3-16-2020

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GEORGETOWN LAW JOURNAL, forthcoming 2021

DRAFT - Please Do Not Cite Without Author Permission
Forthcoming GEORGETOWN LAW JOURNAL (2021).

STATE CREATED FETAL HARM

Meghan Boone[1] & Benjamin J. McMichael[2]

ABSTRACT

Half a century of abortion litigation might suggest that state governments have a longstanding commitment to protecting fetal life. And yet, over the last several decades, state governments and local law enforcement are increasingly taking steps that actively undermine fetal health. Through the passage of state fetal endangerment laws and the prosecution of pregnant women under stretched interpretations of existing criminal law, states are actively creating conditions that result in poorer fetal health outcomes—including an increase in fetal and infant death.

This Article seeks to make three important contributions to the scholarly literature regarding the undesirability of fetal endangerment laws. First, it shows—for the first time through empirical evidence—that fetal endangerment laws fail to accomplish the state's stated goal of protecting and promoting fetal and infant health. Second, it shows that these laws actually have a statistically significant negative impact on fetal and infant health. In particular, we examine the impact of Tennessee's 2014 fetal endangerment law—a law which explicitly criminalized prenatal drug use—by analyzing comprehensive datasets on births, fetal deaths, and infant deaths. We find consistent evidence that this law undermined the ability of mothers to access prenatal care, worsened birth outcomes, and increased both fetal and infant death rates. For example, in 2015 alone, this law resulted in 20 more fetal deaths and 60 more infant deaths. Finally, based on this empirical evidence, this Article argues the Constitution prohibits states from either passing additional fetal endangerment laws or continuing to enforce current ones because such state action fails to survive even rational basis review.

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INTRODUCTION

The criminalization of pregnancy started slowly. Initially, only a few women were prosecuted under the theory that their own actions harmed the fetus they were carrying. And even then, the cases generally involved more extreme facts. But in the last several decades, more and more women are being prosecuted for their behavior during pregnancy.[3] And for the first time, state legislatures have introduced and passed laws that specifically criminalize pregnancy, as opposed to simply applying existing criminal laws to pregnant people.[4]

From the outset, however, scholars, advocates, and public health officials have been ringing the alarm over the potential harms – to women and to babies – that may

[3] *See* Linda C. Fentiman, BLAMING MOTHERS 111-12, 131 (2017) (noting both the increase in the prosecution of women for prenatal drug use and the increasing severity of the criminal charges leveled against them).
[4] *See supra* Section I(1).

result from the criminalization of pregnancy.[5] The criminalization of addiction in pregnancy, they argued, would simply cause more women to avoid the healthcare system entirely in order to avoid prosecution. Such avoidance would, in turn, result in additional adverse outcomes for pregnant women and children. Nevertheless, over the last two decades, state legislators and local prosecutors have aggressively sought to criminalize a larger swath of conduct in pregnancy under the guise of protecting fetal life.[6] Any negative outcomes for pregnant women, they argued, would be more than made up for in the positive results that such laws will have in terms of improving fetal and infant health.[7]

Unsurprisingly, however, the alarm bells were warranted. As this Article shows – using, for the first time an empirical, data-driven analysis – fetal endangerment laws[8] not only fail to deliver the promised benefits in terms of improved fetal and infant health, but they actively undermine the realization of that goal. In light of this new empirical evidence that fetal endangerment laws fail to deliver on the promise of improved fetal and neonate outcomes – which builds on the mountain of scholarly argument, as well as anecdotal and qualitative evidence, that already exists – this Article argues that fetal endangerment laws are unconstitutional for failure to survive even the most lenient rational basis review.

In Section I, a brief description of the history and form of fetal endangerment laws is undertaken. In Section II, the existing literature regarding fetal endangerment laws – all of which is uniformly opposed to such laws – is summarized. Section III presents an empirical analysis of the data used to calculated official birth and death statistics by the Centers for Disease Control and Prevention. This unprecedented empirical analysis reveals consistent evidence that fetal endangerment laws, contrary to their stated purpose, harm both fetuses and infants. Finally, in Section IV, the authors argue that in light of this new, empirical evidence, states are constitutionally

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[5] One of the first academic treatments of the subject was a 1991 article by Dorothy Roberts that critically examined the reaction to the "crack epidemic" and its particular effects on pregnant, African-American women. *See* Dorothy Roberts, *Punishing Drug Addicts Who Have Babies: Women of Color, Equality, and the Right of Privacy*, 104 HARV. L. REV. 1419 (1991)).

[6] Michele Goodwin, *Fetal Protection Laws: Moral Panic and the New Constitutional Battlefront*, 102 CALIF. L. REV. 781, 787 (2014) ("According to proponents, fetal protection laws are intended to promote the health and safety of fetuses by criminalizing actual or intended harm to the unborn.").

[7] *See* Cortney E. Lollar, *Criminalizing Pregnancy*, 92 IND. L.J. 947, 996 (2017) ("The state legislators creating laws specifically criminalizing the use of drugs by pregnant women, the prosecutors who rely on these and other generally applicable criminal laws to punish women for this same behavior, and the judges who sanction punishment based on these justifications all vocally rely on the harm to the fetus and subsequent child as motivation for their actions."). *See also* Lanetra Bennett, *Woman Charged with Child Abuse for Drug Use During Pregnancy*, WCTV.tv (Mar. 10, 2010) (quoting a law enforcement officer supporting the prosecution of pregnant drug users because of his belief that drug use during pregnancy is, "a selfish act by the mother of the child. To me, the important thing is the child.").

[8] These laws are referred to in a number of ways – fetal assault laws, chemical endangerment laws, personhood laws. This Article uses the umbrella term "fetal endangerment laws" to refer to the criminalization of pregnant women's conduct that causes or risks harm to fetal life, whether such criminalization occurs through the passage of specific laws or the interpretation of existing criminal laws.

prohibited from passing additional fetal endangerment legislation – or from continuing to enforce existing fetal endangerment laws – under the guise of protecting fetal health, as such an argument is patently irrational.

I. FETAL ENDANGERMENT LAWS

Beginning in the late 1980's, the term "fetal protection" was used for the first time to describe laws and policies intended to punish women, either through the civil or criminal legal system, for conduct they engaged in while pregnant.[9] These punitive measures were aimed primarily at women who used crack cocaine during pregnancy,[10] and tapped into the "moral panic" that arose in the face of prenatal drug use in already marginalized communities.[11] While at first the criminalization of risky behavior in pregnancy was still relatively rare, in the last several decades there has been rapid acceleration in both the passage of specific fetal endangerment laws and the prosecution of pregnant women under existing criminal statutes.[12]

While most often used to prosecute pregnant women who use illegal drugs,[13] laws are often worded broadly enough to criminalize all types of behavior in pregnancy. Pregnant women have been prosecuted for attempted self-abortion,[14] attempted suicide,[15] and even for failure to wear a seatbelt as required by state law.[16]

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9 *See* Linda C. Fentiman, *The New "Fetal Protection": The Wrong Answer to the Crisis of Inadequate Health Care for Women and Children,* 84 DENV. U. L. REV. 537, 540 n.7 (2006). Up to that point the term had been used only to describe employers' policies of excluding fertile women from workplaces where toxic chemical exposure was possible or to the policies regulating scientific experimentation on embryos or fetuses. *See id.*

10 Mishka Terplan, et al., *Prenatal Substance Use: Exploring Assumptions of Maternal Unfitness*, 9 SUBSTANCE ABUSE: RESEARCH AND TREATMENT 1, 1 (2015) ("Public concern [in the 1980's] focused on pregnant women as the agents responsible for propagating a predicted underclass of children whose cognitive and developmental disabilities would strain the country's economic and social welfare systems for years to come.").

11 *See* The Editorial Board, *When Prosecutors Jail a Mother for Miscarriage*, NY TIMES (Dec. 28, 2018) ("News organizations shoulder much of the blame for the moral panic that cast mothers with crack addictions as irretrievably depraved and the worst enemies of their children.").

12 Priscella A. Ocen, *Birthing Injustice: Pregnancy as a Status Offense,* 85 GEO. WASH. L. REV. 1163, 1174-75 (2017) (noting that of the over a thousand prosecutions of pregnant women for crimes relating to the alleged or potential risk to the fetus, more than half of the cases have occurred in the years following 2007); Lollar, *supra* note 7 at 966 (noting the "rapid acceleration in the criminalization of drug use by pregnant mothers" in the years between 2005 and 2014).

13 *See* Lynn M. Paltrow & Jeanne Flavin, *Arrests and Forced Interventions of Pregnant Women in the United States*, 38 J. HEALTH POL. POL'Y & L. 299, 315 (2013) (finding that 84% of pregnant women who had state action taken against them as a result of behavior while pregnant had allegations of drug use against them).

14 *See* Lee Rood, *I Never Said I Didn't Want My Baby,* RADIO IOWA (Feb. 10, 2010) (discussing the case of Christine Taylor, who was charged with attempted feticide after she tripped and fell down stairs while pregnant).

15 *See* The Editorial Board, *When Prosecutors Jail a Mother for Miscarriage*, NY TIMES (Dec. 28, 2018) (describing prosecution of Bei Bei Shuai, who attempted suicide and was subsequently charged with murder when her baby died a few days after the suicide attempt).

16 Amnesty International, CRIMINALIZING PREGNANCY: POLICING PREGNANT WOMEN WHO USE DRUGS IN THE USA 8 (2017) ("Laws identifying fetuses as potential 'victims' can

In any circumstance in which a woman could theoretically risk harm to her pregnancy – whether intentional or not – fetal endangerment laws can be used to criminalize her behavior.[17]

Discussing fetal endangerment as a cohesive set of laws and policies is difficult because of the various ways that states criminalize conduct on the part of pregnant women – and the judiciary's reaction to such attempted criminalization.[18] While this project discusses fetal endangerment laws as a single phenomenon, it is important to understand that approaches the criminalization of pregnancy take different forms. In the following sections, the various state approaches to fetal endangerment are catalogued and described.

A. Specific Criminal Statutes

In 2014, Tennessee became the first state to specifically criminalize drug use during pregnancy in its "fetal assault" law.[19] The law stated that a pregnant woman would be guilty of assault for the "illegal use of a narcotic drug…while pregnant, if her child is born addicted to or harmed by the narcotic drug and the addiction or harm is a result of her illegal use of a narcotic drug taken while pregnant."[20] Although exact statistics are not available, at least several dozen women were prosecuted under the statute before the law lapsed under a sunset provision in 2016.[21] Since that time, state legislators in Tennessee have unsuccessfully re-introduced similar measures several times.[22]

While Tennessee stands alone in specifically criminalizing prenatal drug use currently, this is not a static area of the law. As states and municipalities rush to address the growing opioid crisis, additional jurisdictions are adding – or looking to add – some

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have the effect of putting pregnant women's rights at risk, regardless of the law's intended purpose.") [hereafter AMNESTY REPORT].

[17] *See* Lollar, *supra* note 7 at 982 (noting that the removal of infants who test positive for an illegal drug upon birth is not predicated on a finding of harm to the infant). The rise of fetal endangerment laws is, of course, one piece of a larger story about the rise of the "carceral state," whereby the United States both criminalizes, prosecutes, and punishes in much greater numbers than comparable countries elsewhere in the world. But the rise of the criminalization of pregnancy implicates unique concerns not present in the larger trajectory towards criminalization – including questions of gender, privacy, and reproductive autonomy.

[18] There is a limited body of relevant federal law, as well. Primarily, the Child Abuse Prevention and Treatment Act (CAPTA), mandates that healthcare providers notify state agencies of newborns exposed to substance use prenatally. Child Abuse Prevention and Treatment Act (CAPTA) Pub. L. 93–247 (Jan. 31, 1974). States have wide latitude, however, in interpreting the law's requirements.

[19] *See* Lollar, *supra* note 7 at 949 (describing the Tennessee law as the first to explicitly criminalize prenatal drug use while it reflects a longstanding trend in the criminalization of poor, largely minority, pregnant women).

[20] Tenn. Code Ann. § 39-13-107 (2014) (expired July 1, 2016).

[21] AMNESTY REPORT, *supra* note 16 at 27-29.

[22] *See* "Tennessee bill to revive 'fetal assault' law would prosecute women who use drugs during pregnancy", WAFB.com (Feb. 11, 2019), available at https://www.wafb.com/2019/02/11/tennessee-bill-revive-fetal-assault-law-would-prosecute-women-who-use-drugs-during-pregnancy/.

version of fetal endangerment laws to their criminal codes. In just the first two months of 2017, seventeen state legislatures introduced fetal endangerment measures.[23] Missouri even considered the addition of an entirely new crime – "abuse of an unborn child" – that would criminalize the ingestion a narcotic drug or controlled substance while a woman knows she is pregnant or should have known she was pregnant – whether or not the child is born addicted or otherwise harmed.[24]

B. Criminalization of Fetal Endangerment Through Existing Criminal Laws

The most common method of criminalizing fetal endangerment, however, is through interpreting existing criminal laws to apply to the behavior of pregnant women. Prosecutors have charged pregnant women with homicide,[25] reckless endangerment,[26] child abuse,[27] child neglect,[28] and unlawful application of controlled substance to a minor[29] on the basis of their behavior during pregnancy.

Some state laws have been interpreted so consistently to apply to prenatal drug use, however, the law becomes a de facto fetal endangerment law. For instance, Alabama's Chemical Endangerment law, passed in 2016, was originally intended to target the exposure of children to home methamphetamine labs.[30] Nevertheless, the law has been used since its passage to prosecute over 400 women for drug use while pregnant.[31] The Alabama Supreme Court has approved the application of the law to prenatal drug use under the theory that the womb is an "environment" and the fetus is a "child" as contemplated by the statute.[32] Thus, even though the legislature of Alabama has never specifically passed a fetal endangerment law, Alabama remains at

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[23] AMNESTY REPORT, *supra* note **Error! Bookmark not defined.** at 7.
[24] H.B. 1903, 98th Gen. Assemb., 2d Reg. Sess. (Mo. 2016).
[25] *State v. Deborah J.Z.*, 228 Wis. 2d 468, 470 (Ct. App. 1999) (holding that a pregnant woman's consumption of alcohol could not support a prosecution for attempted first-degree intentional homicide and first-degree reckless injury
[26] *Kilmon v. State*, 394 Md. 168 (2006) (holding that pregnant woman's ingestion of cocaine could not form basis for reckless endangerment conviction).
[27] *State v. Martinez*, 139 N.M. 741 (N.M. App. April 3, 2006) (reversing conviction of child abuse against woman who ingested cocaine while pregnant).
[28] *State v. Louk*, 237 W. Va. 200, 786 S.E.2d 219 (2016) (reversing child neglect conviction of pregnant woman who ingested methamphetamine).
[29] *State v. Cervantes*, 232 Or. App. 567(2009) (reviewing legality of prosecution of pregnant woman who ingested methamphetamine).
[30] Nina Martin, *Take a Valium, Lose Your Kid, Go to Jail*, PROPUBLICA (Sept. 23, 2015) ("Passed in 2006 as methamphetamine ravaged Alabama communities, the [chemical endangerment] law targeted parents who turned their kitchens and garages into home-based drug labs, putting their children at peril.").
[31] AMNESTY REPORT, *supra* note 16 at 37. As Alabama's use of the chemical endangerment law has continued unabated since the time of the Amnesty report, this number is likely considerably higher currently.
[32] *Ex parte Ankrom*, 152 So. 3d 397, 400 (Ala. 2013). The Alabama Supreme Court affirmed this approach the following year in *Hicks v. State*, 153 So. 3d 53 (Ala. 2014).

the forefront of the criminalization of pregnancy through the aggressive application of its chemical endangerment law to pregnant women.[33]

Importantly, under the umbrella of fetal endangerment, behavior that is not otherwise criminal outside of pregnancy can become criminal simply as a result of a pregnancy.[34] So women who refuse medical intervention – which is not only *not* a criminal offense, but a constitutional right[35] – can still be prosecuted if they create a risk of harm to the fetus as a result of their refusal.[36] This is true whether or not identifiable harm results to a fetus or child[37] – the criminalization attaches simply to the risk of harm.[38] As another example, pregnant women of lawful drinking age who consume alcohol may be prosecuted for this behavior as a result of their pregnancy.[39] While the consumption of alcohol is not criminal, the consumption while pregnant – even within otherwise applicable legal limits – is criminalized. And even behavior which is marginally criminal – such as failure to wear a seatbelt – can subject pregnant women to harsher penalties as a result of the "risk" to the fetus.[40] The criminalization of drug use in pregnancy is also somewhat unique, as the vast majority of states do not criminalize drug use, but only the manufacture, possession, or sale of drugs.[41] Pregnant drug users, however, are prosecuted for their actual use of drugs. This approach implicates larger constitutional concerns about the criminalization of a disease, like

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[33] AMNESTY REPORT, *supra* note 16at 8 (noting that more prosecutions of prenatal drug use have been prosecuted under Alabama's chemical endangerment law than any other single law in the country).

[34] Goodwin, *supra* note 6 at 786 ("Contemporary fetal protectionism includes sanctioning women for refusing cesarean sections, forcibly confining them to bed rest, and instigating prosecutions for otherwise legal conduct.").

[35] *Cruzan v. Missouri Dep't of Health*, 497 U.S. 261, 278 (1990) ("The principle that a competent person has a constitutionally protected liberty interest in refusing unwanted medical treatment may be inferred from our prior decisions.").

[36] *See* Joanne Csete et al., *Vertical HIV Transmission Should Be Excluded from Criminal Prosecution*, 17 Reprod. Health Matters, Dec. 3, 2009, at 154, 158 (describing a prosecution for prosecuted for felony child neglect as a result of failure to prevent HIV transmission to her unborn child).

[37] Lynn M. Paltrow & Jeanne Flavin, *Arrests and Forced Interventions on Pregnant Women in the United States*, 38 J. Health Pol. Pol'y & L. 299, 317-18 (2013) (finding that in a majority of cases identified in the study, no evidence of harm to a fetus or infant was present).

[38] Ocen, *supra* note 12 at 1179 ("[Prosecutions of pregnant women who use drugs rest largely on the *risk* posed by the drug use rather than the *actual* harm.") (emphasis in original).

[39] *See* Kontji Anthony, *Police: Woman Earns DUI for Endangering Fetus*, WMC Action News 5 (Jan. 7, 2013, 9:07 PM), http://www.wmcactionnews5.com/story/20525700/police-pregnant-woman-earns-dui-for-endangering-fetus (describing arrest of pregnant woman for DUI-child endangerment despite the fact that her blood alcohol level was half the legal limit).

[40] Ocen, *supra* note 12 at 1180-81 (discussing how pregnancy is used as a "sentencing enhancement"). The underlying rationale for the criminalization of pregnant women could be used to prosecute women for "harm" incurred for much more mundane behavior, like a failure to take prenatal vitamins. While such prosecutions haven't, to date, been undertaken, it is chilling that they rest on the same underlying rationales. *See id.* ("These prosecutions place all pregnant women at risk for criminalization if they engage in behavior that does not assure optimal fetal health, including failure to exercise, eating badly, taking prescribed medication, and failing to follow doctor's orders.").

[41] Ocen, *supra* note 12 at 1167 (stating that states do not typically criminalize drug use directly).

[41] Tenn. Code Ann. § 39-13-107 (2014) (expired July 1, 2016).

addiction.[42] Perhaps most heartbreakingly, a fetal endangerment approach countenances prosecutions of women for pregnancy loss through miscarriage or stillbirth.[43] Such prosecution can occur even when the pregnancy loss is unexplained[44] or the pregnant woman herself testifies to her desire to have the child.

Despite the prevalence of prosecutions of pregnant women at the state level, all but two state supreme courts presented with convictions of pregnant women have overturned them.[45] The most common reason for overturning the convictions appears to be the belief that state legislatures did not intend to include fetuses in the definition of "child" or "victim" in the relevant statute.[46] Similarly, some courts have stated that interpreting these laws to apply to harm to a fetus would violate pregnant women's due process rights because the women would fail to have reasonable notice regarding potential criminal liability for their actions.[47] Courts have recognized that it is difficult, if not impossible, to differentiate lawful conduct that nevertheless risks harm to the fetus (like smoking or eating a poor diet) and the ingestion of drugs.[48] Interestingly,

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[42] *See* Khiara M. Bridges, Race, Pregnancy, and the Opioid Epidemic: White Privilege and the Criminalization of Opioid Use During Pregnancy, 133 Harv. L. Rev. 770, 803–04 (2020) ("The general sense is that punishing any person for having a substance use disorder while pregnant is analogous to pressing charges against a person for having schizophrenia or Tourette syndrome while pregnant: the person would be punished for being pregnant while suffering from a medical condition."). In her article, *Birthing Injustice: Pregnancy as a Status Offense*, scholar Priscilla A. Ocen persuasively argues that the specific criminalization of pregnancy in this manner is a violation of the Eighth Amendment's prohibition on cruel and unusual punishment. Ocen, *supra* note 12.

[43] *See* New York Times Editorial Board, *When Prosecutors Jail a Mother for a Miscarriage*, NY Times (Dec. 28 2018).

[44] Ocen, *supra* note 12 at 1166.

[45] In addition to the Alabama Supreme Court cases discussed, *supra*, the South Carolina Supreme Court has upheld the application of existing criminal statutes to cases of prenatal drug use. *See* Whitner v. State, 328 S.C. 1 (1997).

[46] *See, e.g., People v. Morabito*, 580 N.Y.S.2d 843, 846-47 (N.Y. City Ct. 1992) (woman could not be charged with criminally endangering the welfare of her child based upon prenatal acts of smoking cocaine); *State v. Gray*, 584 N.E.2d 710, 713 (1992) (woman could not be prosecuted for child endangerment for prenatal substance abuse); *Reinesto v. Superior Court of Ariz.*, 894 P.2d 733, 737 (Ct. App. 1995) (woman could not be prosecuted under child abuse statute for prenatal heroin use).

[47] *See State v. Martinez*, 137 P.3d 1195, 1197 (2006) (prosecution for prenatal cocaine use violated due process, because woman "could not have reasonably known that her conduct was criminal"); *Collins v. State*, 890 S.W.2d 893, 898 (Tex.App.1994) (statute did not give woman sufficient notice that prenatal substance abuse would be considered criminal, and thus her prosecution violated due process).

[48] *See State v. Wade*, 232 S.W.3d 663, 665–66 (Mo. Ct. App. 2007):

> "One reason why courts have disallowed such criminal charges is that it would be difficult to determine what types of prenatal misconduct should be subject to prosecution. Here, the State argues that criminal liability should arise when an unborn child is injured as a result of the mother's unlawful conduct, such as the use of illegal drugs. However, the mother is already subject to prosecution for such unlawful activity, and the only purpose of allowing additional pregnancy-related charges would be to protect the interest of the fetus. Given that goal of protection, the logic of allowing such

even when courts in the state have already found that pregnant women cannot lawfully be prosecuted for harm to the fetus they are carrying, prosecutors continue to bring these claims against women.[49] Thus, zealous prosecutors continue to criminalize pregnancy unabated even in the face of judicial decisions specifically finding such criminalization invalid. As a result, the threat of criminal prosecution exists even if the hope that a conviction might be overturned on appeal remains well-founded in most, but not all, jurisdictions.[50]

B. Non-Criminal Fetal Endangerment Laws

The most common approach to fetal endangerment is actually through the civil, not criminal, system. For instance, in eighteen states, prenatal drug use alone can be used as a basis to terminate parental rights,[51] including in situations where there is no observable negative effect on the infant.[52] While removing fetal endangerment from the criminal justice system results in pregnant women avoiding some of the most draconian aspects of the fetal endangerment laws – including potential incarceration – civil endangerment laws deeply affect women's lives through the temporary or permanent deprivation of their parental rights. Missouri law considers a woman to be a presumptively unfit parent if she has a positive drug screen within eight hours of delivery and she has previously been convicted of child abuse or neglect or if she failed to complete a drug treatment program recommended by Child Protective Services.[53]

> prosecutions would be extended to cases involving smoking, alcohol ingestion, the failure to wear seatbelts, and any other conduct that might cause harm to a mother's unborn child. It is a difficult line to draw and, as such, our legislature has chosen to handle the problems of pregnant mothers through social service programs instead of the court system."

[49] For instance, in 1992 the Florida Supreme Court invalidated the conviction of a woman for delivery of controlled substance to a minor under the theory that the statute did not cover cocaine passing through umbilical cord after birth. Johnson v. State, 602 So. 2d 1288 (Fla. 1992). Nevertheless, women in Florida continue to be prosecuted for prenatal drug use. *See* Lanetra Bennett, *Woman Charged with Child Abuse for Drug Use During Pregnancy*, WCTV.tv (Mar. 10, 2010) (discussing prosecutions of Florida women for prenatal drugs use); Seth Robbins, *Deland Police Charge Pregnant Woman With Child Abuse After Drug-Use Admission*, The Daytona Beach News Journal (Jun. 12, 2018) (discussing arrest of Florida woman for prenatal drug use but quoting law enforcement spokesperson recognizing that a child abuse charge would "likely not be prosecutable.").

[50] Bridges, *supra* note 42 at 808 ("However, the fact that most prosecutions or convictions for substance use during pregnancy have not been sustained on appeal should not be taken to mean that state efforts to criminalize substance use during pregnancy are irrelevant or insignificant. Far from it.").

[51] *See* How States Handle Drug Use During Pregnancy, ProPublica, available at https://projects.propublica.org/graphics/maternity-drug-policies-by-state (last accessed January 22, 2020).

[52] *See* The Editorial Board, *When Prosecutors Jail a Mother for Miscarriage*, NY Times (Dec. 28, 2018) (describing case of New Jersey woman whose baby was put in foster care as a result of her refusal to submit to a cesarean section – despite the fact that the infant was born vaginally and "in full health.").

[53] Mo. Ann. Stat. § 211.447 (West).

Additionally, three states — Minnesota, South Dakota and Wisconsin — have laws that allow women who use drugs during pregnancy to be involuntarily committed to a treatment program either for the length of the program or the entirety of the pregnancy.[54]

II. EXISTING ARGUMENTS AGAINST THE CRIMINALIZATION OF PREGNANCY

Many scholars have critiqued fetal endangerment laws specifically, and the criminalization of pregnancy generally, on both theoretical and policy grounds. While scholars are uniformly opposed to these practices, their opposition is based in a variety of arguments. These arguments include that such laws violate the privacy and reproductive autonomy of women, that they fail to serve any legitimate penological purpose, that they create poor health outcomes for women and children, and that they unfairly and disproportionately harm women of color and poor women. Of course, the multiple ways that fetal endangerment laws can create harm cannot be completely disaggregated from one another, as the harms are often mutually reinforcing.[55] Nevertheless, the most common critiques of these laws are explored individually below.

A. Reproductive Autonomy

It is not a coincidence that the rise of fetal endangerment laws mirrors the increase in abortion restrictions nationwide, nor that the jurisdictions most likely to have stringent restrictions on abortion are also the states with the most draconian approaches to fetal endangerment.[56] In both instances, the dual driver of such reforms is a focus on the sanctity of fetal life and a devaluation of women's reproductive autonomy.

In fact, much of the scholarly critique of fetal endangerment laws has focused on how the criminalization of pregnant women harms women's constitutional rights.[57] Scholars have argued that fetal endangerment laws "undermine pregnant women's constitutional rights to be treated as equal citizens, to be free from unreasonable

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[54] *See* How States Handle Drug Use During Pregnancy, ProPublica, available at https://projects.propublica.org/graphics/maternity-drug-policies-by-state (last accessed January 22, 2020).

[55] *See* Fentiman, *supra* note 9 at 540 ("Current 'fetal protection' efforts pack a triple whammy: they undermine women's health, limit women's ability to fully participate in the economic life of the nation, and disproportionately affect the indigent and racial minorities.")

[56] Both fetal endangerment laws and laws restricting abortion normalize and promote the understanding that life begins at conception and that fetal life is thus entitled to individualized protection. *See* Goodwin, *supra* note 6 at 791 (describing the shift in understanding that allows for fetal endangerment laws "is significant as it normalizes treating the unborn as if they were born and alive at the time of injury, which not only implicates abortion policy, but also criminal law and women's other constitutional interests.").

[57] Ocen, *supra* note 12 at 1168-69 ("Indeed, much of the literature on the prosecution of pregnant women…explores the way in which such prosecutions violate women's fundamental right to reproductive autonomy or breach the privacy that should be inherent in the doctor-patient relationship.").

searches and seizures, and to be secure in their bodies."[58] Finally, there are persuasive arguments that forcing women to accept medical intervention that is contrary to their religious beliefs in order to protect fetal life violates the Free Exercise Clause.[59] Relatedly, scholars have argued that fetal endangerment laws run counter to the longstanding legal principle that no one has a duty to rescue another – and particularly that no one must use their own body in order to do so.[60]

Perhaps because most people do not envision themselves being on the receiving end of fetal endangerment laws, these risks to women's autonomy might not seem pressing. The basic proposition that undergirds these laws, however, is that once women are pregnant, the state may assume control over almost all aspects of their decision-making in the interest of promoting fetal health.[61] The potential for dystopian-level state overreach in such a reality is not hard to imagine and, indeed, is not merely a figment of the imagination.

B. Harm & Penological Intent

Underpinning many fetal endangerment laws is the (apparently) rational argument that prenatal drug use harms fetuses and infants.[62] Prosecution of prenatal drug use is premised, in large part, in avoiding that harm.[63] Indeed, there are harrowing accounts of neonatal intensive care units filled "the persistent squealing cry of newborns going through drug withdrawal."[64]

The science behind prenatal drug use and its effects on children's health, however, is surprisingly uncertain. In fact, the large majority of children born to women who use drugs while pregnant have zero long-term negative effects as a result.[65] And while Neonatal Abstinence Syndrome can cause startling symptoms in newborns,[66] it is a treatable condition and there isn't reliable research on how – or

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[58] Goodwin, *supra* note 7 at 794.

[59] *See* April L. Cherry, *The Free Exxercise Rights of Pregnant Women Who Refuse Medical Treatment*, 69 Tenn. L. Rev. 563 566-67 (2002).

[60] *See* Julie D. Cantor, Court-Ordered Care: A Complication of Pregnancy to Avoid, 366 New Eng. J. Med. 2237, 2238-40 (2012).

[61] The Editorial Board, *When Prosecutors Jail a Mother for Miscarriage*, NY Times (Dec. 28, 2018)("A society that embraces a legal concept of fetal personhood would necessarily compromise existing ideals of individual freedom. Americans — even many who oppose abortion — have not considered the startling implications of this idea, even as it has steadily gained strength in the law and in social norms. If a fetus is granted equal rights, women who become pregnant may find their most personal decisions coming under state control.")

[62] *See* Lollar, *supra* note 7 at 950 (noting that "few question the judgment" of punishing pregnant women who use drugs, under the theory that such prenatal drug use will cause harm).

[63] *See infra*, notes 155-158, and accompanying text.

[64] Mallory Yu, et al. In Tennessee, Giving Birth To A Drug-Dependent Baby Can Be A Crime, NPR (Nov. 18, 2015).

[65] *See generally* Lollar, *supra* note 7.

[66] *See* Stephen W. Patrick, et al., *Neonatal Abstinence Syndrome and Associated Health Care Expenditures*
United States, 2000-2009, 307 J. Am. Med. Assoc. 1934 (2012) ("Neonatal abstinence syndrome is characterized by a wide array of signs and symptoms including increased irritability,

whether – it effects children in the long run.[67] In fact, there is some research that suggests the it is the symptoms of a pregnant woman's *withdrawal* from drug use while pregnant that presents the most immediate danger to the health of a fetus.[68]

Thus, arguments against fetal endangerment laws include that the criminalization of behavior that doesn't result in harm to fetal or infant life is simply an inappropriate use of criminal law, as it is predicated on a fundamental misunderstanding of the science of pregnancy, addiction, and withdrawal.

C. Public Health

In addition to the arguments discussed in the previous section, both legal and policy scholars have warned about the potential for fetal endangerment laws to create negative public health outcomes. Namely, scholars have argued that the criminalization of pregnant women will disincentivize them to seek prenatal care or treatment for existing addiction.[69]

Many medical and public health organizations have warned that fetal endangerment laws are likely to discourage women from obtaining prenatal care out of fear of prosecution.[70] Initial studies suggest that this fear is well grounded.[71] The failure to obtain prenatal care is not merely one factor in determining health outcomes for infants – it is perhaps the most important factor. Early prenatal care is associated with a host of positive health outcomes, including reducing the incidence of neonatal death, preterm birth, and low-birth weight.[72] Proficient prenatal care is even more crucial in ensuring fetal health for women of color.[73]

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hypertonia, tremors, feeding intolerance, emesis, watery stools, seizures, and respiratory distress.").

[67] Mallory Yu, et al. In Tennessee, Giving Birth To A Drug-Dependent Baby Can Be A Crime, NPR (Nov. 18, 2015) (quoting Dr. Stephen Patrick of the Vanderbilt Hospital's Neonatal Intensive Care Unit).

[68] American College of Obstetricians and Gynecologists' Committee on Obstetric Practice, *Opioid Use and Opioid Use Disorder in Pregnancy* (August 2017), available at https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Opioid-Use-and-Opioid-Use-Disorder-in-Pregnancy ("For pregnant women with an opioid use disorder, opioid agonist pharmacotherapy is the recommended therapy and is preferable to medically supervised withdrawal because withdrawal is associated with high relapse rates."). *See also* Rementeria & Nunag*, Narcotic withdrawal in pregnancy: stillbirth incidence with a case report*, 116 Am. J. Obstetrics & Gynecology 1152 (1973).

[69] *See, e.g.* Mishka Terplan, et al., *Prenatal Substance Use: Exploring Assumptions of Maternal Unfitness*, 9 Substance Abuse: Research and Treatment 1, 1 (2015) (stating that punitive strategies "may also have the unintended consequence of further alienating such women from seeking both obstetrical care and [substance use disorder] treatment, thus exacerbating many problems already faced by families struggling with substance use.").

[70] *See* Lollar, *supra* note 7 at 991-95.

[71] *See id.* at 997 (discussing how women in Tennessee failed to seek prenatal care or addiction treatment as a result of Tennessee's fetal assault law).

[72] *Id.*

[73] *Id.* (noting the importance of adequate prenatal care for African-American women).

Similarly, the risk of prosecution prevents pregnant women from seeking care for their own health – including for treatment for drug or alcohol addiction.[74] In fact, women continue to face civil child abuse charges for complying with the medically-prescribed methadone regimen they are on in order to treat opioid addiction.[75] These instances clearly send the message that if women want to escape civil or criminal consequences, they should not seek treatment for their addiction while pregnant at all.

Underlying both the reluctance to seek prenatal care or treatment for addiction is the fundamental undermining of the doctor-patient relationship that can occur as a result of the criminalization of prenatal drug use.[76] Fundamentally, women who fear that medical professionals are simply extensions of the criminal justice system will reasonably learn to distrust and avoid doctors in general.[77] This is a negative outcome for public health in any scenario, but it is a particularly troubling outcome in this context because it will not only affect the health of the pregnant woman and the child during the pregnancy,[78] but potentially her health and the health of her children in the future.[79]

Of course, there is a real public health crisis occurring in this country around drug use. The number of babies born with neonatal abstinence syndrome increased 400% in the period between 1999 and 2013.[80] Recognizing the immediacy and scope of the problem of drug addiction and abuse – including but not limited to addiction

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[74] Goodwin, *supra* note 6 at 832 ("[P]regnant women who suffer from drug addiction may be particularly hesitant to meet with doctors and reticent about providing details exposing the type, extent, and frequency of their drug use.").

[75] *See* New Jersey Division of Child Protection & Permanency v. Y.N., 104 A.3d 244 (N.J. 2014); Elizabeth Brico, *State Laws Punish Pregnant People Just For Seeking Drug Treatment*, TalkPoverty.org (Aug. 14, 2019)

[76] Mishka Terplan, et al., Prenatal Substance Use: Exploring Assumptions of Maternal Unfitness, 9 Substance Abuse: Research and Treatment 1, 2 (2015) (noting that the automatic notification of a child welfare case that many states require when a child is born with a positive drug screen "can weaken trust in the patient-clinician relationship" even if no child welfare case is subsequently opened). *See generally* Michele Goodwin, Fetal Protection Laws: Moral Panic and the New Constitutional Battlefront, 102 Cal. L. Rev. 781, 795-839 (2014) (discussing the myriad ways that fetal endangerment laws pervert and undermine the doctor-patient relationship).

[77] *See* Goodwin, *supra* note 6 at 830 ("[P]oor pregnant women trust their medical providers trust their medical providers at a significant risk to their liberty and privacy, which is not good for society.").

[78] Goodwin, *supra* note 6 at 830 ("Driving pregnant patients away from medical care is a form of punishment that harms not only women but undermines the purported state interest in nurturing fetal development.").

[79] Mishka Terplan, et al., Prenatal Substance Use: Exploring Assumptions of Maternal Unfitness, 9 Substance Abuse: Research and Treatment 1, 2 (2015) (noting that fetal endangerment law and policy "[d]isregard[s] the interconnectedness of maternal and fetal health" and "detracts from widely shared public health objectives, including safe pregnancies and health women, children, and families.")

[80] American College of Obstetricians and Gynecologists' Committee on Obstetric Practice, *Opioid Use and Opioid Use Disorder in Pregnancy* (August 2017), available at https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Opioid-Use-and-Opioid-Use-Disorder-in-Pregnancy.

and abuse of pregnant women – does not shield fetal endangerment laws from critique. If anything, it underscores the necessity of finding different, effective interventions that promote public health.

D. Unequal Enforcement

Finally, critics of fetal endangerment laws correctly point out that the women most likely to be prosecuted under these laws are those that are already marginalized. While drug use generally, and drug use in pregnancy, is equally common among different racial and socioeconomic groups in the United States,[81] the prosecution of pregnant women under fetal endangerment laws paints a very different picture. It is overwhelmingly poor women and women of color who are targeted under fetal endangerment laws. This is no accident, but the result of deeply ingrained stereotypes regarding who is – and who is not – a "good mother."[82]

Historically, prosecutions for prenatal drug use have been much more heavily concentrated on women of color.[83] By some estimates, over fifty percent of the prosecutions for drug use in pregnancy have been of black women.[84] This doesn't reflect an increased incidence of drug use among black women, but only the use of fetal endangerment prosecutions in a discriminatory manner.[85] In fact, data suggests that pregnant white women use harmful – but legal – substances such as tobacco in higher numbers than pregnant women of color,[86] and are more likely to seek and acquire prescription medications during pregnancy.[87] Nevertheless, the disproportionate targeting of women of color reveals that racialized ideas of mothering

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[81] *See* Elizabeth A. Evans, et al., *Gender and race/ethnic differences in the persistence of alcohol, drug, and poly-substance use disorders*, 174 Drug and Alcohol Dependence 128 (2017).

[82] Ocen, *supra* note 12 at 1170 ("The criminlization of pregnancy as a means of social control is deeply informed by racial stereotypes and class bias regarding motherhood.").

[83] *See* Cara Angelotta & Paul S. Appelbaum, *Criminal Charges for Child Harm from Substance Use in Pregnancy*, 45 J. Am. Acad. Psychiatry Law 193, 201 (2017) (citing studies which suggest black women are disproportionately reported to authorities for prenatal drug use). *But see* Wendy Bach, *Prosecuting Poverty, Criminalizing Care*, 60 William & Mary L. Rev. 1, 43 (2019) (discussing the focus of prosecutions for poor, white women living in Eastern Tennessee).

[84] *See* Lynn M. Paltrow & Jeanne Flavin, *Arrests and Forced Interventions on Pregnant Women in the United States*, 38 J. Health Pol. Pol'y & L. 299, 310-11 (2013).

[85] Chasnoff et al., *The prevalence of illicit drug or alcohol use during pregnancy and discrepancies in mandatory reporting in Pinellas County, Florida*, 322 N. Engl. J. Med. 1202 (1990) (finding that black women were as much as ten times more likely to be reported to authorities as a result of prenatal drug use).

[86] Ocen, *supra* note 12 at 1174.

[87] Committee on Healthcare for Underserved Women, American College of Obstetricians and Gynecologists, Committee Opinion No. 538: Nonmedical Use of Prescription Drugs 2 (2012), available at http://www.acog.org/~/media/Committee%20Opinions/Committee%20on%C20Health%C20Care%C20for%C20Underserved%20Women/co538.pdf?dmc=1&ts =20140102T1509157316 ("White women are more likely to abuse prescription pain relievers than women of any other race or ethnicity.").

and addiction play a large role in the historical development of fetal endangerment laws.[88]

In part due to the racial make-up of most opioid users, more white women are being prosecuted under fetal endangerment laws than in the past.[89] But here again, it is not socioeconomically advantaged women who are being prosecuted – but poor, white women.[90] Prosecutors enforcing Tennessee's short-lived fetal assault law targeted almost exclusively poor women.[91] Thus, socioeconomic class has, in some cases, become as much a determinant of who is prosecuted than race has been historically.[92]

Of course, women whose identities expose them to multiple, overlapping systems of discrimination and oppression are even more susceptible to criminalization for alleged fetal harm.[93] This increase in the risk of criminalization further undermines the willingness of pregnant women on the margins to seek prenatal care or treatment for any underlying addiction issues. Thus, it is not only that fetal endangerment laws result in poorer outcomes for pregnant women and for babies – it is that the women most likely to bear the brunt of these negative outcomes are those that are already marginalized.

In the end, critics of fetal endangerment laws argue that they are little more than "symbolic gestures"[94] that do little to address the concern that supposedly animates them – protection of children. In the following section, this argument is empirically engaged in order to answer the question whether such laws are an effective method of promoting the health of infants.

III. EMPIRICAL ANALYSIS OF FETAL ENDANGERMENT LAWS

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[88] Dorothy Roberts, *Punishing Drug Addicts Who Have Babies: Women of Color, Equality, and the Right of Privacy*, 104 Harv. L. Rev. 1419 (1991).

[89] *See* Bridges, *supra* note 42 at 776 ("[T]he demographics of the more recent arrests and prosecutions of women who use substances while pregnant are in keeping with the demographics of the opioid epidemic: as white people predominate among those struggling with opioid use, misuse, and dependence, white women predominate among those who have faced criminal charges for opioid use during pregnancy"); Lollar, *supra* note 7 at 1002 ("Poor white women who use drugs while expecting are now subject to a similar moral condemnation and criminal punishment as their Black peers have been for approximately forty years.").

[90] *See* Lollar, *supra* note 7 at 1000 ("No empirical or anecdotal evidence appears to exist documenting the prosecution of any middle- to upper-class women for these crimes. However, decades of evidence support the conclusion that only those of lesser financial means are ending up in the criminal justice system for their behavior while pregnant.").

[91] *See* Wendy Bach, *Prosecuting Poverty, Criminalizing Care*, 60 William & Mary L. Rev. 1, 43-44 (2019) (noting that almost all of the women prosecuted under the law had one or more indicators of poverty, and considering the location of the prosecutions, it is likely that all women prosecuted were indigent).

[92] Goodwin, *supra* note 6 at 786 ("Frequently, class matters as much as race, meaning African American and Latina women no longer serve as the default targets of fetal protection laws…").

[93] Mishka Terplan, et al., Prenatal Substance Use: Exploring Assumptions of Maternal Unfitness, 9 Substance Abuse: Research and Treatment 1, 2 (2015) (noting that "the reporting of pregnant women to state authorities as well as prosecution and incarceration in the US has disproportionately affected [ ] low income women of color.").

[94] *See* Fentiman, *supra* note 9 at 541.

To examine the premises underlying the continued use of fetal endangerment laws—that these laws protect fetuses and infants from danger and exposure to harmful activities—we conduct an empirical analysis of unprecedented depth and breadth. Specifically, we examine a series of three datasets that can definitively answer the question of how fetal endangerment laws affect pregnancies, fetuses, and infants. We begin this Part by detailing these datasets and the information they contain. We then turn to the straightforward, but necessary, exercise of distilling the existing arguments on both sides of the fetal-harm-law debate into empirically testable hypotheses. Given those hypotheses, we analyze the effect of Tennessee's fetal endangerment law on pregnancy, fetal, and infant outcomes—most importantly fetal and infant death. Tennessee's law became effective on April 28, 2016, and ceased to be effective on June 30, 2016.[95] While, as noted above, other states have criminalized potentially harmful behavior during pregnancy in various ways, Tennessee remains the only state to take such an explicit stance on the issue. And Tennessee's specific statute instantiating its fetal endangerment law offers a nearly ideal setting in which to empirically evaluate the effect of this law.[96]

While Tennessee's statutory approach provides a nearly ideal setting, examining the effect of a law in a single state nevertheless presents important analytical challenges.[97] To address these challenges and provide a clear evaluation of Tennessee's fetal endangerment law, we present our analysis in several stages. We begin by examining changes in various health outcomes in Tennessee over time. We then estimate a series of regression models that can isolate the effect of Tennessee's law from other factors. We conclude our analysis by using innovative synthetic control techniques to provide additional evidence on the effect of Tennessee's law. We reserve a discussion of the legal implications of these results to the following Part of the Article.

A. Data, Medicolegal Context, and Hypotheses

The data examined here come from the National Vital Statistics System, which is maintained by the Centers for Disease Control and Prevention ("CDC").[98] In particular, we focus on three separate datasets that each cover the period between 2005

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[95] Tenn. Code Ann. § 39-13-107 (2014) (expired July 1, 2016).

[96] Other states' approaches do not offer the sharp beginning and ending date that Tennessee's statute provides. With such a clear period in which the law applies and does not apply, empirically evaluating the law becomes much easier and the results much clearer. The more nebulous start dates of prosecution under other states' more general criminal laws inhibits testing the effects of these laws because it is not clear when they actually became applicable to pregnant women in general. These other laws are certainly important, and we do not mean to suggest otherwise. However, for the purposes of our empirical analysis, we focus on Tennessee and its fetal endangerment law.

[97] *See* Nikolay Doudchenko & Guido Imbens, *Balancing, Regression, Difference-in-Differences and Synthetic Control Mehtods: A Synthesis* 1–2 (Nat'l Bureau of Econ. Research, Working Paper No. 22791, 2016), https://www.nber.org/papers/w22791.pdf (discussing the problems associated with analyzing a legal change in a single state and methodological solutions to those problems).

[98] National Vital Statistics System, Nat'l Center for Health Stat., https://www.cdc.gov/nchs/nvss/index.htm (last visited Feb. 3, 2020).

and 2017:[99] (1) data on all births in the United States, (2) data on all deaths of fetuses in the United States, and (3) data on all deaths in the United States—we focus on infant deaths in this dataset. While publicly available versions of these datasets exist, we analyze the restricted-use versions. These versions contain information on the location of individuals, which is necessary to isolate the impact of state laws. All datasets were accessed after receiving permission from the National Center for Health Statistics.[100] Additionally, the institutional review board at the University of Alabama reviewed and approved our use of these datasets and all protocols for analyzing them.[101] Importantly, all of the datasets we examine here are the same ones used by the CDC when calculating official birth and death statistics for the United States.[102] Using the universe of official data—as opposed to samples of official or unofficial data—allows us to generate unprecedented insight into the role of fetal endangerment laws without concern that our results may be driven by quirks in the data or in the sampling process.

Beginning with the dataset on births in the United States, these data come directly from official birth certificates.[103] Individual states gather all of the information contained in each birth certificate and report it to the CDC. The CDC then aggregates the information into a comprehensive database.[104] From this database, we gathered information on the following relevant outcomes: the length of gestation, five-minute Apgar score, and whether the mother received prenatal care. While the data do not include information on the long-term health outcomes of infants, medical research has clearly established a link between length of gestation and long-term outcomes.[105] Shorter gestation times are generally associated with poorer health outcomes for infants.[106] Accordingly, we analyze gestation as an indicator of more serious health problems that infants may suffer in the future.[107] Similarly, the five-minute Apgar score can also indicate the presence of serious health consequences in infants.[108] This "scoring system provide[s] a standardized assessment for infants after delivery."[109] An

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[99] The 2017 datasets represent the most recent available at the time we requested access from the National Center for Health Statistics.

[100] Documentation to this effect is on file with the authors.

[101] Documentation to this effect is on file with the authors.

[102] *See, e.g.*, Danielle M. Ely & Anne K. Driscoll, *Infant Mortality in the United States, 2017: Data From the Period Linked Birth/Infant Death File*, 68 NAT'L VITAL STAT. REP.1, 2–3 (2019) (using the birth and infant death datasets examined here to calculate official US statistics).

[103] *Birth Data*, NAT'L CENTER FOR HEALTH STAT., https://www.cdc.gov/nchs/nvss/births.htm (last visited Feb. 4, 2020)

[104] *Id.*

[105] American College of Obstetrics & Gynecology, A*COG Committee Opinion No 579: Definition of term pregnancy*, 122 OBSTETRICS GYNECOLOGY 1139, 1139–40 (2013).

[106] *See, e.g.,* Elaine M Boyle et al., *Effects of gestational age at birth on health outcomes at 3 and 5 years of age: population based cohort study*, 344 BRIT. MED. J. e896, e896–e899 (2014) (explaining the poor health outcomes associated with shorter gestation periods).

[107] Throughout our analysis, we consider length of gestation and whether an infant weighs less than 2500 grams at birth. The dataset does not include actual birth weight.

[108] *See* Am. Acad. Pediatrics, *The Apgar Score*, 136 PEDIATRICS 819, 821 (2015) ("[A] low 5-minute Apgar score clearly confers an increased relative risk of cerebral palsy, reported to be as high as 20- to 100-fold over that of infants with a 5-minute Apgar score of 7 to 10.").

[109] AM. COLL. OF OBSTETRICIANS AND GYNECOLOGISTS, COMMITTEE OPINION NUMBER 644: THE APGAR SCORE 1 (2019), https://www.acog.org/Clinical-Guidance-and-

Apgar score can vary between zero and ten (with higher scores indicating healthier infants), and calculating it involves the consideration of five different components that are associated with the health of the infant.[110] Based on research tying Apgar scores to infant health outcomes,[111] we include it in our analysis.

In contrast to these two measures of health outcomes, whether a mother received prenatal care is not, itself, a health outcome. However, many scholars and organizations have argued that fetal endangerment laws ultimately cause more harm than good because they discourage mothers from obtaining healthcare when needed.[112] We evaluate whether a mother received prenatal care during her pregnancy as an indicator of her engagement with the healthcare system. If mothers systematically receive less prenatal care following the passage of a fetal endangerment law, that would support the argument that these laws discourage them from obtaining care when they need it.

Examining pregnancy- and birth-related outcomes can offer important insight into the overall health of infants. To fully understand the effect of fetal endangerment laws, however, we extend our analysis to include an examination of the ultimate health indicator—death. With respect to fetal death, we examine a dataset unique to these deaths. We focus on fetal deaths occurring after 20 weeks of gestation for two reasons. First, not all states report fetal deaths that occur prior to 20 weeks of gestation.[113] Second, fetal deaths after 20 weeks are often treated differently than pre-20-week deaths, as indicated by the use of the term "stillbirth" instead of "miscarriage" to refer to these deaths.[114] The CDC maintains a dataset on fetal deaths that closely parallels the data on births,[115] and using these data, we calculate the total number of fetal deaths in each state and county.

Though fetal deaths are certainly a salient target of fetal endangerment laws, they do not, by themselves, capture the full effect of these laws. Accordingly, we consider deaths of live born infants in addition to fetal deaths.[116] Information on these deaths comes from the CDC's mortality data. These data, in turn, come from state submissions based on death certificates.[117] We focus primarily on infant deaths occurring after a live birth but before the 28th day of life. In an unreported analysis, we also consider infant deaths that occur before a child's first birthday. The results of this analysis are not meaningfully different than those reported below for deaths in the first month of life, so we exclude them in the interest of succinctness.

Publications/Committee-Opinions/Committee-on-Obstetric-Practice/The-Apgar-Score?IsMobileSet=false.

110 *Id.*

111 *See* Fe Li et al., *The Apgar Score and Infant Mortality*, 8 PLOS ONE e69072, e69072 (2013) ("The Apgar score system has continuing value for predicting neonatal and post-neonatal adverse outcomes.").

112 *See supra* Part ** (discussing these arguments).

113 *Fetal Deaths*, NAT'L CENTER FOR HEALTH STAT.,
https://www.cdc.gov/nchs/nvss/fetal_death.htm (last visited Feb. 4, 2020).

114 *Id.*

115 *Id.*

116 The key distinction between a fetal death and infant death is that the former occurs prior to birth and the latter occurs after birth.

117 *Mortality Data*, NAT'L CENTER FOR HEALTH STAT.,
https://www.cdc.gov/nchs/nvss/deaths.htm (last visited Feb. 4, 2020).

Collectively, the data we analyze here represent multiple measures of health (and death) that may be directly impacted by fetal endangerment laws. And, importantly, the data provides the universe of outcomes so that our analysis does not suffer from sampling bias or other problems associated with incomplete information. Given these data and the medicolegal context in which our analysis occurs, we can develop straightforward hypotheses about the effect of fetal endangerment laws on our various measures of fetal and infant health based on the arguments advanced by proponents and opponents of those laws.

The narrative advanced by advocates of fetal endangerment laws clearly presupposes a positive effect on fetal and infant health outcomes.[118] Indeed, they argue that preventing in utero exposure to various drugs will reduce the incidence of fetal harm and thereby decrease fetal death rates.[119] Extending these arguments implies that infant outcomes should similarly improve as a healthier pregnancy should lead to a healthier infant. In terms of the variables we analyze, if proponents of these laws are correct in their assertions, then fetal endangerment laws should reduce death rates of both fetuses and infants, increase gestation length, and increase Apgar scores. While proponents of fetal endangerment laws often do not take an explicit position on the effect of these laws on prenatal care, their implicit stance is that these laws do not affect the willingness or ability of mothers to access prenatal care.

On the other hand, those opposed to fetal endangerment laws assert, based on existing evidence, that these laws discourage mothers with addiction problems from accessing healthcare and thereby result in pregnancies with more health problems. When women forego standard prenatal care or refuse to access healthcare for specific injuries and illnesses out of fear of prosecution, opponents argue, their fetuses ultimately suffer greater harm than the harms associated with in utero drug exposure. In terms of our empirical analysis, if opponents of these laws are correct, women will systematically use less prenatal care, gestation length and Apgar scores will decrease, and fetal and infant mortality will increase. All of these problematic outcomes are associated with decreased access to healthcare during pregnancy as noted above.

Table 1 summarizes the testable hypotheses that can be distilled from the arguments of both opponents and proponents of fetal endangerment laws. These hypotheses serve as the basis for our empirical analysis, the first part of which is detailed in the next Part.

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[118] *See infra* Part IV (discussing the reasoning that states offer in support of their fetal endangerment laws).
[119] *See id.*

Table 1: Hypotheses Based on the Arguments of Proponents and Opponents of Fetal Endangerment Laws

Outcome	Predicted Effect of Fetal Endangerment Law if **Proponents** are Correct	Predicted Effect of Fetal Endangerment Law if **Opponents** are Correct
Probability of Receiving Prenatal Care	No Effect	−
Gestation length	+	−
Apgar score	+	−
Fetal Death Rate	−	+
Infant Death Rate	−	+

B. Tennessee's Fetal Endangerment Law

We begin our empirical analysis by examining various health outcomes in Tennessee. While an analysis of outcomes in a single state cannot, by itself, establish the causal effect of a fetal endangerment law on those outcomes, it is nevertheless useful to obtain a broad understanding of the role this law plays. It can also provide important context for more sophisticated analyses. Beginning with the question of whether Tennessee's fetal endangerment law discouraged pregnant mothers from receiving prenatal care, Figure 1 reports the proportion of mothers who received this care in Tennessee before, during, and after the implementation of Tennessee's fetal endangerment law. In particular, Figure 1 reports, by month, the proportion of mothers giving birth in Tennessee that received prenatal care.[120]

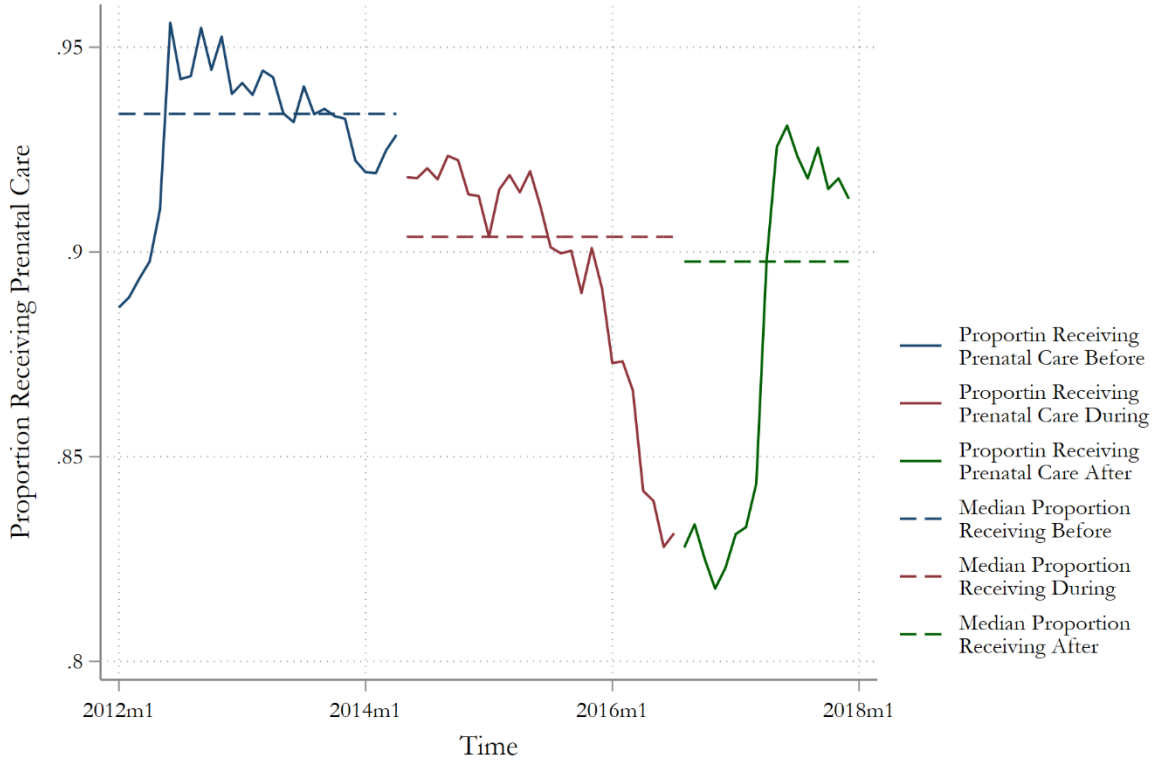
Here, and for other variables throughout our analysis, we examine the receipt of prenatal care as reported at the time of birth because our data come from birth certificates issued at the time of birth.[121] This means that the effect of Tennessee's fetal endangerment law may appear to be delayed, as some mothers who refused prenatal care as a result of the law would not have reported the absence of this care until they gave birth. In general, mothers (and their associated fetuses and infants) who were subject to the fetal endangerment law for the entire term of their pregnancies do not appear in the data until five to seven months after the implementation of Tennessee's law. On the other hand, if Tennessee mothers anticipated the passage of Tennessee's fetal endangerment law, they may have preemptively foregone prenatal care (which

[120] For example, if 100 mothers gave birth in January 2014, and 92 of them reported having received prenatal care during their pregnancies, then the January 2014 proportion for Tennessee would be reported as 0.92.

[121] We do not lag our variables to "correct" for the delay between the failure to receive prenatal care and birth because doing so requires numerous assumptions about when mothers should have received prenatal care, when a baby would have been born, and other pregnancy-related factors. Many of these factors themselves may be affected by fetal endangerment laws, so any attempt to "correct" for the time delay may induce a salient source of bias. Instead of risking the introduction of bias into our analysis, we report prenatal care (and the other variables examined here) at the time they are reported in the official statistics—at the time of birth.

would show up as a decline in prenatal care prior to the adoption of the fetal endangerment law). Both of these time factors will be reflected in the data on prenatal care in Tennessee (as well as the other variables we consider).

Figure 1: Prenatal Care Before, During, and After a Fetal Endangerment Law



Turning to that data in Figure 1, the proportion of mothers receiving prenatal care varied widely during Tennessee's experimentation with a fetal endangerment law. Figure 1 includes three separate lines: one for the monthly proportion of mothers receiving prenatal care prior to the implementation of Tennessee's fetal endangerment law, one for the same proportion during the time that law was effective (May 2014 through June 2016),[122] and one for that proportion after the law lapsed under its sunset provision. Because the proportion of mothers receiving prenatal care tends to vary from month to month, Figure 1 also reports the median proportion of mothers receiving care with separate dashed lines for each of the three periods around the implementation of Tennessee's fetal endangerment law.

In general, Figure 1 demonstrates a clear decline in the receipt of prenatal care around the time the fetal endangerment law was implemented. Before the law was implemented, approximately 94 percent of women giving birth in Tennessee received some prenatal care during their pregnancies. This percentage began to decline around the time the fetal endangerment law was passed and plummeted about a year after the law became effective. Indeed, at its lowest point, the percentage of mothers receiving prenatal care was around 83 percent, an approximately 11 percentage point decline

[122] Technically, the law became effective April, 28, 2014, but because this is nearly the end of April and we examine monthly data, we define the law as becoming effective in May 2014.

from the pre-implementation period. Troublingly, but not surprisingly, the proportion of mothers receiving care did not begin to recover to pre-implementation levels until approximately a year after the fetal endangerment law lapsed. And while the proportion did increase after the law ceased to be enforceable, it had not recovered to pre-implementation levels by the time our data ends in 2018.

Importantly, the failure to obtain prenatal care can put both mother and fetus (and later infant) at substantial risk. While the remainder of our analysis focuses on some of these risks, we want to be careful to note that no dataset is complete. We cannot examine all potential negative consequences of failing to obtain prenatal care, and it is important to emphasize that a drop in prenatal care by itself is cause for substantial concern, given the myriad medical studies connecting prenatal care to better health outcomes.[123]

With respect to the birth- and pregnancy-related outcomes we can examine, Figure 2 reports the average gestation length among Tennessee mothers (Panel A) and the average five-minute Apgar score among Tennessee infants (Panel B) by month.[124] As before, because the mean gestation length and Apgar score tend to vary from month to month, we include dashed lines denoting the before, during, and after implementation medians.

Turning first to Panel A and gestation length, gestation tends to vary more noticeably than the proportion of mothers receiving prenatal care. However, the median lines in Figure 2 clearly indicate that gestation length decreased following the implementation of Tennessee's fetal endangerment law. Gestation became more variable, but the trend towards shorter gestation time becomes apparent about halfway through the period that the fetal endangerment law was in place. This shorter gestation length persisted after the law sunsetted, but this persistence may stem from the fact that mothers giving birth in the seven to ten months following the lapse of the law were subject to its provisions for part of their pregnancies. Additionally, fetal endangerment laws may have a chilling effect on mothers, such that their trust in the healthcare and legal systems is undermined well after the fetal endangerment law that eroded that trust in the first place has lapsed.

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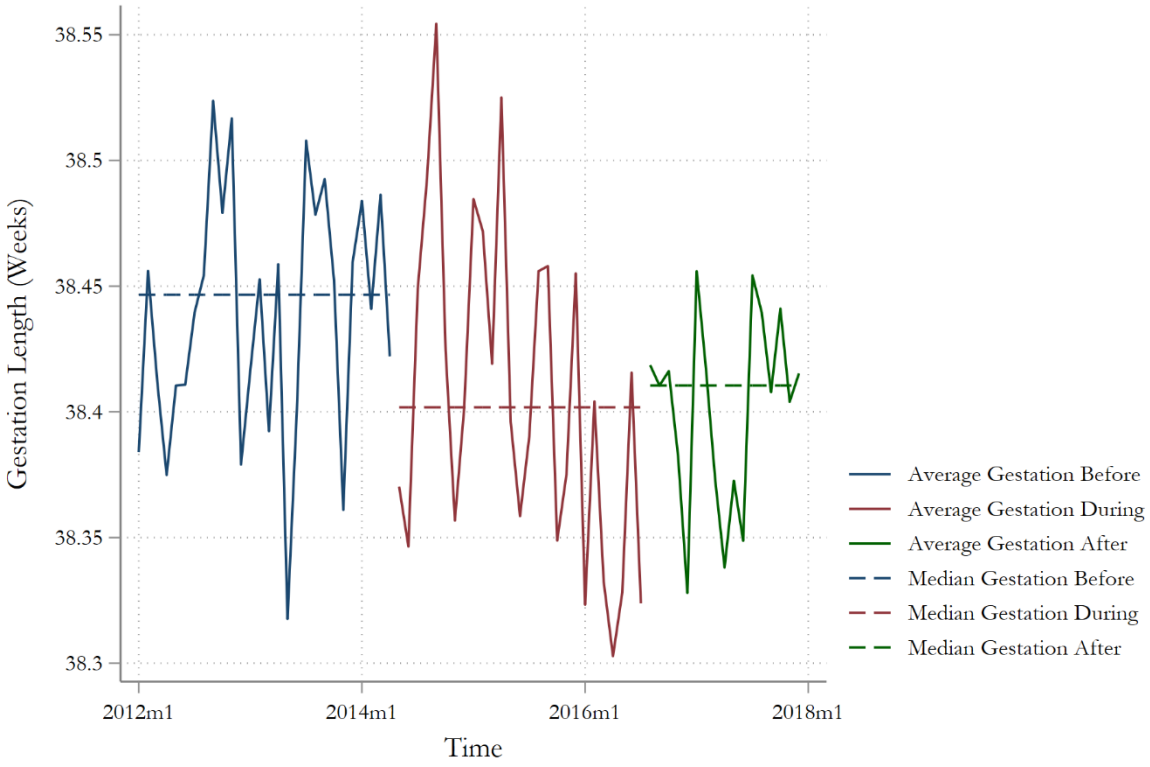
[123] *See, e.g.*, CRISTINIA NOVOA, ENSURING HEALTH BIRTHS TRHOUGH PRENATAL SUPPORT (2020), https://www.americanprogress.org/issues/early-childhood/reports/2020/01/31/479930/ensuring-healthy-births-prenatal-support/ (discussing, based on existing clinical evidence, the various health risks associated with the absence of prenatal care).

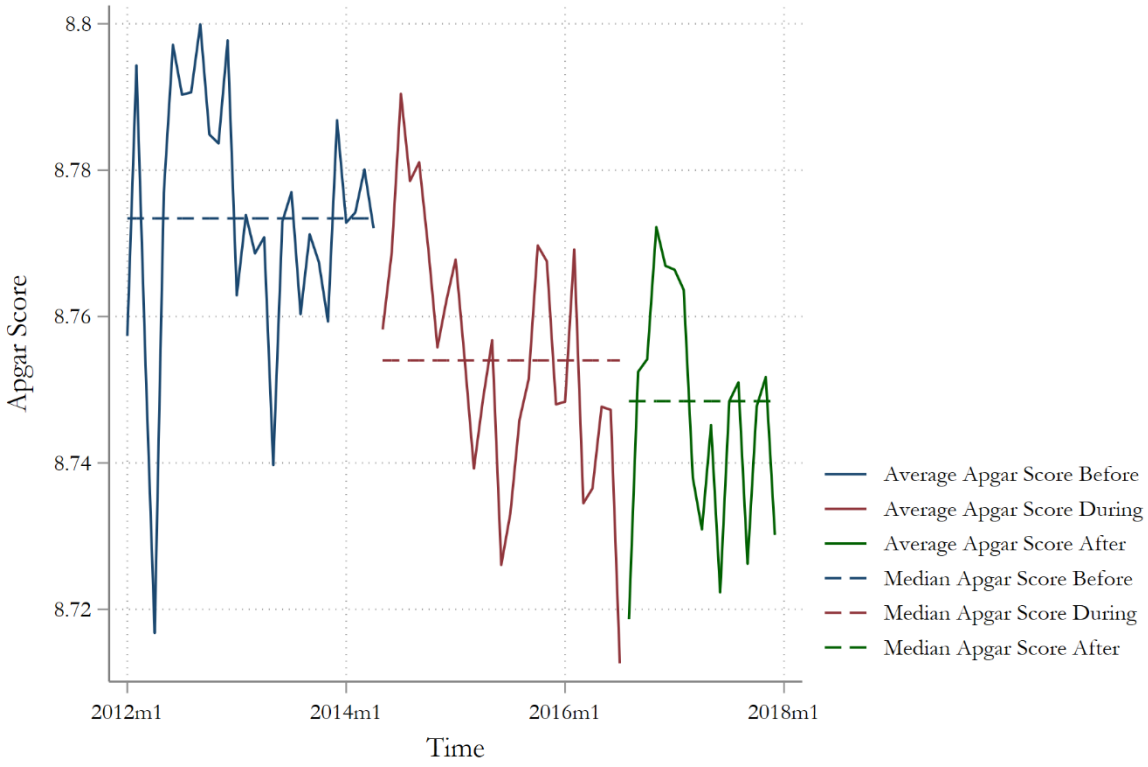
[124] As with prenatal care, Apgar scores and gestation length are reported at the time of birth. Therefore, mothers (and the associated fetuses and infants) subject to the fetal endangerment law for the entire duration of their pregnancy do not appear until seven to eight months after the implementation of the fetal endangerment law.

Figure 2: Pregnancy- and Birth-related Outcomes Before, During, and After a Fetal Endangerment Law

Panel A: Average Gestation Length



Panel B: Average Five-Minute Apgar Score



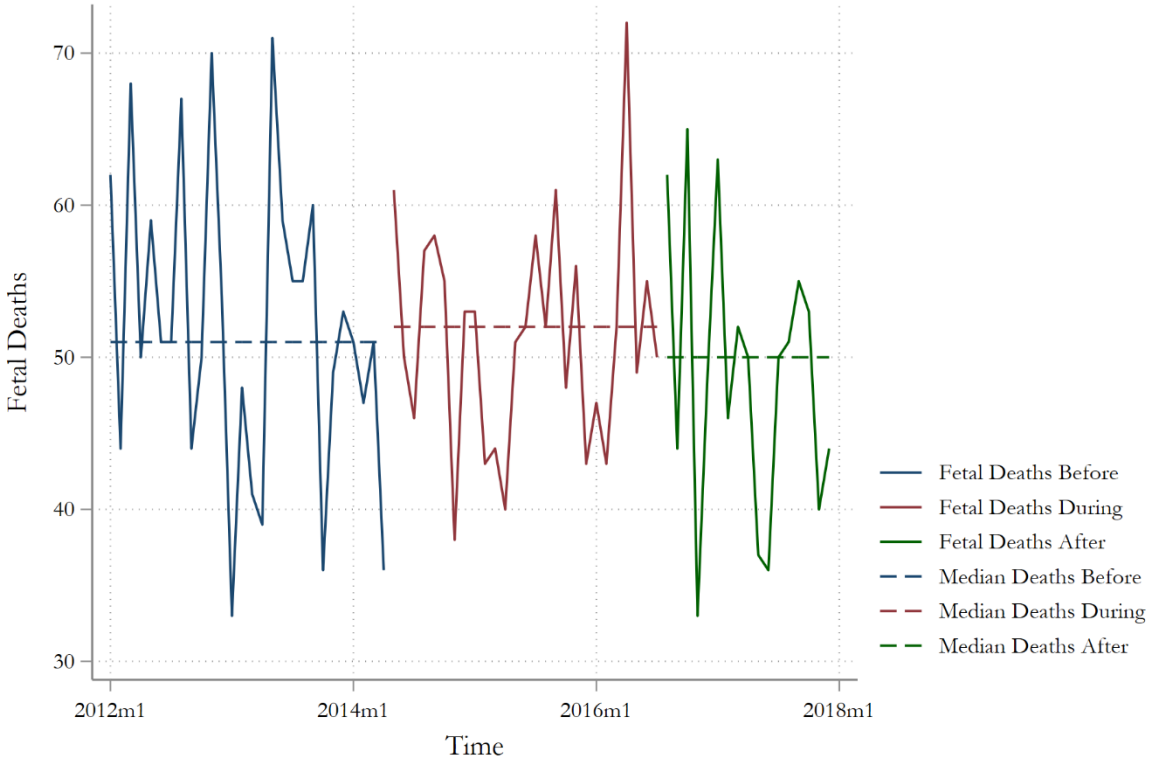
With respect to Apgar scores and Panel B, an Apgar score is assigned five minutes after birth and indicates the general health of the newborn, with higher Apgar scores being associated with healthier newborns.[125] In general, Apgar scores in Tennessee declined several months after the implementation of the fetal endangerment law. While similar declines prior to the passage of the law occurred in Tennessee, the post-implementation decline persisted for much longer at lower levels. Indeed, even after the fetal endangerment law lapsed, Apgar scores in Tennessee did not return to pre-implementation levels.

The decline in pregnancy- and birth-related outcomes is not consistent with the spirit of fetal endangerment laws, which are designed to promote the welfare of the unborn. These laws, however, ultimately focus on outcomes that are more clearly detrimental to the well-being of fetuses and infants—death. And examining fetal and infant deaths can elucidate whether these laws serve their core function of protecting the unborn and youngest members of society from harm. Figure 3 reports, by month, the number of fetal deaths (Panel A) and number of infant deaths (Panel B) in Tennessee.

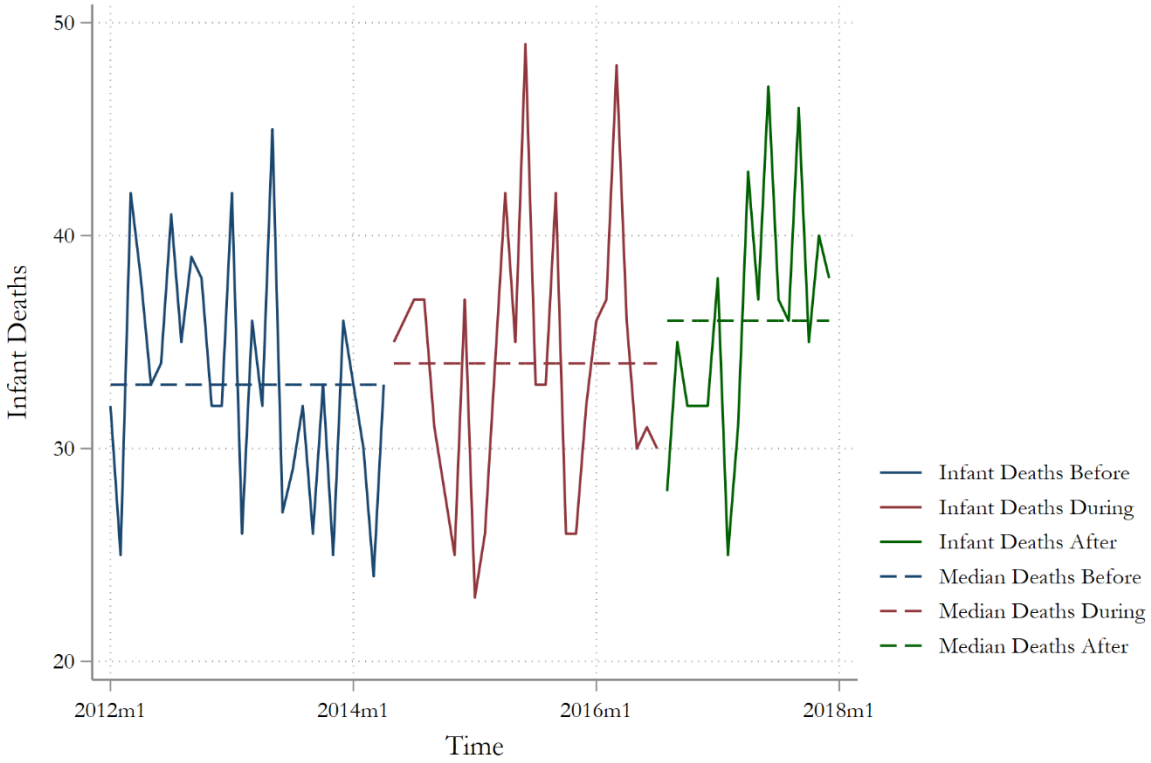
[125] *See* Am. Acad. Pediatrics, *supra* note 108, at 821.

Figure 3: Fetal and Infant Deaths Before, During, and After a Fetal Endangerment Law

Panel A: Number of Fetal Deaths



Panel B: Number of Infant Deaths



Focusing first on Panel A, the number of fetal deaths exhibits substantial variability from month to month, much like gestation length. However, examining the median number of fetal deaths before, during, and after the implementation of Tennessee's fetal endangerment law reveals a similar pattern as with the pregnancy- and birth-related outcomes. Fetal deaths increase when the fetal endangerment law is effective. Fortunately, the number of fetal deaths decreases following the lapse in Tennessee's fetal endangerment law, similar to the eventual increase in gestation length described above. The same cannot be said of the number of infant deaths in Tennessee. The number of infant deaths generally increased following the adoption of the fetal endangerment law, and this increase persisted following the demise of that law. Again, the number of infant deaths exhibits substantial variability, but the general increase in infant deaths following the implementation of the fetal endangerment law is clearly visible in the lines denoting the median number of deaths.

While the decrease in access to prenatal care and the decline in pregnancy- and birth-related outcomes are not consistent with the spirit of Tennessee's fetal endangerment law, the increase in fetal and infant deaths around the time that law was passed directly contradict the stated purpose of that law. Indeed, an increase in the number of deaths in the population a law seeks to protect is, in no way, consistent with the stated goal of protecting this population. Rather, such an increase is best characterized as *perverse* in that it represents the exact opposite of the goal sought to be achieved.

In interpreting the results presented in this Section, however, it is important to note that they cannot, by themselves, establish that Tennessee's fetal endangerment

law *caused* these perverse effects. For example, it may simply be the case that other factors operating at the time the law was passed worked to increase fetal and infant deaths, discourage the receipt of prenatal care, and undermine gestation length and Apgar scores. Without additional information, we cannot rule out the possibility that these other potential factors were responsible for the problematic shifts in pregnancy-, birth-, fetal-, and infant-related outcomes we detailed above. We do not mean to suggest that isolating the causal impact of the fetal endangerment law is impossible, however, and the next Section details the additional information and sophisticated empirical techniques that we use to examine this causal effect.

C. Regression Analysis

The fundamental problem with the above analysis in establishing the causal effect of the fetal endangerment law is the absence of a valid counterfactual. For example, consider the prenatal care results reported in Figure 1. At first glance, this figure clearly indicates a decline in the proportion of mothers receiving prenatal care during and after the implementation of Tennessee's fetal endangerment law. Under the assumption that this proportion would have remained stable absent the passage of this law, the effect is obvious—the law reduced mothers' use of prenatal care. However, if the proportion of mothers would have *declined even further* without the implementation of the fetal endangerment law, then the law could be considered a success. The problem with drawing strong conclusions solely from the information presented above is that we cannot know with certainty what the proportion of mothers receiving prenatal care would have looked like had Tennessee never passed its fetal endangerment law, i.e., we lack a valid counterfactual. Of course, the pattern of effects may suggest that the fetal endangerment law was responsible for the detrimental effects on mothers, fetuses, and infants, but to establish that this was the case, we rely on econometric methods specifically designed to isolate the causal effects of policy interventions.

We begin by estimating a series of difference-in-differences regression models. As demonstrated by prior work, these models effectively create a valid counterfactual against which to compare what actually happened in Tennessee.[126] By doing so, these models can isolate the role of the fetal endangerment law from other confounding factors and thereby produce estimates of the causal effect of this law on the outcomes described above.[127] Specifically, difference-in-differences models compare trends in the relevant outcomes in Tennessee with trends in the same outcomes in other states. This allows the models to account for how the outcomes would have trended over time as a result of changes in the many other factors that influence the relevant outcomes and thereby isolate the role of Tennessee's fetal endangerment law. In other

[126] Esther Duflo, winner of the 2019 Nobel Price in Economics, along with others have evaluated difference-in-differences models, identifying several key problems that these models must address if they are to produce reliable estimates of causal effects. The analysis presented in this Article addresses all of those issues. Marianne Bertrand, Esther Duflo & Sendhil Mullainathan, *How Much Should We Trust Difference-in-Differences Estimates?*, 119 Q.J. ECON. 249, 249–52 (2004).

[127] *See* Benjamin J. McMichael, *Healthcare Licensing and Liability*, 95 IND. L.J. 29–32 (forthcoming 2020) (detailing the ability of difference-in-differences models to isolate causal effects).

words, these models effectively "net out" the effect of unobservable factors that may influence maternal, fetal, and infant outcomes.[128] Thus, the models can estimate the causal effect of Tennessee's fetal endangerment law.

More technically, the difference-in-differences models we estimate are a specific type of regression model, and these models take a specific form to effectively net out the effect of various other confounding factors.[129] The dependent variable in these models is one of the following: the proportion of mothers receiving prenatal care, the average gestation length,[130] the average Apgar score, the number of fetal deaths per 1,000 births, or the number of infant deaths per 1,000 births.[131] The first three variables are exactly as described above; we simply extend our analysis to consider these variables outside of Tennessee. The last two variables are slightly different versions of the same variables examined above. Focusing on the number of fetal and infant deaths per 1,000 births allows us to standardize these death measures and better compare them across different geographic areas. To control for as many potential confounding factors as possible, all of these variables are defined at the county level instead of the state. Thus, for example, instead of examining outcomes across the entire state of Tennessee, we examine each of these five outcomes in each of the 95 counties within Tennessee. The same is true for the 159 counties in Georgia and in all of the other states included in our analysis. Doing so allows us to better control for county-specific factors that may influence the outcomes of interest.

The independent variables of interest are an indicator variable that equals one when a birth occurred in Tennessee at a time when the fetal endangerment law was effective and an indicator variable that equals one when a birth occurred in Tennessee at a time after the fetal endangerment law had lapsed.[132] Based on this construction, the coefficient estimates for these variables represent the causal effect of the fetal endangerment law. Importantly, in addition to these variables of interest, every model

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[128] Michael Frakes, *The Surprising Relevance of Medical Malpractice Law*, 82 CHI. L. REV. 317, 365 (2015) (discussing difference-in-differences models).

[129] Our regression model has the following general specification: $Y_{cst} = \beta(Fetal\ Harm\ Law_{st}) + \delta_c + \tau_t + \varepsilon_{cst}$. In this model, *c* indexes counties, *s* indexes states, and *t* indexes time as measured in months. The dependent variable, *Y*, is one of the five outcome variables described below. The variable, Fetal Harm Law, is an indicator variable that equals one in Tennessee during the time its fetal endangerment law was effective. The vectors δc and τ_t include county and month fixed effects.

[130] In this section, we define gestation length in terms of months instead of weeks. The two definitions are mathematically equivalent, and we change this definition solely to improve the readability of the results reported below.

[131] We calculate fetal deaths per 1,000 births by dividing the number of fetal deaths in a given month by the number of births in that month and multiplying by 1,000. Fetal deaths include all deaths of fetuses occurring after 20 weeks of gestation. We calculate infant deaths per 1,000 births by dividing the number of infant deaths in a given month by the number of births in the preceding month and multiplying by 1,000. Infant deaths include all live born infants who died within 28 days of birth. Based on this definition, the preceding month's number of births is the correct denominator.

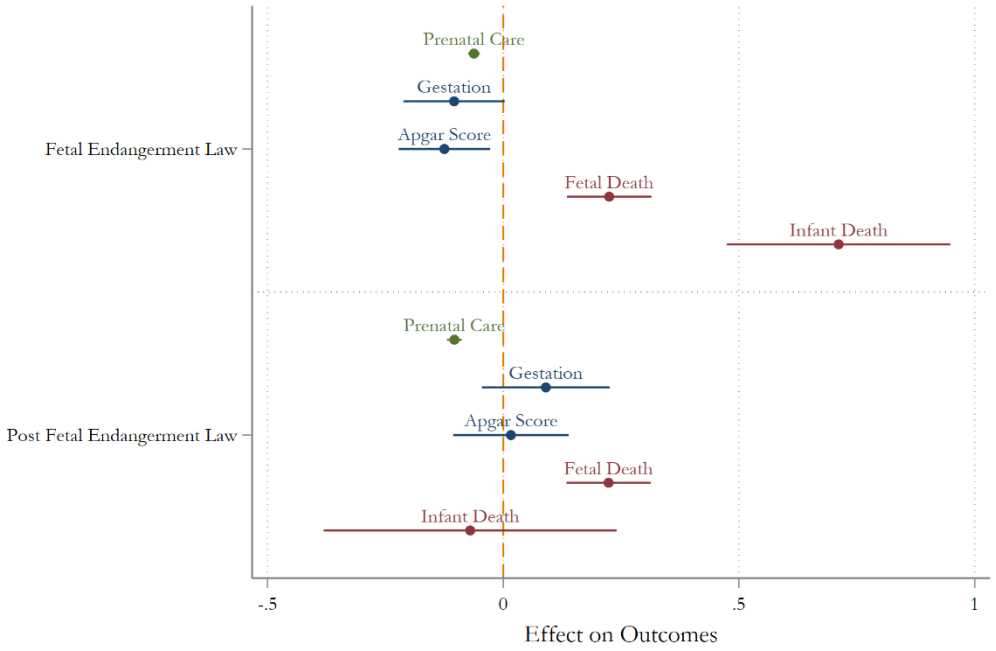
[132] The omitted category is the entire period prior to the implementation of Tennessee's fetal endangerment law. This period, therefore, serves as the baseline for comparison. All coefficient estimates can be interpreted as representing changes from this pre-implementation baseline.

includes a full set of indicator variables for individual counties and months. The county variables control for observed and unobserved characteristics of individual counties. Counties may differ in their health outcomes for many reasons other than a fetal endangerment law, and including these indicator variables allows the models to net out these other factors. Month fixed effects control for any linear or nonlinear trends in health outcomes over time. The county and month variables absorb much of the idiosyncratic variation present in the health outcomes we examine and therefore allow the models to isolate the role of the fetal endangerment law. The inclusion of these county and month variables obviates the need for many other control variables since they better control for confounding factors than generic variables for various observable factors.[133]

Figure 4 reports the results of a series of regression models which use the *rest of the United States* to create the counterfactual to what would have happened in Tennessee had it not adopted a fetal endangerment law. Figure 4 presents the results of five separate regression models, and the coefficient estimates from these models are reported in two separate groups. The first five estimates represent the effect of the fetal endangerment law itself, and the second five estimates represent the effect of being in Tennessee following the lapse of the fetal endangerment law. Each estimate is reported as a point in Figure 4, and the bars associated with each point represent the 90 percent confidence interval associated with the coefficient estimate. If this confidence interval does not cross the dashed line indicating zero, then a given coefficient is statistically significant.

[133] Throughout the analysis, we estimate ordinary least squares regression models, and we calculate standard errors clustered at the state level to correct for serial autocorrelation.

Figure 4: Regression Results for Tennessee's Fetal Endangerment Law



Notes: Each point represents the coefficient on the fetal-harm-law or post-fetal-harm-law variables as indicated. Both coefficients are estimated in the same model. The dependent variable for each regression is indicated above the point estimate. Ninety percent confidence intervals are reported as bars extending from the point estimates and are derived from standard errors clustered at the state level. All regression models include a full set of county and month fixed effects. All models include all counties from across the United States.

In general, the results are not encouraging. The fetal endangerment law meaningfully worsened all of the health outcomes we examine. Focusing first on prenatal care, the regression results indicate that Tennessee's fetal endangerment law reduced the probability of a mother receiving prenatal care by approximately 6.2 percentage points (relative to the pre-implementation period). Translating this into the number of mothers denied prenatal care, Tennessee's fetal endangerment law caused approximately 5,421 mothers to forego prenatal care in 2015 alone.[134] Of course, the total number of mothers denied care is higher over the entire lifespan of the law. This negative effect of the fetal endangerment law on prenatal care did not abate following the lapse of the fetal endangerment law, with the post-law effect resulting in a decrease in the probability of receiving prenatal care of approximately 10.2 percentage points.

Turning next to gestation length, the regression results indicate that the fetal endangerment law reduced gestation by approximately one tenth of one month, i.e., roughly 3 days. Across all of the pregnancies completed in 2015, this negative effect would translate to nearly 720 fewer years of gestation. While this effect is not statistically significant at traditional levels, a reduction of this amount of gestation could have serious consequences for the infants who must survive without the benefits

[134] In 2015, 87,432 babies were born in Tennessee. The regression results indicate that 6.2 percent of mothers chose not to receive prenatal care as a result of the fetal endangerment law, and 6.2 percent of 87,432 is approximately 5,421.

of increased in utero development—consequences which can translate into serious costs for young families and society at large.[135] Relatedly, Tennessee's fetal endangerment law had a statistically significant and negative effect on Apgar scores, reducing them by about 0.125 points. While the magnitude of this effect may appear small, the reduction of Apgar scores can signal the appearance of serious medical conditions in infants. And, again, incurring the financial and emotional cost of caring for sick infants can be a heavy burden for young families—and society at large will share the financial burden as state Medicaid programs often fund the healthcare needed by newborns.[136] Fortunately, unlike the effect of the fetal endangerment law on prenatal care, the negative impact on gestation and Apgar scores abated following the law's demise—the coefficients on the post-fetal-endangerment law variable in both the gestation and Apgar score models are positive and statistically insignificant.

Finally, with respect to the core purpose of fetal endangerment laws—the prevention of fetal and infant deaths—the models evince a problematic situation. Tennessee's fetal endangerment law had a *positive* and statistically significant effect on both fetal and infant deaths. The fetal endangerment law increased fetal deaths by 0.225 for every 1,000 births. As noted above, 87,432 babies were born in Tennessee in 2015. This means that Tennessee sponsored the deaths of approximately 20 fetuses in 2015. Similarly, the regression results indicate that the fetal endangerment law increased the death rate of infants per 1,000 births by approximately 0.711. This means that, in 2015, Tennessee sponsored the deaths of more than 60 infants in the first 28 days of life with its fetal endangerment law. Fortunately for live born babies in Tennessee, the increase in infant death rates abated after the law lapsed. But the positive effect on fetal death rates did not, which suggests that the fetal endangerment law had lingering deleterious effects on the unborn in Tennessee.

To probe the validity of these troubling results, we re-estimate all of the regression models above but limit the models to include only counties in Tennessee, Alabama, Arkansas, Georgia, Florida, Kentucky, Missouri, North Carolina, and Virginia. By examining the effect of the fetal endangerment law in Tennessee relative to the states that share a border with Tennessee, we can ensure that the effect persists when only states that share many commonalities with Tennessee are included in the comparator group.[137] The results of these models are reported in Figure 5.

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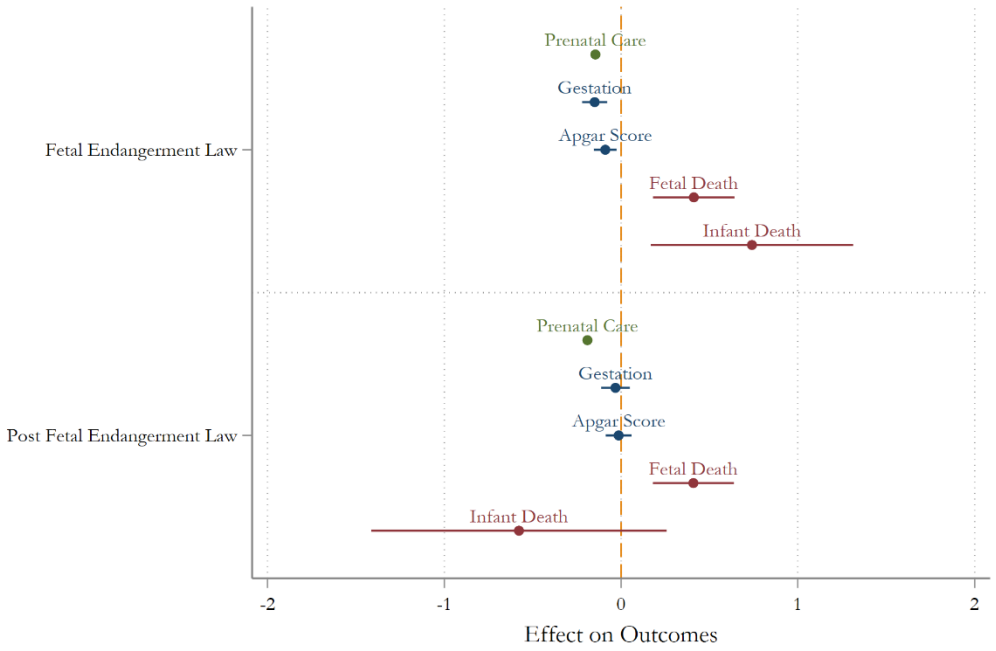
[135] Eileen M. Walsh et al., *Incremental Cost of Prematurity by Week of Gestational Age*, 9 AM. J. PERINATOLOGY REP. e76, e76 (explaining that shorter gestation times translate into higher costs).

[136] *Births Financed by Medicaid*, KAISER FAMILY FOUNDATION, https://www.kff.org/medicaid/state-indicator/births-financed-by-medicaid/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D (last visited Feb. 15, 2020).

[137] As noted above, Alabama began prosecuting mothers for similar actions as those criminalized by Tennessee's fetal endangerment law in 2016. We nevertheless include Alabama as a comparator state. If the inclusion of Alabama biases our results at all—here or in the primary models reported above—the bias will be against finding a statistically significant effect of Tennessee's law. Accordingly, by including Alabama, we offer conservative estimates of the effect of Tennessee's law.

Figure 5: Regression Results for Tennessee's Fetal Endangerment Law (Limited to States Bordering Tennessee)



Notes: Each point represents the coefficient on the fetal-harm-law or post-fetal-harm-law variables as indicated. Both coefficients are estimated in the same model. The dependent variable for each regression is indicated above the point estimate. Ninety percent confidence intervals are reported as bars extending from the point estimates and are derived from standard errors clustered at the state level. All regression models include a full set of county and month fixed effects. All models include all counties from the following states: Tennessee, Alabama, Arkansas, Georgia, Florida, Kentucky, Missouri, North Carolina, and Virginia.

In general, the results in Figure 5 largely parallel those of the models reported above. The fetal-endangerment-law and post-fetal-endangerment law variables continue to have a negative and statistically significant effect on the likelihood that mothers received prenatal care. Similarly, the law reduced both gestation and Apgar scores.[138] This negative effect on these birth-related outcomes abated after the law lapsed. Finally, as above, the law increased fetal deaths both during and after implementation, and it increased infant deaths during the time it was in effect.

Overall, the evidence discussed above paints a dire picture of Tennessee's fetal endangerment law. Though ostensibly passed to protect fetuses (and later, infants) from harm, this law does no such thing. In 2015 alone, it resulted in 20 fetal deaths and 60 infant deaths. And the empirical results suggest a clear mechanism by which these deaths occurred. Mothers forego prenatal care when this law is in place—indeed, the chilling effect of this law on pregnant mothers lasts past the time the law lapses—which places them and their fetuses at higher risk. This risk later manifests in the form

[138] Unlike the models that include all states, the effect of the fetal endangerment law on gestation is statistically significant in the models that include only states that border Tennessee

of shorter gestation times and lower Apgar scores. It may well manifest in myriad other ways; we simply do not have the data to examine all of these effects. Ultimately, the foregone care translates into more dead fetuses and infants.

D. Synthetic Control Models

As noted above, we want to be careful in testing the sensitivity of our results. These results have profound implications for how states should regulate pregnant mothers, and we want to ensure that our results are robust before turning to the legal implications of our analysis. To that end, it is relevant to note that empirical scholars have indicated that difference-in-differences models which rely on a legal change in only state—have only a single treated unit in econometric parlance—may suffer from problems that can undermine their ability to generate robust estimates of causal effects.[139] A survey of this complex methodological debate is well beyond the scope of this Article.[140] We nevertheless want to be sensitive to these methodological concerns and, therefore, employ a technique that prior work has indicated can address these concerns.[141] Specifically, we estimate a series of synthetic control models.

Synthetic control models differ from difference-in-differences models in one key respect. Where difference-in-differences models rely on a pool of states that never adopted a fetal endangerment law to provide a comparator group, synthetic control models explicitly construct a comparison state that mirrors the state that enacted the relevant law as closely as possible.[142] More specifically, instead of comparing Tennessee to all other states or to states that bordered Tennessee, synthetic control models construct a "Synthetic Tennessee" from other states. These models then compare the evolution of a relevant outcome in Tennessee to the evolution of that outcome in Synthetic Tennessee.[143] To construct a synthetic Tennessee, the models focus on the evolution of an outcome prior to the adoption of Tennessee's law. They then construct a weighted average of other states to match this pre-implementation evolution in Tennessee as closely as possible. This weighted average is "Synthetic Tennessee." Then, the models examine how this weighted average of other states compares to Tennessee after Tennessee implemented its law. By explicitly constructing a Synthetic

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139 Nikolay Doudchenko & Guido Imbens, *Balancing, Regression, Difference-in-Differences and Synthetic Control Mehtods: A Synthesis* 1–2 (Nat'l Bureau of Econ. Research, Working Paper No. 22791, 2016), https://www.nber.org/papers/w22791.pdf (discussing the problems associated with analyzing a legal change in a single state and methodological solutions to those problems). *See also* Noemi Kreif et al., *Examination of the Synthetic Control Method for Evaluating Health Policies with Multiple Treated Units*, 25 HEALTH ECON. 1514, 1514–16 (2016).

140 *See generally* Nikolay Doudchenko & Guido Imbens, *Balancing, Regression, Difference-in-Differences and Synthetic Control Mehtods: A Synthesis* 1–2 (Nat'l Bureau of Econ. Research, Working Paper No. 22791, 2016), https://www.nber.org/papers/w22791.pdf.

141 *See* Alberto Abadie, Alexis Diamond & Jens Hainmueller, *Synthetic Control Mehtods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program*, 105 J. AM. STAT. ASS'N 493, 494–97 (2010) (discussing the ability of synthetic control models to address specific methodological problems).

142 *See* Alberto Abadie, Alexis Diamond & Jens Hainmueller, *Comparative Politics and the Synthetic Control Method*, 59 AM. J. POL. SCI. 495, 500 (2015) (discussing how synthetic control models select specific comparison groups to create a synthetic version of the treated unit).

143 *Id.*

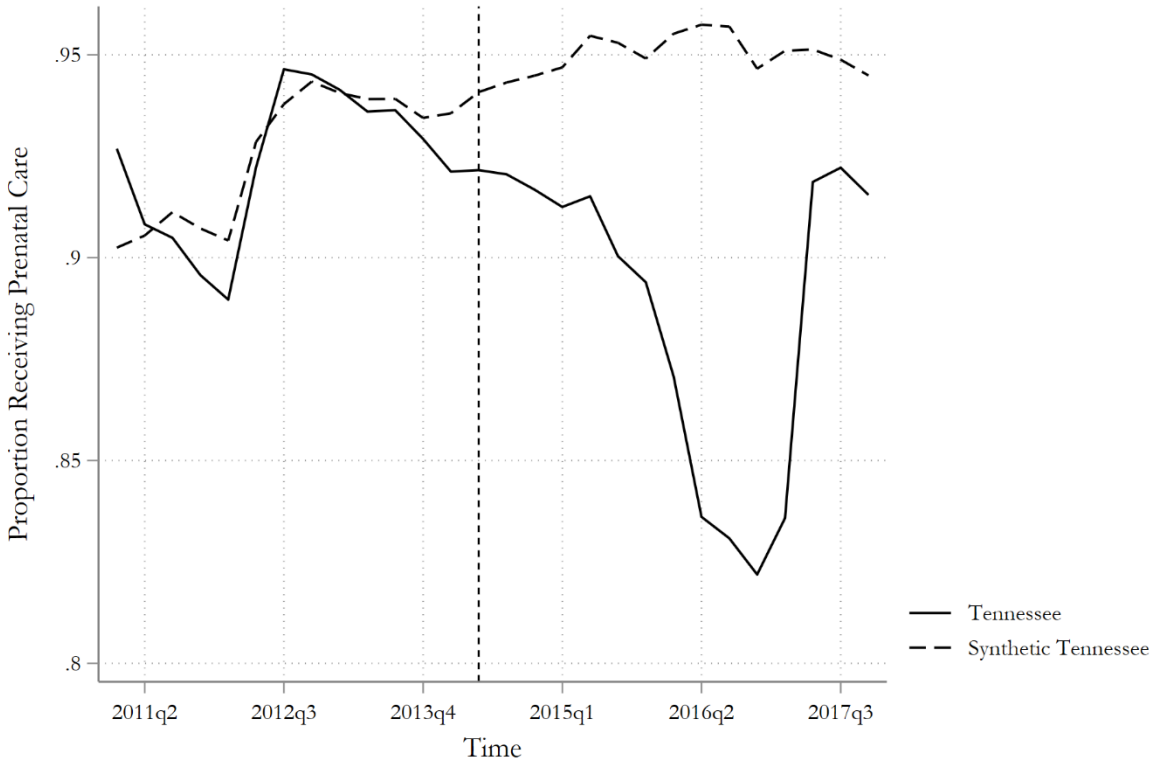
Tennessee against which to compare Tennessee, synthetic control models can address the potential methodological problems scholars have raised in the context of single-treated-unit difference-in-differences models.[144]

Throughout our analysis, we report all synthetic control model results graphically for ease of interpretation. Additionally, we examine outcomes at the state level because synthetic control models are specifically designed to compare one treated unit (Tennessee) to a synthetic unit. We also examine quarterly outcomes instead of monthly outcomes. This choice is driven purely by the desire to present readable results. Because monthly results are more variable (as can be seen in many of the graphs above), we focus on quarterly results, which tend to be less so. We do not present yearly results because it is difficult to match the implementation date of Tennessee's fetal endangerment law (which occurred in the middle of a year) with yearly data. We have, however, estimated all of the synthetic control models reported below at the monthly and yearly levels. The results are consistent with the quarterly results presented below and are omitted only because they are duplicative and more difficult to interpret.

Proceeding in the same order as above, we begin with a synthetic control model focused on prenatal care, and the results of this model are reported in Figure 6. In general, the results show a good match between Tennessee and Synthetic Tennessee, as the pre-fetal-harm-law lines match relatively closely. Once Tennessee implements its fetal endangerment law, however, the proportion of mothers receiving prenatal care in Tennessee diverges sharply from the predicted proportion of mothers who should receive prenatal care as represented by Synthetic Tennessee. Thus, these results corroborate the empirical results reported above.

[144] *Id.*; Doudchenko & Guido Imbens, *Balancing, Regression, Difference-in-Differences and Synthetic Control Mehtods: A Synthesis* 1–2 (Nat'l Bureau of Econ. Research, Working Paper No. 22791, 2016), https://www.nber.org/papers/w22791.pdf.

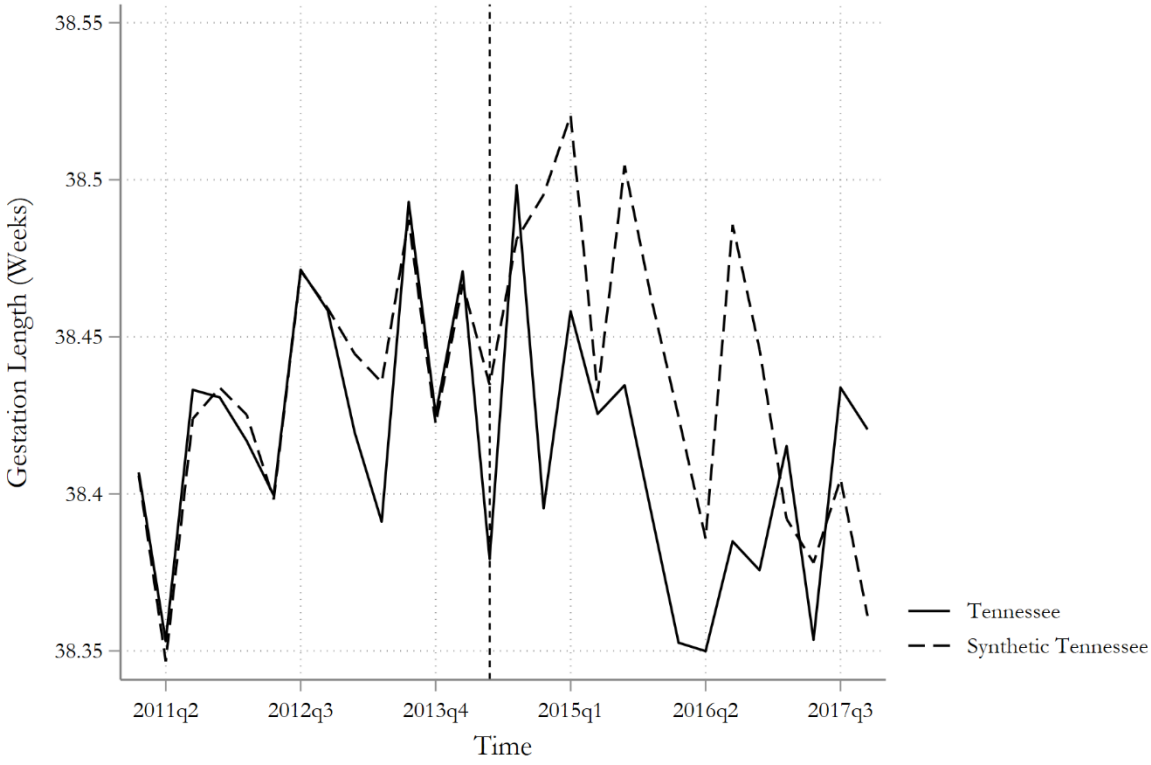
Figure 6: Synthetic Control Results for Prenatal Care



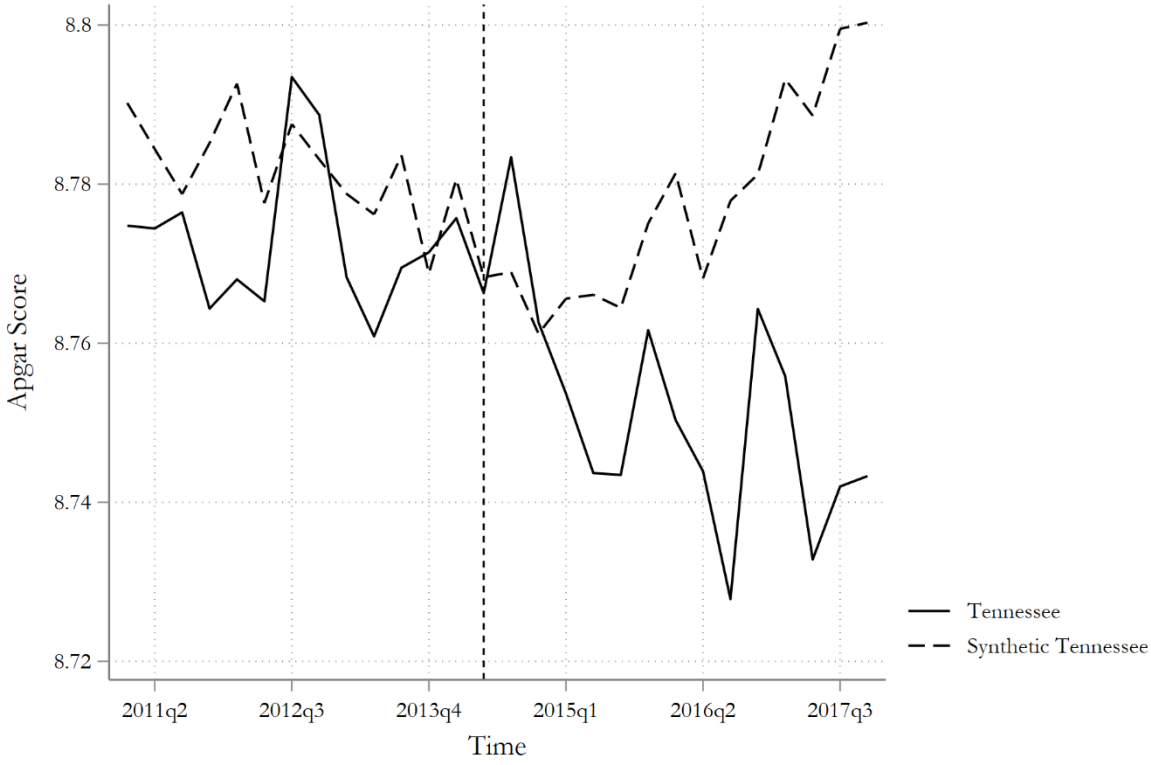
Turning next to the pregnancy- and birth-related outcomes, Figure 7 focuses on gestation length (Panel A) and Apgar scores (Panel B). After implementation of its fetal endangerment law, a clear gap in gestation length emerges between Tennessee and Synthetic Tennessee. This gap persists until the later part of our data period before closing—i.e., the time after Tennessee's law lapsed. As well, a clear divergence emerges between the Apgar scores in Tennessee and Synthetic Tennessee after the implementation of the fetal endangerment law. The gap in Apgar scores, however, never closes.

Figure 7: Synthetic Control Results for Pregnancy- and Birth-related Outcomes

Panel A: Gestation



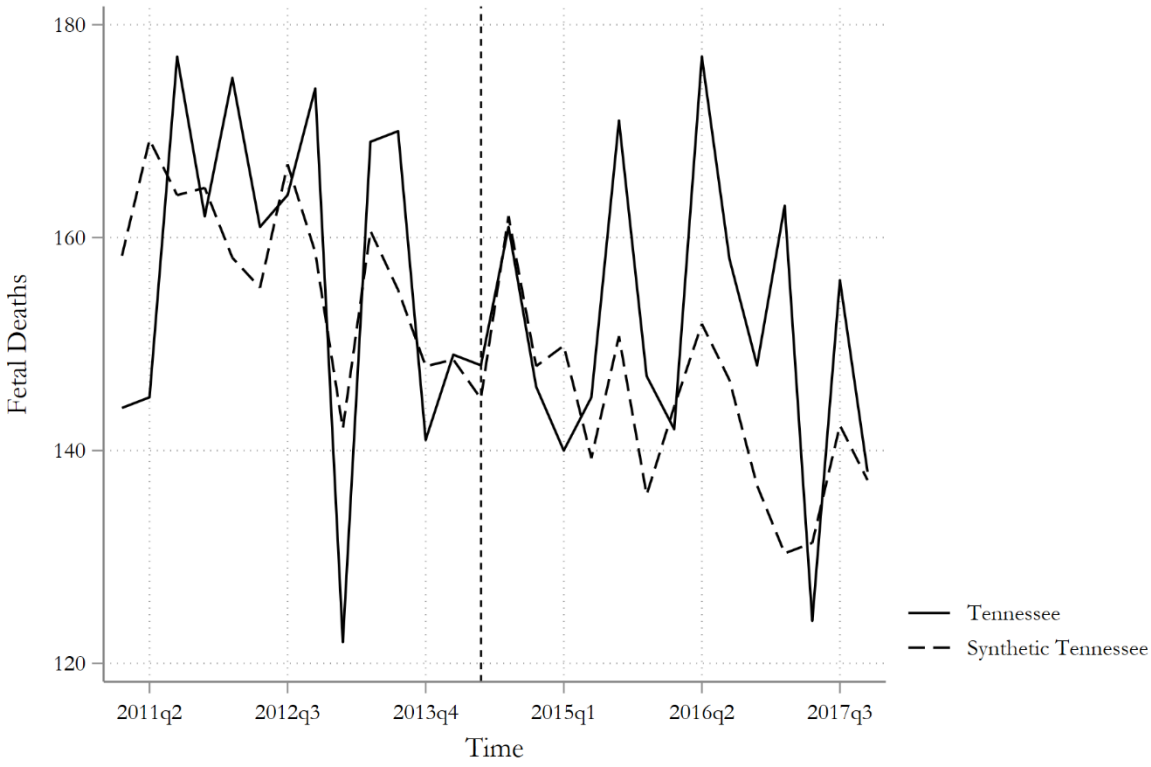
Panel B: Apgar Score



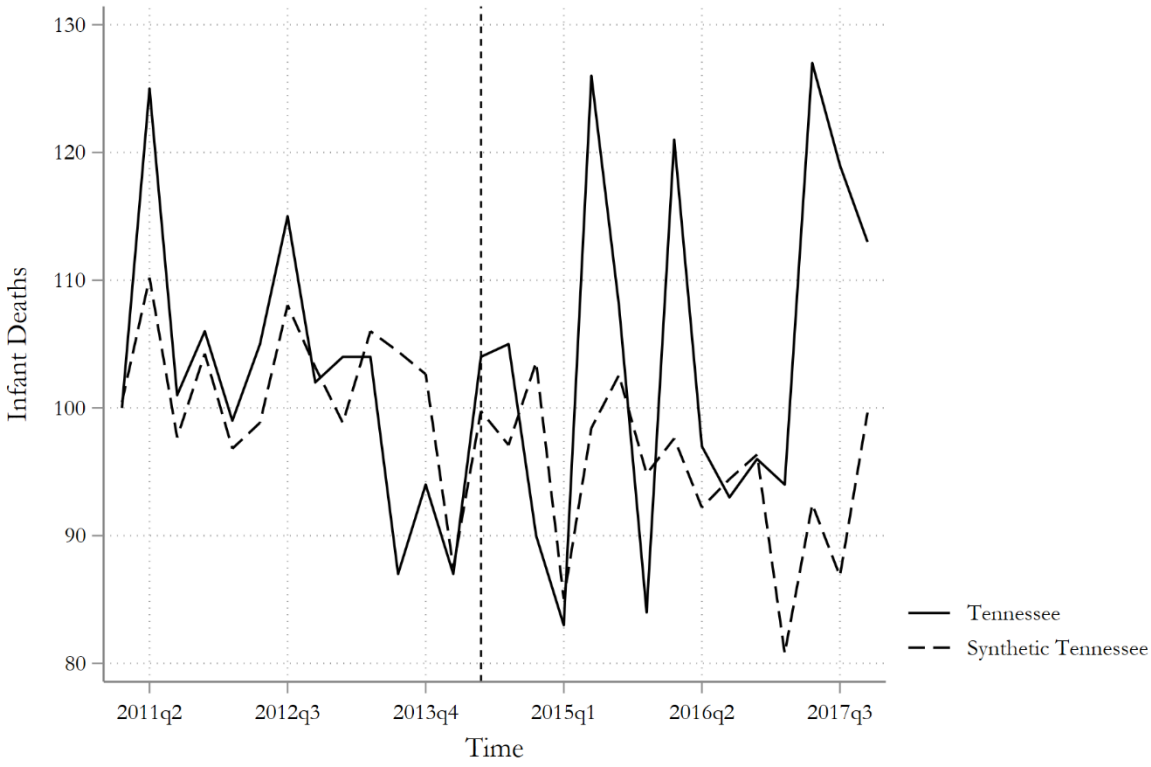
Finally, Figure 8 presents the synthetic control results for fetal (Panel A) and infant (Panel B) deaths. Though the gap between fetal deaths in Tennessee and Synthetic Tennessee is not quite as obvious as the other outcomes reported above, that gap does exist and indicates that fetal deaths increased in Tennessee from what they otherwise would have been if Tennessee had never enacted a fetal endangerment law. Similarly, the infant death results in Panel B exhibit a gap to the extent that, in some quarters, Tennessee experienced a spike in infant deaths that Synthetic Tennessee did not experience. In general, these results support the regression results described above and paint a similarly grim picture of the effect of Tennessee's fetal endangerment law. We explore the legal implications of this grim picture in the next Part.

Figure 8: Synthetic Control Results for Fetal and Infant Deaths

Panel A: Fetal Deaths



Panel B: Infant Deaths



IV. FETAL ENDANGERMENT LAWS CREATE FETAL HARM

Every single professional and medical organization that has taken a public position has been uniformly opposed to the criminalization of pregnancy through fetal endangerment laws.[145] The American College of Obstetricians and Gynecologists,[146] the American Academy of Pediatrics,[147] the American Psychiatric Association,[148] and the American Medical Association[149] have each released statements opposing such

[145] *See* Lollar, *supra* note 7 at 991 ("[E]very major medical organization in this country has vocally opposed criminalizing drug use by pregnant women.").

[146] Committee on Health Care for Underserved Women at the American College of Obstetricians and Gynecologists, Substance *Abuse Reporting and Pregnancy: The Role of the Obstetrician-Gynecologist* (2011), available at: http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Health-Care-for-Underserved-Women/Substance-Abuse-Reporting-and-Pregnancy-The-Role-of-the-Obstetrician-Gynecologist.

[147] American Academy of Pediatrics Committee on Substance Abuse, *Drug-Exposed Infants*, 96 Pediatrics 364 (1995).

[148] Council on Addiction Psychiatry, American Psychiatric Association, *Position Statement On the Care of Pregnant and Newly Delivered Women Addicts*, 149 Am. J. Psychiatry 724 (1992).

[149] Board of Trustees, American Medical Association, *Legal Interventions During Pregnancy: Court-Ordered Medical Treatments and Legal Penalties for Potentially Harmful Behavior by Pregnant Women*. 264 J. Amer. Medical Assoc. 2663 (1990).

practices are harmful, counterproductive, and contrary to widely shared public health goals.[150] There is no evidence that fetal endangerment laws result in fewer infants born with neonatal abstinence syndrome,[151] and new evidence that they result in more affected infants.[152] There is no evidence that they prevent women from using drugs.[153]

Thus, while a robust literature surrounding the negative policy outcomes of fetal endangerment laws has correctly identified a range of problematic consequences of the laws, this Article pairs these arguments with new empirical evidence that the laws fail to accomplish their stated goal – and in fact result in additional harm of the type the states are purportedly seeking to avoid. It further argues that such failure makes the continued passage and enforcement of these laws rise to the level of a constitutional violation.

State legislatures and local law enforcement base their support of these laws on the idea that the criminalization of risky behavior in pregnancy promotes the protection of fetal and infant life.[154] Speaking on the introduction of Tennessee House Bill 1168, one of the legislation's sponsors stated that: "This bill's intent is to protect babies, period."[155] A Texas state representative, speaking on behalf of a piece of fetal endangerment legislation, stated: "I am interested in providing additional safety and protection for our next generation, and it must happen now."[156] Many states already have laws that criminalize the conduct of third parties who harm fetal life, and some state lawmakers argue that pregnant women shouldn't be treated differently because "they are hurting someone else."[157] The language of the "protection of innocent, unborn children" dominates much of the discussion.[158]

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150 Bridges, *supra* note 42 at 803 ("Every medical and public health organization of record that has addressed the issue of pregnant women and drug use has opposed arresting and prosecuting pregnant women with a substance use disorder.").

151 *See* Lollar, *supra* note 7 at 963 (the number of infants born affected by NAS during the period the Tennessee Fetal Assault law was operative was roughly the same as when the law was allowed to lapse through a sunset provision).

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153 *See* Sarah E. Smith, Note, *No Safe Harbors: Examining the Shift from Voluntary Treatment Options to Criminalization of Maternal Drug Use in Tennessee,* 46 U. Mem. L. Rev. 203, 229 (2015) ("There has not been a change in the rate of maternal drug use nationally since the rise of child abuse statutes punishing women for drug use during pregnancy ...."); Lollar, *supra* note 7 at 963 (noting the lack of evidence that the Tennessee Fetal Endangerment law prevented drug use).

154 Bridges, *supra* note 42 at 798 ("At all times, however, the state professes to act in pursuit of the health and safety of infants."); Goodwin, *supra* note 6 at 840 ("The legitimacy of fetal protection laws rests on an explicit welfare assumption rooted in public health rationales. The law are based on the assumption that state interventions in pregnancies promote the health of fertilized embryos and fetuses.").

155 Maggie Ethridge, *New Bill Targets Pregnant Women With Addiction*, The Fix (Feb. 15, 2019) available at https://www.thefix.com/new-bill-targets-pregnant-women-addiction.

156Goodwin, *supra* note 6 at 786 (quoting Texas state Representative Doug Miller).

157 Nancy Hicks, Fetal Assault Bill Advances, Lincoln Journal Star (Mar. 8, 2006)(statement of Nebraska state senator Chris Buetler).

158 Press Release, *Big Horn County Attorney's Office Announces Immediate Crackdown of Pregnant, Expecting Mothers Consuming Alcohol or Dangerous Drugs, Particularly Methamphetamine and Opioids*, Big Horn County Attorney's Office (Jan, 11, 2018) available at http://advocatesforpregnantwomen.org/PUBLIC%20NOTICE.pdf. *See also* Tony Gonzalez & Dave Boucher, *Tennessee Targets Meth Abuse During Pregnancy*, WBIR.com (Knoxville) (Apr.

If fetal endangerment laws are understood as an attempt on the part of prosecutors and state legislators to protect fetal life through the criminalization of dangerous or risky behavior in pregnancy than it is clear that they fail to meet their stated goal.[159] Our empirical analysis clearly shows that these laws result in increases in stillbirth and fetal death.[160] This increase in harm to fetal and infant life is likely the result of the delay or failure to seek prenatal care and/or an unwillingness to disclose concerns to healthcare providers out of fear of prosecution. When pregnant women delay or avoid prenatal care and fail to have the candid conversations with their healthcare providers that pave the way to support or harm reduction mechanisms, fetal outcomes are demonstrably poorer. No one wins – not the babies who have a decreased risk of survival and an increased risk of health complications, not the women who are too afraid to access healthcare, and not the state which has failed in protecting fetal life or promoting public health more generally.

Which all begs the question – how can states be prevented from continuing to pass and enforce fetal endangerment laws? While states have wide latitude to determine the content of their criminal code[161] – and prosecutors have virtually unbridled discretion in deciding who to charge with violations of that code[162] – state action is not completely immune from review. Even under the deferential rational basis review utilized when state action does not implicate fundamental liberties or a protected class of people, state action must be rationally related to a legitimate government interest.[163] Assuming, arguendo, that the criminalization of pregnancy does not implicate a fundamental liberty or a protected class of people, a law that

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8, 2015), http://legacy.wbir.com/story/news/crime/2015/04/08/tennessee-targets-meth-abuse-during-pregnancy/25474383/ *(quoting* Bill Whitesell, interim executive director of the Tennessee prosecutors' conference who says that district attorneys "feel we have innocent children who are being harmed, in some cases to the point of death, and someone needs to be there for these children.")

159 Importantly, these laws have also been championed as a way for drug addicted women to access care and treatment. *See generally* Bach, supra note ___. Putting aside the dubious nature of the claim that involuntary contact with the criminal justice system can ever be said to be beneficial, the empirical basis for this claim has been persuasive debunked. *See id.*

160 *See,* supra notes ___ through ____, and accompanying text.

161 *See United States v. Comstock*, 560 U.S. 126, 137 (2010) (discussing "broad authority" of government to define criminal behavior and punishment).

162 *See Bordenkircher v. Hayes*, 434 U.S. 357, 364 (1978) ("[S]o long as the prosecutor has probable cause to believe that the accused committed an offense defined by statute, the decision whether or not to prosecute, and what charge to file or bring before a grand jury, generally rests entirely in his discretion.").

163 *See Jefferson v. Hackney*, 406 U.S. 535, 546 (1972); Silvio Membreno & Fla. Ass'n of Vendors, Inc. v. City of Hialeah, 188 So. 3d 13, 22 (Fla. Dist. Ct. App. 2016) ("[C]ourts' power and responsibility to determine whether a law violates substantive due process and equal protection are at their absolute minimum concerning laws, such as business and economic regulations, that do not establish suspect classes and do not infringe fundamental rights."). This basic requirement that the government act rationally exists elsewhere in the constitutional scheme, as well. *See United States v. Comstock,* 560 U.S. 126, 134 (2010) (discussing requirement under the Necessary and Proper Clause that a "statute constitutes a means that is rationally related to the implementation of a constitutionally enumerated power.").

results in the *opposite* of the legislature's stated goal seems an obvious example of when even rational basis review might invalidate state action.[164]

All laws make classifications.[165] Equal protection requires, at a minimum, that such classifications be rationally related to a legitimate government purpose.[166] Although rational basis review is a deferential standard, it does not amount to a complete lack of review. And indeed, courts have struck down hundreds if not thousands of laws on rational basis review.[167] The crux of rational basis review is that there must be some reason to believe the law will further a legitimate government interest.[168]

Most would agree that to protect and promote the health of fetal and infant life is a legitimate government purpose, and several decades of Supreme Court precedent confirm that it is so.[169] Therefore, the satisfaction of equal protection's mandate turns on whether or not fetal endangerment laws make a classification that is rationally related to that goal. The question thus becomes whether classifying pregnant women as susceptible to criminal prosecution or civil commitment for behavior that

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164 *See Zobel v. Williams*, 457 U.S. 55, 65 (1982) ("The state legislative scheme cannot stand if the only asserted state interests cannot rationally be furthered by the state action.").

165 *See Toll v. Moreno*, 458 U.S. 1, 39 (1982) (Rehnquist, J., dissenting) ("All laws classify, and, unremarkably, the characteristics that distinguish the classes so created have been judged relevant by the legislators responsible for the enactment."); Michael J. Perry, *Modern Equal Protection: A Conceptualization and Appraisal,* 79 Colum. L. Rev. 1023, 1068 (1979) ("Every time an agency of government formulates a rule--in particular every time it enacts a law--it classifies.").

166 *See San Antonio Indep. Sch. Dist. v. Rodriguez*, 411 U.S. 1, 40 (1973) ("A century of Supreme Court adjudication under the Equal Protection Clause affirmatively supports the application of the traditional standard of review, which requires only that the State's system be shown to bear some rational relationship to legitimate state purposes.").

167 *See* Government Discrimination: Equal Protection Law and Litigation § 4:30 (collecting cases in which courts have found classifications irrational, including cases involving the regulation of access to justice, adoptions, alcoholic beverages, automobile guest statutes, bail bonds, bottles, business licensing or regulation, cable television, casket sales, clemency, conditions of incarceration, consumer protection, crimes, criminal justice damages, driving, drunk driving, insurance, juvenile commitments and incarceration, sentencing, sex offenders, damages, employment, entertainment, federal land management, fishing, food stamps, foster parenting, gambling, gender, guns, health care, homestead rights, insurance, jury service, juvenile curfews, juvenile judicial proceedings, labor regulation, land development, landlords and tenants, massage parlors, Medicaid, medical assistance, medical malpractice, mental or other commitments, municipal services, motor vehicles, names, narcotics, parole and probation, poolrooms, professional licensing, parking, prostitution, public officials, public contracting, retail sales, retirement, schools, sex offenders, Social Security, signs and billboards, smoking, social welfare programs, sovereign immunity, sports, statutes of limitations, suicide, Sunday closing laws, support, taxes, taxi cabs, tort recovery, towing, unemployment compensation, utilities, wages, and workers' compensation.).

168 Jeffrey D. Jackson, Putting Rationality Back into the Rational Basis Test: Saving Substantive Due Process and Redeeming the Promise of the Ninth Amendment, 45 U. Rich. L. Rev. 491, 535 (2011) ("[T]he rational basis test is rooted in the English common law concept that laws cannot be 'arbitrary,' but instead must be based on reason.").

169 *See* Mary Ziegler, *After Life: Governmental Interests and the New Antiabortion Incremetalism*, 73. Univ. of Miami L. Rev. 78 (2018).

would not result in such state action being taken against non-pregnant individuals[170] is a rational method of promoting fetal and infant health.

When states began to implement fetal endangerment policies in the 1970s – and even through the 1990s – it might have been arguable that such an approach would rationally serve the legislative intent.[171] In light of the evidence and professional consensus that has accumulated over the subsequent decades about the harm of fetal endangerment policies to public health – including the empirical evidence presented in this Article – it is no longer arguable.[172] Fetal endangerment laws result in state created harm to fetal and infant life.

This is not to say that states must, at the outset, justify their actions with evidence or other empirical data suggesting the correctness of their approach. This is decidedly not required.[173] It is entirely possible that state actors pursued these policies under the rational theory that by bringing the force of the criminal justice system to bear on pregnant women, women would either be deterred from engaging in risky behavior at the outset or be prevented from continuing that behavior as a result of their incapacitation through incarceration.[174] Such an argument has at least minimum logical merit. Without information to the contrary, a state could reasonably conclude that such an approach might prevent additional harm to fetal life.[175] Qualitative and quantitative data collected since the introduction of fetal endangerment laws –

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[170] It is fair to say that pregnant individuals are different than non-pregnant individuals. This difference alone, however, does not validate state action treating them differently if it is not rationally related to a legitimate state goal.
See City of Cleburne, Tex. v. Cleburne Living Ctr., 473 U.S. 432, 448 (1985) (noting that although the mentally retarded "as a group are indeed different from others not sharing their misfortune," that such a "difference is largely irrelevant" if it meant their occupation of a group home "would threaten legitimate interests of the city in a way that other permitted uses such as boarding houses and hospitals would not.").

[171] *West Coast Hotel*, 300 U.S. at 399 ("Even if the wisdom of the policy be regarded as debatable and its effects uncertain, still the Legislature is entitled to its judgment.").

[172] *Cf.,* Minnesota v. Clover Leaf Creamery Co., 449 U.S. 456, 464 (1981) ("[T]hose challenging the legislative judgment must convince the court that the legislative facts on which the classification is apparently based could not reasonably be conceived to be true by the governmental decisionmaker.").

[173] *See* Heller v. Doe, 509 U.S. 312, 320(1993) ("[A] legislative choice is not subject to courtroom factfinding and may be based on rational speculation unsupported by evidence or empirical data."). *But see St. Joseph Abbey v. Castille*, 712 F.3d 215, 223 (5th Cir. 2013) ('[A]lthough rational basis review places no affirmative evidentiary burden on the government, plaintiffs may nonetheless negate a seemingly plausible basis for the law by adducing evidence of irrationality.").

[174] *See* Lollar, *supra* note 7 at 950 ("Underlying the actions of the state courts, legislators, and prosecutors in their decisions to allow the pursuit of criminal charges against women for using drugs while pregnant is the intuitive belief that such drug use causes harm, or at the very least, a serious risk of harm, to both the developing fetus and the child subsequently born.").

[175] And the Supreme Court has emphasized the need for at least some space for legislatures to experiment with novel solutions to societal problems. *See New State Ice Co. v. Liebmann*, 285 U.S. 262, 311(1932) (Brandeis, J., dissenting) ("Denial of the right to experiment may be fraught with serious consequences to the nation. It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.").

including the empirical analysis contained herein – make continuing to make that assumption illogical.[176] A state is not free to ignore empirically-observable adverse outcomes of its own actions once that evidence does exist.[177] "The State may not rely on a classification whose relationship to an asserted goal is so attenuated as to render the distinction arbitrary or irrational."[178] Simply put, it is not "rational" to continue to engage in acts that have the opposite outcome of your stated intent.[179] This is true even if the intent is ostensibly a laudable one.[180] The "prediction" about outcomes that formed the supposedly rational basis for the original law no longer has any basis.

This is also not meant as an argument that any law that fails to meet its stated goal – as long as it is otherwise rational – should be struck down under the constitutional framework asserted here. It is not only that fetal endangerment laws fail to protect fetal and infant life, thus failing in their professed purpose. It is that the laws have a *perverse* effect on the stated goal, increasing the exact outcome they are intended to protect against. While a law based on a rational belief that the desired outcomes will materialize fails to deliver on its promise might be an ineffective law, in most circumstances it is likely not a constitutionally deficient one. When the consistent and compelling evidence proves that a law is such an abysmal failure in achieving its purpose that it exacerbates the problem it was intended to solve, however, legislatures cannot be free from constitutional review of their actions to persist in passing such laws.[181]

There are three additional reasons to believe that fetal endangerment laws are constitutionally suspect. First, is that even assuming the laws furthered a legitimate government interest, they are both irrationally under- and over-inclusive. The second

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176 Mishka Terplan, et al., Prenatal Substance Use: Exploring Assumptions of Maternal Unfitness, 9 Substance Abuse: Research and Treatment 1, 3 (2015) (stating that scientific evidence does not support the utility of fetal endangerment laws which criminalize prenatal drug use, but instead that such policies have "adverse effects …on the engagement of substance-using women in prenatal care and/or the disclosure of their substance use to health care professionals.").

177 *See, cf. St. Joseph Abbey v. Castille*, 712 F.3d 215, 226 (5th Cir. 2013) ("The great deference due state economic regulation does not demand judicial blindness to the history of a challenged rule or the context of its adoption nor does it require courts to accept nonsensical explanations for regulation."); *Minnesota v. Clover Leaf Creamery Co.*, 449 U.S. 456, 464 (1981) (noting that "those challenging the legislative judgment must convince the court that the legislative facts on which the classification is apparently based could not reasonably be conceived to be true by the governmental decisionmaker.").

178 City of Cleburne, Tex. v. Cleburne Living Ctr., 473 U.S. 432, 446 (1985).

179 *See* Williams v. Vermont, 472 U.S. 14, 25 (1985) (striking down under rational basis review a state tax scheme that was likely to result in the opposite of the state's stated interest in protecting local business).

180 There are persuasive arguments that the intent of these laws are *not* laudable, and instead they are intended to harm and further marginalize poor women and women of color. *See* Lollar, *supra* note 7 (rejecting premise that state legislators pursue these policies simply out of ignorance or an overreliance on intuition that such laws will result in positive outcomes for infant health). For purposes of the present Article, however, the state's stated interest is accepted at face value.

181 *Cf.* St. Joseph Abbey v. Castille, 712 F.3d 215, 223 (5th Cir. 2013) ("Mindful that a hypothetical rationale, even post hoc, cannot be fantasy, and that the State[]'s chosen means must rationally relate to the state interests it articulates…").

is that the laws are likely animated by moral animus towards a politically unpopular group – pregnant drug users – and are thus constitutionally infirm as a result. And finally, there are compelling reasons to believe that because of who and what the laws seek to regulate, they should be subject to a higher standard of scrutiny, in which case they would almost certainly fail to pass muster.

If all the evidence marshalled herein is still not enough to convince courts and legislators that fetal endangerment laws are counterproductive to the stated intent of state prosecutors and legislators, then they must at least enforce the identified state interest in a manner that is rational and non-arbitrary. Namely, pregnant women who use prescription drugs, alcohol, or tobacco products – all of which are as or more harmful than illicit drug use – should also be aggressively prosecuted as criminals. The consumption of unhealthy, non-nutritious food during pregnancy could similarly be criminalized. In point of fact, impoverished pregnant women would likely come under the purview of the law by the simple fact that their poverty is related to poor fetal and infant outcomes. Also, men who use drugs, alcohol, or tobacco and then father children should also be prosecuted as criminals, as evidence increasingly shows that such behavior results in fetal and infant harm, as well.[182] If such a proposal strikes the reader as disturbing and dystopian, it should. And yet it rests on the same underlying theories of harm and state interests that fetal endangerment laws do. Thus fetal endangerment laws are under-inclusive, as they fail address similarly harmful conduct consistently with prenatal drug use.[183]

As the discussion of the science of prenatal drug use, *infra*, makes clear, these laws are also over-inclusive. Fetal endangerment laws punish pregnant women even in the absence of identifiable harm to fetal or infant life, or when the evidence of such harm is attenuated at best. A recent case in Alabama illustrates this principle. A pregnant woman consumed a poppy seed bagel the day before she went into labor and gave birth.[184] As a result, she tested positive for opioid use at the time of delivery. Despite the fact that the baby tested negative for opioids (and despite the obvious fact that the mother was not abusing opioids), the baby was taken into state custody a mere four hours after delivery. The hospital maintains that it did so because of its, "commit[men] to following the law and regulatory requirements" placed on it by the state.

In addition to the problems with over- and under-inclusiveness, the Supreme Court has been particularly willing to strike down legislation under rational basis review when it is clear that the legislation is animated by animus to a particular group of people.[185] Harm to a politically unpopular segment of the population is thus an

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[182] *See, e.g.,* Hye Jeong Lee, et al. *Transgenerational effects of paternal alcohol exposure in mouse offspring*, 17 Animal Cells and Systems 429 (2013).

[183] *See* City of Cleburne, Tex. v. Cleburne Living Ctr., 473 U.S. 432, 450 (1985) (invalidating law, in part, because it subjected a particular group to regulation that it did not impose on other individuals despite the presence of an identical state interest in the latter situation).

[184] https://www.nbcnews.com/news/us-news/alabama-mom-s-newborn-taken-away-after-false-positive-drug-n1128216

[185] *See* U. S. Dep't of Agric. v. Moreno, 413 U.S. 528, 534(1973) ("[A] bare congressional desire to harm a politically unpopular group cannot constitute a legitimate governmental interest.").

inappropriate government objective.[186] Certainly there is ample evidence that women who use drugs while pregnant are subject to a great deal of moral judgment,[187] and that such judgment is one of the animating (but often unspoken) principles of fetal endangerment laws.[188] In the face of such moral animus, it is clear that state laws that single out pregnant drug users for the ultimate deprivation of liberty through the use of the criminal justice system should, at the minimum, be considered skeptically.

Finally, it is not altogether clear that rational basis review is the correct governing standard when determining the appropriateness of fetal endangerment laws.[189] These laws, which concern traditionally private decisions regarding reproduction and health, implicate fundamental concerns about equality, autonomy and choice.[190] Further, setting apart pregnant women as a category of people subject to additional criminalization may implicate equal protection doctrine and trigger at least the application of intermediate scrutiny.[191] Finally, laws such as these that affect the lives and wellbeing of children through an attempt to control the conduct of adults are likely subject to a more searching level of constitutional review. [192]

It is not simply the method of enforcement of these laws that make them dangerous to the health of women and babies. While reliable data on the exact number of prosecutions under fetal endangerment laws is not available, prosecutions are still

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[186] City of Cleburne, Tex. v. Cleburne Living Ctr., 473 U.S. 432, 446 (1985)("[S]ome objectives-such as a bare ... desire to harm a politically unpopular group - are not legitimate state interests.") (internal quotations and citations omitted).

[187] Elizabeth Brico, *State Laws Punish Pregnant People Just For Seeking Drug Treatment*, TalkPoverty.org (Aug. 14, 2019) (quoting Stephen Patrick, a neonatologist and an associate professor of pediatrics and health policy at Vanderbilt University, as saying that "[a]mong people with substance use disorders, there's no one more stigmatized than pregnant women.").

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[189] The outcome also might reasonably depend on the flavor of rational basis that a court employs. *See* Robert C. Farrell, *Successful Rational Basis Claims in the Supreme Court from the 1971 Term Through* Romer v. Evans, 32 Ind. L. Rev. 357 (1999) (arguing that the Supreme Court's approach to rational basis scrutiny has been inconsistent and cannot be explained by the subject of the classification, the political leanings of the authoring justices, or any other factor); Clark Neily, No Such Thing: Litigating Under the Rational Basis Test, 1 NYU J.L. & Liberty 898 (2005) ("[T]he rational basis test is nothing more than a Magic Eight Ball that randomly generates different answers to key constitutional questions depending on who happens to be shaking it and with what level of vigor.").

[190] *See* City of Cleburne, Tex. v. Cleburne Living Ctr., 473 U.S. 432 (1985) (noting that strict scrutiny is required, "when state laws impinge on personal rights protected by the Constitution.").

[191] *See, c.f.* Ocen, *supra* note 12 at 1169 (criminalization and incarceration have "long been used as a means to police gender norms."). While the Court has held that discrimination on the basis of pregnancy does not constitute gender discrimination, *See Geduldig v. Aiello,* 417 U.S. 484 (1974), there is reason to believe the Court might rule differently if it were presented with that question today.

[192] *See* Plyler v. Doe, 457 U.S. 202, 223–24 (1982) ("In determining the rationality of [the state legislations], we may appropriately take into account its costs to the Nation and to the innocent children who are its victims. In light of these countervailing costs, the discrimination contained in [the legislations] can hardly be considered rational unless it furthers some substantial goal of the State.").

relatively uncommon.[193] The negative impact of these laws is not limited to those women who are actually charged with a crime. The threat of prosecution – and with it the threat of loss of liberty and attendant loss of benefits and parental rights – is sufficient to create the detrimental effect even if that threat materializes for a small fraction of the population.[194] This is especially true for populations who are already marginalized and rationally mistrustful of the criminal justice system. Moreover, these laws can embolden private and state actors to overstep the law's mandate.[195] Thus, the harm that accrues as a result of fetal endangerment laws is outsized to the small number of prosecutions.

CONCLUSION

Looking out at the horizon, it would be rational to conclude that the world is flat. To do so in the face of the overwhelming scientific evidence to the contrary, however, would be patently irrational. This Article adds yet another piece of compelling evidence to the unanimous consensus that fetal endangerment laws cause harm. In making that argument, it relies on new empirical evidence that the laws create outcomes perverse to the stated intent – namely that the laws increase fetal and infant harm. And in so doing, this article concludes that states should be constitutionally prohibited from continuing to enforce fetal endangerment laws or enacting new ones.

The world is round. Insistence to the contrary by those who have the power to enforce their worldview through criminal sanction is intolerable.

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193 Contrast the approximately 1,000 confirmed prosecutions with the "tens of thousands of women" who likely have used opioids in pregnancy. Bridges, *supra* note 42 at 793, 804. The number of prosecutions, however, is also seriously underreported. *Id.*

194 *See* The Editorial Board, *When Prosecutors Jail a Mother for Miscarriage*, NY Times (Dec. 28, 2018) ("Rarely will a woman who lost a stillborn child be charged with murder. Yet the mere existence of criminal statutes aimed at forcing women to make decisions to protect their fetuses – even at the expense of their own health – has injected fear into maternity wards and operating rooms, complicating even routine health care decisions.").

195 *Cf.* Goodwin, *supra* note 6 at 797 ("[F]etal protection laws embolden some doctors to threaten criminal punishment even when no crime has been committed.").