylvania. We estimate the impact of TRAP laws implemented across the U.S. Finally, unlike previous studies, we are able to identify the effects of different types of TRAP laws separately.

The remainder of the paper is structured as follows: Section 2 describes the legal history of abortion, TRAP laws, and the previous literature, Section 3 describes the data, Section 4 explains the empirical strategy, Section 5 documents the results, and Section 7 concludes.

2 Background

2.1 Legal history of abortion in the US

The 1960’s civil rights and antiwar movements inspired women’s liberation movements. These movements inspired the reforms and repeals of restrictive abortion laws in some states and also set the grounds for the legalization of abortion nationwide (Obos Abortion Contributors, 2014).

On January 22, 1973, the U.S. Supreme Court legalized abortion in the landmark case *Roe v. Wade*, which established that the right to an abortion during the first trimester was protected under a constitutional right to privacy. The Court allowed states to place

restrictions in the second trimester to protect a woman’s health and, in the third trimester, to protect a viable fetus. The Court also held that a woman would not be forced to continue a pregnancy if her health or life were endangered. The right to obtain an abortion became legally protected to the same standard as freedom of speech or religion, and any law that pertained to abortion access would be subject to “strict scrutiny.” This standard meant that if a law restricting abortion were challenged in Court, the onus was on the state to prove that the regulation did not violate this fundamental right (Mercier et al. 2018).

As a response to *Roe v. Wade*, between 1973 to 1992, several states tried to impose strict regulations on abortion clinics. Since many of these requirements were struck down by lower federal courts starting in the early 1980s, states took a different approach and restricted abortion access directly through the market’s demand-side the patients. Some of these restrictions include laws requiring parental involvement in a minor’s decision to abort, limits to Medicaid funding of abortion, mandating the provision of information including unfounded claims about risks, and requiring a waiting period between receipt of mandated information and an abortion (Joyce, 2011; Guttmacher Institute, 2020b).

In 1992, the abortion regulation landscape changed with the next major Supreme court ruling regarding abortion access. In *Planned Parenthood v. Casey* (*Casey* from now on), the Supreme Court upheld in a 5-4 decision the 1989 Pennsylvania Abortion Control Act that included counseling with state-mandated content, a 24-hour waiting period between counseling and abortion, parental consent for minors, extensive reporting requirements for abortion providers, and spousal notification if the woman seeking an abortion was married, this last requirement being the only one found unconstitutional (Mercier et al. 2018, Obos Abortion Contributors, 2014).⁵

With this decision, the Court upheld the legality of abortion throughout the U.S., but dramatically changed regulatory standards in several ways. Under *Casey*, while a state could not prohibit a woman from obtaining an abortion prior to viability, states did have

⁵According to Mercier et al. (2018), the Pennsylvania Abortion Control Act (PACA) is considered the original TRAP law.

the right to restrict abortion, as long as those restrictions did not pose an “undue burden” on the woman seeking an abortion. Under *Casey*, courts were now directed to consider the particular restriction and the degree to which it would interfere with the woman’s ability to access abortion. States seeking to regulate or restrict abortion had a new standard to meet and a template for a law that met this standard (Mercier et al. 2018). In the aftermath of *Casey*, state and local legislatures began to pass more and more laws to restrict abortion, and the Supreme Court has more often upheld them.

The current abortion landscape has significantly evolved since its legalization, but particularly after *Casey*. According to the Guttmacher Institute, one-third of the 1,193 state abortion restrictions since *Roe v. Wade* were enacted between 2010 and 2017 (Guttmacher Institute, 2017). These laws most often targeted the demand side of abortion, such as bans of late-term abortions, restrictions on medication abortions, enforcement of waiting periods, and “informed consent” requirements mandating that medical personnel provide inaccurate information. Efforts to use clinic regulations to limit access to abortion, rather than to make its provision safer, also resurfaced after *Casey* and have gained steam since 2010 (Guttmacher Institute, 2020b). These restrictions on the supply side of abortion are better known as targeted regulation of abortion providers (TRAP) laws.

2.2 TRAP Laws

Abortion providers are subject to strict evidence-based regulations explicitly created to ensure patients’ safety. These include state licensing requirements, federal workplace safety requirements, association requirements, and medical ethics requirements (Guttmacher, 2020b). Despite these regulations, states have also enacted TRAP laws, which mandate requirements that are more stringent than those for other medical procedures of similar risk (Jones et al. 2018). According to anti-abortion rights activists, the provisions make abortion safer, but there is no evidence that this is true. Abortion is one of the safest medical procedures in the country, far safer than pregnancy and childbirth, and complications are rare (Obos Abortion

Contributors, 2014).⁶

The passage of TRAP laws is a function of complicated political processes. For instance, Texas HB2 provides an example of how politically influenced abortion restrictions are. Passage of this Bill involved a governor’s special session, a 10-hour filibuster, an after-hours vote later nullified by the Lieutenant Governor, a second special session, and a heavily partisan vote. As in Texas, abortion legislation in many other states is heavily charged by political decisions rather than women’s health and safety.

TRAP laws are diverse, and states differ on the specific restrictions they impose on providers. This study identifies three main categories of TRAP laws, encompassing the most common requirements for abortion providers. We additionally discuss two other types of provider regulations that have evolved relatively recently.

Figure 1 displays the enforcement of the first TRAP law in each state across the years. The map indicates that most of the states that have implemented TRAP laws are in the Midwest and the South. States in the South generally have higher percentages of Black population relative to states in other regions. Also, the map reveals that the implementation of these laws became more frequent after 1992.

Hospital Admitting Privileges The first main category of TRAP laws is hospital admitting privileges. These privileges allow providers to admit patients to a particular hospital and personally provide specific medical services at that hospital.⁷ Complying with admitting privileges requirements may be difficult for clinics and providers. These laws often require that providers live near the hospital and admit a certain number of patients per year. How-

⁶The leading medical groups uniformly oppose TRAP laws. Far from making women safer, they put women’s health in jeopardy by shutting down clinics and making it more difficult for women to access safe and legal abortion care. The American Medical Association and the American College of Obstetricians and Gynecologists have said, “there is simply no medical basis” for the TRAP law and that it “does not serve the health of women..., but instead jeopardizes women’s health by restricting access to abortion providers” (ACLU Fact Sheet)

⁷Missouri was the first state to enact such a policy in 1986, and these laws remained relatively rare until 2011. Several states successfully have established these laws, but they were tied up in legal challenges in many other states (Austin and Harper, 2019).

ever, abortion is a very safe procedure.⁸ As such, it is difficult for providers to meet the hospital admission threshold. Securing admitting privileges may be particularly challenging for rural providers as there is often no hospital nearby.

The existing evidence on how hospital admitting privileges laws affect abortion access is mainly based on Texas' case. After Texas's HB2 passed in July 2013, almost half of the existing clinics closed due to the inability to comply with this requirement (Grossman et al. 2014).

Ambulatory Surgical Centers The second category requires abortion facilities to operate as an ambulatory surgical center (ASC). ASCs are health facilities that perform surgical procedures that typically do not require an overnight stay. These facilities usually perform invasive surgical procedures and use higher levels of sedation than abortion clinics do. They generally are set up and equipped for emergencies and meet a high standard of sterility. The rules that cover ASCs are strict, often specifying hallway width, the number of bathrooms, hospital-grade ventilation systems, specifications for janitor's closets, and the size of treatment rooms, among others (Mukpo, 2020). Depending on the state, these requirements can apply to all providers or only to those providing abortion beyond a certain gestational age (Austin and Harper, 2019). Opponents argue that ASC laws are too restrictive as clinics and providers already comply with federal and state safety standards.⁹

The only existing empirical evidence on the impacts of an ASC law studies Pennsylvania's case. Pennsylvania SB732, passed in 2011, imposed restrictions on abortion providers to operate as an ASC. Some of the requirements included increased hallway width, increased operating room size, increased staffing requirements, and elevators size guidelines. The enforcement of this law obliged 9 out of the 22 abortion facilities to permanently close their

⁸Fewer than 0.5 percent of abortion patients in the United States experience a major complication that requires hospitalization (Guttmacher Institute, 2020a).

⁹Federal standards include those set by the Occupational Safety and Health Administration, the Health Insurance Portability and Accountability Act of 1996, and the Clinical Laboratory Improvement Amendments of 1988; state regulations include building fire codes, professional licensing standards, and continuing education requirements (Guttmacher Institute, 2020a).

doors. Although most of the closures happened in urban areas, the remaining open clinics faced increases in the demand for services, reducing their capacity to operate (Kelly, 2020).

Transfer Agreements The third category is transfer agreement requirements, which require clinics and providers to have a written transfer agreement with a local hospital. While admitting privileges are granted on a case-by-case basis to individual doctors, a transfer agreement is signed between the hospital and the clinic itself. With this “contract,” a hospital agrees to treat anyone who needs emergency care resulting from an abortion performed at a specific clinic. Some states with laws requiring written transfer agreements may allow a waiver if clinics can show they have made back up arrangements with doctors who have admitting privileges (Mukpo, 2020).¹⁰ Again, opponents argue that transfer agreement laws are unnecessary as federal law already requires hospitals to admit to anyone who needs emergency services.

Physician Presence Newer and less common are regulations focused on medication abortion, requiring a present physician to dispense the medication. Medication abortion is the use of prescription medications Mifepristone and Misoprostol rather than surgical methods such as dilation and curettage. These represent 39 percent of all abortions in the U.S. and are sometimes preferred by patients, based on their less-invasive nature (Guttmacher Institute, 2019). The Food and Drug Administration first approved this protocol in 2000, and provider regulations first appeared in 2004. These regulations prevent the provision of medication abortion via telemedicine by requiring that a provider administer the medications in-person. This prevents patients from accessing the medications via a pharmacy, as is allowed for other medications with similar records of safety and effectiveness. Given the recency of these regulations, we are unable to assess their impact in our main analysis. However, we do provide a partial analysis of telemedicine restrictions in Appendix A.

¹⁰According to Austin and Harper (2019), early versions of ASC and transfer agreement laws can be traced as far back as 1970, in the case of Alaska, 1973 in Illinois, Indiana and Rhode Island, and 1974 in Georgia. However, these early versions of the TRAP laws may be potentially different from those enacted after *Casey*.

Advanced Practice Clinicians Since the 1970s, most states have required that abortions be provided by physicians only. The medical literature confirms that abortion is safe and effective when provided by Advanced Practice Clinicians (APC), such as Certified Nurse Practitioners or Physician Assistants (Weitz et al. 2013). However, only 12 states have legislation or court rulings stating that APCs can perform abortions (Planned Parenthood, 2019). While this regulation has seen increasing changes since 2000, the lack of variation across states in this provision prevents the analysis of its impact.

Legal Challenges In the last few years, efforts have been made to strike down TRAP laws. In June 2016, in *Whole Woman’s Health v. Hellerstedt*, by a vote of 5-3, the Supreme Court ruled that two of the most burdensome TRAP laws that had been enacted in Texas were unconstitutional: an admitting privileges law that required physicians to establish official relationships with local hospitals and an ASC law. Since both of these requirements were unnecessary to ensure patients’ safety and patient care, the Supreme Court did not find any evidence to support the need for these requirements and concluded that the restrictions created an undue burden for women seeking abortion services. Although this case has not eliminated all TRAP requirements, it is paving the way to challenge other states’ regulations that target abortion providers (Guttmacher Institute, 2020a; 2020b).

2.3 TRAP laws and abortion access

The period 2011-2017 is particularly relevant when talking about abortion restrictions because 32 states enacted a total of 394 new restrictions on either patients or providers during this period, with the vast majority of these measures not being struck down by a court (Nash and Dreweke, 2019). This period is particularly relevant regarding TRAP laws because forty percent of these laws were enforced between 2011 and 2017.

TRAP laws may affect abortion access because some clinics and providers cannot comply with the requirements, which obliges them to stop operating. In 2017, ninety-five percent

of all abortions reported were provided at clinics. So change in the number of clinics is a good proxy for change in abortion access overall. According to Nash and Dreweke (2019), TRAP laws and administrative regulations reduced the number of clinics providing abortions between 2011 and 2017. During this period, the South and the Midwest had the largest share of new abortion restrictions, with nearly 86 percent of total restrictions nationwide enacted in those two regions. As a result, the South had a drop of 50 clinics, with 25 in Texas alone, and the Midwest had a decline of 33 clinics, mainly in Iowa, Michigan, and Ohio. (Nash and Dreweke, 2019). Regulations also resulted in the closure of nearly half of all the clinics that provided abortions in Arizona, Kentucky, Ohio, and Texas, and the closure of five clinics in Virginia, including two of the state’s largest providers.

Smaller changes in clinic numbers are also significant in states where access to abortion services is already extremely limited. Missouri, West Virginia and Wisconsin, each lost one clinic during 2011-2017 out of an already small number in each state. In cases like this, the remaining clinics typically cannot absorb all the patients seeking abortion care, and patients face significant obstacles to obtaining an abortion, such as longer travel distances and increased financial costs (Nash and Dreweke, 2019).

However, when TRAP laws have been struck down, clinic numbers in affected states have not increased significantly. This underscores the fact that once a clinic is forced to close, it can be challenging for it to reopen (Nash and Dreweke, 2019).

2.4 Existing Evidence

An array of studies has focused on the role of reproductive controls on health and economic outcomes for women and their families.

A large body of work has studied the impacts of early legal access to the “Pill” in the 60s and 70s and documents beneficial effects on women’s educational attainment, labor force participation, career decisions, earnings, marriage, and poverty, among others (Goldin and Katz, 2002; Bailey, 2006; Guldi, 2008; Hock, 2007; Bailey, 2010; Bailey et al. 2012; Browne

and LaLumia, 2014; Edlund and Machado, 2015; Steingrimsdottir, 2016; and Myers, 2017a). Other studies have also documented the harmful consequences of cuts to public funding for family planning, especially for those living in poverty. (Stevenson et al. 2016), fertility (Packham, 2017; Lu and Slusky, 2019), and preventive care (Lu and Slusky, 2016).

A smaller body of work has estimated the impact of access to abortion, including studies that analyze expansions to abortion access and those that study restrictions to access.

Studies of expanding access to abortion have documented that abortion legalization reduces fertility (Joyce and Mocan, 1990; Levine et al. 1999; Ananat et al. 2007; Guldi, 2008; Donohue et al. 2009; Myers, 2017b), increases educational attainment (Angrist and Evans 2000; Amador 2017), and improves labor force participation (Angrist and Evans 2000; Kalist 2004). All of these studies have focused on the era of access expansion in the 1960s and 1970s. Research on the impact of restrictions has focused on the 1980s through the 2010s and may be more relevant for today’s policy-making.

Limitations of public funding for abortion Access to abortion may be restricted by funding cuts or limitations on funding use. Abortion use was significantly reduced by the implementation of the Hyde amendment in 1976, which banned the use of federal funds for abortion (Trussell et al. 1980). State restrictions of the use of Medicaid for abortion decrease abortion use among minors (Lundberg and Plotnik, 1990; Haas-Wilson, 1993 and 1996; (Blank et al. 1996; Tomal, 1999) and low-income populations (Levine et al. 1996), though they have not been shown to impact overall birth rates (Haas-Wilson, 1997).¹¹ In North Carolina, cuts to the State Abortion Fund reduced abortion use and increased births (Cook et al. 1999; Morgan and Parnell, 2002).

Patient-targeted abortion restrictions Abortion restrictions that introduce obstacles to the patient’s efforts to seek an abortion have been shown to impact abortion use and

¹¹Meier and McFarlane (1994) and Matthews et al. (1997) also document that state Medicaid funding is negatively correlated with abortion rates and positively correlated with a number of infant and maternal health indicators.

fertility. Parental consent and/or notification laws have been shown reduce minors' abortion use (Cartoof and Klerman, 1986; Haas-Wilson, 1993; Ohsfeldt and Gohmann, 1994; Kane and Staiger, 1996; Joyce and Kaestner, 1996; Haas-Wilson, 1996; Ellertson, 1997; Altman-Palm, 1998; Tomal, 1999; Levine, 2003; Joyce et al. 2006; Joyce et al. 2020), delay their abortion timing (Rogers et al. 1991; Bitler and Zavodny, 2001; Joyce and Kaestner, 2001; Colman and Joyce, 2009), and increase early fertility (Tomal, 1999; Myers and Ladd, 2020). Other patient-targeted restrictions, such as mandatory waiting periods, have been shown to reduce abortion use and delay abortion timing (Joyce et al. 1997; Bitler and Zavodny, 2001; Lindo and Pineda-Torres, 2020). The role of gestational limits was explored in the Turnaway Study, which followed women who were denied wanted abortions and found that they had worse health and economic outcomes than women who were able to access the needed care (see Foster (2020) for an annotated list of findings). Compulsory ultrasound requirements have not been found to affect abortion use (Gius, 2019).

Provider-targeted abortion restrictions There is less evidence regarding the impacts of abortion restrictions that reduce clinics' ability to provide abortion services. Colman and Joyce (2011) is the first study to examine restrictions on abortion providers. The authors focused on the 2004 Woman's Right to Know (WRTK) law in Texas, which required providers performing abortions after 15 weeks of gestation to operate as an ASC. This study shows that WRTK triggered a dramatic decline in abortion services' availability after 15 weeks of pregnancy, causing a significant decrease in the number of abortions after this gestational age but not for earlier gestational ages.

Texas HB2 is the most widely studied provider-targeted restriction. It required that all providers obtain admitting privileges at a hospital located within 30 miles of the location where an abortion was performed and that all abortion facilities meet new ASC standards.¹² This law gained significant attention because once the admitting privileges requirement took

¹²The ASC standard was scheduled to be enforced in 2014, but it never happened. *Whole Woman's Health v. Hellerstedt* confirmed this requirement would not be applied.

effect in November 2013, half of Texas' abortion clinics closed. Grossman et al. (2014) present a pre and post comparison of the number of providers, the number of abortions, and second-trimester abortion rates in Texas after HB2 enactment. Although this study does not estimate the causal effects of HB2, their findings associate the Bill with declines in the number of providers and the abortion rate and increases in second-trimester abortions. Grossman et al. (2017) quantify that after HB2's enactment, the decline in abortions was higher in those counties whose changes in distance to the nearest open facility increased.

More recent studies have estimated the causal effects of HB2 on various health outcomes, leveraging variation in abortion access through the documented changes in distance to the nearest abortion provider resulting from clinic closures. Quast et al. (2017) examine the relationship between county-level abortion rates and proximity to abortion facilities. They estimate a 10 percent decrease in abortion rates when the distance to the nearest provider increases by 100 miles. Lu and Slusky (2019) find that the same level of increase results in a 1.2 percent increase in the overall birth rate, driven by fertility increases for unmarried women and nulliparous or uniparous women. Fischer et al. (2018) study both the funding cuts to family planning services in Texas and the enactment of HB2. Regarding HB2, their findings suggest that having no abortion provider within 50 miles reduced abortions by 17 percent. They also find an increase in births by 1 percent and non-statistically significant changes in contraception use. Lindo et al. (2019) also analyze the impact of clinic closures due to HB2, finding non-linear effects of travel distance on abortion rates - a change in travel distance from 0-50 miles to 50-100 miles reduces abortions by 16 percent. They also estimate that clinic closures caused congestion on the remaining open clinics, which lead to reductions in abortion rates and delays in abortion timing. However, their results do not allow us to conclude that the decline in abortions increased birth rates. These findings are consistent with those of Venator and Fletcher (2019). They find that following abortion clinic closures in Wisconsin (unrelated to TRAP laws), a 100-mile increase in distance to the nearest clinic predicts a 25 percent decline in abortion rates and a 3.3 percent increase in births.

Beyond HB2, TRAP laws have only been examined in Pennsylvania. In 2011, Pennsylvania implemented ASC requirements for abortion providers, causing the closure of almost half of the abortion facilities creating congestion in the remaining open. Kelly (2019) shows that the reduced clinic capacity negatively impacted abortion timing by reducing approximately 30 percent in abortions happening within the first eight weeks of gestation and increasing abortions in later stages of pregnancy. It also caused a reduction in the abortion rate of 14 percent and increases in birth rates by 3 percent.

Impacts beyond service use and fertility Very few studies have examined the impact of any abortion restriction (clinic- or patient-targeted) on outcomes beyond service use and fertility. These are dominantly focused on patient-targeted restrictions.

Borelli (2011) examines the impact of parental involvement laws on fertility and educational attainment. Her findings indicate that parental involvement laws reduced the probability of black women completing high school and their likelihood of entering college.

The investigators of the Turnaway Study compared future outcomes of women who were denied wanted abortions due to gestational limits to women who were able to receive abortions. They find that abortion access increased the probability of full-time employment and reduced the probability of living in poverty at six months and four years after the abortion was sought (Foster et al. 2018b). They also find that abortion access has economic and developmental benefits for existing children (Foster et al. 2019) and subsequently born children (Foster et al. 2018a).

The only study of the economic impacts of TRAP laws, of which we are aware, is Bahn et al. (2020). The authors document that women in states that ever implemented TRAP laws before 2016 exhibit lower propensity to change jobs and move to higher-paying jobs between 2015 and 2016. This analysis is suggestive, though not conclusive, as it may be confounded by time-invariant state differences, which are not controlled in the analysis.

2.4.1 Differences by race

Previous studies highlight that the impacts of abortion access may be different across demographic groups. Many studies have documented that impacts of abortion legalization on birth rates are significantly larger for black women (or teens) versus whites (Joyce and Mocan 1990; Gruber et al. 1999; Levine et al. 1999; Angrist and Evans 2000; Donohue et al. 2009; Ozbeklik 2014; Myers, 2017b). The impacts of restrictions on abortion access have also been shown to differ by race. Reductions in abortion funding increase births by twice the amount among black women as white women in North Carolina (Cook et al. 1999; Morgan and Parnell, 2002). Reductions in Medicaid funding for abortion increase fatal injuries to black children but not white children (Sen 2007) Myers and Ladd (2020) find that parental involvement laws increase births for both White and Black teens. However, at higher avoidance distances, the estimated effects are 50 to 100 percent larger for Black women.¹³ Similarly, Venator and Fletcher(2019) find that a distance increase of 100-miles increases births by five times as much among black women compared to white women. These findings are consistent with the evidence provided by Joyce, Tan, and Zhang (2013) that distance to a provider has a greater impact on abortion use for nonwhite vs. white women.

The few studies that have examined the impact of abortion access on economic outcomes have also found differences by race. Angrist and Evans (2000) find that that the impact of abortion legalization on early births translates into improvements in high school graduation and college entry for Black women (only). Similarly, Borelli (2011) finds negative impacts of parental involvement laws on educational attainment for black but not white women. Angrist and Evans (2000) and Kalist (2004) both find impacts of abortion legalization on employment for Black but not White women.

Why does research find greater impacts of abortion access among Black women? Black women have higher rates of unmet need for contraception, higher rates of unintended preg-

¹³Myers and Ladd (2020) define “avoidance distance” as the difference between the distance to the nearest provider of a confidential abortion and the nearest abortion provider.

nancy, and report higher use of abortion (Bernstein and Jones, 2019ab). Lower access to contraception is likely to increase the potential impact of access to abortion. Black women are also more likely to be living in poverty than white women and so generally face greater barriers to accessing reproductive health care and are less able to overcome abortion access restrictions.

These disparities stem from the broader environment of structural racism and oppression facing black women in the United States. Throughout the history of the country, there have been efforts to control the fertility of women of color and low-income women, including through involuntary sterilization and long-acting contraception for public assistance recipients (Rocca and Harper, 2012; Thorburn and Bogart, 2005; Gold, 2014). This legacy of reproductive coercion perpetuates mistrust of the health care system and may deter women from seeking care.

Given the evidence of sizeable impacts of abortion access on black women relative to other women, it seems likely that TRAP laws would also differentially affect these two groups. Our analysis explores the impacts on the full population and Black women as a sub-group of interest.

3 Data

We combine data from multiple sources. We first create a state-year panel that includes information on the enforcement of each category of TRAP law. We use this to create a state-by-birth-cohort panel that includes information on each birth cohort’s exposure to various TRAP laws based on their year of birth, state of residence, and neighboring states. We combine this with 13 rounds of cross-sectional data on individual women, which are representative at the national level. The resulting dataset allows us to estimate the effects of exposure to TRAP laws on fertility, human capital investment, and labor decisions.

3.1 Legal coding of TRAP laws

We rely on the longitudinal database constructed by Austin and Harper (2019), which provides information on the years of enactment, enforcement, and enjoinder of TRAP laws across states from 1973 through 2017. We focus on the years of implementation instead of the year of enactment because, as Austin and Harper (2019) state, “the enforcement can occur well after the year of enactment due to political, legal and logistical reasons.” Policy coding can be problematic because of the complexity of these laws, which allows for the possibility that sources of information on the timing of TRAP laws could interpret the timing, content, and exposure to a law differently. We are confident in the information Austin and Harper (2019) compiled on the relevant dates for each TRAP law because they cross-referenced different sources of information to provide the most precise years possible that genuinely reflect the abortion policy environment at the time.¹⁴

We focus on the three main categories of TRAP laws we described in subsection 2.2—admitting privileges laws, ambulatory surgical center (ASC) laws, and transfer agreement laws—to evaluate their effects on economic outcomes separately and all together.

We modified some of the years of enforcement of TRAP laws that Austin and Harper (2019) provided. When states amended a law over time, these authors documented the process but coded the first law passage as the law’s date of enforcement. However, the authors recognized that comparatively early laws in the dataset, such as those following the federal legalization of abortion, are likely not comparable to more recent TRAP laws. Then, we recoded the year of enforcement to reflect recent, major modifications to the laws or the implementation of more restrictive bills that are more representative of the current abortion landscape than the first time these laws were implemented.¹⁵ Table 1 provides information

¹⁴The sources of information Austin and Harper (2019) used are Guttmacher Institute, state websites, Lexis Nexis Quicklaw, WestlawNext, a resource created by the American Public Health Association, Law Atlas, media reports, among others.

¹⁵We modified some of the dates as follows. Admitting privileges laws: we changed the year of enforcement from 1973 and 2011 to 2014 for Illinois and Indiana, respectively, and from 1988 to 2005 for Missouri. ASC laws: From 1973 to 1993 for Indiana, and from 1973 to 2002 for Rhode Island. Transfer agreement laws: From 1973 to 1993 for Indiana, and from 1976 to 1999 for Wisconsin.

on the relevant dates for each state.

3.2 Measure of exposure

Using the dates in which TRAP laws were enforced (and blocked) in each state based on the information from Austin and Harper (2019), we construct a dataset at the state-birth-cohort level that contains the exposure to each category of TRAP law for each birth cohort during each critical period (when they were aged 15 to $k - 1$, for $k \in 18, 21, 24$). The exposure variables are the percentage of years during the critical period in which the state-birth-cohort was exposed. This measure of exposure reflects the fact that there is not just one single age at which exposure matters; instead, a woman’s cumulative exposure during this critical period of life determines (partially) the barriers to abortion access that she likely faces. These data include measures both for the state of residence exposure and for exposure to laws in bordering states. We construct a measure of being “border-trapped,” which is the percent of time during the critical period when all the bordering states within 300 miles had a TRAP law. Those with no bordering states within 300 miles are also considered border-trapped.¹⁶

Table 2 shows the average proportion of women exposed to in-state and bordering state TRAP laws between age 15 and age $k - 1$ for $k \in 18, 21, 24$, for all women and Black women. Regarding in-state exposure, in general, Black women have been exposed to TRAP laws more than the population average in the U.S. This is not surprising since the enforcement of TRAP laws has been more common in the South, where Black women are a higher share of the population. In the case of admitting privileges laws, for each age k , the proportion of Black women exposed is more than double the population average. Similarly, Black women’s exposure to ASC laws and transfer agreement laws is higher for each k . Regarding TRAP laws in bordering states, Black women’s probability of being border-trapped not different from the population average.

¹⁶For details on the construction of the border-trapped measure, see Appendix B.

3.3 Women’s outcomes

Our primary source of socioeconomic and demographic information is the 2005 to 2017 rounds of the American Community Survey (ACS).

We focus on women exposed to abortion restrictions in the Post-*Casey* era. Since this decision gave states more freedom to restrict abortion, it is likely that the potential effects of the exposure to abortion restrictions enacted pre-*Casey* are different from the impact of restrictions enacted post-*Casey*. Our sample comprises women born between 1977 and 1993 who were thus aged 15 to 24 during the era 1992 to 2017. We also restrict the sample to women from these cohorts who were interviewed at ages 24 or older, which includes women interviewed up to age 40.¹⁷

Ideally, since TRAP laws are state-dependent, we would like to know women’s state of residence when they were 15 to 24 years old to define their exposure to these policies. However, the ACS only provides information on the state of residence at the time of the interview. Edlund and Machado (2015) show that among women interviewed at ages 20 to 44, the state of residence at interview is highly correlated with the state of residence during adolescence; in fact, it is a better predictor than the state of birth. Therefore, we use the state of residence at the interview as a proxy for the state of residence during the critical period of exposure (ages 15-24).

To evaluate the potential effects of TRAP laws on fertility, we generate identifiers for women that had an early birth. We note that abortion access is known to affect fertility not only at early ages but at all reproductive ages. In fact, most abortions are provided to women who already have children (Guttmacher, 2020c). We focus on early births because we are interested in the impacts of abortion access on educational attainment. While women may complete a college degree at any age, 77 percent of first bachelor’s degrees are awarded to

¹⁷We set a lower bound age for sample inclusion to reduce truncation of educational attainment arising from the observation of women who have not yet completed schooling. We set this higher than the expected age of graduation, 21, as only 40 percent of first-time bachelor’s degrees in the U.S. are awarded before age 22 (authors’ analysis of data from the 2017 National Survey of College Graduates).

individuals aged 24 or less.¹⁸ As such, an unwanted birth is most likely to impact educational attainment if it occurs in adolescence or early adulthood.

We define an early birth as a birth before age k , for $k \in 18, 21, 24$. In the ACS, these are identified as respondents who are coded as the mother of a child in the household roster who is less than k years younger than the respondent. This is an excellent proxy for the occurrence of a birth that was less than 18 years ago. In the U.S., 89 percent of children under 18 co-reside with their biological mother.¹⁹ This drops substantially as children turn 18. So we limit our analysis sample to women aged k to $k + 17$ to minimize measurement error in birth occurrence.

We analyze the effects of TRAP laws on human capital investments through an indicator of completing college. This indicator variable takes the value of one when women report finishing college, as well, as if they report having studied any year of graduate school.²⁰ We also study the effects of TRAP laws on the real family income at the time of the interview, in 2012 prices. Table 3 Panel A shows statistics regarding early birth, college completion, and real family income at the interview for both women exposed before age 24 and other women. We present these statistics for all women and Black women separately. In general, Black women are more likely to give birth before age k than the population average, regardless of exposure to TRAP laws. Black women also have lower college completion and lower mean real family income than the population average. Women exposed to TRAP laws are moderately more likely to have an early birth, and this association is stronger among Black women. Exposed women are also less likely to complete college and have lower family income relative to their non-exposed counterparts.

¹⁸Based on author's analysis of data from the 2017 National Survey of College Graduates.

¹⁹Based on authors' analysis of Current Population Surveys, 2005-2017, using self-reported parent-child links. Births uncounted due to mortality would be extremely few, as the under 18 mortality rate in the U.S. is 0.3 percent (Statista, 2017)

²⁰We also report in the Appendix results for an indicator of entering college.

3.4 Policy environment controls

We rely on the differential timing of TRAP law implementation across states to identify the impacts of TRAP laws on economic outcomes. However, if the timing of TRAP law implementation is correlated with the onset of other policies that may affect births or economic outcomes, our estimates may be confounded. To address this, we control for other policies related to abortion and contraception, as well as social policies that may affect educational attainment and future income. We rely on data that codes the presence of parental involvement laws, mandatory delay laws, and exposure to state Medicaid funding for abortions in each state and year (Merz et al. 1995; Guttmacher Institute, 2016). We also include controls for state exposure to insurance mandates to cover contraception (Yordán, 2014), availability of emergency contraception over-the-counter (Zuppann, 2013), and expanded Medicaid eligibility for family planning services (Kearney and Levine, 2009; Guttmacher Institute, 2015; NARAL, 2005).

We also include controls for state changes in welfare policy, such as the exposure to welfare reform, maximum benefits, and family caps (Moffitt, 2002; U.S. House of Representatives, 2012; Urban Institute, 2019).²¹ Finally, we control for state changes in available resources for higher education based on state appropriations for higher education (Grapevine Reports, Center for the Study of Education Policy).²²

3.5 Abortion provision

To explore pathways of impact, we additionally estimate the impact of TRAP laws on provider availability and the provision of abortion. These data are provided by the Alan Guttmacher Institute (AGI), which conducts regular surveys of the abortion provision landscape. The data are at the county-by-year level from 1973 to 2014 and include the number

²¹We thank Caitlin Myers for providing us with the data for the policy environment controls described in this section

²²Educational appropriations are state and local support available for public higher education operating expenses, including ARRA funds, excluding appropriations for independent institutions, research, hospitals, and medical education.

of providers in a county and the number of abortions provided in the county.

A few caveats are in order regarding these data. First, these data are collected regularly but not annually. The data include information in twenty-eight separate years. The analysis of the data is limited to the available years. Second, to protect provider privacy, providers who performed fewer than 400 abortions in a year are excluded from the county-year provider count, and county-year combinations where fewer than 400 abortions were provided in total have been excluded from the data.²³ In our analysis, these county-year observations are coded to have zero providers and zero abortions, as is true for the vast majority of county-years that do not appear in the data.²⁴ The impact of this truncation is that abortion availability and provision are mismeasured disproportionately in rural counties. However, there is no reason to believe that the mismeasurement is correlated with TRAP laws' implementation and, therefore, should not induce bias in our estimates. Third, the number of abortions provided does include abortions provided to non-residents, which reduces the likelihood that the county level results will match the results of our resident-based approach in the primary analysis.

3.6 Birth rates

We also seek to confirm our findings on the impacts of TRAP laws on early births using an alternative data source. In addition to individual-level data from the ACS, described above, we also estimate this relationship using county-by-year natality data provided by the National Vital Statistics System. These data include information for each individual birth recorded in the U.S. from 1989 to 2017. We rely on the birth record information regarding mother's year of birth and mother's race to create a county-by-year birth rate for demographic sub-groups. To create birth rates, we calculate the number of births per 1,000 women using state-level annual estimates of state populations for women aged 15 to 24 from

²³AGI no longer provides the un-truncated data to external researchers.

²⁴For reference, the number of abortions provided in a county in a year in these data range from 400 to 104,440, with a median of 2,414 and a mean of 4,980. We are unable to assess the percent of non-zero observations that are truncated.

SEER (2018). We do this separately for all women and black women.

3.7 Sexual behavior

We also test whether individuals' perceptions of abortion access can impact their behaviors and expectations. We rely on data from the Center for Disease Control's Youth Risk Behavior Surveillance System (YRBSS), which includes a representative sample of students in grades 9 through 12 in odd-numbered years from 1991 to 2017. From these data, we employ information on sexual activity and contraceptive use, as well as information on individual gender, age, race, and state of residence.²⁵

4 Empirical Strategy

This study relies on a quasi-experimental research design to estimate the effects of the enforcement of TRAP laws on early births and economic outcomes. We exploit the variation across states and over time in the enforcement of these laws using the following equation:

$$Y_{itpsa} = \beta_0 + \beta_1 \text{ExpTRAP}_{ts} + \beta_2 \text{ExpBord}_{tps} + \gamma X_{ts} + \eta_s + \eta_t + \eta_a + \epsilon_{itpsa} \quad (1)$$

The dependent variable Y_{itps} indicates the outcome for woman i born in year t residing puma p and state s , who was age a at the time of her interview. We describe the outcomes Y in section 3.

On the right-hand side, η_s represents state fixed effects to control for time-invariant state characteristics, η_t represents individual year-of-birth fixed effects to control for state-invariant temporal shocks, and η_a is a set of age fixed effects at the time of the interview.

²⁵The YRBSS combined dataset does not contain information on all the states. Some state and district health and education agencies that conducted the surveys did not give CDC permission to include their data in this dataset. Furthermore, some states did not collect information on specific questions or did not release this information to CDC. The combined dataset contains data for 44 states. The states whose information is not collected are Indiana, Massachusetts, Minnesota, Ohio, Oregon, and Washington.

The standard errors are clustered at the state level to account for the correlation of errors within each state.

The variable of interest is $ExpTRAP_{ts}$, captures the percent of years a woman born in year t , living in the state s was exposed to a TRAP law between age 15 and $k - 1$. We estimate separate equations for each $k \in \{18, 21, 24\}$. The parameter β_1 is the average treatment effect of the exposure to TRAP laws before age k on an outcome Y . This estimator is the reduced-form effect of exposure to TRAP laws on women’s birth and economic outcomes. The variable $ExpBord_{tps}$ represents the exposure to being border-trapped before age k for women born in year t living in the PUMA p in state s .²⁶ The vector X_{ts} includes controls for exposure to other abortion restrictions, contraception policies, and welfare reforms, as well as race and ethnicity, as determined by the state of residence and year of birth. When estimating for the whole population, we also control for race and ethnicity.

In addition to restricting the analysis to specific birth cohorts (as discussed in section 3), we also limited the sample to women interviewed at specific ages. In the case of early births, we limit the analysis to women aged k through $k + 17$. We selected this upper bound because our data on births is drawn from the household roster, so information on birth occurrence depends on the child still living with the mother. Regarding education and labor outcomes, we limit the sample to women aged 24 or older, as women at this age are more likely to be out of school and potentially in the labor force.

Our analysis compares how a woman’s economic outcomes differ from the mean for her birth cohort and the mean for her state as a function of her exposure to TRAP laws. We recognize that an alternative identification strategy would be to employ exposed men as the control group (instead of or in addition to unexposed women). However, we highlight that men are not unaffected by abortion access, as unintended births may also affect their education, career decisions, and future earnings. As such, their use as a control group would significantly underestimate policy impacts.

²⁶For description of relevance of PUMA, see Appendix B.

5 Results

In this section, we present the results of estimating equation 1 for each one of the outcomes we described in section 3.

As we discussed in section 4, we hypothesize that the direct pathway by which TRAP laws affect economic outcomes is through early childbearing. Therefore, we explore the impact of exposure to each TRAP law on the probability of childbearing before age k for $k \in \{18, 21, 24\}$.²⁷

Table 4 shows the estimated effects of exposure to a TRAP law on an early birth for the full sample. Each coefficient represents the value of β_1 in a separate estimation of equation 1. In column (1), we control for the state of residence fixed effects, age fixed effects, and year of birth fixed effects. Column (2) also accounts for exposure to being border-trapped. Column (3) additionally includes controls of exposure to other abortion policies. Column (4) also controls for welfare and contraception policies; this is our preferred specification. Finally, column (5) additionally controls for state appropriations for higher education.²⁸ The Table contains four panels, where each presents the impacts of a separate category of TRAP law: (A) admitting privileges laws, (B) ASC laws, (C) transfer agreement laws, and (D) any of these TRAP laws. The columns and panels of Tables 5 to 8 are organized similarly.

The results of Table 4 indicate that the exposure to TRAP laws before age k did not have significant impacts on the probability of birth before age k for any value of k in the full sample.

In Table 5, we explore how TRAP laws effect early births for Black women, estimating equation (1) for the sample of Black women.²⁹ In general, the results show that living in a state where a TRAP law was enforced while aged 15 to k increases the probability of an early birth for Black women. The effects differ across the different types of TRAP laws,

²⁷We analyzed the effects for each $k \in \{17, 18, 23, 24\}$, and the results are consistent; we report selected results for brevity.

²⁸All the estimations are weighted by the person's weight provided in IPUMS-ACS. It indicates how many people in the U.S. population are represented by a person in the IPUMS sample.

²⁹The estimations in Tables 5 to 8 do not include controls for race and ethnicity such as Table 4 does.

though.

According to the results in Panel A, living in a state where an admitting privileges law has been enforced does not have any statistically significant effect on the probability of birth for Black women before ages 18, 21, or 24 these results are not surprising. From the three categories of TRAP laws we study, women have been exposed the least to admitting privileges laws because these restrictions are relatively new. As we can see in Table 2, the average exposure of Black women to admitting privileges laws is about half of the average exposure to ASC laws or transfer agreement laws. Perhaps too few women may have been affected by admitting privileges laws to detect a significant effect on their fertility decisions. We expect similar non-significant results of exposure to admitting privileges laws on other outcomes for the same reasons.

The results in Panel B and C indicate that the exposure to ASC laws and transfer agreement laws cause moderate but statistically significant increases in the probability of early birth. The results of our preferred specification (column 5) indicate that full exposure to ASC laws (Panel B) increases the likelihood of an early birth between 0.8 and 2.9 percentage points. These changes represent increases of 6.2 to 6.6 percent in the probability of an early birth before ages 18, 21, and 24. The percent increase is relative to the probability of early birth for Black women *not exposed* to a TRAP law (probabilities are 13 percent before age 18, 32 percent before age 21, and 44 percent before age 24). Similarly, the exposure to transfer agreement laws (Panel C) significantly increases the probability of an early birth when exposed before ages 21 and 24 by 1.9 to 4 percentage points. This corresponds to increases of 5.9 and 9 percent in the probability of an early birth, respectively.

The results in Panel D indicate that the exposure to any of the three categories of TRAP laws significantly increases black women's probability of an early birth before age 24 by 2.7 percentage points relative to the mean for non-exposed Black women (44 percent). This change corresponds to a 6.1 percent increase.

Table 6 shows the reduced-form effects of Black women's exposure to TRAP laws on the

probability of completing college.³⁰ Similar to the results in Table 5, exposure to admitting privileges laws does not have any statistically significant impact on this outcome. Exposure to ASC laws before age 18 reduces their probability of completing college by 1.7 percentage points or 7 percent, relative to the mean for non-exposed Black women (24 percent). The estimated effects for the other ages of exposure are not statistically significant. The results in Panel C show that the exposure to transfer agreement laws before age 18 and 21 causes statistically significant decreases in the probability of college completion by 2.5 and 2.6 percentage points. These reductions correspond to declines of 10.4 to 10.8 percent in the probability of college completion. Panel D shows that exposure to any TRAP law before ages 18 and 21 decreases the probability of completing college by 1.9 and 1.2 percentage points, respectively. These changes are equivalent to 7.9, and 5 percent declines in the probability of completing college relative to non-exposed Black women, respectively.³¹

Table 8 shows the reduced-form effects of exposure to TRAP laws on the log of real family income at the time of the interview (age 24-40), in 2012 USD. As in the cases of early births and college completion, we do not identify significant effects of exposure to admitting privileges laws on this outcome. Regarding the exposure to ASC laws (Panel B), we find negative and significant impacts on real family income. However, once we account for other policy controls, these estimators are not statistically significant. Panel C shows that exposure to transfer agreement laws at ages 18, 21, and 24 significantly reduces real family income by 4.4, 6.1, and 6.2 percent, respectively. This change is equivalent to a reduction in real family income of about 1425-2008 USD per year, based on the mean real family income of non-exposed Black women (32,395 USD). The exposure to any TRAP law

³⁰None of the estimated impacts of TRAP laws on college completion of non-black women are statistically significant.

³¹Table 7 shows the reduced-form effects of the exposure to TRAP laws on the probability of entering college. This outcome takes the value of one if a woman studied at least one year of college but did not necessarily complete it. The estimated treatment effects indicate that the exposure to TRAP laws does not cause changes in the probability of entering college for most of the TRAP laws and most of the ages of exposure. If any, the exposure to ASC laws and any TRAP law before age 18 causes moderate reductions in the probability of entering college by 1.7 and 1.4 percentage points, respectively. These changes are equivalent to 2.7 and 2.2 percent decreases relative to the mean for non-exposed Black women.

(Panel D) also causes reductions in real family income by 3 percent and 3.4 percent when women are exposed to TRAP laws before ages 18 and 21, respectively, which corresponds to a reduction in real family income of 972-1,101 USD per year. These results are in line with Goldin and Katz (2002)’s theoretical framework and indicate that women may suffer lower wages and may also end up in marriages or partnerships with lower-earning partners relative to those they might have had if they had not faced TRAP laws.

Heterogeneity by metropolitan status We additionally explore whether the impacts of exposure to TRAP laws vary by metropolitan status. One might expect that women in metropolitan areas have more options for accessing abortion, so any given clinic closure would have a lower impact on them. On the other hand, if clinic closures act to increase the distance to the nearest clinic, this might be less of a barrier for women in rural areas who are more accustomed to traveling long distances to access services of all sorts. For urban women who may not have private means of transportation, increased distances may, in fact, present a greater barrier. Empirically, we observe that the impacts are not statistically different by metropolitan status. This may reflect that both countervailing effects described above are operating in tandem, offsetting each other.

5.1 Falsification test

Goodman-Bacon (2019) proposes that difference in difference estimators with variable treatment timing (and two-way fixed effects) may suffer from bias due to the uneven weighting of each sub-comparison within the estimation. To test whether this issue may be driving our results, we conduct an event study version of our analysis, as suggested by Goodman-Bacon (2019).

Our primary analysis does not translate directly into an event study framework. A standard difference-in-difference with variable treatment timing relies on a state by year panel where the treatment turns on in different years in different states and includes state

and year fixed effects. Our treatment is not binary, but rather, is a continuous variable of the share of years exposed during the period when a woman is aged 15-23. The value of the exposure variable is a function of her age at first exposure, which is determined by the state of residence and year of birth. To conduct an event study analysis, we convert our continuous exposure variable into a set of dummies indicating the age at which a woman is first exposed. We estimate the model

$$Y_{isba}^K = \alpha_s + \alpha_b + \alpha_a + \sum_k \tau_k (D_{sb} * T_{sb}^k) + \epsilon_{isb} \quad (2)$$

Where Y_{isba}^K indicates that woman i residing in state s , who was born in year b and interviewed at age a had a birth before age K . T_{sb}^k indicates that a cohort from state s born in year b was first exposed to a TRAP law at age k . D_{sb} indicates that the cohort born in year b in state s is ever exposed to a TRAP law. τ_k estimates the impact of exposure to a TRAP law beginning at age k on the probability of having a birth before age K , relative to never being exposed.

We expect $\tau_k \approx 0$ for $k \geq K$, $\tau_k > 0$ for $k < K$, and $Corr(\tau_k, k) < 0$, such that the impact of exposure is decreasing in the age at first exposure and is not different from zero if the age of first exposure occurs after age k . We estimate this equation for Black women for $K = 24$ and $k \in \{< 13, 13, 14, \dots, 28, 29, > 29\}$, where the endpoints are categories including all women exposed before age 13 or after age 29, respectively. We estimate this equation for each one of the TRAP laws categories.

Figure 2 shows the estimated treatment effects on the probability of birth before age 24 across the different ages in which women may have been exposed to TRAP laws.³² We only present these results for early births because this is the outcome that we expect to be impacted by the enforcement of TRAP laws more immediately. We expect to observe that when laws were implemented when women were younger than 24 years old, the probability

³²We only show the figures for an early birth before age 24. However, the results for early births before ages 18 and 21 are consistent with these results but noisier.

of delivering a baby before that age increases significantly. Then, if a law is enforced after a woman is 24 years old, it should not affect her probability of early birth.

Panel A of Figure 2 indicates that the effects of implementing an admitting privileges law on the probability of an early birth before age 24 are not conclusive. Although for some of the ages of implementation before age 24, we observe a positive and statistically significant increase in the probability of birth before this age, this is not consistent across all ages $k < 24$. Regarding the enforcement of ASC laws and transfer agreement laws (Panels B and C), we can observe that when these laws are enforced when women are younger than 24 years old, their probability of birth before age 24 increases significantly. Then, when analyzing the enforcement of any of the TRAP laws categories (Panel D), the results indicate that for enforcements before age 24, there is some indication of statistically significant increases in the probability of birth before age 24. In contrast, for ages in which we should not detect effects, the estimators are mainly not significantly different from zero. While our estimates may be slightly biased by the issues raised by Goodman-Bacon (2019), these results suggest that such bias cannot fully explain our findings.

6 Pathways

The results presented above document a significant impact of ambulatory surgical center and transfer agreement laws on early births, college completion, and future family income. This section provides evidence that the impact of TRAP laws on these outcomes is operating through reductions in abortion access and exploring behavioral responses to changes in access.

6.1 Abortion Access

We rely on county-by-year panel data that includes information on the number of abortion providers, the number of abortion occurrences, and the birth rate by demographic sub-group,

as described in Section 3. Also, we use the information on whether or not each county-year has any providers to calculate the distance to the nearest county with a provider for each county-year combination.³³ We estimate

$$O_{csy} = \delta_0 + \delta_1 TRAP_{sy} + \zeta X_{sy} + \eta_c + \eta_y + \epsilon_{csy} \quad (3)$$

where O_{csy} indicates the natural log of one of the outcomes (the number of providers, the number of abortions per 15-44-year-old women, or the distance to the nearest county with a provider) for county c in state s observed in year y . $TRAP_{sy}$ indicates that the TRAP law of interest was in effect in state s in year y . X_{sy} is a vector of controls for state-year level abortion policies, contraception policies, and public assistance policies, as described in Section 3. We also control for state and year fixed effects, η_c and η_y . Standard errors are clustered at the state level. The estimations for the distance to the nearest county additionally include a control for being “border-trapped,” which indicates that there are no bordering states within 300 miles of county c that were not enforcing a TRAP law in year y (either because there were no bordering states within 300 miles or because all nearby bordering states were enforcing TRAP laws).

We estimate this equation for each of the three main categories of TRAP laws and the indicator of any TRAP law first for all counties and then for sub-sets of counties. Given that our main results are limited to black women, we attempt to examine subsets of counties where black women are proportionally over-represented. We therefore also estimate these impacts among counties in the South and counties with below-median income.³⁴

Impacts of TRAP laws on the number of providers per county are presented in Table 9. Each coefficient presented is from a separate regression on the TRAP law of interest indicated in the row header. Each column shows an estimate with an increasing number

³³Distance to the nearest county with a provider is coded as zero for counties that have at least one provider.

³⁴For each county, we compared the county’s median household income at 2017 dollars with the median of this indicator across all counties. We then classify counties as poor if their median household income is below the counties’ median.

of controls. The top panel shows the results for all counties. We find suggestive evidence that admitting privileges laws reduce the number of providers by 20 percent. However, this impact is not robust to the inclusion of the full set of controls. More robustly, we find that transfer agreement laws reduce providers per county by 19 to 29 percent. Despite lower power due to smaller sample size, the results for counties in the South are consistent since the transfer agreement laws reduce the number of providers by 17 to 20 percent. Among poor counties, we see a large and robust impact of admitting privileges laws, which reduce providers 27 to 52 percent.

Table 10 presents the impacts of TRAP laws on the natural log of the distance to the nearest county with a provider. Across all counties and the subsets of Southern and poor counties, we see consistently and robustly that admitting privileges laws increase the distance to a provider by 10 to 13 percent. Interestingly, ambulatory surgical center laws and transfer agreement laws increase distances by 1 to 6 percent, but these impacts are not statistically significant. This may indicate that these laws reduced providers more so in urban areas, potentially contributing to clinic congestion without significantly increasing distance to a provider.

Table 11 presents the impacts of TRAP laws on aggregate abortion rates for all women aged 15 to 44. Based on the analysis presented in Section 5, we would expect no impact on rates among young women generally, but substantial impacts on rates among young, black women. We note that the available data do not allow us to estimate the impact on abortion rates of young women, black women, or young black women. Nonetheless, we do find that transfer agreement laws consistently reduce aggregate abortion rates by 8 to 13 percent and admitting privileges laws by 3 to 7 percent, though these effects are not statistically significant among all counties. Effects are larger and more precisely estimated among Southern and poor counties, where admitting privileges laws reduce abortions 10 to 27 percent, an effect which is significant at the 10 percent significance level without policy controls. Furthermore, transfer agreement laws reduce abortions by 17 to 41 percent, which

is significant at the 5 percent significance level in poor counties, robust to all controls.

6.2 Fertility pathway

We also examine whether TRAP-induced changes in abortion access resulted in higher birth rates among young women, using natality data from Vital Statistics, as described in Section 3. We estimate equation 3 using births per 1000 women in year $y + 1$. Again, based on the results in Section 5, we expect impacts only among young black women. Table 12 presents the impact for all women aged 15 to 24 in the top panel and for black women aged 15 to 24 in the bottom panel. Even among all young women, we see transfer agreement laws increase birth rates by 1.4 to 1.5 percent, an effect that is precisely estimated and robust. Among young black women, we see the impacts of every type of TRAP law on birth rates. Admitting privileges laws and ambulatory surgical center laws increase birth rates by 1.5 to 2.2 percent, effects that are significant at the 10 percent significance level, and robust to all controls. Transfer agreement laws increase birth rates by 3.2 to 4 percent, effects that are significant at the 1 percent significance level in all specifications.

6.3 Behavioral pathway

Even for women who do not experience an unwanted pregnancy, a young woman's perception of her abortion access may affect her decisions and behaviors. A young woman may perceive her level of abortion access based on news reports about abortion restrictions or by merely observing experiences of sisters, cousins, or friends who seek an abortion. If a young woman expects an abortion to be challenging to obtain if needed, she may adjust expectations for her ability to complete her desired schooling or achieve her desired career. This may, in turn, affect her effort and other investments in the development of her human capital. This would be a behavioral pathway by which TRAP laws may affect economic welfare, even absent impacts on fertility.

Do individuals perceive TRAP-induced changes in abortion access? We test this by

examining another potential behavioral response to access restrictions: changes in sexual behavior or contraceptive use aimed at reducing the probability of pregnancy. In contrast to the behavioral pathway discussed above, this behavioral response would dampen the impact of TRAP laws on fertility. Evidence of such a response would (i) indicate that individuals do perceive changes in access and (ii) suggest that the estimates of TRAP laws' impacts on fertility are a lower bound.

We estimate

$$B_{iagsy} = \gamma_0 + \gamma_1 TRAP_{sy} + \zeta X_{sy} + \eta a + \eta g + \eta_s + \eta_y + \epsilon_{iagsy} \quad (4)$$

Where B_{iagsy} indicates the behavior of individual i of age a and gender g observed in state s in year y . $TRAP_{sy}$ and ζX_{sy} are as defined as in equation 3, and η indicates a fixed effect for age, gender, state, or year. Outcomes of interest are (i) whether or not the individual is sexually active (has had sexual debut) and (ii) whether or not a sexually active individual used contraception at last intercourse. We estimate this separately for the full sample of high school girls and boys, for the full sample of high school girls, and for the sample of black high school girls, correcting for survey design as recommended by the data provider.

The results for sexual debut are provided in Panel A of Table 13 with each sample in a separate panel. In the full sample of boys and girls, we find that individuals do adjust their sexual behavior in response to abortion access, with rates of sexual debut declining by 1 to 2 percentage points, a 2 to 4 percent reduction relative to a mean of 46 percent. This effect is shown for each type of TRAP law, most of which are significant at the 5 percent or 1 percent significance level. Effects among girls only are larger in magnitude and more precisely estimated 2 to 2.5 percentage points, or a 5 to 6 percent effect relative to a mean of 44 percent. Strikingly, among black girls, not only do we not find significant reductions in sexual debut as a result of TRAP laws, we find positive (though imprecisely estimated) coefficients.

Panel B of Table 13 shows results for contraceptive use among the sexually active. Coefficients are mostly negative, though not consistently, and none are significant at the 5 percent significance level or better.

Overall, we find evidence that, on average, adolescents do perceive changes in abortion access and make small adjustments in sexual activity in response. However, they do not adjust their contraceptive use. This may reflect the difficulty in accessing contraceptives that adolescents face, relative to adults. Further, among black women, we do not find evidence of any behavioral response. This may indicate either that black women are less likely than other women to perceive TRAP-induced changes in abortion access or perceive changes similarly but choose not to adjust sexual behavior. In the latter case, the perception of lower access may still impact expectations and human capital investment.

In considering the importance of a behavioral pathway, we examine the evidence for non-black women. We find that they do perceive TRAP-induced changes in access, as evidenced by changes in sexual behavior. Do these perceptions also impact their expectations and, subsequently, their human capital investments? We find no impact of TRAP laws on their early fertility, which may be partly driven by the offsetting changes in sexual behavior. However, if we nonetheless find (even suggestive) impacts on education for these women, that would indicate expectations to be a significant pathway. Instead, we find that none of the TRAP laws exert a significant negative impact on college completion of non-black women. In fact, most of the coefficients are positive.³⁵

Taken together, the evidence presented here suggests that the primary pathway by which TRAP laws impact the educational attainment and future income of black women is by reducing abortion access and increasing early fertility.

³⁵Results available upon request.

7 Conclusions

Existing evidence has shown that TRAP laws negatively impact women’s ability to access abortion through increases in the distance to the nearest abortion provider (Quast et al. 2017, Fischer et al. 2018, Lindo et al. 2019) and by creating congestion in the remaining open clinics (Kelly, 2019). In this study, we provide estimates of how TRAP laws impact young women’s fertility, educational attainment, and future income.

Our findings indicate that the impact of these laws varies by demographic group. As in previous studies, we find that black women are the most affected by abortion access changes. Their exposure to ambulatory surgical center laws and transfer agreement laws increases their probability of early birth by 6 to 9 percent, relative to their non-exposed counterparts. We also find that TRAP laws reduce black women’s probability of completing college by 5 to 11 percent and their future family income by 3 to 6 percent.

An analysis of pathways suggests that these regulations reduce the number of abortion providers by 20 to 30 percent and reduce the occurrence of abortion by 10 to 40 percent, particularly in Southern counties and counties with below-median income. As a result, these regulations increase birth rates among 15 to 24-year-old women. This is especially true for transfer agreement laws, which increase birth rates by 3 to 4 percent among young black women and by 1.5 percent among young women as a whole.

We conclude that the primary pathway by which these regulations affect economic outcomes is through early fertility, rather than changes in expectations or investments in the absence of pregnancy. The results for non-black women provide an opportunity to examine this. Given that TRAP laws do not significantly change their probability of early birth, impacts on their economic outcomes would indicate significant expectation effects. However, no such effects are found.

We consider whether expectation effects are not found because such effects do not exist or whether young women are simply unable to perceive TRAP-induced changes in their abortion access. Examining sexual behavior data, we find that non-black high school girls

are less likely to be sexually active when exposed to a TRAP law, indicating that they do perceive changes in abortion access. We thus conclude that such expectation effects are nonexistent or too small to be detected in this sample.

In sum, we find that TRAP laws reduce abortion access, increase early fertility among black women, and as a result, reduce black women’s educational attainment and future income. These findings have particular relevance in the current abortion policy landscape. The Supreme Court case *Whole Woman’s Health v. Hellerstedt* was one of the first to consider the legality of TRAP laws in 2016. The Court ruled that TRAP laws enforced in Texas created an *undue burden* for women seeking abortion services. In June 2020, the Court also struck down as unconstitutional an admitting privileges law in Louisiana in *June Medical Services v. Russo*. Nonetheless, other states continue to enforce TRAP laws that are virtually identical to those struck down in Texas and Louisiana.

As the reproductive health care landscape continues evolving and more states enforce restrictions on abortion providers, evidence on the impacts of these policies is critical. The evidence presented here suggests that these policies have harmful consequences for disadvantaged women, acting to further increase economic inequality. With the passing of Justice Bader Ginsberg and the potential appointment of Amy Coney Barrett to the Supreme Court, a future reversal of *Roe v. Wade* could potentially make abortion entirely illegal in many states. The findings presented here suggest significant consequences for women’s human capital development and welfare and social and economic inequality.

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Table 1
TRAP laws. Relevant dates

State	Admitting Privileges Laws		ASC Laws		Transfer Agreement Laws	
	<u>Enforced</u>	<u>Blocked</u>	<u>Enforced</u>	<u>Blocked</u>	<u>Enforced</u>	<u>Blocked</u>
Florida	2016				2016	
Georgia	1974		1974		1974	
Illinois	2014		1973		1973	
Indiana	2014		1993		1993	
Kentucky					1998	
Louisiana	2014	2016				
Maryland			2012			
Michigan			1999		1999	
Missouri	2005	2017	2007	2017	2007	2017
Mississippi			2005		2013	
North Dakota	2014					
Ohio			1999		1999	
Pennsylvania	2012		2012		2012	
Rhode Island			2002			
South Carolina	1996		1996		1996	
Tennessee	2012		2015		2015	
Texas	2013	2016	2004			
Utah	1998	2017			1998	2017
Virginia			2012		2012	
Wisconsin					1999	

Notes: This information is based on the relevant dates of TRAP laws provided by Austin and Harper (2019). These authors provide the first date in which a TRAP law was ever enforced in a state. However, according to these authors TRAP laws implemented before 1992 may be different from the current versions of these restrictions. Then, we modified some of the dates provided by these authors based on their supplemental analysis as follows. Admitting privilege laws: we changed the year of enforcement from 1973 and 2011 to 2014 for Illinois and Indiana, respectively; and from 1988 to 2005 for Missouri. ASC laws: From 1973 to 1993 for Indiana, and from 1973 to 2002 for Rhode Island. Transfer agreement laws: From 1973 to 1993 for Indiana, and from 1976 to 1999 for Wisconsin.

Table 2
Descriptive statistics. Exposure to TRAP laws

	All women			Black women		
	15 to 17	15 to 20	15 to 23	15 to 17	15 to 20	15 to 23
Mean share of years exposed when aged...						
In-state exposure						
Admitting Privileges Law	0.06	0.06	0.07	0.12	0.12	0.13
Ambulatory Surgical Center Law	0.17	0.19	0.21	0.24	0.26	0.29
Transfer Agreement Law	0.17	0.19	0.21	0.23	0.24	0.26
Any TRAP law	0.19	0.22	0.25	0.25	0.28	0.31
Border trapped						
Admitting Privileges Laws	0.07	0.07	0.08	0.07	0.07	0.07
Ambulatory Surgical Center Laws	0.08	0.08	0.08	0.08	0.08	0.08
Transfer Agreement Laws	0.10	0.10	0.10	0.09	0.09	0.09
Any TRAP Law	0.10	0.10	0.10	0.09	0.09	0.09

Table 3
Descriptive statistics. Outcomes

	All women			Black women		
	All	Any exposure before age 24 No	Yes	All	Any exposure before age 24 No	Yes
Outcomes						
Birth before age 18	0.08	0.07	0.08	0.14	0.13	0.14
Birth before age 21	0.21	0.20	0.23	0.33	0.32	0.34
Birth before age 24	0.32	0.31	0.35	0.45	0.44	0.47
Any college	0.72	0.73	0.71	0.63	0.63	0.64
Completed college	0.37	0.38	0.35	0.23	0.24	0.21
Family Income	47,666	49,433	44,291	30,986	32,395	28,909
Abortion policy controls						
PI law	0.56	0.42	0.84	0.63	0.49	0.84
MWP law	0.33	0.19	0.60	0.34	0.23	0.51
Medicaid coverage of abortion	0.36	0.47	0.13	0.27	0.36	0.13
Contraception policy controls						
Medicaid coverage of CPT	0.40	0.45	0.31	0.41	0.46	0.35
EC available	0.30	0.29	0.32	0.28	0.25	0.33
CPT insurance mandate	0.30	0.33	0.24	0.30	0.29	0.32
Welfare policy controls						
Welfare reform	0.93	0.91	0.97	0.93	0.90	0.97
Family cap	0.46	0.50	0.37	0.52	0.52	0.50
Max welfare benefit	502	545	426	437	465	395
Higher education controls						
State appropriations (per capita)	200	199	201	202	203	202

Table 4
Effects of exposure to TRAP laws on the probability of an early birth. All women

	(1)	(2)	(3)	(4)	(5)
Admitting privileges laws					
Exposure before age 18	0.00179 (0.00427)	0.00179 (0.00427)	0.00308 (0.00368)	0.00236 (0.00480)	-0.000717 (0.00565)
Exposure before age 21	-0.00649** (0.00322)	-0.00649** (0.00322)	-0.00700 (0.00426)	-0.00847 (0.00582)	-0.0119* (0.00660)
Exposure before age 24	-0.00478 (0.0131)	-0.00477 (0.0131)	-0.0101 (0.0121)	-0.0101 (0.0106)	-0.0156 (0.0103)
ASC laws					
Exposure before age 18	-0.00210 (0.00164)	-0.00239 (0.00174)	-0.00139 (0.00206)	-0.000138 (0.00204)	-0.00105 (0.00184)
Exposure before age 21	-0.00310 (0.00277)	-0.00286 (0.00273)	-0.00432 (0.00358)	-0.00102 (0.00387)	-0.00185 (0.00384)
Exposure before age 24	0.00427 (0.00495)	0.00484 (0.00503)	0.000919 (0.00624)	0.00700 (0.00651)	0.00494 (0.00667)
Transfer agreement laws					
Exposure before age 18	0.00123 (0.00199)	0.000554 (0.00242)	0.00168 (0.00260)	0.00198 (0.00257)	0.000761 (0.00244)
Exposure before age 21	0.0000949 (0.00390)	-0.0000221 (0.00411)	0.0000371 (0.00401)	0.000958 (0.00443)	-0.000304 (0.00444)
Exposure before age 24	0.0137 (0.00965)	0.0142 (0.00973)	0.0121 (0.00937)	0.0122 (0.00967)	0.00933 (0.0100)
Any TRAP law					
Exposure before age 18	-0.00108 (0.00184)	-0.00139 (0.00198)	0.000121 (0.00247)	0.00136 (0.00246)	0.000232 (0.00231)
Exposure before age 21	-0.00172 (0.00303)	-0.00176 (0.00302)	-0.00322 (0.00377)	-0.000280 (0.00391)	-0.00125 (0.00397)
Exposure before age 24	0.00712 (0.00641)	0.00727 (0.00617)	0.00342 (0.00661)	0.00890 (0.00621)	0.00699 (0.00613)
Border trapped	No	Yes	Yes	Yes	Yes
Abortion policies	No	No	Yes	Yes	Yes
Welfare and contraception policies	No	No	No	Yes	Yes
State appropriations for higher education	No	No	No	No	Yes

Notes: The dependent variable is an indicator variable of delivering a baby before age k , where $k = 18, 21, 24$. The coefficients correspond to the value of β_1 in equation 1. All the estimations control for race (white, black, other), ethnicity (Hispanic vs non Hispanic), state of residence fixed effects, age fixed effects, and year of birth fixed effects. The estimations are weighted by the person weight provided in ACS-IPUMS. Exposure before age k is the proportion of years between ages 15 through $k - 1$ that a woman lived in a state in which a TRAP was enforced. Border-trapped is the proportion of years between ages 15 through $k - 1$ in which a woman lived in a PUMA where all bordering states within 300 miles enforced a TRAP law. The abortion policies include controls for exposure to parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the exposure to Medicaid coverage of CPT, availability of emergency contraception, and CPT insurance mandate. The welfare policy controls include the exposure to welfare reform, the family cap, and the average maximum benefit. The estimations also control for the exposure to state higher education tax appropriations per capita. Source: American Community Survey. The exposure to TRAP laws is based on Austin and Harper (2019). The information on state appropriations for higher education is based on the Grapevine Compilation of State Higher Education Tax Appropriations Data of the Center for the Study of Education Policy from Illinois State University. The information on other policies is based on Myers and Ladd (2020). The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 5
Effects of exposure to TRAP laws on the probability of an early birth. Black women

	(1)	(2)	(3)	(4)	(5)
Admitting privileges laws					
Exposure before age 18	0.00728 (0.0153)	0.00728 (0.0153)	0.00678 (0.0162)	0.00461 (0.0139)	0.00264 (0.0142)
Exposure before age 21	0.00115 (0.00877)	0.00110 (0.00875)	-0.00377 (0.0114)	-0.00301 (0.00894)	-0.00819 (0.0129)
Exposure before age 24	0.0265** (0.0128)	0.0267** (0.0128)	0.0192 (0.0152)	0.0234* (0.0139)	0.00195 (0.0181)
ASC laws					
Exposure before age 18	0.00808** (0.00346)	0.00892** (0.00346)	0.00863** (0.00388)	0.00818* (0.00427)	0.00790* (0.00421)
Exposure before age 21	0.0139** (0.00541)	0.0172** (0.00696)	0.0162** (0.00731)	0.0148* (0.00842)	0.0144* (0.00770)
Exposure before age 24	0.0344*** (0.0107)	0.0366*** (0.0119)	0.0329*** (0.0117)	0.0374*** (0.0109)	0.0291*** (0.00950)
Transfer agreement laws					
Exposure before age 18	0.00120 (0.00518)	0.00265 (0.00584)	0.00234 (0.00613)	0.00209 (0.00616)	0.00135 (0.00595)
Exposure before age 21	0.0157* (0.00851)	0.0205** (0.00959)	0.0184* (0.0103)	0.0197* (0.0115)	0.0192* (0.0113)
Exposure before age 24	0.0517*** (0.0121)	0.0546*** (0.0128)	0.0532*** (0.0137)	0.0521*** (0.0140)	0.0399*** (0.0141)
Any TRAP law					
Exposure before age 18	0.00625* (0.00357)	0.00713* (0.00374)	0.00672 (0.00421)	0.00588 (0.00468)	0.00545 (0.00468)
Exposure before age 21	0.0127** (0.00496)	0.0147** (0.00573)	0.0130** (0.00603)	0.0113 (0.00693)	0.0108 (0.00645)
Exposure before age 24	0.0351*** (0.0104)	0.0363*** (0.0107)	0.0322*** (0.00998)	0.0354*** (0.00952)	0.0273*** (0.00883)
Border trapped	No	Yes	Yes	Yes	Yes
Abortion policies	No	No	Yes	Yes	Yes
Welfare and contraception policies	No	No	No	Yes	Yes
State appropriations for higher education	No	No	No	No	Yes

Notes: The dependent variable is an indicator variable of delivering a baby before age k , where $k = 18, 21, 24$. The coefficients correspond to the value of β_1 in equation 1. All the estimations control for state of residence fixed effects, age fixed effects, and year of birth fixed effects. The estimations are weighted by the person weight provided in ACS-IPUMS. Exposure before age k is the proportion of years between ages 15 through $k - 1$ that a woman lived in a state in which a TRAP was enforced. Border-trapped is the proportion of years between ages 15 through $k - 1$ in which a woman lived in a PUMA where all bordering states within 300 miles enforced a TRAP law. The abortion policies include controls for exposure to parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the exposure to Medicaid coverage of CPT, availability of emergency contraception, and CPT insurance mandate. The welfare policy controls include the exposure to welfare reform, the family cap, and the average maximum benefit. The estimations also control for the exposure to state higher education tax appropriations per capita. Source: American Community Survey. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The information on state appropriations for higher education is based on the Grapevine Compilation of State Higher Education Tax Appropriations Data of the Center for the Study of Education Policy from Illinois State University. The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 6
Effects of exposure to TRAP laws on the probability of completing college. Black women

	(1)	(2)	(3)	(4)	(5)
Admitting privileges laws					
Exposure before age 18	-0.00711 (0.00816)	-0.00709 (0.00815)	-0.00836 (0.00982)	-0.00962 (0.0103)	-0.00779 (0.0114)
Exposure before age 21	-0.00314 (0.0116)	-0.00311 (0.0116)	-0.00158 (0.0148)	-0.00902 (0.0163)	-0.000521 (0.0187)
Exposure before age 24	-0.00708 (0.0166)	-0.00713 (0.0167)	-0.00221 (0.0178)	-0.00745 (0.0177)	0.00487 (0.0213)
ASC laws					
Exposure before age 18	-0.0170*** (0.00543)	-0.0181*** (0.00579)	-0.0166*** (0.00549)	-0.0172*** (0.00626)	-0.0172*** (0.00631)
Exposure before age 21	-0.0172** (0.00680)	-0.0180** (0.00684)	-0.0152** (0.00593)	-0.0113 (0.00709)	-0.00906 (0.00696)
Exposure before age 24	-0.0171** (0.00808)	-0.0176** (0.00800)	-0.0134* (0.00697)	-0.00603 (0.00826)	-0.000201 (0.00856)
Transfer agreement laws					
Exposure before age 18	-0.0193*** (0.00713)	-0.0212** (0.00791)	-0.0221*** (0.00801)	-0.0254*** (0.00818)	-0.0253*** (0.00806)
Exposure before age 21	-0.0220** (0.00992)	-0.0240** (0.0102)	-0.0245** (0.0101)	-0.0272** (0.0112)	-0.0256** (0.0112)
Exposure before age 24	-0.0226 (0.0142)	-0.0244* (0.0141)	-0.0250 (0.0150)	-0.0284* (0.0153)	-0.0218 (0.0171)
Any TRAP law					
Exposure before age 18	-0.0186*** (0.00612)	-0.0197*** (0.00633)	-0.0185*** (0.00587)	-0.0189*** (0.00625)	-0.0190*** (0.00596)
Exposure before age 21	-0.0191** (0.00779)	-0.0198** (0.00777)	-0.0171** (0.00675)	-0.0140* (0.00740)	-0.0120* (0.00658)
Exposure before age 24	-0.0184** (0.00908)	-0.0188** (0.00898)	-0.0146* (0.00786)	-0.00843 (0.00890)	-0.00280 (0.00868)
Border trapped	No	Yes	Yes	Yes	Yes
Abortion policies	No	No	Yes	Yes	Yes
Welfare and contraception policies	No	No	No	Yes	Yes
State appropriations for higher education	No	No	No	No	Yes

Notes: The dependent variable is an indicator variable of college completion. The coefficients correspond to the value of β_1 in equation 1. All the estimations control for state of residence fixed effects, age fixed effects, and year of birth fixed effects. The estimations are weighted by the person weight provided in ACS-IPUMS. Exposure before age k is the proportion of years between ages 15 through $k - 1$ that a woman lived in a state in which a TRAP was enforced. Border-trapped is the proportion of years between ages 15 through $k - 1$ in which a woman lived in a PUMA where all bordering states within 300 miles enforced a TRAP law. The abortion policies include controls for exposure to parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the exposure to Medicaid coverage of CPT, availability of emergency contraception, and CPT insurance mandate. The welfare policy controls include the exposure to welfare reform, the family cap, and the average maximum benefit. The estimations also control for the exposure to state higher education tax appropriations per capita. Source: American Community Survey. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The information on state appropriations for higher education is based on the Grapevine Compilation of State Higher Education Tax Appropriations Data of the Center for the Study of Education Policy from Illinois State University. The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 7
Effects of exposure to TRAP laws on the probability of attending some college. Black women

	(1)	(2)	(3)	(4)	(5)
Admitting privileges laws					
Exposure before age 18	-0.00157 (0.0117)	-0.00156 (0.0117)	-0.00113 (0.0110)	-0.00366 (0.0136)	-0.00440 (0.0143)
Exposure before age 21	0.00891 (0.0181)	0.00891 (0.0181)	0.0104 (0.0173)	0.00844 (0.0207)	0.00861 (0.0232)
Exposure before age 24	0.0312 (0.0194)	0.0312 (0.0194)	0.0319 (0.0192)	0.0286 (0.0201)	0.0327 (0.0231)
ASC laws					
Exposure before age 18	-0.00987 (0.00795)	-0.0110 (0.00716)	-0.0128* (0.00734)	-0.0164** (0.00714)	-0.0172** (0.00730)
Exposure before age 21	-0.00551 (0.00847)	-0.00637 (0.00815)	-0.00895 (0.00986)	-0.0108 (0.00855)	-0.0117 (0.00802)
Exposure before age 24	-0.000902 (0.0102)	-0.00149 (0.0101)	-0.00520 (0.0138)	-0.00251 (0.0120)	-0.00239 (0.0119)
Transfer agreement laws					
Exposure before age 18	-0.0102 (0.0107)	-0.0111 (0.00989)	-0.0116 (0.00984)	-0.0154 (0.00982)	-0.0162 (0.0100)
Exposure before age 21	-0.0102 (0.0120)	-0.0111 (0.0115)	-0.0102 (0.0115)	-0.0140 (0.0122)	-0.0160 (0.0127)
Exposure before age 24	-0.00616 (0.0173)	-0.00681 (0.0170)	-0.00406 (0.0169)	-0.00813 (0.0179)	-0.0102 (0.0199)
Any TRAP law					
Exposure before age 18	-0.00715 (0.00768)	-0.00808 (0.00715)	-0.0102 (0.00734)	-0.0135* (0.00748)	-0.0144* (0.00765)
Exposure before age 21	-0.00333 (0.00853)	-0.00400 (0.00838)	-0.00643 (0.00976)	-0.00793 (0.00885)	-0.00891 (0.00837)
Exposure before age 24	0.00349 (0.0104)	0.00301 (0.0104)	-0.0000597 (0.0136)	0.00296 (0.0126)	0.00355 (0.0129)
Border trapped	No	Yes	Yes	Yes	Yes
Abortion policies	No	No	Yes	Yes	Yes
Welfare and contraception policies	No	No	No	Yes	Yes
State appropriations for higher education	No	No	No	No	Yes

Notes: The dependent variable is an indicator variable of attending some college education. The coefficients correspond to the value of β_1 in equation 1. All the estimations control for state of residence fixed effects, age fixed effects, and year of birth fixed effects. The estimations are weighted by the person weight provided in ACS-IPUMS. Exposure before age k is the proportion of years between ages 15 through $k - 1$ that a woman lived in a state in which a TRAP was enforced. Border-trapped is the proportion of years between ages 15 through $k - 1$ in which a woman lived in a PUMA where all bordering states within 300 miles enforced a TRAP law. The abortion policies include controls for exposure to parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the exposure to Medicaid coverage of CPT, availability of emergency contraception, and CPT insurance mandate. The welfare policy controls include the exposure to welfare reform, the family cap, and the average maximum benefit. The estimations also control for the exposure to state higher education tax appropriations per capita. Source: American Community Survey. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The information on state appropriations for higher education is based on the Grapevine Compilation of State Higher Education Tax Appropriations Data of the Center for the Study of Education Policy from Illinois State University. The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 8
Effects of exposure to TRAP laws on the log of real family income. Black women

	(1)	(2)	(3)	(4)	(5)
Admitting privileges laws					
Exposure before age 18	-0.0108 (0.0142)	-0.0107 (0.0141)	-0.0111 (0.0144)	-0.0101 (0.0127)	-0.0103 (0.0155)
Exposure before age 21	-0.0145 (0.0235)	-0.0143 (0.0235)	-0.00443 (0.0212)	-0.00613 (0.0208)	-0.00269 (0.0283)
Exposure before age 24	0.00160 (0.0397)	0.00121 (0.0396)	0.0197 (0.0296)	0.00952 (0.0318)	0.0101 (0.0368)
ASC laws					
Exposure before age 18	-0.0267* (0.0147)	-0.0380** (0.0188)	-0.0332* (0.0169)	-0.0264 (0.0159)	-0.0280* (0.0162)
Exposure before age 21	-0.0306 (0.0209)	-0.0402* (0.0237)	-0.0332 (0.0214)	-0.0287 (0.0189)	-0.0293 (0.0187)
Exposure before age 24	-0.0287 (0.0251)	-0.0356 (0.0272)	-0.0254 (0.0231)	-0.0260 (0.0200)	-0.0264 (0.0191)
Transfer agreement laws					
Exposure before age 18	-0.0398** (0.0169)	-0.0527** (0.0233)	-0.0510** (0.0200)	-0.0428** (0.0174)	-0.0435** (0.0176)
Exposure before age 21	-0.0583** (0.0234)	-0.0732*** (0.0260)	-0.0689*** (0.0216)	-0.0597*** (0.0209)	-0.0614*** (0.0218)
Exposure before age 24	-0.0637* (0.0333)	-0.0786** (0.0358)	-0.0713** (0.0322)	-0.0561* (0.0286)	-0.0622** (0.0301)
Any TRAP law					
Exposure before age 18	-0.0327** (0.0151)	-0.0395** (0.0183)	-0.0337** (0.0152)	-0.0285* (0.0145)	-0.0304* (0.0152)
Exposure before age 21	-0.0375* (0.0212)	-0.0429* (0.0234)	-0.0344* (0.0197)	-0.0326* (0.0178)	-0.0341* (0.0180)
Exposure before age 24	-0.0350 (0.0263)	-0.0388 (0.0280)	-0.0276 (0.0227)	-0.0302 (0.0201)	-0.0322 (0.0195)
Border trapped	No	Yes	Yes	Yes	Yes
Abortion policies	No	No	Yes	Yes	Yes
Welfare and contraception policies	No	No	No	Yes	Yes
State appropriations for higher education	No	No	No	No	Yes

Notes: The dependent variable is the log of real family income at 2012 prices. The coefficients correspond to the value of β_1 in equation 1. All the estimations control for state of residence fixed effects, age fixed effects, and year of birth fixed effects. The estimations are weighted by the person weight provided in ACS-IPUMS. Exposure before age k is the proportion of years between ages 15 through $k - 1$ that a woman lived in a state in which a TRAP was enforced. Border-trapped is the proportion of years between ages 15 through $k - 1$ in which a woman lived in a PUMA where all bordering states within 300 miles enforced a TRAP law. The abortion policies include controls for exposure to parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the exposure to Medicaid coverage of CPT, availability of emergency contraception, and CPT insurance mandate. The welfare policy controls include the exposure to welfare reform, the family cap, and the average maximum benefit. The estimations also control for the exposure to state higher education tax appropriations per capita. Source: American Community Survey. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The information on state appropriations for higher education is based on the Grapevine Compilation of State Higher Education Tax Appropriations Data of the Center for the Study of Education Policy from Illinois State University. The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 9
Effects of TRAP laws enforcement on the log of the
number of abortion providers in a county

	(1)	(2)	(3)
All Counties			
Admitting privileges laws	-0.190** (0.0687)	-0.0511 (0.0592)	-0.0396 (0.0641)
ASC laws	-0.117 (0.0605)	-0.0786 (0.0548)	-0.0965 (0.0496)
Transfer agreement laws	-0.287*** (0.0743)	-0.194** (0.0598)	-0.192** (0.0599)
Any TRAP law	-0.213** (0.0612)	-0.190*** (0.0536)	-0.188*** (0.0498)
Counties in the South			
Admitting privileges laws	-0.0279 (0.0921)	0.0523 (0.0972)	0.0775 (0.122)
ASC laws	0.0455 (0.0821)	0.0122 (0.0731)	0.00761 (0.0837)
Transfer agreement laws	-0.194* (0.0676)	-0.165* (0.0673)	-0.202* (0.0790)
Any TRAP law	-0.132* (0.0475)	-0.148** (0.0459)	-0.167* (0.0612)
Counties below median income			
Admitting privileges laws	-0.522* (0.209)	-0.274** (0.0882)	-0.282* (0.112)
ASC laws	-0.196 (0.153)	-0.0743 (0.0907)	-0.0926 (0.128)
Transfer agreement laws	-0.509** (0.157)	-0.302 (0.189)	-0.391 (0.195)
Any TRAP law	-0.290 (0.162)	-0.230 (0.186)	-0.381* (0.182)
Abortion policies	No	Yes	Yes
Welfare and contraception policies	No	No	Yes

Notes: The dependent variable is the log of the number of providers in a county in which at least 400 abortions occurred. The coefficients correspond to the value of δ_1 in equation 3. All the estimations control for county of residence fixed effects and year fixed effects. The abortion policies include controls for the enforcement of parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the Medicaid coverage of CPT, the availability of emergency contraception, and CPT insurance mandate. The welfare policy controls are indicators for state welfare reform, the family cap, and the average maximum benefit. See Section 6 for more information on the subsamples of counties in the South and counties below median income. Source: The number of providers per county was provided by the Alan Guttmacher Institute. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 10
Effects of TRAP laws enforcement on the log of the
minimun traveled distance to an abortion provider

	(1)	(2)	(3)	(4)
All Counties				
Admitting privileges laws	0.109** (0.0320)	0.109** (0.0312)	0.110** (0.0323)	0.113** (0.0332)
ASC laws	0.0447 (0.0301)	0.0439 (0.0293)	0.0461 (0.0302)	0.0479 (0.0332)
Transfer agreement laws	0.0364 (0.0374)	0.0355 (0.0367)	0.0397 (0.0358)	0.0410 (0.0353)
Any TRAP law	0.0237 (0.0182)	0.0223 (0.0169)	0.0243 (0.0172)	0.0246 (0.0198)
Counties in the South				
Admitting privileges laws	0.129* (0.0577)	0.125* (0.0552)	0.125* (0.0543)	0.107* (0.0466)
ASC laws	0.0176 (0.0157)	0.0153 (0.0129)	0.0131 (0.0128)	-0.0187 (0.0181)
Transfer agreement laws	-0.0272 (0.0264)	-0.0322 (0.0278)	-0.0306 (0.0273)	-0.0260 (0.0219)
Any TRAP law	0.00452 (0.0123)	0.000798 (0.0129)	-0.00188 (0.0129)	-0.0240 (0.0222)
Counties below median income				
Admitting privileges laws	0.134** (0.0418)	0.133** (0.0412)	0.133** (0.0415)	0.135** (0.0417)
ASC laws	0.0698 (0.0427)	0.0661 (0.0416)	0.0669 (0.0424)	0.0685 (0.0456)
Transfer agreement laws	0.0551 (0.0559)	0.0515 (0.0546)	0.0504 (0.0525)	0.0528 (0.0508)
Any TRAP law	0.0336 (0.0253)	0.0289 (0.0233)	0.0284 (0.0236)	0.0271 (0.0264)
Border-trapped	No	Yes	Yes	Yes
Abortion policies	No	Yes	Yes	Yes
Welfare and contraception policies	No	Yes	No	Yes

Notes: The dependent variable is the log of the traveled distance in miles to the nearest county that has an abortion provider. The coefficients correspond to the value of δ_1 in equation 3. All the estimations control for county of residence fixed effects and year fixed effects. The estimations also control for a county being “border-trapped,” which indicates all the states within 300 miles of the centroid of a county enforced a TRAP law in year y . The abortion policies include controls for the enforcement of parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the Medicaid coverage of CPT, the availability of emergency contraception, and CPT insurance mandate. The welfare policy controls are indicators for state welfare reform, the family cap, and the average maximum benefit. See Section 6 for more information on the subsamples of counties in the South and counties below median income. Source: The information on the counties that have abortion clinics was provided by the Alan Guttmacher Institute. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 11
Effects of TRAP laws enforcement on the log of
abortion rates

	(1)	(2)	(3)
All counties			
Admitting privileges laws	-0.0767 (0.0557)	-0.000590 (0.0532)	-0.0318 (0.0579)
ASC laws	-0.00570 (0.0373)	0.0170 (0.0421)	0.00667 (0.0475)
Transfer agreement laws	-0.131 (0.0741)	-0.0811 (0.0662)	-0.0799 (0.0776)
Any TRAP law	-0.0911 (0.0582)	-0.0826 (0.0584)	-0.0811 (0.0604)
Counties in the South			
Admitting privileges laws	-0.160* (0.0570)	-0.122 (0.0856)	-0.101 (0.0908)
ASC laws	-0.0757 (0.0417)	-0.0562 (0.0646)	-0.0563 (0.0673)
Transfer agreement laws	-0.234** (0.0742)	-0.165 (0.0922)	-0.190 (0.105)
Any TRAP law	-0.171* (0.0602)	-0.159* (0.0726)	-0.156* (0.0650)
Counties with below median income			
Admitting privileges laws	-0.266* (0.121)	-0.165 (0.104)	-0.164 (0.107)
ASC laws	-0.0744 (0.0944)	0.0549 (0.0884)	0.0577 (0.0875)
Transfer agreement laws	-0.410* (0.170)	-0.338** (0.112)	-0.411** (0.142)
Any TRAP law	-0.304* (0.120)	-0.271* (0.0976)	-0.330** (0.113)
Abortion policies	No	Yes	Yes
Welfare and contraception policies	No	No	Yes

Notes: The dependent variable is the log of the abortion rate per 1000 15-44 year-old women. The coefficients correspond to the value of δ_1 in equation 3. All the estimations control for county of residence fixed effects and year fixed effects. The abortion policies include controls for the enforcement of parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the Medicaid coverage of CPT, the availability of emergency contraception, and CPT insurance mandate. The welfare policy controls are indicators for state welfare reform, the family cap, and the average maximum benefit. See Section 6 for more information on the subsamples of counties in the South and counties below median income. Source: The information on abortion counts per county was provided by the Alan Guttmacher Institute. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 12
Effects of TRAP laws enforcement on the log of birth
rates

	(1)	(2)	(3)
Panel A. All Women			
Admitting privileges laws	0.00562 (0.00503)	0.00457 (0.00511)	0.00437 (0.00504)
ASC laws	0.00526 (0.00441)	0.00487 (0.00461)	0.00488 (0.00456)
Transfer agreement laws	0.0151** (0.00554)	0.0140* (0.00564)	0.0138* (0.00609)
Any TRAP law	0.0138** (0.00528)	0.0133* (0.00535)	0.0129* (0.00572)
Panel B. Black Women			
Admitting privileges laws	0.0221* (0.0101)	0.0156* (0.00732)	0.0149* (0.00681)
ASC laws	0.0198* (0.00927)	0.0164* (0.00766)	0.0167* (0.00710)
Transfer agreement laws	0.0395*** (0.00911)	0.0319*** (0.00655)	0.0333*** (0.00753)
Any TRAP law	0.0365*** (0.00824)	0.0309*** (0.00642)	0.0321*** (0.00692)
Abortion policies	No	Yes	Yes
Welfare and contraception policies	No	No	Yes

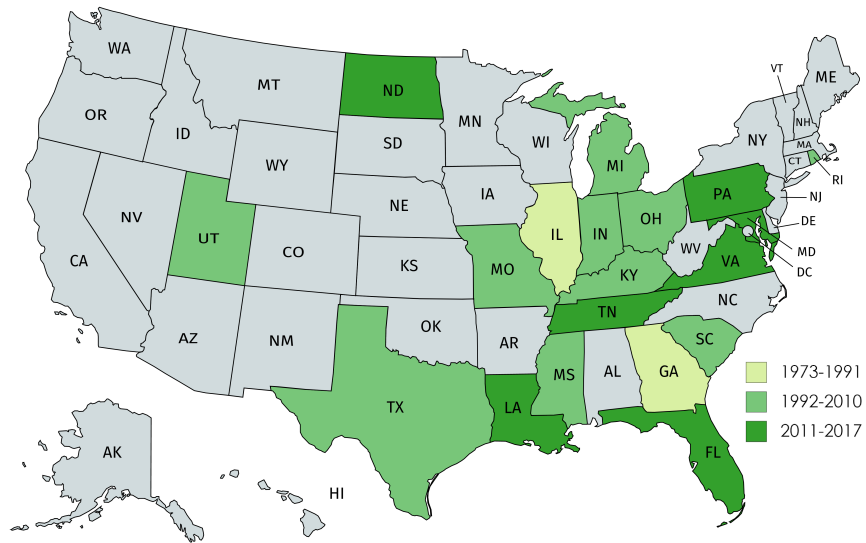
Notes: The dependent variable is the log of number of births per 1000 15-24 year-old women in year $y + 1$. The coefficients correspond to the value of δ_1 in equation 3. All the estimations control for county of residence fixed effects and year fixed effects. The abortion policies include controls for the enforcement of parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the Medicaid coverage of CPT, the availability of emergency contraception, and CPT insurance mandate. The welfare policy controls are indicators for state welfare reform, the family cap, and the average maximum benefit. Source: The information on births per county was provided by the NCHS, Division of Vital Statistics. The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 13
Effects of TRAP laws enforcement on sexual behavior

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Sexual Debut						
	Boys and Girls		Girls		Black Girls	
Admitting privileges laws	-0.0186*** (0.00719)	-0.0160** (0.00748)	-0.0259*** (0.0077)	-0.0225*** (0.008)	-0.0186*** (0.00719)	-0.0160** (0.00748)
ASC laws	-0.0183** (0.00933)	-0.0120 (0.00984)	-0.0267** (0.0108)	-0.0230** (0.0105)	-0.0183** (0.00933)	-0.012 (0.00984)
Transfer agreement laws	-0.0192*** (0.00707)	-0.0145* (0.00759)	-0.0246*** (0.00776)	-0.0181** (0.00871)	-0.0192*** (0.00707)	-0.0145* (0.00759)
Any TRAP law	-0.0184*** (0.00695)	-0.0144** (0.00663)	-0.0226*** (0.00807)	-0.0197*** (0.00738)	-0.0184*** (0.00695)	-0.0144** (0.00663)
Panel B. Contraception Use						
	Boys and Girls		Girls		Black Girls	
Admitting privileges laws	-0.00582 (0.00743)	-0.00409 (0.00779)	-0.00479 (0.0113)	-0.00261 (0.0116)	-0.00582 (0.00743)	-0.00409 (0.00779)
ASC laws	-0.00277 (0.00774)	-0.00412 (0.00780)	-0.00297 (0.0107)	-0.00294 (0.00984)	-0.00277 (0.00774)	-0.00412 (0.0078)
Transfer agreement laws	-0.00594 (0.00715)	-0.00989 (0.00749)	-0.0123 (0.00964)	-0.0161* (0.0098)	-0.00594 (0.00715)	-0.00989 (0.00749)
Any TRAP law	0.00168 (0.00650)	0.00328 (0.00660)	0.00156 (0.00907)	0.00372 (0.00797)	0.00168 (0.0065)	0.00328 (0.0066)
Border trapped	No	Yes	No	Yes	No	Yes
Abortion policies	No	Yes	No	Yes	No	Yes
Welfare and contraception policies	No	Yes	No	Yes	No	Yes
State appropriations for higher education	No	Yes	No	Yes	No	Yes

Notes: The dependent variables are an indicator of an individual being sexually active (sexual debut), and an indicator of whether a sexually active individual used contraception at last intercourse (contraception use). The coefficients correspond to the value of γ_{11} in equation 4. All the estimations control for state of residence fixed effects and year of interview fixed effects. The estimations also control for a state being "border-trapped," which indicates all the bordering states enforced a TRAP law in year y . The abortion policies include controls for the enforcement of parental involvement (PI) laws, mandatory waiting period laws, and Medicaid coverage of abortion. The contraception policies are the Medicaid coverage of CPT, the availability of emergency contraception, and CPT insurance mandate. The welfare policy controls are indicators for state welfare reform, the family cap, and the average maximum benefit. The estimations also control for the exposure to state higher education tax appropriations per capita. Source: Center for Disease Control's Youth Risk Behavior Surveillance System (YRBSS). The exposure to TRAP laws is based on Austin and Harper (2019). The information on other policies is based on Myers and Ladd (2020). The information on state appropriations for higher education is based on the Grapevine Compilation of State Higher Education Tax Appropriations Data of the Center for the Study of Education Policy from Illinois State University. The standard errors are clustered at the state of residence level. * $p < .1$, ** $p < .05$, *** $p < .01$.

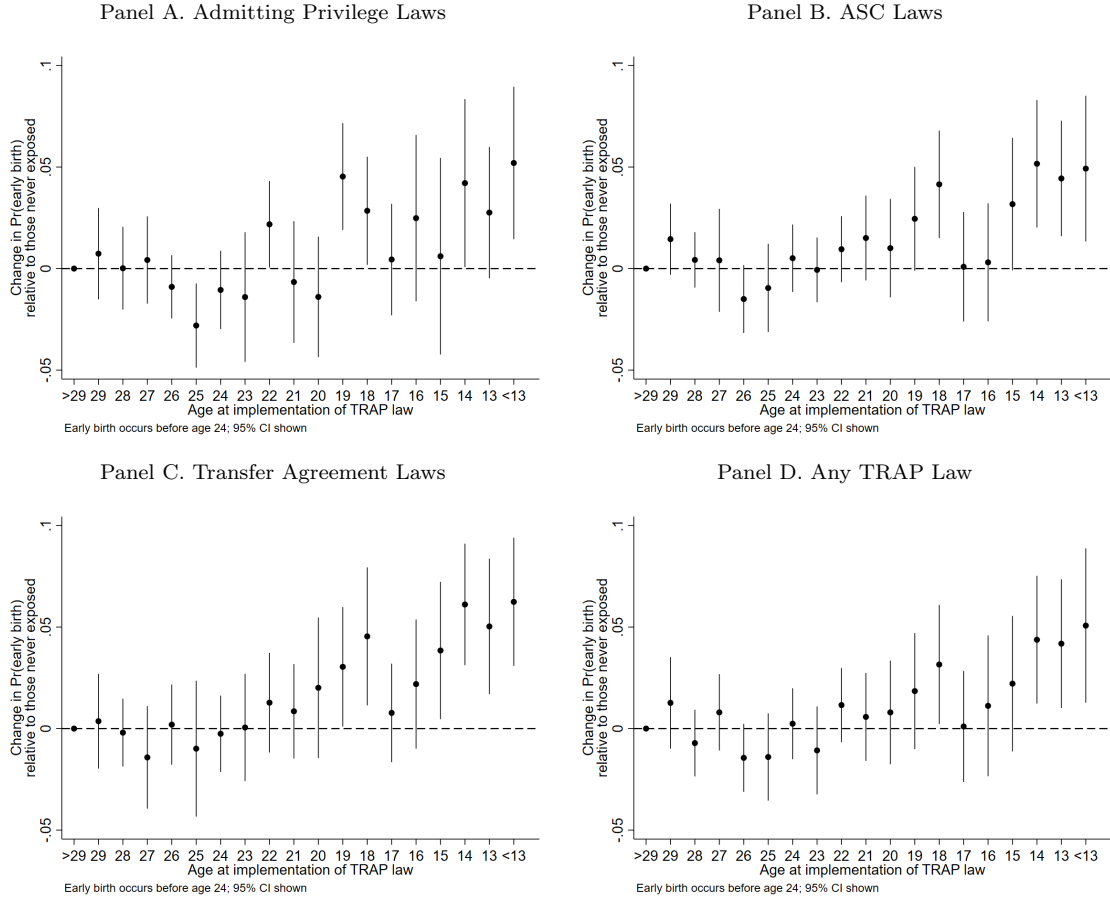
Figure 1
TRAP laws' enforcement



Created with mapchart.net ©

Notes: The map shows the period in which the first TRAP law (ASC law, admitting privileges laws, or transfer agreement laws) was enforced in a state. The information is based on Table 1. See notes in this table for more information on these dates.

Figure 2
Impact of the implementation of TRAP laws on the $\Pr(\text{birth before age 24})$



Notes: The dependent variable is an indicator variable of a birth before age 24. The coefficients correspond to the values in the vector τ_k in equation 2, where k is an age of potential exposure to a TRAP law. See section 5.1 for more information. The standard errors are clustered at the state level. The confidence intervals are at the 95 confidence level.

Appendix A

Table 14
Effects of exposure to TRAP laws on the
probability of an early birth before age 18.
Black women born between 1977-1999

	(1)	(2)
Admitting privileges laws	-0.000266 (0.00867)	-0.00169 (0.00877)
ASC laws	0.00741** (0.00353)	0.00718* (0.00363)
Transfer agreement laws	-0.000256 (0.00502)	-0.000115 (0.00539)
Physician presence laws	-0.0105 (0.00730)	-0.0104 (0.00713)
Any TRAP law	0.00474 (0.00373)	0.00416 (0.00370)
Border trapped	No	Yes
Abortion policies	No	Yes
Welfare and contraception policies	No	Yes
State appropriations for higher education	No	Yes

See notes in Table 5.

Appendix B: Creation of border exposure control

A critical feature of the ACS is the geographic information it provides regarding the residence of the respondents. Although the information on the county of residence is not available, the ACS provides information on the Public Use Microdata Area (PUMA) where the housing unit was located. This feature of the survey is beneficial for us because it allows us to exploit variation in exposure to TRAP laws within states, which allows us to control for exposure to TRAP laws in bordering states in a more granular manner. The ACS started in 2000, but until 2005 the information on PUMA or residence became publicly available. Thus, we limit our analysis to the sample of respondents in the 2005 through 2017 surveys.

According to the Integrated Public Use Microdata Series (IPUMS), PUMAs do not cross state borders and generally follow the boundaries of territories with 100,000+ residents. The Census Bureau redraws PUMA boundaries every ten years based on population information gathered from the most recent decennial census. The ACS sample for the period 2005-2017

includes two different definitions of PUMAs, one based on the 2000 census and the other one based on the 2010 census. The 2010 definition was incorporated into the ACS starting in 2012. As a result, the surveys between 2005 and 2011 are based on the 2000 definition, and those after 2011 are based on the 2011 definitions. Although changes in PUMAs definitions do not affect exposure to TRAP laws, because laws are state-dependent, it affects the exposure to TRAP laws in bordering states according to the geographic centroid of the PUMA across definitions.

Based on the information on PUMAs of residence, we constructed variables of exposure to TRAP laws enforced on bordering states. First, we defined indicator variables of being “border-trapped” this means either there is no bordering state within 300 miles, or they all had a TRAP law when the woman was 15, 16, , or 24 years old.³⁶ Then, the exposure to these controls prior ages $k = 18, 21, \text{ and } 24$ are the number of years between age 15 through age $k - 1$ out of the total years in the interval $k - 15$ that women living in a state were “border-trapped.” Our reasoning to include these controls is that if women are facing TRAP laws not only in their state of residence but also in the nearby bordering states, it is unlikely they could avoid complying with TRAP laws in their states of residence through out-of-state abortions. We generated these controls for exposure to TRAP laws in bordering states for each category of TRAP laws.

³⁶We use the command *georoute* in Stata to calculate the distance between the geographic centroid of each PUMA to the geographic centroid of each PUMA in a bordering state.