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Carrissa Griffing  
cg879312@wcupa.edu

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Impact on Abortion Rates: An Interrupted Time Series Analysis of Planned Parenthood's Refusal  
of Title X Family Planning Funding

A Dissertation Submitted to the Faculty of  
The Department of Public Policy and Administration  
West Chester University

In Partial Fulfillment of the Requirements for  
the Degree of Doctorate in Public Administration

By  
Carrissa A. Griffing, BSN, MCIS, MSW

April 2024

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## Dedication

To my family, Michael, Morgan and Maddox, thank you for supporting me. I could not have done this without your support, love, and energies. You all have held me accountable, gave out hugs as needed for encouragement, and believed in me when I had doubts.

## Acknowledgements

Thank you, Dr. Christian Awuyah for your initial prompting to achieve a doctoral degree in Public Administration at West Chester University. Your encouragement will forever be cherished. I would also like to thank Dr. Samuel Wagner, my father-in-law, for sitting down with me to develop an approach to collecting and analyzing the data. Dr. Wagner, your statistical expertise and instructional excellence empowered me to continue this project to the end. Lastly, I have the deepest gratitude to Dr. Michelle Wade for all her guidance and support throughout this seemingly endless project. Dr. Wade, you literally held my hand, patted my back, and bolstered my spirits. Thank you all!

## Abstract

Planned Parenthood Federation of America (PPFA) decided to reject federal family planning funds when faced with a “gag rule” that would prevent PPFA from providing abortion services. The economic theory of scarcity and everyday human experience teach that a reduction in available resources or means will necessarily impact the ends to which those means are expended. This dissertation tests the prediction of economic theory that a reduction in available means results in a sacrifice in given ends, like a paycheck reduction might result in less food on a family dinner table. Planned Parenthood’s behavior is examined in light of this economic theory and ubiquitous human experience. The dissertation reviews existing scholarship and the consistent findings that abortion rates do not decline following enactment of restrictive reproductive health policies and that, other than income levels, there is no demographic predictor of persons receiving abortion services. Previous studies consistently show that access to contraception reduces abortion rates more reliably than another action, policy, or law. To assess PPFA’s behavior here, this dissertation conducts an interrupted time series analysis, ARIMA, to determine any relationship between Planned Parenthood’s rejection of federal family planning funding and the number of abortion procedures performed. The dissertation concludes that there is no significant relationship between PPFA’s rejection of family planning funds and abortion services performed, and that data show Planned Parenthood’s revenue increased after the organization rejected those federal funds. It concludes with suggestions for ongoing research.

*Keywords:* reproductive health policy, family planning fund, Planned Parenthood, gag rule

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## **Chapter I: Introduction**

Planned Parenthood Federation of America's (PPFA) mission is to "protect and expand access to sexual and reproductive health care and education, and provides support to its member affiliates" (Planned Parenthood Federation of America, 2024). In 2021, PPFA performed approximately 50% of the abortions performed in the United States (Planned Parenthood Federation of America, 2020; Center for Disease Control and Prevention, 2023). Federal law had long prevented these funds from paying for abortion services, so the new regulation prevented any organization that received these funds from using other resources to provide or counsel toward abortion services. The anti-abortion policy goal of restricting family planning funds seems clear: to reduce the funding for, and thus the service-providing ability of, abortion service providers and thus reduce the incidents of abortion. The underlying purpose of Planned Parenthood's reactive refusal to accept these federal funds also seems clear: to continue to provide abortion services notwithstanding anti-abortion public policy around family planning funds. This dissertation seeks to apply economic theory regarding the scarcity of resources to both (i) policy decisions by the administration of President Donald J. Trump, to withhold federal family planning funds to organizations that perform abortion services and (ii) Planned Parenthood Federation of America's reactive decision to refuse these funds. The Trump Administration imposed a regulation -- commonly called a "gag-rule" -- preventing any organization providing or counseling toward abortion services from receiving federal family planning funding.

### **Summary of Thesis and Goals**

This dissertation examines evidence of the effects of these decisions. From Planned Parenthood's perspective, it questions whether the organization sacrificed abortion service

availability after rejecting federal funds. From the government's perspective, it questions whether the gag rule, in fact, reduced abortion rates.

British economist Lionel Robbins (1932) once described economics as the study of “human behaviour as a relationship between ends and scarce means which have alternative uses” (p.15). “The services which others put at our disposal are limited. The material means of achieving ends are limited....Scarcity of means to satisfy given ends is an almost ubiquitous condition of human behaviour” (Robbins, p.15). Most people experience these concepts in daily life, deciding where to spend monthly paychecks and which purchases must be foregone. Economics “is concerned with ends in so far as they affect the disposition of means. It takes the ends as given in scales of relative valuation, and enquires what consequences follow in regard to certain aspects of behaviour” (Robbins, p.25).

Thus, this dissertation seeks to understand the behavior of PPFA, an institution run by humans, in refusing federal family planning funds. The underlying question is straightforward: by refusing federal family planning funds, would Planned Parenthood need to cut-back abortion or other services because of a reduction in revenue, as Robbins' theorizing might suggest? The “end as given” of Robbins' construct here is PPFA's provision of abortion services, one of its primary missions. It is reasonable to assume that Planned Parenthood's determination to continue those services was a primary impetus to refuse the federal funding since accepting the money would prevent Planned Parenthood from continuing that service.

This is like a parent needing to provide the family food even after a pay cut; the lower paycheck either buys less food, or the heat gets turned down to compensate. Either way, Robbins theorizes that something is sacrificed in the ends provided. The plain implication here is that Planned Parenthood sacrificed means to continue the services it provides, but did so at some cost

to services. So, does limiting Planned Parenthood's access to sources of means by refusing family planning funds actually impact the organization's ability to continue providing abortion and other services? If so, one would expect that Planned Parenthood would report fewer abortions and other services provided after its refusal to accept family planning funds under the Trump Administration's policy.

The concomitant policy question is also straightforward: does reducing public funding for abortion providers reduce the provision of abortion services by organizations like Planned Parenthood? Under Robbins' construct, the Trump Administration policy would be expected to reduce the incidents of abortion by restricting the funding of abortion providers. Thus, this dissertation examines available evidence of this policymaking's effectiveness in diminishing the availability of and demand for abortion services. Because Planned Parenthood provides roughly half of all abortion services in the country, a reduction in its service providing ability would be expected to show up in national statistics. Any evidence of the effectiveness of the Trump Administration's policy choice in achieving its anti-abortion goal would aid policymakers in crafting new, or changing existing, reproductive health public policy.

To accomplish these analyses, this dissertation conducts an interrupted time series analysis. This theoretically enables comparison of reported funding and service provision before-and-after the Trump Administration's policy choice. It also enables analysis of whether reported incidents or rates of abortion dropped as a result of the gag-rule policy. The research question through which this dissertation seeks these insights is: Did Planned Parenthood's determination to reject Title X Family Planning funding reduce their ability to provide abortion services, as reflected on PPFA's internally reported statistics of abortion numbers and funding levels?

## **Factual and Legal Landscape**

Providing some factual and historical background will supply context here. The Title X Family Planning Fund was an outgrowth of anti-poverty measures enacted in the mid-to-late 1960s. President Nixon stated in 1969 that no “American woman should be denied access to family planning assistance because of her economic condition” and the following year, Title X, the national Family Planning Program, was enacted (Nixon, R., 1969). Among Title X’s key functions is to ensure evidence-based practices and using data collection and research to drive family planning policies (Vamos, C., Daley, E., Perrin, K., Mahan, C., and Buhi, E., 2011). In 1973, the Supreme Court declared in *Roe v. Wade* that access to abortion services was a constitutionally protected right, and Title X became a political football. In 1976, the Hyde Amendment made it generally illegal to use federal funds for abortion services, including funds under Title X (Flood, D., 1976).

The Planned Parenthood Federation of America originated in the 1920s through the combination of two organizations formed to facilitate the provision of birth control in New York City (Planned Parenthood Federation of America, 2024). Since then, Planned Parenthood has been a leading advocate for reproductive health rights. The organization has also led many legal challenges to restrictions on abortion services.

In 2018, the administration of President Trump decided to prohibit recipients of Title X funding from providing or counseling toward abortion services, imposing a gag rule preventing all discussion of abortion as a choice for patients. Planned Parenthood consequently determined to forego all Title X funding so that it could maintain its scope of available abortion counseling and services. Thus far, there has been no commentary concerning the practical impact of these two decisions on Planned Parenthood’s ability to perform abortion services on a national

level. Again, as an economic matter, one might suppose that rejecting Title X funding would result in fewer resources available to Planned Parenthood and, thus, fewer abortion services Planned Parenthood could provide because of foregoing said funding. Has the Trump Gag Rule effectively reduced the number of abortion services provided by Planned Parenthood?

### **Outline of Approach and Methodology**

This dissertation examines the practical impact of the Trump Administration's change to public reproductive health policy on the number of abortion services Planned Parenthood performed. First discussed is the legal framework existing in 2018, before the *Dobbs* decision that overturned *Roe v Wade*. The historical legal wrangling of proponents and foes of abortion access is reviewed, and the state of the law at the time of the Trump Administration's gag-rule is elucidated. While it may seem like the distant past post-*Dobbs*, it is important for this analysis to understand where abortion policy stood in 2018 to understand the motivations underlying the policy decisions examined.

In Chapter II this dissertation then surveys existing scholarship examining any correlation between the enactment of anti-abortion public policy measures and reproductive health variables, generally. While existing scholarship generally seeks evidence of the effectiveness of reproductive health public policy measures, including abortion restrictions, it should also come as no surprise for those who have experienced the political debate around abortion access in the United States that certain papers authored seek to achieve political ends through thin analysis. Nevertheless, as explained, at least one truth emerges from sound research: people need and seek abortion services regardless of public policy restrictions.

Later in Chapter IV, this dissertation reviews the statistical methodology and the data employed for national analysis, its appropriateness, and its limitations are further discussed in

detail. Ultimately, the conclusions of this dissertation are consistent with those of other studies: anti-abortion public policy measures appear ineffective in reducing the number of abortion services performed. There is no statistical significance between the government's 2018 Title X change and reduced abortions performed by Planned Parenthood. To be sure, after rejecting Title X funding, Planned Parenthood's overall national funding increased year-over-year, enabling the organization to maintain the extent of abortion services they provided on a national scale. It is unfortunate that we were unable to examine data regionally to see if this held true.

### **Key Takeaways**

In Chapter V, this dissertation concludes with observations and suggestions for further research to further illuminate the practical effects of public policy concerning abortion. It appears likely that both Planned Parenthood and the Trump Administration understood that the change in Title X policy was about political points and would have little, if any, real-world effect beyond diverting funds from Planned Parenthood and other national abortion service providers. The current environment of oppositional politics will, likewise, probably deter evidence-based policymaking concerning abortion, with advocates instead insisting on extreme measures to protect their overall positions. Yet, individuals will continue to seek abortion services regardless of public policy, just as they have for millennia, and evidence-based abortion policy is sorely needed in this important area of public concern.

## **Chapter II: Review of Literature**

This dissertation seeks to fill a hole in existing research which tends to focus on the impact of decisions by state policy makers on abortion rates and access to family planning funds and services. Only one article in this literature review addresses the behavior of abortion providers to more restrictive abortion policies enacted by state policy makers. In this post-Roe world, evidence based reproductive health public policy can only help design new abortion policy in the United States. Planned Parenthood's decision to forego Title X funding, in response to the Trump Gag Rule, presents a previously unavailable opportunity to study an abortion provider's determination to decline a source of public funding because of restrictions placed on that funding that would undermine the provider's ability to operate.

Planned Parenthood made this determination because accepting the public funding would hinder its operations, both economically and as a manner of ethics (Planned Parenthood Federation of America, 2019). Planned Parenthood's determination to reduce its available means by rejecting Title X funding would intuitively cause a concomitant reduction in Planned Parenthood's available services, under Robbins' economic construct of human behavior and scarcity. Planned Parenthood's behavior was examined in this dissertation; that is, its reaction to the Trump Gag Rule, given Planned Parenthood's mission and dedication to serving women and families in need and its status as the largest abortion provider in the country. Here, a review of existing literature will serve both the traditional role in academic writing and help explain the information available to Planned Parenthood in its decision-making process.

The literature discussed generally shows that restrictive state abortion laws are ineffective at reducing abortion rates and that limiting access to effective contraceptive services increases interstate flight to obtain medical care. Little to no science forms the basis of any abortion policy



in this country (Griffing, 2020). Rather, debate over legal status of abortion is the driving force behind abortion policy, and pseudo-science is used as a rationalization for political ends already cemented in a legislator's mind (Jasen, 2005; Derbyshire, 2006; Nash, 2019; Cates, 2012; Woodruff and Roberts, 2019). Reducing availability of abortion services, by reducing potential funding for or erecting barriers to services, may not have predictive value when applied to the effects of abortion policy on overall abortion rates. Indeed, some research shows that non-economic forces are paramount in a woman's decision to terminate a pregnancy (Cowan, 2013; Jerman, Jones and Onda, 2016; Jones, Jerman, and Ingerick, 2018; Kelly and Grant, 2007).

### **Legal Background and Framework**

Abortion debate in the United States has been largely framed by the constitutional issue of whether the right to abortion is protected as an aspect of a constitutional right to privacy. Accordingly, it is useful to examine the development of constitutional abortion policy before discussing Title X specifically. This dissertation does this by examining Supreme Court rulings on the issue.

#### ***Constitutionality of Abortion***

*Griswold v. Connecticut* (1964) addressed whether states could impose restrictions on a woman's access to contraceptives. The Court found that a right to privacy, though not explicit, existed within the Bill of Rights in the Constitution and protected a woman's procreative decisions from unwanted governmental intrusion. Specifically, the Court found a right to privacy implied by the 3<sup>rd</sup> Amendment (barring quartering of soldiers in citizen's houses), the 4<sup>th</sup> Amendment (barring unreasonable search and seizures), the 9<sup>th</sup> Amendment (stating the rights not enumerated otherwise in the Bill of Rights still exist and are retained by the people), and the 14<sup>th</sup> Amendment (barring the deprivation of due process of law). From these specific Constitutional

provisions the Court found there was an implicit right to privacy not stated but still protected in the Constitution's "Penumbra" (*Griswold v. Connecticut*, 1964). This decision provided the theoretical underpinnings for the constitutional right to reproductive freedom (Planned Parenthood Action Fund, 2024).

*Roe v. Wade* (1973) expanded on *Griswold*'s right to privacy concept and found that the relationship between a woman and her doctor was also subject to the right to privacy and that a woman's right to terminate a pregnancy through abortion during the first trimester of pregnancy is protected by the Constitution. The Court employed available medical evidence at the time and constructed a trimester framework under which an unborn fetus gains constitutional protection upon the fetus' viability outside of the womb. As a result of this decision most states' abortion laws were declared unconstitutional (Center for Reproductive Freedom, 1992-2024).

After the Court decided *Roe*, conservative legislators and governors sought to limit and otherwise restrict the right to abortion that the Court declared. Several states enacted restrictions that raised barriers to, but did not outright prevent, abortion services. Those cases ultimately rose through the courts, and like *Roe*, ended up before the Supreme Court.

For example, *Webster v. Reproductive Health Services* (1989) addressed Missouri laws prohibiting the use of state funds or personnel to provide abortion services and limiting second trimester abortions, among other things. A splintered Court upheld some of Missouri's restrictions including the prohibition against using state employees or facilities but declared unconstitutional the provisions limiting abortions in the second trimester. *Webster* allowed for the first time since *Roe v. Wade* state legislation regulating abortion and began a continuous legislative and judicial attempt to narrow reproductive rights and potentially overturn *Roe v. Wade*. (Rhode, 1989).

Additionally, *Planned Parenthood of Southeastern Pennsylvania v. Casey* (1991) addressed Pennsylvania regulations requiring a waiting period, spousal notice, and parental consent for minors before an abortion was performed. The Supreme Court upheld the constitutional right to an abortion and reaffirmed that aspect of *Roe v. Wade*, but significantly changed the standard on which the Court would evaluate abortion regulations. With respect to the Pennsylvania regulations the Court determined that requirements for a waiting period and parental consent for minors did not place an “undue burden” on a woman’s right to an abortion but struck down the spousal notification requirement. Thus, the Court replaced the bright line trimester framework with a more malleable undue burden standard that, by its nature, allows for substantial regulation of abortion.

*Whole Woman’s Health v. Hellerstedt* (2016) looked at Texas laws that would effectively shut down many abortion providers in the state and substantially increase the distance that Texas women would have to travel in order to obtain an abortion. Applying the undue burden standard, a five to three majority of the Supreme Court struck down the Texas law as unconstitutional. Chief Justice John Roberts dissented from this decision. Following the decision, three new Trump-appointed Justices have joined the Supreme Court.

*June Medical Services LLC* (2020) addressed a Louisiana law that was nearly identical to the Texas law that had been struck down in *Hellerstedt*. The primary change and circumstances since *Hellerstedt* was an overhaul in Supreme Court membership occasioned by President Trump’s appointment of four justices to the Supreme Court. This altered the ideological dynamic of the Court’s make-up. The state of Louisiana and its lawyers were confident that the change in Supreme Court membership would result in a different decision than in *Hellerstedt*. However, Chief Justice Roberts changed his vote from *Hellerstedt* and ruled that the power of legal

precedent was sufficient to require the same result as in *Hellerstedt* despite the fact that Roberts, personally, had voted in favor of the Texas law in that case. In doing so, the Chief Justice sought to preserve the institutional integrity of the Supreme Court and protect it from political forces seeking to use the Court to obtain political ends as they relate to abortion policy (Stern, 2020)..

### ***Title X***

The Administrative Procedure Act (APA) enables elected political officials to change interpretation of federal statutes, such as Title X, so long as those political leaders follow the procedural safeguards in the APA. Federal courts under well-established principles give “substantial deference” in the interpretation of federal statutes to administrative agencies empowered to effect federal policy in those federal statutes (*Chevron USA, Inc. v National Resources Defense Council*, 1984).

“[APA] governs the process by which federal agencies develop and issue regulations. It includes requirements for publishing notices of proposed and final rulemaking in the Federal Register and provides opportunities for the public to comment on notices of proposed rulemaking” (United States Environmental Protection Act, 2021, para. 1). The need for the APA developed during the New Deal era of President Franklin Roosevelt, in response to the creation of numerous new federal agencies that had the ability to enact regulations essentially having the force of Congressional statutes. Specifically, the APA was enacted:

- to require agencies to make public disclosures of their organization, procedures and rules;
- to require public participation in the rulemaking process, principally through allowing the public to comment on proposed rules;
- to require specific and uniform procedures for the rulemaking process; and
- to determine the extent to which courts could review the regulations (Clark, T., 1947).

The APA mandates that a regulation cannot be "arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with the law" (5 U.S.C. s 706(2)(a)). This generally allows an agency's rulemaking to withstand a reviewing court's scrutiny so long as the agency can articulate a reasonable rationale for the rule based on the evidence before the agency at the time and the regulation does not violate the Constitution or a federal statute (*Chevron USA, Inc. v National Resources Defense Council*, 1984).

Because agencies must only articulate some reasonable basis for their regulations, agency rules often change with the election of a new President and new political priorities, and the agency does not have to show new circumstances or otherwise explain why a rule needs changing. The agency just needs to articulate a reasonable basis for the new regulation and show that it is otherwise lawful. A reviewing court is powerless to second-guess the new rule.

Ever since Title X was adopted in 1970, it has contained a provision stating, "none of the funds appropriated under this sub-chapter shall be used in programs where abortion is a method of family planning" (United States Code: The Public Health Service Act, Section 1008). Until 1988, this provision was interpreted to allow for counseling of women seeking information concerning abortion so long as the Title X projects did not promote or encourage abortion over other family planning methods. In 1988, the Secretary of Health and Human Services (HHS) reinterpreted Section 1008 and authorized new regulations prohibiting Title X projects from providing any counseling concerning the use of abortion as a family planning method or from referring patients to abortion providers. This reinterpretation of Section 1008 came to be known as a Gag Rule and was challenged before the Supreme Court in *Rust v. Sullivan* (1991).

## ***Gag Rule***

The Gag Rule was challenged in *Rust v. Sullivan* on two grounds. First, the Gag Rule was challenged as exceeding the HHS' Secretary's authority and violating the APA. Second, the case challenged the Gag Rule on First Amendment grounds by prohibiting employees of Title X programs from engaging in any discussion of abortion as a lawful option. The Supreme Court upheld the Gag Rule. With respect to the APA claim, the Court majority reasoned that because Title X is ambiguous and does not define "method of family planning" nor specify the kinds of counseling and services entitled to Title X funding, the Gag Rule's interpretation that Section 1008 requires a ban on abortion counseling is not impermissible (*Rust v. Sullivan*, 1991). On the First Amendment claim, the Court said that the Gag Rule is constitutional because it does not force any person to state an opinion that is not authentically that person's opinion even though it restricts communication of facts.

In 1993, at the direction of President Clinton, HHS suspended the Gag Rule (Guttmacher Institute, 2020). Three years later in 1996, Congress stated in an appropriations bill that Title X grants could not be used for abortions and required all pregnancy counseling to be non-directive, implicitly permitting counseling concerning abortion services. From the years of 1996 to 2010, no President altered the interpretation of Section 1008. In 2010, Congress enacted the Affordable Care Act which among other things prohibited the HHS Secretary from issuing regulations impeding access to health care services or interfering with communications concerning the full range of options available to a patient.

In 2018, HHS issued a notice of proposed rule seeking to revert the interpretation of Section 1008 to that in the 1988 Gag Rule (the 2018 Trump Gag Rule). The notice provided an 8-week comment period during which HHS received more than 500,000 comments (*Mayor v.*

*Azar*, 2020). The Trump Gag Rule allowed Title X projects to exclude abortion providers and counselors from a list of qualified health providers to which the client was referred from providing any counseling, including non-directive abortion counseling and referral from Title X funding. Title X providers could technically counsel on abortion, but they could not counsel *only* on abortion. Even if the patient did not want any other information but abortion services, the provider could not refer the patient to an abortion provider.

In 2021, the Supreme Court heard oral argument on three cases challenging the Trump Gag Rule under the APA, which the Court heard together in one proceeding and which all raised these issues: (1) whether the Trump Gag Rule — which prohibits and compels certain pregnancy-related speech between a Title X provider and her patient, proscribing abortion-related information but requiring information about non-abortion options — is arbitrary and capricious; (2) whether the rule violates Title X, which requires that “all pregnancy counseling” under Title X “shall be nondirective”; and (3) whether the rule violates the Obama-era Affordable Care Act, which requires that HHS “shall not promulgate any regulation” that harms patient care in any one of six ways, including by “interfer[ing] with communications” between a patient and her provider. Decisions in the underlying cases conflicted, with the Court of Appeals for the 9th Circuit ruling in two cases that the Trump Gag Rule was lawful (*American Medical Association v. Becerra*, No. 20-429 (U.S. 2021); *Oregon v. Becerra*, No. 20-539 (U.S. 2021)), while the 4th Circuit concluded in the third case that the rule must be struck down as unlawful (*Becerra v. Mayor and City Council of Baltimore*, No. 20-545 (U.S. 2021)). Consistent with Court practice, a decision in these cases on these issues was expected by July 2022. However, in October 2021, the Supreme Court dismissed the case at the party’s request after the Biden

administration took over litigation of the lawsuit (*Becerra v. Mayor and City Council of Baltimore*, 141 S.Ct. 2170 (May 17, 2021)).

Ahmed (2020) examines and discusses the Trump Gag Rule and its impact on recipients of foreign aid and foreign non-governmental organizations (NGOs) as well as the impact of the Trump Gag Rule on foreign policy. Ahmed concludes that the Trump Gag Rule had wide ranging and devastating effects around the world and that Congress should have reacted swiftly to repeal the Gag Rule. In March 2022, HHS published a new rule effectively rescinding the Trump Gag Rule. Thereafter, hundreds of Planned Parenthood Chapters returned to Title X Funding. Since FY2023,

“[t]he Title X network has been rebuilding under the new regulations and funding. Of the 411 Planned Parenthood sites that left the program, 286 sites (70%) have rejoined. Of the 869 other sites that left the program, 531 (61%) have returned. At the same time, there are 777 new sites that were previously not part of the program. This brings the current Title X network back to 4,108 sites, which is 2% more than the original 4,010 sites prior to the Trump regulations” (Frederiksen, Gomez, and Salganicoff, 2023).

### ***Studies Focusing on Demographics***

The bulk of studies on abortion rates look at the demographics of women seeking abortions across broad geographic areas. These studies analyze the demographics of women seeking abortion or contraceptive services and the rates of abortion within those demographic groups. These studies do not analyze specific funding decisions or regulatory changes, nor do they discuss any perspective from service providers.

Finer and Henshaw (2006) utilized the 2002 National Survey of Family Growth and federal, state and NGO birth, abortion, and population data to calculate rates of unintended pregnancies between the years 1994 and 2001. They found that the national rate of unintended pregnancies for women aged 15-44 in 1994 and 2001 were unchanged. However, in 2001 unintended pregnancies were higher for unmarried women of color, considered low income, and



who had not yet completed high school. Lastly, Finer and Henshaw observed that the abortion rate and the number of unintended pregnancies ending in abortion declined overall for all women, but the unintended birth rate saw an increase; they determined additional research is warranted to explain this disparity. While this research makes some broad historical observations and suggests directing family planning funding towards low-income populations, Finer and Henshaw provide no evidence upon which to otherwise alter or assess current abortion policy.

Sedgh, Bankole, Singh, and Eilers (2012) reviewed data from more than 40 countries regarding age-specific abortion rates and examined trends from 1996 and 2003. Their results showed that in most countries abortion rates were highest among women aged 20-29 years and that adolescent abortion rates were a smaller share than the population of adolescents. Higher abortion rates among women in specific age groups most likely reflected unmet needs for contraception or contraceptive education as well as a desire to avoid childbearing (Sedgh et al, 2012). While this study provides some broad historical observations about abortion rates in certain age groups, Sedgh et al. also provided little evidence to assess or propose changes to existing abortion policy in the United States.

Juarez and Singh's (2012) study focused on determining abortion rates in Mexico by state and age (geography and demographics). Due to the absence of state and age specific data provided by the Mexican governmental authorities, Juarez and Singh extended an established Abortion Incidence Complications Method (AICM) approach using both governmental statistics on post-abortion patients and health professionals' estimates concerning abortion complications. Since unsafe abortions are common everywhere in Mexico, particularly with women from 15-24 years old, AICM could generate evidence to foster additional debate and policy changes to improve healthcare and family planning services in Mexico (Juarez & Singh, 2012). Juarez and

Singh made a substantial effort to tie proposed policy changes to evidence generated through their study, such as this dissertation seeks to accomplish.

Cowan (2013) utilized decades of data generated since *Roe v. Wade* seeking to examine abortion rates for women in a specific birth cohort, reasoning that members of the same age cohort influence each other's behavior and should therefore be studied together. Looking to discern empirical findings revealed by cohort abortion analyses, Cowan sought to translate between period and abortion cohort rates combining quantitative and qualitative research design methods. Utilizing data from the Guttmacher Institute, the Centers for Disease Control and Prevention, and the National Survey for Family Growth, abortion rates generally peaked with the 1969 birth cohort and then fell by 28% in the years up to 1990 (Cowan, 2013, p. 294). Between 1967 and 1990, the average age of abortion for Hispanic women remained relatively constant while that of white and black women rose during the same period (Cowan, 2013). Cowan's results provide support of the notion that legalized abortion results in reduced abortion rates and that certain populations are likely to require greater focus of healthcare providers to bridge a gap shown in demographic data.

Kimball and Wissner (2015) examined variations between states on the interaction between certain social determinants of health (i.e., religion, voting patterns, child poverty, income inequality) and their policy effects on three reproductive outcomes of women (i.e., abortion, teen births, and infant mortality rates). Substantial variations were found between politically liberal and politically conservative states with respect to the impact of social determinants of health on rates of abortion, teen births and infant mortality. For instance, they found that teen birth rates were positively correlated with the child poverty rate, the 2008 presidential election results, and the percentage of Republicans in the states' congressional

delegations (Kimball and Wissner, 2015). Kimball and Wissner's research demonstrated the importance of focusing on particular states' regulatory schemes with respect to abortion, as these likely impact overall numbers for abortion rates and abortion provider availability.

Political debate and some of the research discussed herein seem to suggest, incorrectly, that women possessing certain demographic characteristics are more likely than others to seek abortion services, with other variables held constant. Jerman, Jones and Onda (2016) studied demographic data collected in the 2008 and 2014 Abortion Patient Survey to discern demographic characteristics of abortion patients and to ascertain the level of insurance coverage of abortion patients in 2014 compared to 2008, given the intervening passage of the Affordable Care Act. The research of Jerman et al. revealed that the majority of abortion patients are in their 20s; no racial or ethnic group had made up the majority of abortion patients; and that 59% of abortion patients in 2014 had one previous birth (p. 5-7). Additionally, the proportion of abortion patients who were adolescents declined by 32% between 2008 and 2014, and ¾ of abortion patients in 2014 were of low-income, with 49% living at less than the federal poverty level (Jerman et al, 2016, p. 5-10). Abortion patients were more likely to have health insurance in 2014 than in 2008, with a 6% increase, and the majority of 2014 abortion patients paid for their abortion service out-of-pocket. The implications of Jerman, Jones, and Onda's 2016 research suggest that increased contraceptive and family planning care needs to be provided to low-income women. Other than low-income risk factor demographic, there is no *typical* abortion patient from a racial, religious, age, or insurance status standpoint.

Jones, Jerman, and Ingerick (2018), utilizing the 2014 Abortion Patient Survey (APS) data, were able to discern demographic risk factors for women who have had prior abortions. Namely, age was found to be the highest risk factor. Specifically, women over the age of 30 had

more than two times the odds of having had a prior abortion; other risk factors included being black, insurance/medical assistance reliance, and “exposure to disruptive events in the past 12 months” (Jones et al, 2018, p58). The APS 2014 survey also found a significant relationship between college degree and living beyond 25-miles away from the abortion provider’s location to decrease a woman’s likelihood of having a prior abortion. Jones et al. (2018) amplified the conclusion that race, income level, education, and other non-age related factors play a significant role in a woman’s decision to obtain abortion services. Rather, the APS revealed that a woman’s singular circumstances generally drive the decision to seek abortion services more than any non-age demographic factor.

Jones, Witmer, and Jerman (2019) utilized the Guttmacher Abortion Provider Census to examine both national and state abortion incidence and the number of abortion providers in 2017. Examining changes in the number of abortion providers can shed light on “availability and accessibility” of health care (Jones, Witmer, and Jerman, 2019, p. 3). While they found that national clinically induced abortion incidences declined between the years 2014 and 2017 and the total number of clinics (nationally) increased (2%), Jones et al. found that this trend was not evenly distributed throughout the four regions analyzed (p.7). Additionally, Jones et al. suggested that the trends regionally could be related to crossing state-lines, self-managed abortion care, and a decline in fertility rates.

In sum, these demographic studies attempt to link non-age demographic factors to abortion rates but ultimately failed in doing so. There is no typical recipient of abortion services, and variations in abortion rates among sub-groups of women aged 15-44 appear more directly related to variations in abortion policy in this country. There is accordingly a need for further

research into factors that impact abortion rates and the ability of providers to offer these reproductive health services to women who need them.

### ***Impact of Science on Abortion Policy***

Thus, *what actually informs abortion policy in the United States?* One would think that, as a public health issue, abortion policy would be driven by scientific evidence and the manifest needs of women to have wide access to reproductive health services. After all, women make up more than 50% of the U.S. population and voter base, so one might assume that political will for health policy that favors access to reproductive services would exist. As anyone who has lived through the last forty years can rightly observe, however, such health-centric factors have, as a general proposition, played no role whatsoever in abortion policy following *Roe v. Wade*. This conclusion shows the need for abortion policy based on actual research and evidence generated from it, and not simply a particular viewpoint.

Jasen (2005) examined a debate that emerged after *Roe v. Wade* in the medical community as to whether there was a link between the legalization of abortion and rates of breast cancer incidences. Epidemiologists unfamiliar with political debate found themselves at the center of this controversy, and ill-equipped to handle it. Reviewing medical literature and materials relating to this debate in the medical community, Jasen determined that political forces infected some scientific scholarship at the time that it had been contrived to support the supposed link between breast cancer rates and abortion. In fact, Jasen found that no link existed and that science was manipulated for political ends.

Derbyshire (2006) examined the existence, or not, of evidence relating to the gestation period at which unborn fetuses experience pain. Policy makers in the United States have sought to create rules concerning abortion based on supposed scientific studies that purportedly show

that unborn fetuses experience pain at any gestation age. Derbyshire found that the neural wiring for pain is immature in fetuses and that certain psychological processes require further physical and development maturation (outside of the womb) for the “mindful experience of pain” to be acknowledged. Therefore, Derbyshire (2006) unequivocally states “avoiding a discussion of fetal pain with women requesting abortions is not misguided paternalism but a sound policy based on good evidence that fetuses cannot experience pain” (p. 912; Griffing, 2020). Accordingly, when science is invoked as a basis for abortion policy, that science is easily debunked as illegitimate scientifically and is almost exclusively used as a basis for abortion restrictions rather than promoting or enhancing greater access. Correctly performed scientific research ought to provide a basis for abortion policy and has infrequently informed sound abortion policy.

Nash (2019) comments on a growing trend of states to enact then-plainly unconstitutional bans against abortions occurring after six-weeks of gestation before many women realize that they are pregnant. Without any scientific basis and with the sole goal of setting up a constitutional challenge to *Roe v. Wade*, these states have wholly abandoned the *Casey* legal framework in the absence of scientific evidence supporting their abortion restrictions. Indeed, anti-abortion activists used an Alabama law clearly inconsistent with *Roe v Wade* in the *Dobbs* case decided in 2022.

Bailey, Guldi and Hershbein (2013) reviewed economics literature for evidence of what would happen if regulation was increased or funding was decreased. Namely, Bailey et al. performed an historical analysis of various trends in abortion policies in the United States, and they concluded that changes in social and economic context favor caution in reading too much into prior research to defend future policy enactments. As example of their findings, “These legal restrictions in 24 states affected the diffusion of oral contraception and reduced the speed of

fertility declines in restrictive states from 1958 to 1965. After the Griswold decision, however... fertility rates in states with sales bans dropped sharply relative to those without these bans. There is little reason to expect the demand for children to change with this pattern, but it is clear that the supply of contraceptives did” (Bailey, Guildi, Hershbein, 2013, p. 3). Too many variables, methodologies, science discoveries, and other social disruptions could not be accounted for or controlled.

Dreweke (2016) set out to assess the accuracy of arguments by abortion opponents that the decline in abortion rates from 2008 and 2011 resulted from state abortion restrictions, at least in part. The decline in abortion rates was most likely explained by greater access to and better use of contraceptives (Dreweke, 2016). Dreweke (2016) found that the best explanation for a 9% drop in the unintended pregnancy rate from 2008-2011 was likely explained by more and better contraceptive use (p. 18). These data debunked anti-abortion activists’ explanation that the 2008 to 2011 decline in abortion rates was a result of more women carrying unwanted pregnancies to term because of restrictive abortion policies in their states. Dreweke’s research serves as a further example that proponents for abortion restrictions manipulate data in a manner that, while facially convincing, withers upon direct scrutiny and obscures the true take-away from the data examined.

Woodruff and Roberts (2020) examined whether and how state legislators use scientific evidence when determining abortion policy. Interviewing 29 state legislators and aides from Maryland, North Carolina, and Virginia in 2017, through conducting an iterative-thematic analysis of interview transcripts, no cases of policy-making decisions being based on scientific evidence were found to exist (Woodruff and Roberts, 2020). Rather, policy makers gave credence to evidence from sources that already supported existing policy views and, in

particular, gave substantial weight to anecdotal evidence over any conflicting scientific studies. Research done by Woodruff et al., showed that abortion policy-making is not evidence based but instead seeks to further its proponents' desired ends regardless of political affiliation.

Griffing (2020) analyzed 10 randomly selected, but geographically representative states, reviewing readily accessible legislative accounts of abortion regulations and found not one of those states' laws referenced science or any kind of medical, social, or scientific evidence to support the regulation. Instead, abortion regulations appear to have been drafted to comply with legal decisions or to push the boundaries of those decisions for judicial consideration, namely if and when *Roe v. Wade* was overturned (so called "trigger laws"). This examination of state statutes and available legislative history further demonstrates that contemporary science plays no role in crafting United States' abortion policy.

The above cited literature shows not only that scientific evidence plays no role in abortion policy in the United States, but also that threads of data and evidence are used for political ends and support conclusions that data and evidence actually contradict. The above-cited research has shown that political viewpoints are the primary driver of abortion policy in this country. The best evidence, arising from the above cited literature, appears to be that greater access to contraception and women's health services, generally, is likely to cause a reduction in abortion rates overall.

### ***State Restrictions' Impact on Abortion***

As suggested above, with respect to the demographic research, regional variations in abortion access are largely due to variations among states and their abortion policies. Other than *Roe v. Wade* and various funding decisions made by Congress, there is no national abortion policy. Accordingly, women and abortion providers remain subject to state-by-state variations in



abortion policy that can impact access to abortion services. Existing research focuses on the impact of state abortion regulation on abortion rates and the impact of those regulations on women in those regional areas.

Kelly and Grant (2007) examined legislative changes in the wake of the 1996 Federal Welfare Reform legislation, which included provisions attempting to influence women's reproductive choices based on the use of economic incentives. Through a quantitative approach of ordinary least squares regression equations, Kelly and Grant found that economic incentives had merely minor and often inconsistent effects on state-wide abortion and non-marital birthrates. Kelly and Grant's research supports existing scholarship concluding that economic incentives are not central to reproductive decision-making and that non-economic factors are paramount. Kelly and Grant make the important observation therefore that economic incentives do not drive a woman's decision to seek abortion services, begging the question as to whether economic incentives drive a provider's decision to offer abortion services.

For decades, The Guttmacher Institute compiled statistics and data concerning abortion rates and state-level abortion restrictions, but researchers have only scratched the surface. Donohue, Grogger, and Levitt (2009) sought to explain an unexpected decrease (starting in 1991) of unmarried, out of wedlock, teen childbearing rates after 41 years of consecutive increases in teen childbirth rates. Data collected from U.S. Vital Statistics Natality files (date of birth, age of mother, state of residence, and mother's state of birth), U.S. Census Department's annual population estimates by state, year, and single year of age, and Guttmacher Institutes' estimate of the number of abortions performed per live births for residents of the state in which the woman was born during the time period in which she was in utero, were all used to determine precise age of mothers and birth/abortion rates. Donohue et al (2009) posited a theory presenting

evidence to support the notion that legalized abortion is one factor leading to the decline in teenage birth rates. Donahue, et al. found that the legalization of abortion in the 1970s changed the nature of women seeking abortions 15-24 years later, such that there was a reduction non-married, teen birth rates declined by 6%, which is about a quarter of the overall observed decline of teenage birthrates in the 15-24 year period (Donahue, Grogger, and Levitt, 2009, p.28). The research performed by Donahue et al. shows that, as one might intuitively expect, legalized abortion resulted in a decline in teenage birth rates, suggesting that greater access might result in further reductions. This could inform abortion policies, specifically legalization to promote declines in teenage birthrates.

Ananat, Gruber, Levine and Staiger (2009) sought to expound on limited and controversial research suggesting that abortion legalization had altered cohort outcomes with respect to fertility. A theoretical model was introduced describing the potential differences in outcomes based on the cost of abortion. Ananat et al. concluded that the legalization of abortion altered outcomes for young women by increasing college graduation rates, decreasing use of welfare benefits, and decreasing odds of being a single-parent. Starting with economic theory, utilizing data of abortion/pregnancy/birth rates, and then essentially overlaying that data with information concerning historic abortion costs since the 1960s,

“[t]he findings suggest that the improved living circumstances experienced by the average child born after the legalization of abortion had a lasting impact on the lifelong prospects of those children. Children who were born unwanted prior to the legalization of abortion not only grew up in more disadvantaged households but grew up to be more disadvantaged as adults” (Ananat, et al., 2009, p. 136).

Ananat et al. showed how improved economic conditions generally improve the lives of children born after *Roe v. Wade* and suggest that the economics of abortion policy may be more complex than is often assumed.

Whelan (2010) studied the impact of expanded health insurance coverage on total abortion rates and on abortion among teenagers under the Massachusetts universal health care initiative. Using state data for the year before the state's health care reform and for the year after (interrupted time series analysis), Whelan's research showed that non-elderly citizens were insured at an increased rate of 5.9%, that total abortion numbers dropped by 1.5% and that abortion among teens dropped by 7.4% (2010, p.e45(2)). It can be concluded that some federal subsidization of health care would not likely result in an increase in abortion rates (Whelan, 2010). Whelan, therefore, amplifies the concept adduced through other studies that increased healthcare funding overall causes lower abortion rates. Again, this evidence could be used to inform abortion policy across the country, as lower abortion rates is the common goal of abortion policy regardless of political perspective.

Colman and Joyce (2011) studied the effect of Texas' 2004 Women's Right to Know Act (WRTK Act) which required a 24-hour waiting period before an abortion procedure can proceed and required all abortions occurring after 16 weeks to occur at an ambulatory surgical center. Focusing on second-trimester abortion rates for the year before the law was enacted, the year of the law's adoption, and the two years thereafter, the research found that abortions had dropped by 88% in the years 2003 and 2004, and the number leaving the state to seek abortions quadrupled (Colman & Joyce, 2011, p. 795). By 2006, only four major cities had facilities to conduct abortions after 16 weeks, down from nine cities in 2003, and the abortion rate for second-trimester terminations were 50% below the 2003 rate (Colman & Joyce, 2011, p.795; cited in Griffing, 2020). Additionally, there was no significant difference in Texas birth rates during the years studied. The implications of Colman and Joyce's research show that restrictive abortion laws do not reduce abortion counts, but rather incentivize intrastate travel to obtain

abortion services. Here the evidence, therefore, supports the idea that state-level abortion restrictions are ineffective in influencing abortion policy in the United States.

Through a qualitative analysis, Mercier, Buchbinder, Bryant, and Britton (2015) studied how abortion providers adapt to new restrictive abortion policies in North Carolina. Surveying 31 abortion providers, using qualitative grounded theory, Mercier, et al (2015) identified numerous adaptive strategies that providers used in response to new abortion policies to balance compliance with the minimization of burden on their patients (Mercier, et al., 2015). These adaptive strategies ranged from extensive alteration of their practices to verbal strategies to mitigate biased language in counseling materials. For instance, the “required counseling” [mandated by law] did not positively contribute to, or enhance, the informed consent procedures [required by law] (Mercier, et al., 2015, p. 3). The research of Mercier (2015) shows that the effect of state-level abortion restrictions will be substantially mitigated by innovation of abortion providers that serve to minimize the impact of those restrictions while continuing to offer quality abortion services and counseling.

White, Hopkins, Aiken, Stevenson, Hubert, Grossman, and Potter (2015) examined the impact of Texas legislation that cut and restricted participation in the state’s family planning program in 2011. One quarter of the state’s family planning clinics were closed in the wake of this law. Looking at state contraceptive data from the year before and two years after the Texas law enactment, the data shows that before the law 71% of clinics offered women long-acting reversible contraception and the two years following that percentage dropped to 46% (White et al., 2015, p.855). Overall, 54% fewer women were served after the law’s enactment (White et al., 2015, p. 855). Restrictive reproductive laws, accordingly, reduce access to contraceptive care and are likely to result in an increase in the rate of unintended pregnancies. The research

performed by White et al. provides further counter-evidence to the efficacy of restrictions on reproductive health services, namely abortions.

There are some researchers who have examined how traditional economic theory holds up when used in the context of abortion policy. In Medoff (2016), the law of demand (ergo higher prices for abortion services reduces the demand for those services) was tested with respect to increasing costs for women to obtain an abortion with economic law, positing that restrictive state abortion laws should cause fewer abortions and unintended pregnancies. Medoff examined four types of restrictive abortion laws for all 50 states and used unintended birth data by state for 2006. Comparing unintended birth rates across all states depending on the presence or absence of any particular abortion restrictions, Medoff concluded that there was not statistically significant difference in unintended birth rates between states with restrictive abortion laws and those without such laws.

Stevenson, Flores-Vazquez, Allgeyer, Schenkkan, and Potter (2016) examined Texas' decision in 2013 to bar all state funding for any Planned Parenthood service. Employing a difference-in-differences method to compare results from counties with and without Planned Parenthood affiliates, the research focused on claims for contraceptive services in state family planning programs for two years before and two years after (a time interrupted series analysis) the exclusions' starting date in 2013. Stevenson, et al. (2016) found a 35% reduction in claims for long-acting and injectable contraceptives, but no statistically significant differences in claims for short-acting hormonal contraceptives were found (p.853). Nevertheless, a conclusion was made that Texas' exclusion of Planned Parenthood adversely impacted women's access to family planning services. This important study provides evidence of how reproductive health providers are impacted by state-level family planning policies. The 2016 research of Stevenson et al. serves

as a model for this dissertation as it employs a similar research design to examine the impact of state funding restrictions and Planned Parenthood's ability to provide services.

Upadhyay, Kimport, Belusa, Johns, Laube, and Roberts (2017) used a mixed-method study design, utilizing an interrupted time series analysis, to examine one abortion facility and the effects of a new Wisconsin law on patients at that facility. The new law required abortion providers to show ultrasound images of the fetus to women and to describe the ultrasound, before an abortion may be performed. Using data from patient's charts at the facility for one year prior to the new law and the year following the law's enactment, as well as conducting interviews of 23 women who viewed their ultrasound images after the law's enactment, Upadhyay et al. concluded that viewing an ultrasound image had little to no impact on a woman's decision-making process regarding abortive termination of their pregnancy. Nevertheless, the quantitative data revealed a drop in abortion count from the year prior to the year after the law's enactment. The absence of trending analysis on Wisconsin abortion rates and that facility's abortion rates could shed light on this qualitative-quantitative difference in the research findings of Upadhyay et al. The research of Upadhyay et al. provides additional reasons to question the efficacy of state-level abortion restrictions and their impact on abortion rates.

### ***Abortion Research Utilizing Interrupted Time Series Analysis***

Like Upadhyay et al. (2017), this dissertation utilizes an interrupted time-series analysis to demonstrate any changes in abortion rates or Planned Parenthood's ability to provide abortion services as a result of Planned Parenthood's decision to forego Title X funding. This research design method isolates the impact of existing trends from Planned Parenthood's decision and could shed substantial light on whether this declination of funding would have the negative impact on operations as economic theory would predict. Other interrupted time series analyses,

including Upadhyay et al. have demonstrated remarkable links between legalized abortion and other more general public health concerns.

For example, Berk, Sorenson, Wiebe, and Upchurch (2003) examined a relationship between the legalization of abortion in *Roe v. Wade*, 1973, and youth homicide rates in the 1980s and 1990s through utilizing an interrupted time series analysis design method. Berk, et al. found a statistically significant correlation between the reduction in youth homicide rates in the 1990s and the *Roe v. Wade* decision. Additionally, Berk et al. were able to exclude alternative explanations for this correlation, such as changes in the drug markets. The researchers understand that this is an unintended effect of legalizing abortion but that policy implications need to be further discussed.

### ***Abortion Research and Geographic Analysis***

Little to no contemporary comparative geographical analysis research on abortion statistics exists. This dissertation does not attempt to comprehensively demonstrate the link between geographic regions and the availability of abortion services or abortion rates. It does, however, seek to demonstrate that there are likely regional variations not accounted for in the national perspective. One study, in particular, has sought to determine regional intra-state variations in abortion rates that are not reflected in state-level data.

Gober (1994) examined geographic variations in supply and demand for abortion services in the United States in 1988. Gober's study differs from other research studies that examine demographic information to explain abortion incidences and rather looks at each state and variations between states. This analysis is important because state governments play a key role in the variability of supply for abortion services/provisions. Gober found that geographical location more than ethnicity may play a role in the availability of abortion services. Specifically, Gober

found that decisions to terminate pregnancies among Hispanic women living in counties in Texas, that border Mexico, were more likely than Anglo women, in border counties, to be inhibited by “determinants of abortion” (i.e., travel distance, education, poverty, employment rate, religion and urbanization). Gober (1994) further determined that the abortion decisions of non-border Hispanics, in contrast, more closely resemble those of Anglo women than their Hispanic counterparts in border counties (p. 241).



### **Chapter III: Methodology (Research Design & Methods)**

This chapter discusses the methodology used for this quasi-experimental, quantitative study regarding the ability of Planned Parenthood to continue its operations without significant impact from the organization's decision to forego Title X funding. This chapter describes the quantitative analysis and data sources used to answer this question and understand the impact that Title X funding on Planned Parenthood. The three- to five-year trend analysis and one-year interrupted time series (ITS) analysis will be discussed in depth, as well as the rationale for applying these temporal perspectives to the datasets. The research plan, including the methodology, the procedures employed, the datasets selected for analysis, and the analytical method utilized are also principal elements of this chapter.

#### **Research Question**

This dissertation seeks to examine and answer the following research question:

**RQ:** Did Planned Parenthood's determination to reject Title X Family Planning funding reduce their ability to provide abortion services, as reflected on PPFA's internally reported statistics of abortion numbers and funding levels?

As explained, Robbins' construct of resource scarcity would suggest a reduced ability of Planned Parenthood to provide the services that are essential to their mission. Accordingly, the hypothesis of this study is that Planned Parenthood's decision to forego Title X funding will result in a decrease of the number of abortions performed nationally in the wake of Planned Parenthood's decision.

#### **Methodology**

An interrupted time series (ITS) research design is effective in evaluating population health policy impacts that have been implemented at a defined point in time (Bernal, Cummins,

& Gasparri, 2017). This approach involves creating a time series of population level rates for a particular health procedure and testing for changes in the outcome rates in the time periods before and after the implementation of a policy that could affect the availability of a procedure (Penfold and Zhang, 2013). Because the purpose of this study is to assess the impact of Planned Parenthood's decision in August 2019 to forego Title X funding in the wake of the Trump administration's Gag Rule preventing communications with patients regarding abortion alternatives, an interrupted time series analysis analyzing PPFA's national abortion services one year before and one year after August 2019 was an appropriate choice for methodology. Other researchers have utilized an ITS when assessing policy changes with respect to abortion (Colman and Joyce, 2011).

For this study, the hypothesis ( $H_1$ ) is that PPFA's rejection of Title X funding caused Planned Parenthood to reduce the number of abortion procedures ( $H_1: Y_{pre} - Y_{post} \neq 0$ ). The null hypothesis ( $H_0$ ) is, accordingly: PPFA's rejection of Title X family planning funding did not reduce the number of abortion procedures ( $H_0: Y_{pre} - Y_{post} = 0$ ), with a model design represented as:  $Y_{-2} \quad Y_{-1} \quad (I) \quad Y_{+1} \quad Y_{+2}$ . "Here the  $Y_t$  and  $I$  represent the  $t$ th observation and the intervention. Subscripts on the  $Y_t$  represent the temporal position of an observation relative to other observations and the intervention" (McDowell, McCleary, and Bartos, 2019, p. 1).

### ***Interrupted Time Series Analysis Methodology***

An interrupted time series analyses has been used in many areas of study, including with respect to health care policy analysis (Linden, 2015; Johnson, 2014). At its basic level, an ITS analysis allows for an observation on an outcome variable to be conducted before and after a particular policy change has been implemented that impacts a large group of the population. In this case women who are of child-bearing age (Ages 15 – 44). ITSA works best with outcomes

that are expected to change quickly after the implementation of a policy change (Bernal et al, 2017). Measures of the outcome need to be available before and after the policy change has been implemented. Before engaging in the analysis, the researcher must hypothesize the likely impact of the policy change on the outcome, assuming policy effectiveness (Bernal et al, 2017).

“Naturally, when the [a] treated group’s outcomes [in an experimental research design] can also be contrasted with those of one or more comparison groups, the internal validity is enhanced by allowing the research to potentially control for confounding admitted variables” (Linden, 2015, p. 480). Planned Parenthood is unique in the United States with respect to its size and scope of reproductive services. Therefore, there are no comparable institutions to use as a control in this analysis. Accordingly, a quasi-experimental research design called an interrupted time series analysis was employed.

Obviously, numerous variables could plausibly impact PPFA’s availability of resources other than their decision to reject Title X funding. To account for the noise of those variables, certain other factors were incorporated, including PPFA’s governmental funding lines and PPFA’s total annual funding (from all sources). Additionally, there could be factors external to PPFA that could impact abortion service provisions, such as changes in the U.S. women population (Ages 15-44 years of age) and the U.S. national birth rate. “It is upon the plausibility of ruling out such extraneous stimuli that credence in the interpretation of this experiment and any given instance must rest” (Campbell and Stanley, 2015, p. 970).

### ***Goals of a typical Time Series Analyses***

“The essence of the time series design is the presence of a periodic measurement process on some group or individual in the introduction of experimental change into these time series of measurements, the results of which are indicated by a discontinuity in the measurements

recorded in the time series” (Campbell and Stanley, 2015, p.947). Time series analyses are used to make future predictions concerning a particular outcome and to additionally explain whether changes in an outcome can be associated with one or more time intervention variables (Bernal, et al, 2017; Scotch Masking, 2021a). After accounting for as much noise (variability) in a time series as possible, is there a change (increase or decrease) associated with a specific intervention detected? Did Planned Parenthood’s refusal to accept all Title X funding in 2019 (I) reduce the number of induced abortions while controlling for other PPFA revenue lines, the national birth rate, and / or the annual women population (Ages 14-44 years of age)?

### ***Auto-Regressive Integrative Moving Average (ARIMA) Time Series Analysis***

“For nearly 50 years, the AutoRegressive Integrated Moving Average (ARIMA) models of Box Jenkins have been workhorse statistics for time series experiments” (McDowell et al, 2019, p. 6). The Box Jenkins Model was created by two mathematicians, George Box and Gwilym Jenkins in 1970 and are used extensively “for forecasting a variety of anticipated data points or data ranges, including business data and future security prices“ (Scott, G., 2022, np). “Following the tradition of Box and Jenkins (1970; Box and Tiao, 1975), ITSA develops strategies for building the noise and intervention components of an ARIMA model separately and independently” (McDowell, 2019, p.7). Therefore, both ARIMA and Box Jenkins monikers have commonly been used interchangeably in contemporary ITSA research. Lastly, this model of prediction controls the noise structure of a time series and is determined from the data itself rather than some theory; it is atheoretical (McDowell et al, 2019; Scotch Masking, 2021). The use of this particular research design and model being used for prediction in the economics world heightens its importance and usage in this dissertation.

## ***Assumptions***

Expectedly, there are some statistical assumptions that need to be satisfied regarding the data used in ARIMA models to ensure validity, both internally and externally. The first is that the observations in the experiment are equally spaced in time (whether it is time, day, month, annually, et cetera). This dissertation has satisfied this assumption by collecting data annually from 2012-2021. A second assumption is that the data should be free of outliers. “Time series that are made non-Normal by ‘outliers,’ for example, are not good candidates for transformation” (McDowell et al, 2015, p. 95). Additionally, there must exist a presence of normality in the residuals (i.e., what is left over after the ARIMA model has been applied). A fourth assumption to satisfy is that the mean and variance of the study are stationary (i.e., there is homogeneity of variance and mean of zero for the residuals after modeling). Lastly, there must be independence of residuals (i.e., no meaningful auto correlation after modeling (McDowell et al, 2019; Campbell et al, 2015; Scotch Masking, 2021a; Scotch Masking, 2021b). All assumptions were considered during each phase of this ARIMA model building.

## **ARIMA: Model Building Strategy**

There are four steps to discerning the appropriate model for analysis. They are (1) model identification, (2) model estimation, (3) model diagnosis and, lastly, (4) intervention analysis. All steps were computed in SPSS and I assessed SPSS’s computations. Campbell and Stanley (2015) assessed Box and Jenkin’s algorithm and determined that there appears to be a “logical loop that iterates until it locates a best ARIMA model ... within each loop the algorithm pauses at three decision points – identification, estimation and diagnosis – where it waits for the analysts’ input” (p. 94).

### ***Step 1: Model Identification***

Three components make up a “noise” model  $(p, d, q)$ . The  $(p)$  is Auto-Regression (AR) and this is the memory for past observations. The  $(d)$  is Integration or Differencing (I) which recognizes the systematic changes in slope or variance. Lastly,  $(q)$  is the Moving Average (MA) which represents memory for past errors or random shocks.

Most processes can usually be modeled using very basic ARIMA structures.  $AR_1(1,0,0)$  is an ARIMA structure that has observations equal to the series mean plus (+) a fraction of the prior value.  $MA_1(0,0,1)$  is where the observations are equal to the series mean plus (+) a fraction of the prior value’s difference from the mean (Campbell et al, 2015; McDowell et al, 2019).

The primary tools used to identify the model are (1) a time series plot of the data modeled, (2) the auto-correlation function (ACF) plot and (3) the partial auto-correlation function (PACF) plot. The ACF plot is a measure of correlation between  $Y_t$  and  $Y_{t+q}$ . The PACF plot represents a measure of correlation between  $Y_t$  and  $Y_{t+q}$  where the values of in-between lags are removed. The ACF and PACF plots have patterns that help identify the model for ITS analysis, such as whether the series needs to be differenced or whether AR, MA or both types of parameters are needed, and the lag order of the AR and MA parameters. It is the pattern and location of spikes in the ACF and PACF that help identify a decent / “good” ARIMA model of underlying series behavior (Campbell et al, 2015; Scotch Masking, 2021a; Scotch Masking, 2021b).

Fortunately, SPSS models the ARIMA structure for use. SPSS will try all sorts of possible models and systematically select the ARIMA model SPSS thinks is best or “good”. However, the researcher will still need to diagnose the model.

### ***Step 2: Model Estimation***

For step 2 of this model building strategy, the AR and MA must possess parameters between -1 and +1. Additionally, the AR and MA parameters are considered statistically significant when the value is less than .05 (sig values < .05). Lastly, there must be no evidence of residual auto-correlation at meaningful lags.

### ***Step 3: Model Diagnosis***

A good ARIMA model should include a host of mandates. First the ARIMA model should account for all the auto-correlation in the time series. That is, the ACF and PACF plots of the residuals do not have spikes. A “good” ARIMA model should utilize a Ljung-Box Q statistic that is not significant. The Ljung-Box is a test for residual auto-correlation. A “good” model possesses a high  $R^2$  value and closely predicts the original series. And lastly, the model of choice, a “good” model must make sense and be parsimonious.

### ***Step 4: Intervention Analysis***

Only once Steps 1-3 have been completed or satisfied should one attempt an intervention analysis. One should force the intervention parameter(s) into the best-fitting ARIMA model in SPSS and estimate it including the post-intervention. The objective is to see if the intervention parameter(s) are statistically significant. If so, the research should characterize the impact of the intervention (e.g., after event I occurred, the series was ### or #% higher/lower). Lastly, intervention effects in ARIMA are usually modeled using dummy variables dichotomously coded; 0 is equal to no event and 1 is equal to event (intervention effect occurred). This should be done manually in SPSS and allocated to each observation.

## **The Variables**

This dissertation utilizes the definition of induced abortion adopted by the Centers for Disease Control and Prevention: “A legal induced abortion is defined as an intervention performed by a licensed clinician (e.g., a physician, nurse-midwife, nurse practitioner, physician assistant) within the limits of state regulations that is intended to terminate a suspected or known ongoing intrauterine pregnancy and that does not result in a live birth” (Center for Disease Control and Prevention, 2020; cited in Griffing, 2020). Planned Parenthood also utilizes that definition for “induced abortions” when compiling their annual data for their respective abortion procedures, available in the organization’s publicly available annual reports from years 2012-2013 to 2020-2021. “When the data are not already gathered into a handy database, researchers must go through files, documents, and records to extract the needed information and create their own database” (Johnson, 2014, p. 101; cited in Griffing, 2020).

Nationally, data was collected from various data sources. The data from the 2012-2013 to 2020-2021 PPFA annual reports were entered into SPSS for analysis (Cruz, Bender, Ombao, 2017; Cruz, Gillen, Bender, & Ombao, 2019; Cruz, Pinto-Orellana, Gillen, & Ombao, 2021). For each calendar year between 2012-2013 and 2020-2021, PPFA reported values for: (1) PPFA Induced Abortion Services, (2) PPFA Revenue: governmental, and (3) PPFA Total Operating Revenue.

Regionally, this study also attempted to examine data compiled in Pennsylvania both by the state’s Department of Health and by the three regional Planned Parenthood organizations that operate independently in Pennsylvania (Planned Parenthood Keystone, Planned Parenthood of Southeastern Pennsylvania, and Planned Parenthood Western Pennsylvania). However, this data is not collected in a consistent and cohesive manner across all separate entities that allows for a



comparison among national and regional data and trends. The results would require comparing apples to oranges. This regional analysis was therefore abruptly ended fear of clouding the primary research question.

A trend analysis was conducted over a five-year period in all the datasets leading up to August 2019. Because there were no “difference in differences” over that 5-year period, I then conducted a quasi-experimental, ARIMA analysis for the two-year period leading up to August 2019 (pre-intervention), August 2019 (intervention point), and then examined two years after the August 2019 date (post intervention) ( $Y_1 Y_2 I Y_3 Y_4$ ). Furthermore, the U.S. national birthrate data from 2013 to 2021 was collected from the U.S. Department of Health and Human Services, and the National Vital Statistics Report for each year, respectively. “Data shown in [those resources] are based on 100% of the birth certificates registered in all states and D.C. More than 99% of births occurring in this country are registered (U.S. Department of Health and Human Services, 2019, p. 2; cited in Griffing, 2020). Furthermore, the U.S. population counts for women aged 15-44 years of age come from the U.S. Census Bureau for 2012-2021 (2020; cited in Griffing, 2020).

This dissertation research study provides the obverse of a study conducted by Whelan and published in the *New England Journal of Medicine* following the institution of universal healthcare in Massachusetts. Whelan (2010) studied whether the influx of public money had an impact on abortion rates. This study will examine whether the rejection of public money by the nation’s largest abortion provider has any impact on abortion counts/rates nationally, as regional analyses was halted.

## **The Limitations**

### ***Sample Size***

The more time points before and after the expected intervention date, the better the ability to estimate both the underlying ARIMA structure and the effects of the intervention, unless that causes bias. When reviewing existing systemic review literature on interrupted time series it has been reported that there should be, in theory, three or more analysis points post intervention to be considered a study that is at “low risk of bias” (Sterne, Hernán, McAleenan, Reeves, and Higgins, 2023; Hategeka, Ruton, Karamouzian, Lynd and Law, 2020). It is important to note that McDowall, McCleary and Bartos (2019) have stated that an  $N \geq 15$  observations, measured before and after an intervention or treatment, is a better starting point for analysis as the power and the complexity of the analysis heightens.

This study only assesses abortion rates two years prior to August 2019 and two years after (two two-year sample size analysis). This limited sample size is an inherent component of this analysis given the limited duration of the Trump Gag Rule’s effectiveness and Planned Parenthood’s concomitant refusal to accept Title X funding. Nkwocha (2019) agrees that interventions on measures in healthcare require short time cycles which will yield fewer data points and this is for practicality, meaningfulness, and usefulness. Additional research would be required to assess the Gag Rule’s impact on other variables such as sexually transmitted infections (STIs), teenage pregnancy rates, and cancer detection. Planned Parenthood provides all of these services, and they could be rendered as collateral costs of the weaponization of reproductive (access to abortion) rights. This, too, warrants further investigation.

### ***Sources of Validity***

As specified by Campbell and Stanley (2015), there are a multitude of sources of invalidity (both internally and externally) for quasi-experimental time series designs (Y1 Y2 I

Y3 Y4). There exist approximately five threats to internal validity in a quasi-experimental time series design. They are (1) maturation, (2) testing instrumentation, (3) regression, (4) mortality, and (5) interaction of selection and maturation, etc. For external validity, there are some questionable sources such as interaction of testing, and X and reactive arrangements (Campbell et al, 2015). “[I]t is assumed that the problem of internal validity boils down to the question of plausible competing hypotheses that offer likely alternative explanations of the shift in the time series other than the effect of X” (Campbell and Stanley, 2015, p. 970).

### ***History***

History can be a threat to the internal validity of this prospective study. “History is a potential threat [to internal validity] if an event took place while the study was being conducted that might impact the results” (Johnson, 2014, p. 74). Unfortunately, due to the COVID19 pandemic we could anticipate a mass interruption in the delivery of healthcare services. Additionally, couples are mandated to stay at home in quarantine, nationally; an increase in unintended pregnancy rates could rise due to quarantine measures and familial/household lockdowns. However, Stone (2020) predicts that there will be a possible reduction in birth rates based on historical analysis from previous disasters such as earthquakes, famines, heatwaves, and diseases for example.

### ***Lack of a Control Group***

Finally, this ARIMA analysis only looks at Planned Parenthood data to the exclusion of data from other abortion providers. There has been no investigation into the availability of such revenue data for other abortion providers, and this research limitation is deliberate in that Planned Parenthood publicly publishes its revenue and service provision data on an annual basis. While not comprehensive and limited to a single organization, Planned Parenthood’s provision of approximately 50% of U.S. abortions over the last seven years makes it a representative

provider for purposes of assessing Trump's Gag Rule and Title X's impact on providers generally (Griffing, 2020). Additionally, looking only at Planned Parenthood data eliminates variables in record keeping practices between different organizations, and presumably PPFA employees consistent practices in its national annual reports.

## **Summary**

This chapter outlines the research method and data sources used to answer the research questions. This chapter discussed the procedures employed, the collection and sources of data utilized, and the analytical methods employed to test the hypotheses posed by our research questions. The chapter discusses the quasi-experimental, ARIMA / interrupted time series analysis that assessed the impact of Planned Parenthood's decision to forego Title X funding on regional and national abortion counts. Because of the nature of the research question and the sources of data utilized, there are no potential conflicts of interest arising from this study. Chapter four provides the study's results and demonstrates that to which the methodology described in Chapter 3 was adhered.

## Chapter IV: Discussion and Results

### Introduction

In Chapter III, this dissertation exposed the utility of an Auto-Regressive Integrative Moving Average (ARIMA) Time Series Analysis for this research. Now, the applied ARIMA to the research question(s) at issue will be discussed. In this application, not only is PPFA's refusal to accept Title X funding on PPFA's annual induced abortion services are examined, but other possible covariate impacts on PPFA's induced abortion services, namely the U.S. National Birth Rate, U.S. Women's population (ages 15-44) and PPFA's Total Annual Revenue were included in the analysis.

### Results

#### *Values*

**DV:** PPFA annual induced abortion rates

**Time period:** 2012-2013 Calendar Year (4 years before PPFA's Refusal of Title X Funding) to 2020-2021 Calendar Year (2 years after).

**IV:** PPFA's refusal of Title X Funding (August 2016). Intervention point at 2017.

**Covariates:** U.S. national birth rate, U.S. women population (ages 15-44), PPFA Federal Funding, PPFA Total Revenue, (to adjust for nationwide trends and PPFA shift in Federal funding and Total Revenue).

#### *Descriptive Statistics*

In essence, the descriptive statistics of this dataset are as follows (Table 1 and Table 2). The PPFA Induced Abortion Services mean for the entirety of this study (8 observations points) was 339,768 (Table 1) with a standard deviation of 19637.1 and a reported variance of 385,615,656.5. Additionally, the PPFA Induced Abortion services mean pre-intervention point was 325,346 and post intervention point mean was 354,190 with a percent change increase of 8.9% (Table 2). I also have included a descriptive analysis of PPFA Government Revenue. For

the span of this study, the PPFA Governmental Revenue mean was \$518,112,500, with a standard deviation of \$125,516,397.7 and variance of \$15,750,000,000,000,000 (Table 1). Furthermore, the pre-intervention point mean for PPFA Government Revenue was \$428,200,000 and post-intervention point was \$608,025,000 with a percent change increase of 42% (Table 2). The annual PPFA Total Revenue means were: (across 8-year observation) 1,509,137,500 with a standard deviation of 1,639,110.12 and a variance of 26,870,000,000,000,000; (pre-intervention point) \$13,533,500,000; and (post-intervention point) \$1,664,925,000 with a percent change increase of 23% (Table 2). Additionally, but of note, the covariate U.S. Women Population means across the 8-year observation period with a value of 63,489.02, a standard deviation of 16,747.11 and a variance of 456,777.36 (Table 1). The pre intervention point the U.S. Women Population mean was 692,934.75 and post-intervention point mean was 34,043.30 with a negative percent change of 45.9% (Table 2). The last covariate examined descriptively was the U.S. National Birth Rate, with a (8-year observation) mean of 3,857,883.75, a standard deviation of 121,889.57 and a variance of 14,857,066,667 (Table 1). The U.S. National Birthrate mean pre-intervention point is 3,961,157.25 and a post-intervention point mean of 3,754,610.25 with a negative percentage change of 5.2% (Table 2). A large standard deviation implies there is substantial variance in the observed data around mean.

**Table 1***Population Descriptive Statistics*

Variables	N	Mean	Std. Deviation	Variance
PPFA Induced Abortion Services	8	339768.0	19637.1	385615656.5
PPFA Government Revenue	8	518112500.0	125516397.7	1575000000000000.0
PPFA Total Revenue	8	1509137500.0	163911012.0	2687000000000000.0
US Population Women (Age 15-44yo)	8	63489.0	675.9	281471440.4
National Birthrate	8	3857883.8	121889.6	456777.4
Valid N (listwise)	8			

*Note.* This table displays the population statistics including the mean, Std. deviation, and variance for 8 observation points throughout this study (2012-2013 to 2020-2021). Additionally, Standard Deviation and Variance use N rather than N-1 denominators

**Table 2***Pre- and Post-Intervention Descriptive Statistics*

Variables	0 (no event)	1 (event)	PPc	%c
	% MeanPre	% MeanPost	MeanPost - MeanPre	((PPc/MeanPre)x100)
PPFA Induced Abortion Services	325346.00	354190.00	28844.0	8.9
PPFA Government Revenue	428200000.00	608025000.00	179825000.0	42.0
PPFA Total Revenue	1353350000.00	1664925000.00	311575000.0	23.0
US Population Women (Age 15-44yo)	62934.75	34043.30	-28891.5	-45.9
National Birthrate	3961157.25	3754610.25	-206547.0	-5.2

*Note.* This table provides descriptive statistics for all variables both pre-intervention and post intervention points. Additionally, PPc = Percentage point change. %c = Percentage change relative to the pre-intervention period.

For optics, this dissertation has included time series plots for all of these variables. Figure 1 is a time series plot for the PPFA's Induced Abortion Services from years 2012 to 2021. The intervention point is 2017 which is the calendar year of 2017 to 2018.

Figure 2 is a time series plot for all of PPFA's Revenue lines examined in this study. These variables are PPFA's Annual Government Revenue, PPFA's Non-Government Revenue, PPFA's Annual Private Revenue, PPFA's Annual Other Revenue and PPFA's Annual Total Revenue (Figure 2). A change prior to the intervention point (between years 2013 to 2015) a slight increase is observed as it relates to PPFA's Annual government revenue but this remained

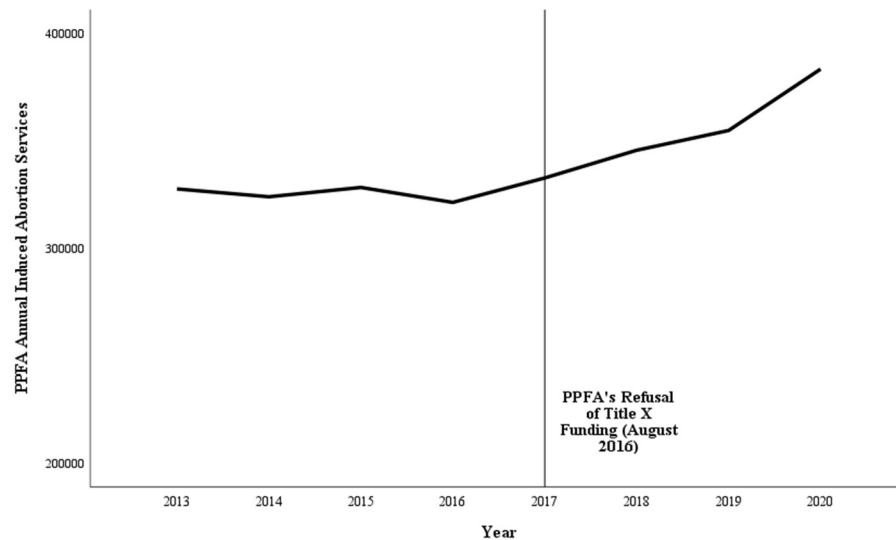
relatively the same until 2021; while during that same period there was a decrease in PPFA's Non-Government Annual revenue and that too remained relatively unchanged until 2021 (Figure 2). Lastly, a subtle trending incline is seen in PPFA's Total Annual Revenue leading to the intervention point, but this value plateaus post-intervention (Figure 2).

Figure 3 and Figure 4 are both times series plots for the annual U.S. Women Population Ages 14-44 years old and the annual U.S. National Birth Rate, respectively. Both of these covariates remain relatively constant from years 2012 to 2021. We won't see any change with an intervention point as they are not associated with PPFA's services, but rather serve to possibly explain any changes in induced abortion services. For example, are there more women (of childbearing ages) than the year before thus creating an uptick in possibility of increased induced abortions? Or, does the US have more babies being born annually post the intervention point which could help explain a decline in U.S. induced abortion services?



**Figure 1**

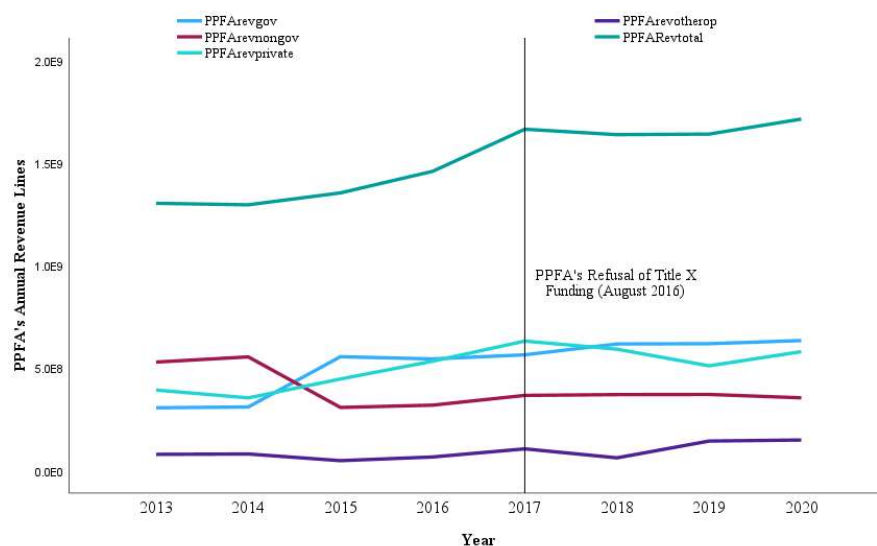
*Time series plot for PPFA's Annual Induced Abortions Services from 2012-2021*



*Note.* This figure depicts a time series plot for Planned Parenthood Federation of America's annual induced abortion services for 8 consecutive years (from 2012-2013 to 2020-2021).

**Figure 2**

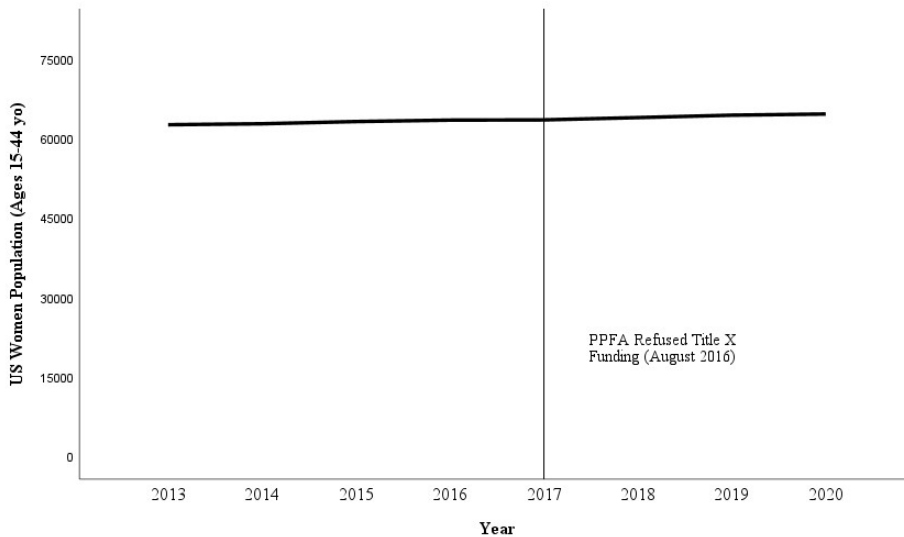
*Time Series Plot of PPFA's Annual Revenues Lines from 2012- 2021*



*Note.* This figure depicts a time series plot for Planned Parenthood Federation of America's annual revenue lines (Government Revenue, Other Revenue, Non-Government Revenue, Private Revenue, and PPFA Total Revenue) for 8 consecutive years (from 2012-2013 to 2020-2021).

**Figure 3**

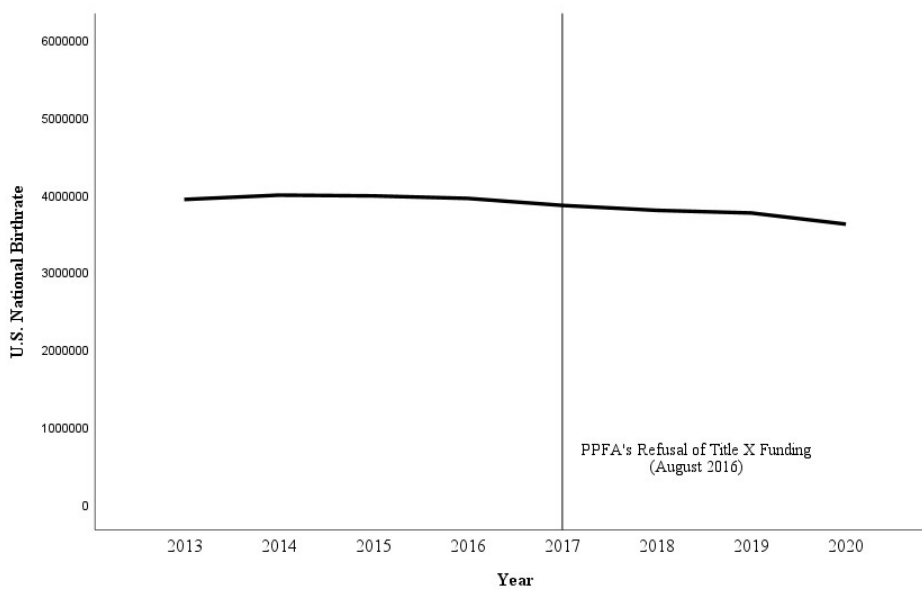
*Time Series Plot for US Population of Women (Ages 15-44) from 2012-2021*



*Note.* This figure depicts a time series plot for U.S. Women Population (Age 15-44yo) for 8 consecutive years (from 2012-2013 to 2020-2021).

**Figure 4**

*Time Series Plot for US National Birthrate from 2012-2021*



*Note.* This figure depicts a time series plot for the U.S. National Birthrate for 8 consecutive years (2012-2013 to 2020-2021).

### ***Initial Model Estimator***

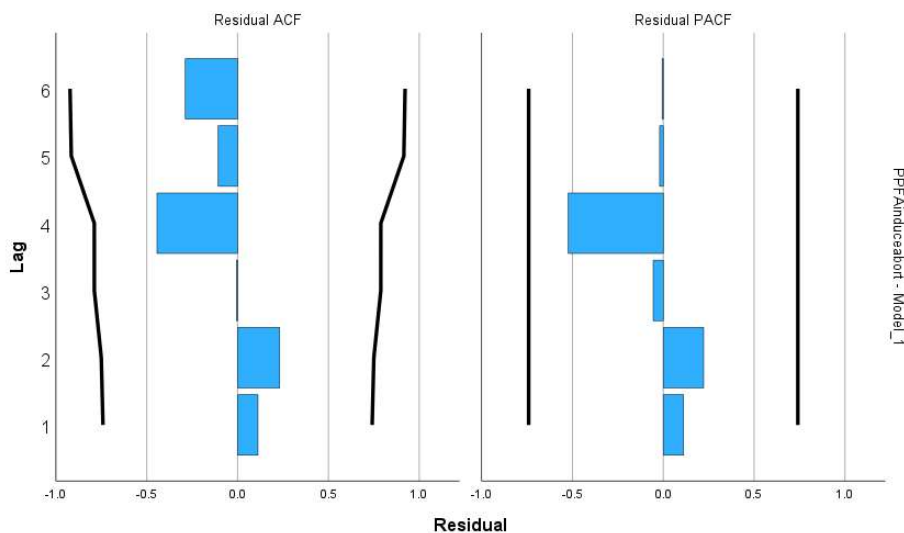
SPSS advised in the initial model estimator that this series is an ARIMA (0,1,0). Meaning that each observation is predicted just by subtracting it from the one prior (1<sup>st</sup> differencing). This model has a low (0.0000000000000001110%)  $R^2$  because there are 0 predictors in the ARIMA model (only differencing being used). Even the Constant parameter was not significant (Sig > .05).

### ***Initial Model Diagnosis***

When examining the SPSS model diagnosis, none of the spikes in the ACF or PACF exceed the 95% confidence interval lines, which is good as it implies there is no residual auto-correlation (Figure 5). The values that are predicted by the model (blue) track reality but are shifted one unit due to the differencing to remove a linear trend. This model, initially, appeared to be a decent model for this study (Figure 6). The intervention effects were then added to inspect whether they change anything.

**Figure 5**

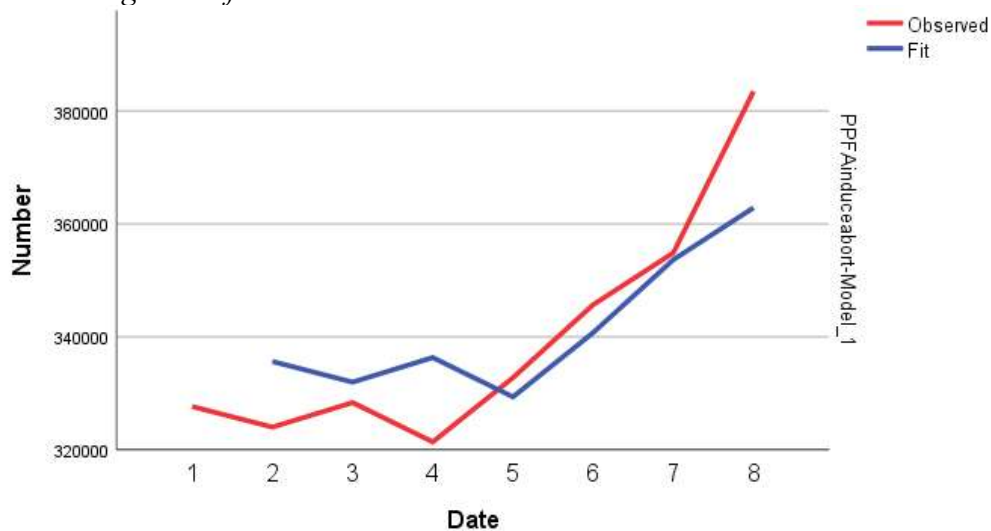
*Initial Model Diagnosis of Residual ACF and PACF*



*Note.* This figure depicts an initial model diagnosis of residual ACF and PACF.

**Figure 6**

*Model Diagnosis of Observed and Fit*



*Note.* This figure depicts an initial model diagnosis of observed and fit lines for PPFA’s induced abortion services.

***Intervention Analysis***

SPSS still advised that this series should be an ARIMA (0,1,0). Each observation is predicted by its difference from the value one prior. A 0.00000000000001110% variance occurred. SPSS rejected the non-receipt of Title X Funding intervention ( $\text{Sig} > .05$ ) and only associated an increase of 7,972 PPFA induced abortions with non-receipt of Title X Funding (Table 2). Note that SPSS differenced the intervention to match the dependent variable too. None of the spikes in the ACF or PACF exceed the 95% confidence interval lines, indicating there is no residual auto-correlation (Figure 7).

**Table 3**

*Intervention Analysis*

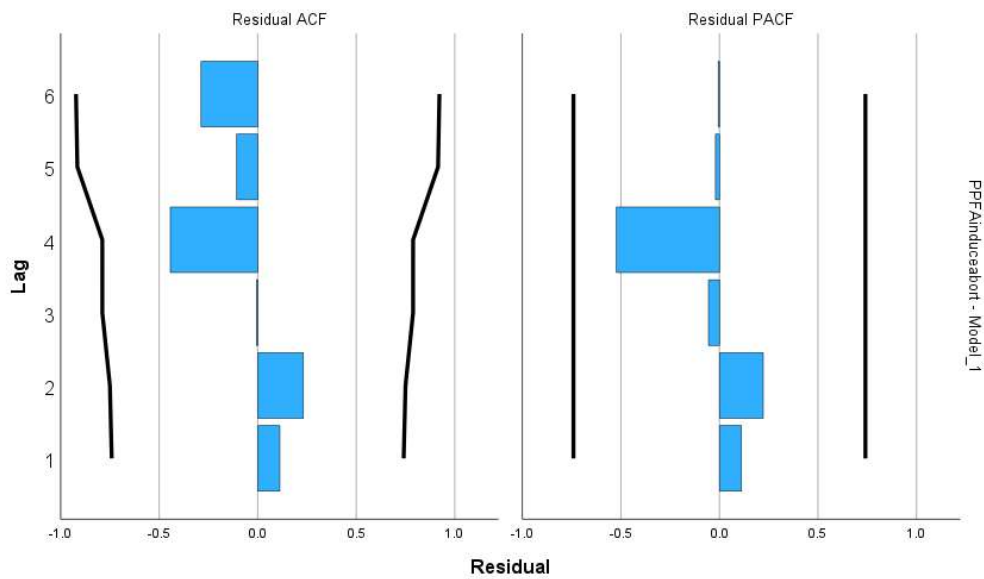
Model Component	Estimate (PPc)	t value
PPFAInduced Abortion Services	7972.43	1.79

*Note.* This table depicts the Intervention Analysis of the Model component.

\*  $p < .05$ , two tailed

**Figure 7**

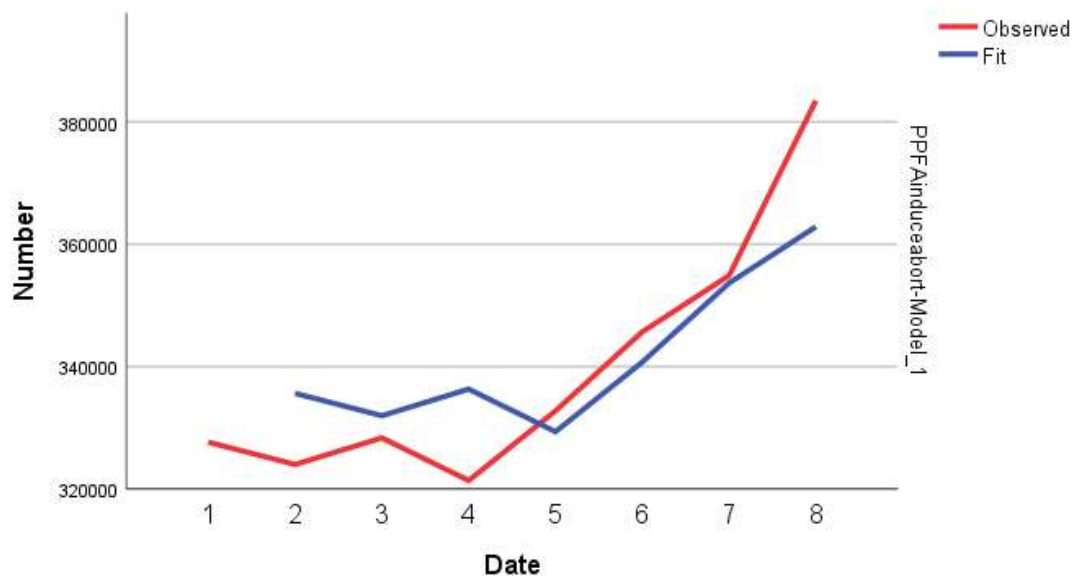
*Intervention Analysis of Residual ACF and PACF*



*Note.* This figure depicts an initial model diagnosis of residual ACF and PACF.

**Figure 8**

*Intervention Analysis of Observed and Fit*



*Note.* This figure depicts an Intervention analysis of observed and fit lines for PPFA's induced abortion services.

The values predicted by the model (blue) track reality but are slightly shifted (Figure 8).

### ***Intervention Model Re-Estimation***

Was the nominal increase in PPFA Induced Abortions just due to changes in Title X funding? Or are there other confounding variables?

Was this increase just a reflection of a trend towards PPFA Induced Abortions Services (trend modeled by comparison series)? Or is there a possible impact by perhaps a shift in US Women Population, National Birth Rate, and/or PPFA's revenue lines (total revenue and government revenue lines)? I, therefore, put these additional four covariates in the model (national birth rate, US Women Population Ages 15-44, PPFA Total Revenue, PPFA Government Revenue). Further, SPSS forced the method as an Arima (0,1,0) model so an estimate on all the independent variables is achieved.

Here is the ARIMA (0,1,0) model that includes all the independent (co)variables. This is the best model yet as 98.1% of variance is accounted (Table 3). Non-Receipt of Title X funding resulted in no significant change to PPFA's induced abortion services ( $p > .05$ ) still.

Additionally, all the covariates National Birth Rate, U.S. Women Population Ages 14-44yo, PPFA Total Revenue, and PPFA Government Revenue are not associated with the increase or change in the PPFA induced abortion counts (all respective Sigs  $p > .05$ ). Of note, however the National Birth Rate covariate is the closest in adjusting the PPFA induced abortion rate (Sig  $p = .153$ ), but this is not considered statistically significant. None of the spikes in the ACF or PACF exceed the 95% confidence interval lines, indicating there is still no residual auto correlation (Figure 9).

The values predicted by the model (blue) track reality closely. All signs point to the ARIMA (0,1,0) model being good for this analysis. Further, non-receipt of Title X funding did not impact significantly PPFA's Induced Abortion rate (Figure 10).

**Table 4**

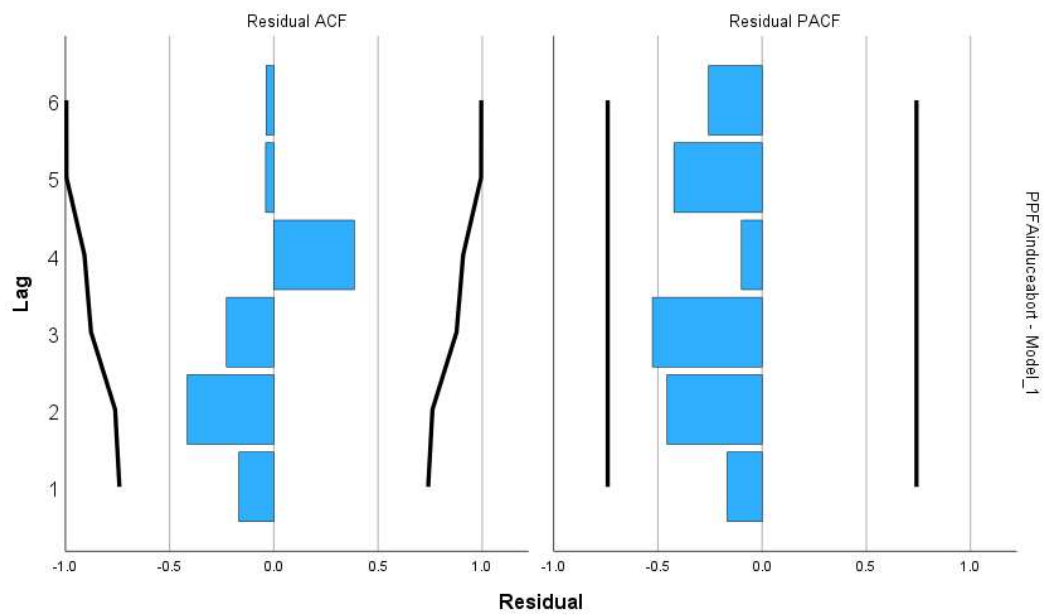
*Intervention Model Re-estimation*

Model Component	ARIMA Model (p,d,q)	Stationary R2	Estimate (PPc)	t value
PPFA Induced Abortion Services	(0,1,0)	0.98	2500472.2	2.412
Title X Funding Variable	(0,1,0)		8751.25	0.878
PPFA Government Revenue	(0,1,0)		8.02E-05	2.291
PPFA Total Revenue	(0,1,0)		-6.58E-05	(-1.34)
US National Birth Rate	(0,1,0)		-25.1	(-1.733)
US Women Population (15-44yo)	(0,1,0)		-0.22	(-4.074)

Note. \*  $p < .05$ , two tailed

**Figure 9**

*Intervention Model Re-estimation of Residual ACF and PACF*

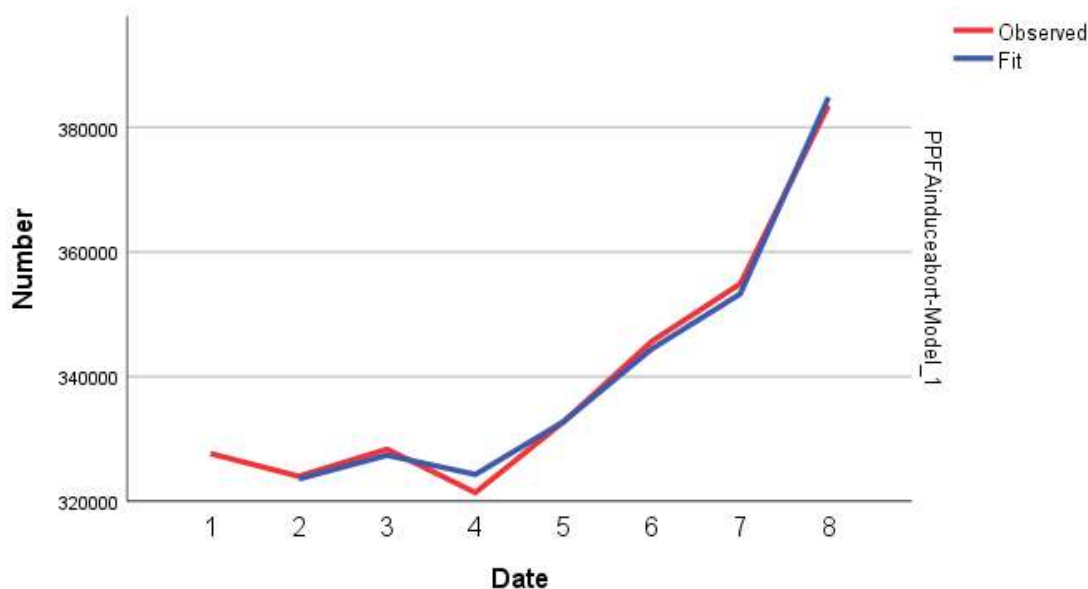


*Note.* This figure depicts an intervention model re-estimation of residual ACF and PACF.



**Figure 10**

*Intervention Model Re-estimation of Observed and Fit*



*Note.* This figure depicts an Intervention model re-estimation analysis of observed and fit lines for PPFA's induced abortion services.

### **A Source of Bias**

Hategeka, Ruton, Karamouzian, Lynd, and Law (2020), in their systemic review of non-randomized interrupted time series employed the Cochran Effective Practice and Organization of Care criteria for assessing risk of bias in ITS. Cochrane's criteria examines confounding bias, selection bias, information bias, and reporting bias at various times in the study. With respect to the Planned Parenthood Federation of America's data repository, reporting bias may be a primary issue. In this dissertation study, it was apparent that the state and national level data collected were reported differently. This invariably could have a bias effect on this study's outcome. Additionally, it has been explained that PPFA defines "induced abortions" just as the CDC. However, could the "reporters" from different Planned Parenthood agencies misidentify procedures and classifications and in turn skew the results of this study (internal validity)? "Confounding may be overcome, in principle, either by design (e.g. by restricting eligibility to

individuals who all have the same value of the baseline confounders) or – more commonly – through statistical analyses that adjust (‘control’) for the confounder(s)” (Sterne, J., Hernán, M., McAleenan, A., Reeves, B., Higgins, J., 2023, sec 25.2.1.). This dissertation attempted to “overcome” confounding bias by including adjustments for these covariates such as the national, annual birthrate and U.S. Women’s population (age 15-44) as well as PPFA’s Total Annual Income. This dissertation does not appear to be impacted by selection bias, which generally happens when there is missing data, participant attrition, and follow up or inception bias as Cochrane does recommend at least three points of analyses post intervention; of which this dissertation study only has two (Sterne, J., Hernán, M., McAleenan, A., Reeves, B., Higgins, J., 2023).

## **Discussion**

Planned Parenthood Federation of America’s refusal to accept Title X Funding in August 2018, in response to President Trump’s imposed Gag Rule, did not have a statistically significant impact on PPFA’s annual induced abortion services. Examining the possible impact of covariables such as PPFA’s total revenue, PPFA’s governmental revenue, U.S. national birth rate, and U.S. women population (ages 15-44), additionally did not statistically impact PPFA’s induced abortion services significantly. Research Question 1: *Did Planned Parenthood’s determination to reject Title X Family Planning funding reduce their ability to provide abortion services, as reflected on PPFA’s internally reported statistics of abortion numbers and funding levels?* has been answered.

It is very likely that there are other contributing variables that may have impacted PPFA induced abortion services, but that is outside the scope of this dissertation. It is important to acknowledge that there could exist other events which led to a slight increase in PPFA induced

abortion rates. However, this researcher felt the need to stress that PPFA induced abortion services have remained relatively constant over the timeframe of this study (2012-2021) (See Figure 1).

## **Chapter V: Summary, Implications, Conclusions**

### **Summary**

This dissertation uses Lionel Robbins' economic theory of scarcity to analyze the decision of Planned Parenthood to reject Title X funding in the wake of the Trump Gag Rule. Dobbins' theory predicts that the decision to forego Title X funding would result in Planned Parenthood reducing the services it provides, including abortion services. The analogy to a pay cut causing a parent to make difficult choices, and impose sacrifice, in allocating available means toward necessary household expenses is made. The ubiquitous human condition of allocating scarce resources among given ends would apply to Planned Parenthood, operated by humans, as well. If the theory of scarcity provided an accurate prediction, then evidence would exist supporting the notion that restrictive abortion policies can, in fact, reduce overall abortion numbers.

To provide edification, existing scholarly literature concerning the practical impacts and goals of restrictive reproductive health policy was surveyed. A consistent thread throughout is that abortion demand remains steady notwithstanding legal restrictions on or barriers to accessing abortion services. Additionally, research has shown that greater access to contraception has a far more significant and negative correlation on abortion rates than legal restrictions on or barriers to abortion services. Other studies showed that restrictive reproductive health policy is rarely, if ever, based on evidence, and far more often targets political constituencies for partisan favor.

Next, the utility of an interrupted time-series analysis for conducting this study was explained. Interrupted time-series analyses allow for isolation of potential variables and their relative values before and after a singular temporal event, such as Planned Parenthood's decision

to reject Title X funding. The associated ARIMA model is self-regulating, allowing the researcher to refine the analysis to achieve a valid result. Numerous data sources to conduct this study and the interrupted-time-series analysis were utilized. These sources include Planned Parenthood's annual reports of operations, which provide line-item detail about the organization's revenue sources, including revenues from governmental sources, private contributions, other revenue sources, and overall revenue figures. Multiple years of data were examined to identify any trends existing before Planned Parenthood's decision to reject Title X funding data from the years immediately preceding that decision in my interrupted time-series analysis were employed, also including Planned Parenthood data concerning overall abortion service provisions, as well as federal government data concerning childbearing population numbers and annual birth rates.

This dissertation research shows no significant correlation between Planned Parenthood's decision to reject Title X funding because of the Trump Gag Rule and reduced availability or provision of abortion services at Planned Parenthood nationally. This result is generally consistent with prior research generally showing no significant correlation between more restrictive anti-abortion public health policies and actual reductions in the number of abortion services provided. Indeed, it appears likely Planned Parenthood and the Trump Administration anticipated that the Gag Rule and PPFA's response to the Gag Rule would have no practical impact on Planned Parenthood's ability to provide abortion services.

Confirming this finding, Robbins' theory of scarcity demonstrates it would be economically irrational for Planned Parenthood to voluntarily forego Title X funding unless it predicted the organization's overall finances would not materially suffer. Planned Parenthood's

decision to forego Title X funding was economically rational. The data show Planned Parenthood's revenue increased after it determined to reject Title X funding.

## **Implications**

Women will continue to seek abortion services regardless of public policy, as abortion services, even if self-administered, are inevitable. Providing and promoting effective reproductive health services, however, requires evidence-based, not politically motivated and scattershot, policies concerning abortion services. In the *Dobbs* case, the Trump Administration proved it was pursuing an anti-abortion agenda through the Supreme Court and was not engaged in evidence-based policymaking by enacting the Gag Rule. Trump has, after all, repeatedly credited himself with overturning *Roe v. Wade*.

Subsequent criminal prohibitions enacted in certain states only drive women and their doctors underground or across state lines. A better public policy concerning abortion would begin with the premise that abortions are, overall, inevitable. Policies approaching that inevitability as the reality would best serve all women and their families.

One additional topic of future research would be to assess whether Planned Parenthood was also able to maintain the extent of other non-abortion health services. These include cancer screenings, fertility testing, sexually transmitted disease detection and treatment, and other family planning services generally. One limitation of this dissertation research is that only national data about abortion services and no other data regarding these other services was no assessed. It would have been informative to examine regional data, as initially proposed to garner regional impacts and variations in the delivery of services and PPFA revenue lines. Unfortunately, data from Planned Parenthood's regional affiliates lacks the reporting uniformity needed to enable meaningful comparisons between regions. Specifically, the state of

Pennsylvania was initially including in this dissertation's research. Pennsylvania has political diversity, is the 6th largest state in the country, has a diverse population with urban centers and vast rural areas in between, and otherwise represents a cross-section of the country.

Pennsylvania's political diversity has resulted in stable reproductive health policy over the last 25 years, following repeated efforts by the state government to impose restrictive abortion policies, only to be limited to Supreme Court rulings which will be discussed later.

Unfortunately, the Pennsylvania Planned Parenthood regional data is not housed in one repository with similar line items, like the PPFA national data, a regional examination was therefore halted during the data collection phase. Regional assessment of PPFA abortion services and funding would be vital to understand what nationally and regionally trends and warrants further future research.

Obviously, the legal landscape for abortion services nationally has changed dramatically with the reversal of *Roe v. Wade* in 2022. State level data, particularly in states that have criminally prohibited abortion procedures for seekers and providers, will show reductions in abortion procedures performed in those states. However, national data may reflect, as history has repeatedly proved, that abortion regulation does not actually reduce the incidence of or demand for abortion, but increases the rates of unwanted full-term pregnancies, especially for lower-income populations. For example, individuals in Texas, who have the means, are likely crossing state lines to receive abortion services or obtaining abortive medications clandestinely.

## **Conclusion**

This dissertation posited that if Robbins' theory of scarcity holds true, Planned Parenthood's rejection of Title X finding would result in a decline in abortion services Planned Parenthood was able to provide. To test Planned Parenthood's economic rationality, further

research would need to be completed incorporating additional variables relating to the sources of PPFA's funding and precise revenue line items. One thing that could be true is that PPFA's private fundraising may have been enhanced because of the Trump Gag Rule, thus mitigating or eliminating any economic downside to the organization for refusing Title X Funding.

Nevertheless, Planned Parenthood organizations reverted to accepting Title X funding as soon as the Biden Administration rescinded the Trump Gag Rule in March 2022. Clearly, Planned Parenthood will accept government funding when it is consistent with the organization's overall mission, and it does not negatively impact the availability of reproductive health services generally and induced abortion services specifically.



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