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Amanda Sitkowski November 16, 2021

Trump’s Gag Rule on Title X: An Examination of Fetal and Infant Mortality Rates in Women of Color

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Abstract

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Trump's gag rule on Title X has forced many women to lose access to reproductive healthcare, especially low-income women and women of color. Title X is a part of the national family planning act that was created in 1970. Its purpose was to help low-income women gain access to family planning care by providing funding to the clinics that provide this care. The gag rule prohibited funding from going to clinics that gave abortion counseling and referrals, which caused many clinics to withdraw from the federal funding. This withdrawal of funding forced many clinics to close and has effectively reduced many women's accesses to healthcare. This article examines how Trump's Gag Rule on Title X may have impacted racial and ethnic inequities in infant and fetal health. The analysis quantifies the relationship between the number of Title X users by region, race, and year from the National Family Planning Report Summary from the Department of Health and Human Services (HHS) and fetal and infant mortality rates from the Vital Statistics Mortality Database. Multivariate regression analyses explored the relationships between the rate of Title X users and infant and fetal mortality. The results show large differences in infant and fetal mortality by race and ethnicity. Rates of Title X users were significantly associated with infant mortality rates but not fetal mortality.

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Table of Contents

Introduction	1
Existing Literature	4
Data and Methods	9
Results	13
Discussion	20
Conclusion	21
References	23

Introduction

This study examines how Trump's gag rule on Title X may have impacted infant and fetal mortality rates in the United States. Title X was passed in 1970 as a part of the Public Service ACT. It was signed into law under the presidency of Richard Nixon. It was created to help low-income individuals gain access to comprehensive family planning and related preventative services. Family planning includes many services, such as helping people have children, preventing unwanted pregnancy and helping to space the number of children a couple has. This care includes but is not limited to STI (Sexually Transmitted Infections) and STI testing, family planning services, infertility services, cancer screening, and HPV (Human Papillomavirus) vaccination. Title X is also the only federally funded grant for family planning. The funding comes from the Department of Health and Human Services and is overseen by the Office of Population Affairs. There are thousands of services that are supported through the 71 current grantees of Title X.

Title X data is organized by ten geographical service regions that have been created by the United States Department of Health and Human Services. The regions are: Region 1 Boston (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), Region 2- New York (New Jersey, New York, Puerto Rico, and the Virgin Islands), Region 3 -Philadelphia (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia), Region 4- Atlanta (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee), Region 5- Chicago (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin), Region 6-Dallas (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas), Region 7- Kansas City (Iowa, Kansas, Missouri, and Nebraska), Region 8- (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming), Region 9- San Francisco (Arizona, California,

Hawaii, Nevada, American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Marshall Islands, and the Republic of Palau), and Region 10-Seattle (Alaska, Idaho, Oregon, and Washington). Each region has its own office that serves both local and state-level organizations. The regions all have a director that is responsible for helping ensure that the communities' needs are being met while abiding by the policies of the Department for Health and Human Services. This study examined the number of Title X users by region across the years to see if the gag rule on Title X during the Trump administration may have affected the number of users. I then looked at the infant and fetal mortality rates by race in each region across the years to see if there was a correlation between the rates and the number of Title X users by race and region. A supplementary analysis examines regional and race/ethnic differences in infant and fetal mortality trends in the United States.

Background and Hypothesis

Infant Mortality Rate is the number of infant deaths per every 1000 live births. It is a death occurring before the child's first birthday. It is utilized as an important biomarker of the health of a country. The data are collected through the national vital statistics program that has access to birth and infant death certifications in all the United States territories. In the United States, there is a difference between races regarding infant mortality. According to the Centers for Disease Control (CDC), Non-Hispanic black women had the highest rates of infant mortality in 2018 (Kochanek, Xu, and Arias 2020). This can be attributed to many causes but is not limited to preterm birth, birth defects, and maternal pregnancy complications.

Fetal death is when the fetus dies within the uterus. Fetal Deaths are required to be reported by the law after 20 weeks (about four and a half months), but some states require reporting at earlier stages. It is collected by the National Vital Statistics Center. The causes of

fetal death are health issues in the mother, such as untreated diabetes and problems with the placenta or umbilical cord. Another contributing factor to fetal mortality rates is social determinants of health, including racial differences in healthcare and inequitable access to care. The rate of fetal deaths among black women from 2015- 2017 was two times higher than white women, according to the CDC. Interestingly, the CDC also points out that fetal deaths due to causes unrelated to the present pregnancy are also higher in women of color than white women.

There has been considerable evidence illustrating the importance of Title X to the maternal health of all poor women and especially women of color. Decreases in Title X funding impact all poor women because they are four times as likely to have an unwanted pregnancy. Defunding Title X clinics not only prevents their ability to exercise their rights to choose, but it also prevents them from gaining access to pregnancy prevention measures as well as prenatal care if they decide to maintain the pregnancy. Cuts in Title X funding have a disproportionately negative impact on women of color because 33% of Title X users identify as being a part of the Hispanic community, and historically women from minority communities also have lower access to prenatal care than their wealthier, white counterparts (Fowler et al. 2019).

For many poor women and women of color, Title X clinics are their primary source of care. These clinics are where they gain access to contraceptives, STD (Sexually Transmitted Diseases) testing, cancer screenings, and abortion services. In *A Catastrophe for Public Health and Law*, it was found that contraceptives had a positive impact on maternal mortality and cut the rate by 30% (Rosenbaum 2019). Furthermore, Title X clinics are important because they help ensure that if a woman chooses to have an abortion, that they can have one safely. The inability to access safe abortions disproportionately impacts women of color. According to the Guttmacher report, non-Hispanic black women had more than double the rate of unintended

pregnancy in 2011 (Guttmacher Institute 2019). This can be detrimental to infant and fetal mortality outcomes because women that have an unexpected or unwanted pregnancy and are forced to carry to term are more likely to delay prenatal care (Thomas 2012). As a result of Trump's Gag rule on Title X, there has been a great reduction in clinics across the country. Some states have seen a 100% reduction in clinics, and a total of 26 states have seen a reduction of clinics by 25% or more (Frederiksen et al. 2019). Since Trump's gag rule denies funding to clinics that perform abortions, about 23% of clinics had to withdraw from the funding because they felt that they would not be able to provide comprehensive care to their patients (Frederiksen et al. 2019).

Since Trump's gag rule has decreased the number of Title X clinics, we would expect to see the greatest impact on women of color who used Title X-funded clinics more often than white women. Specifically, we may expect to see an effect on infant and fetal mortality because these clinics provide access to prenatal care and health screenings.

Existing Literature

In this section, I will discuss prior literature on how Title X has been shown to impact maternal, infant, and fetal health. I start off by examining how Title X clinics help women control their reproductive choices. I then will explain how prior literature demonstrates that helps women of color gain access to contraceptive care and other forms of reproductive healthcare. Following this section, I delve into how prior literature demonstrates the impact of the gag rule on the number of Title X clinics as well as the impact it had on women's ability to access healthcare.

Thirty years ago, there were studies done that looked at the income level of women, how many children they had, and how many they had wanted. It was found that many of the lower-

income women had more children than they often wanted because of a lack of access to contraceptives (Frost et al. 2006). Furthermore, research demonstrated that having unintentional pregnancies often led to decreased levels of education, an increase in poverty, as well as an increased reliance on the government for public assistance (American College of Obstetricians and Gynecologists n.d.). Title X was signed into law in 1970 during the presidency of Nixon. It was designed to help ensure that people have access to family planning services as well as preventative health services (Physicians for Reproductive Health n.d.). The program focused on people of lower incomes as well as people who are uninsured (Fowler et al. 2019). However, it does not have a specific criterion that people need to meet to receive care. Thus, the program is very important in helping to subsidize care for people who cannot afford it yet are not eligible for Medicaid as well.

There is a myriad of services that are included in Title X, such as contraceptive methods, cancer screening, STD and HIV testing, education, and prevention of sexually transmitted diseases (Fowler et al. 2019). The funds of Title X can also be used for research that pertains to reproductive health, contraception, and other things that impact family planning and can also be used to pay the salaries of staff at clinics. It is the only title in the law that helps people of lower incomes gain access to preventative healthcare and family planning. Title X funding, however, has never been allowed to finance abortions. Yet, the regulation of the program enforces complete counseling of pregnant women of all her options, including adoption, foster care, infant care, delivery information, and abortion information (Benson Gold 2001). Title X has had an immense impact on women's reproductive healthcare in the United States. It has helped prevent twenty million unwanted pregnancies (nine million of which would have been aborted) and has also reduced the rate of teen pregnancy significantly (Benson Gold 2001). Moreover, Title X has

contributed to the fight against cervical and breast cancer. Title X clinics helped detect up to 55,000 cases of cancer early. One of the most shocking yet not surprising accomplishments of Title X is its ability to save money for the public and government long term. According to the Guttmacher Institute report "For every dollar that the federal and state governments spend on family planning services, three dollars are saved in Medicaid costs for pregnancy-related and newborn care (Guttmacher Institute 2019).

Research has demonstrated that Trump's gag rule on Title X has caused a significant reduction in Title X's clinic network. This occurred despite the increased need for Title X funding for contraceptives. From 2010 to 2014, one million more women needed publicly-funded contraceptives (Frost, Frohwirth, and Zolna 2016). The Guttmacher Institute found that the Trump policy had an immense impact on Title X clinics federally, with a reduction of the network across the country being reduced by 46%. This has a colossal impact because 23 % of Title X receiving clinics have withdrawn from the funding because they have said that women would be unable to access comprehensive care (Frederiksen et al. 2019). States were impacted in different ways when it comes to the gag rule; however, 26 states have experienced at least a 25% decrease in Title X's network capacity (Dawson 2020). There are also six states (Hawaii, Maine, Oregon, Utah, and Washington where Title X has been reduced by 100% (Dawson 2020). In states where Title X clinics have been reduced by 100%, there is a serious concern for figuring out how low-income women will gain access to family planning services, prenatal care, STD testing, and abortion services.

The closures of Title X clinics are extremely significant because this will disproportionately impact low-income women and women of color. According to the study done by George Washington University, Title X-funded clinics serve higher numbers of non-white

women, Medicaid eligible, and the uninsured. In addition, because of withdrawing from Title X funding, it will be difficult for the needs of low-income women to be met at the clinics. Without the funding from Title X might have to reduce their staff, their supply of contraceptive devices, and scale back their educational outreach and other programs, according to a study done by the Kaiser Family Foundation (Frederiksen et al. 2019). The gag rule that Trump put into effect has left 41% of women that utilized Title X clinics without access to a contraceptive provider (Villavicencio, McHugh, and Edmonds 2020). The Guttmacher Report demonstrates that from 2010 to 2014, an additional one million women needed publicly funded contraception. This is an alarming situation because access to contraceptive methods has been seen to be effective in reducing the interpregnancy period. Moreover, when women can plan their pregnancies with contraceptives, infant mortality decreases (National Partnership 2008). According to a study published in the American Journal of Obstetrics and Gynecology, short interpregnancy periods have increased the risk of poor maternal outcomes especially if the mother is 35 years old or older. Likewise, the study states that increased access to contraceptives could have the ability to reduce the maternal mortality rate by almost 30% (Rice et al. 2020). Furthermore, In Texas, the defunding contributed to closures of women's clinics and was found to raise maternal deaths two-fold (MacDorman et al. 2016).

Under the gag rule, the Trump administration ensured that any clinic that provides abortion services could not be eligible for Title X funding. This is alarming because an important aspect of preventing maternal, infant, and fetal mortality is the ability to obtain an abortion safely and without inference (Villavicencio et al. 2020). This is exceptionally problematic because there is data that demonstrates that states with higher amounts of abortion restriction have worse

maternal and infant outcomes, and the gag rule on Title X now restricts clinics from referring pregnant patients to abortion services (Ravi 2018).

According to the Title X fact sheet, “From 2010 to 2014, the number of women in need of publicly funded care increased by five percent” and is expected to increase (Frost et al. 2016). Thus, illustrating the fact that cutting funds is the opposite of what is needed. The current cuts to the Title X program are unprecedented. According to the History of Title X funding over the past five years, the funds have been cut by 39.2 million dollars (Fowler et al. 2019). This is astonishing because, between 1985 and 2010, the total cuts that Title X experienced was 13.9 million dollars (Fowler et al. 2019). It is problematic as well because as the rise of unemployment continues to increase, more women will seek federally subsidized contraception (Fowler et al. 2019).

Cuts in Title X funding have an extremely negative impact on women from minority communities. About half of the women that are patients at Title X clinics are women of color, according to the 2019 Title X fact sheet. In addition, according to the Family Planning annual report, about 33% of Title X users identified as being a part of the Hispanic community. Funding cuts only add to the disparity in health care because lower-income populations and minority women also have a lower rate of getting access to prenatal care than wealthier, white women. Budget cuts to Title X limit the clinics' abilities to help mitigate the disparity and poor outcomes that happen because of lack of access to prenatal care because it limits the amount of money the clinics must provide this care. Through developing unique approaches and providing women with the care that they need, Title X clinics have helped to address systemic and structural issues, yet there is still a long way to go. However, cutting funding only causes the process to slow down and leads to poorer health outcomes.

Cuts in Title X also drastically impact low-income women across all races. The department of Health and Human Services has demonstrated that in 2017: 90% of users had incomes that were low enough for free services, and 67% of people had incomes that were at or below 100% of the poverty level. The National Women's Law Center states that in the USA, poor women are four times as likely to have an unintended pregnancy versus their wealthier counterparts. Certain states like Arizona are also dropping thousands of people from their Medicaid programs which would put an even greater hardship on Title X clinics than there already is (Fowler et al. 2019). This is extremely concerning and inefficient because cutting the funding would not only harm women by preventing them from getting access to the only healthcare that might have otherwise been available, but it is also inefficient for the government.

Data and Methods

The annual family planning report is data that is collected by the United States department of health and human services. We used the annual report to collect the number of female Title X users by race/ethnicity, health service region, and year from 2007 to 2019. Title X clinics are required to submit their data every single year to continue to receive the funding as instructed in the Title X of the Public Health Service Act Rogers et al. (2017). One of the services that are required is to ensure that low-income populations are prioritized by the clinics. The submission of data keeps the clinic's patients anonymous, but the data is used to evaluate the performance and quality of care at the clinic. These statistics that are collected are used to determine whether the clinics are providing patients with the spectrum of family planning services that the funding requires. Furthermore, the data are used to provide information for future financial planning as well and to give to members of congress upon inquiry (Rogers et al. 2017).

It is useful because, according to the Department of Health and Human Services, it is the only source of yearly reporting of Title X clinics. The department also ensures that this data is reliable and consistent (Rogers et al. 2017). The data is also useful because it is collected at the national level and broken down by region, which can illustrate potential geographic differences. It includes a wide range of racial groups to see the difference in the usage of Title X clinics across regions by race. However, collecting this data is time-consuming and requires people at the clinics to be able to use multiple computer software.

The data set has been used in a study done by the Altrarum and Urban Institutes. The funding was provided by the United States Department of Health and Human Services. The goal of the researchers was to examine the infrastructure and strategies that are employed by Title X clinics. Additionally, they looked at how well Title X was able to execute billing insurers while keeping their patients protected. They utilized the family planning data to look at whether people are insured as well as how the funding was distributed, and billing practices. They used the data from the Family Planning services and other sources to develop an understanding of these practices and how they inform future health policy. Another study that utilized the Family Planning Annual report was the Guttmacher Institute. They sought to examine whether the Affordable Care Act ACA had impacted the usage of Title X clinics. They also wanted to see whether more people who used Title X clinics services had insurance after the passing of the ACA.

Family planning data has also been used to develop comprehensive policy when it comes to women's contraceptive services. The Office of Population Affairs and the National Quality forum used the statistics from the Family Planning Annual Report to look at who is using contraceptive devices and determine whether these devices are accessible to people of

reproductive age. The performance measures that have been developed in part through the utilization of the Family Planning Annual report will help with ensuring that healthcare professionals are more aligned with women's reproductive goals. Furthermore, utilizing the statistics will help the providers ensure that patients have a wide range of options to fit their contraceptive desires.

Exhibit 11 in the annual Family Planning Reports published the number of Title X users by race and ethnicity across the ten health services regions. It is useful to determine the influence of Trump's gag rule on infant and fetal mortality because we can see the number of women that accessed healthcare through the clinics by race in each region. This will enable us to see whether Trump's gag rule on Title X an impact on women's ability had to access healthcare. Thus, we will be able to compare it to the infant and fetal mortality by race in each of the regions to see if there is a correlation between a mother's ability to access Title X clinics and infant and fetal mortality rates.

We merged data on Title X users from the Family Planning Reports with data from the US Vital Statistics (NVSS 2019). The Vital Statistics System consists of data on infant mortality rates and fetal mortality rates. It has been collected since 1960, and it is one of the oldest collection systems of its kind, according to the CDC. The data collection system was created when both state and federal welfare programs needed reliable statistics to inform their policy decisions CDC. This data is provided from a collaboration between the CDC's National Center for Health Statistics and the Vital Registration system that registers vital life events such as marriages, divorce, birth, death, and fetal death CDC. This legal authority expands across all 50 states and all the United States territories. The National Vital Statistics are useful for economic, social, and health reasons. Some examples include helping inform policies to improve

healthcare, such as the impact of unnecessary cesarean sections and reducing accidental deaths. It is also used to monitor elevated risk infant births and deaths (Li, Binongo, and Kancherla 2019). In addition, the data is accurate and has gone through numerous efforts to make it more efficient. In 2003, there were revisions to the US standards of certificates to increase the uniformity of the data, track indicators, utilization of health care, and outcomes. There are also webinars available for physicians to ensure that they are labeling death certificates correctly and other health certificates like birth and fetal death. To create efficiency, the NVSS helped all states officially establish electronic birth records in 2013.

The national vital statistics system was utilized in a study done by the Maternal and Child Health Journal. In the study, the researchers looked at the rates of pregnancy-related hypertension in Asian American women to examine its relationship with birth parity (Li et al. 2019). They used the National Vital Statistics System's 2014 data to examine Asian American women that had given birth that year. The researchers were able to examine differences in the rates of pregnancy-related hypertension of diverse groups of Asian Americans across different ethnic groups. The researchers aimed for the results of this study to influence treatment policy towards expectant Asian mothers to mitigate rates of pregnancy-related hypertension. A study done by the County Health Rankings examines infant mortality rates across the country in each state and each of their counties (Country Health Rankings 2021). The data has been drawn from the years 2013-2019. The NVSS data provided the county health rankings with the ability to calculate life expectancy and premature death rates. Their research is important because although infant mortality is rare in the United States and oftentimes, country changes are because of random chance, it is important to determine if the infant mortality rates are due to real change. The office of health and disease employed the NVSS data to find avenues to reduce cesarean

sections in first-time mothers (U.S. Department of Health and Human Services. 2020). They looked at the trends of cesarean sections from 2008 to 2017 to see if there were any notable trends in the data. The data in this study will be used to promote policy that could lead to mitigating future cesarean sections in first-time mothers with low-risk pregnancies.

In this study, we used the National Vital Statistics system to look at the fetal and infant mortality trends by race, ethnicity, and health service region. We then used regression analysis to examine the relationship between Title X users and infant/fetal mortality while controlling for year and geographical region.

Results

In the first set of figures, we present the number of Hispanic and Latina Title X users by region, along with their infant and fetal mortality rates during the same period. The numbers show no single trend occurring across all regions. There are increases and decreases across different regions at the same time. Some regions, such as Seattle, experienced a significant decrease in users right before 2015. However, the region of Boston experienced an increase in users right around the same time. The infant mortality rate (IMR) for Hispanic and Latina women had no consistent downward or upward trends across regions. Boston is interesting because of its significant increases and decreases throughout the years. Another region that follows Boston is Kansas City, which matches Boston's second-highest peak of infant mortality of almost 7 per 1000 births. Seattle is another region that displayed a zigzag pattern; however, the higher infant mortality numbers did not reach the peaks of Kansas City or Boston. Denver was one of the regions with a slight overall downward trend. Around 2017, there was an increase in the infant mortality rate. The last set of graphs show fetal mortality rates (FMR). The New York region started off with the highest levels of FMR but decreased significantly around 2007,

to increase again around 2010, and continue to follow this pattern. The Denver region is like the New York region in that there were many significant fluctuations throughout the years. The Atlanta FMR is one of the only consistently stable regions alongside the San Francisco region.

Figure 1. Title X users and infant and fetal mortality rates for Hispanic/Latina women across years by region

The second set of graphs show the trends in Title X users with infant and fetal mortality rates during the same period among non-Hispanic Black women. The number of Black users across regions had relatively steady trends when compared to other racial graphs. The regions with the most notable changes include the decrease in the Philadelphia, Atlanta, and Kansas City regions. San Francisco experienced a decrease in users around 2011 but then shortly increased again around 2013 and leveled out. The infant mortality rate for Non-Hispanic Black women had some consistent downward trends, with both New York and San Francisco showing some slight increases that were followed by decreases. Philadelphia consistently had one of the highest infant mortality rates. The Denver region, on the other hand, had significant increases and decreases throughout the years. The Seattle region is also interesting because it had a sharp decrease around 2007 but started increasing significantly until 2013, only to level off. Then in 2015, the Seattle region had a sharp drop only to be immediately followed by a rise in infant mortality rates. Fetal mortality rates experienced the most drastic increases, and decreases occur in the Denver region for non-Hispanic Black women. The Denver region went from the lowest fetal mortality rate of around 5 per 1,000 births in 2007 to the highest, around 12 per 1,000 births in 2017. The Kansas City region experienced some increases and decreases, but not to the extent of the Denver region. The Dallas region and Atlanta region look to be the most consistent of the regions.

Figure 2. Title X users and infant and fetal mortality rates for non-Hispanic Black women across years by region

The third set of graphs show the trends in Title X users with infant and fetal mortality rates during the same period among non-Hispanic White women. The number of White users across regions had relatively steady downward trends across all regions. San Francisco experienced an increase in Title X users in 2010 but afterward continued the downward trend. In the Philadelphia region overall, there was a downward trend; however, from 2014-2015, there was a more notable decrease to be followed by an increase in the number of users in 2016. In 2015, there was a slight increase in the Boston and New York regions. The infant mortality rate for non-Hispanic white women had some regions (Dallas and Atlanta) that stayed relatively consistent throughout the years at an infant mortality rate of almost 6 per 1,000 live births. The San Francisco region consistently had the lowest rates of infant mortality for non-Hispanic white women, with the rate only hitting 3 per 1,000 births three times. The Seattle region was interesting because of its zigzag patterns throughout the graph. Fetal mortality rates had the most significant increases and decreases for non-Hispanic white women. The Boston region maintained a significantly lower fetal mortality rate than the other nine regions, despite having its own slight increases and decreases as well. The most stable region was Dallas, with a relatively consistent fetal mortality rate of about 4.2 fetal deaths per 1000. Atlanta had a relatively high rate of fetal mortality throughout the years, with a peak of almost six fetal deaths in 2014. The region with the most significant increases and decreases was New York, with a peak of over six fetal deaths per 1000. The Seattle region had a zigzag pattern, but its peak never reached the New York or Atlanta regions.

Figure 3. Title X users and infant and fetal mortality rates for non-Hispanic white women across years by region

The fourth set of graphs demonstrates the rates of Title X users, the IMR, and FMR in Asian American and Pacific Islander women. The rate of Title X users for Asian American and Pacific Islanders remained consistently lower throughout the years in both Dallas and Chicago. The San Francisco region with the highest users overall, with a peak of almost 80 per 1000 users around 2008, and then began to decrease consistently. There was a significant decrease in users in the Atlanta region around 2009 that stabilized around 2010 and remained consistent. The Denver region experienced some slight increases around 3013, but that was followed by a slight decrease shortly after. The infant mortality rate for Asian American and Pacific Islander women had many different trends occurring. The Denver region had the most significant zigzag pattern with peaks of almost eight infant deaths per 1000 births in 2010. Another region with significant zigzags was the Atlanta region; however, its peaks did not reach those of the Denver region. The Boston region had a consistent decreasing pattern up until 2013, followed by an increase in 2016, to then begin decreasing again. The fetal mortality rate for Asian American and Pacific Islander women also had significant zigzag patterns across regions. The Seattle region had a zigzag pattern, with the highest peak in 2011 of almost eight fetal deaths per 1000. The Kansas City and Denver regions also had a zigzag pattern, but their peaks did not reach the level of the Seattle region. The San Francisco fetal mortality rate remained the most consistent throughout the years.

Figure 4. Title X users and infant and fetal mortality rates for non-Hispanic Asian American and Pacific Islanders across years by region.

Figure 5 shows the relationship between infant mortality rates and Title X users in a scatter plot. Each color represents a different race/ethnic group. Non-Hispanic white women,

Asian American/Pacific Islanders, and Latinas all had similar infant mortality rates despite differences in the number of Title X users. Latina women had the most users but had slightly higher infant mortality rates than non-Hispanic white women. The group with the least amount of Title X users was Asian American/Pacific Islanders. Non-Hispanic black women had the highest infant mortality rate across all region-years with varying Title X users.

Figure 5. Relationships between infant mortality rates and Title X users differentiated by race and ethnicity

Race/ethnic patterns of fetal mortality rates resembled infant mortality rates. Non-Hispanic white women had the lowest fetal mortality rate on average, and their use of Title X clinics was less than the Latina and Non-Hispanic Black women. Asian American/Pacific Islanders also had low fetal mortality rates, including some of the lowest rates recorded, even though they utilized the clinics the least out of all the racial groups. However, they did have some years in areas whose fetal mortality rates reached around 7 per 1,000 births. Hispanic or Latina women once again had the highest usage of the clinics, yet their fetal mortality rates were remarkably like both non-Hispanic white women and Asian American/Pacific Islanders. However, Hispanic or Latina women also had some fetal mortality rates that neared 7 per 1,000 births as well. Once again, non-Hispanic black women had the highest rates of fetal mortality regardless of the rate of the Title X users.

Figure 6. Relationships between fetal mortality rates and Title X users differentiated by race and ethnicity

The last set of results show multivariate regressions that examined the relationship between the rate of Title X users (users per 1,000 women aged 15-44) and infant and fetal mortality rates while controlling for race/ethnicity, year, and health service region.

Table 1. Multivariate regression of infant mortality rates over the rate of Title X users among women 15-44

Table 1 presents the regression results that examined infant mortality rates. The F test shows that the variables included in the regression had a statistically significant explanatory power; the p-value for the F test is less than 0.001. The R-squared value is .6418 in this regression which indicates that about 64% of the variation in infant mortality rate is explained by the number of Title X users, mothers' race/ethnicity, region, and year. There is a statistically significant relationship (p-value < 0.05) between the number of Title X users and the infant mortality rate. As the rate of Title X users per 1,000 women increased, the infant mortality rate decreased. The regressions also show large and statistically significant differences in infant mortality rates between race and ethnic groups which confirmed the patterns in the scatter plots. Infant mortality among Latinas was higher than non-Hispanic whites by about 1 per 1,000 births even after controlling for year and region. The difference is particularly large between non-Hispanic white and non-Hispanic Black women. The infant mortality rate is about 6 per 1,000 births higher among Black women compared to non-Hispanic white women, and the difference is statistically significant with a p-value of less than 0.001. Infant mortality rates were lower among Asian Americans and Pacific Islanders than among non-Hispanic white women by about 0.8 deaths per 1,000 births, and the difference was also statistically significant. The coefficients related to health service regions also show statistically significant differences. Compared to Region 1 (Boston), which includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode

Island, and Vermont, infant mortality rates were higher in most other parts of the country. Regions in the Southeast (Atlanta), Midwest (Chicago), and the mountain west (Denver) had notably higher infant mortality rates. The infant mortality rate appears to be decreasing over time. Compared to the first year in the dataset (2007), all other years have slightly lower infant mortality rates.

Table 2. Multivariate regression of fetal mortality rates over the rate of Title X users among women 15-44

The regression results for fetal mortality rates (Table 2) are largely similar to the results for infant mortality rates but with notable differences. The F test indicates that the coefficients in this regression have explanatory power in describing the patterns in fetal mortality rates. The R squared value is similarly high, and almost 60 percent of the variation is explained by Title X user rate, race/ethnicity, year, and region. The rate of Title X users was not correlated with fetal mortality rates when controlling for other variables. Race/ethnic differences in fetal mortality rates mirror the race/ethnic differences in infant mortality rates; Latinas and non-Hispanic Black women experience fetal mortality more often than non-Hispanic white women. Asian Americans and Pacific Islanders have a lower fetal mortality rate than white women, but the difference is not statistically significant at 0.05 level. There are also regional differences. The Atlanta region (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee) has the highest fetal mortality rate, and the difference between the Atlanta and Boston regions is statistically significant. Unlike infant mortality rates, fetal mortality rates appear to have remained relatively stable over time.

Discussion

Previous studies have shown that race and ethnicity can impact infant and fetal mortality rates. Additionally, there has been evidence demonstrating that Title X can improve infant and fetal health outcomes by lowering the rate of unintended pregnancies (Vamos et al. 2011). However, prior studies have not examined how the number of Title X users impacted fetal and infant mortality in the United States. This study tested using multivariate regression analyses whether there is a connection between the rate of Title X Users and both infant and fetal mortality across races. The rate of Title X users by race did have an impact on infant mortality rates but not on fetal mortality rates.

The findings in this study align with prior research. The inability to access Title X clinics disproportionately impacted women of color, which impairs both infant and fetal outcomes. This occurs because when unwanted or unexpected pregnancies occur, they are less likely to start prenatal care right away, which can have negative effects on the health outcomes of the infant and fetal health (Guttmacher Institute 2019). Historically, women from marginalized groups have had lower access to prenatal care, which can negatively impact infant and fetal mortality rates, which can indicate why infant and fetal mortality rates were higher in non-Hispanic black and Latina women (Fowler et al. 2019).

Furthermore, the reduction of Title X clinics that provide prenatal care, among other vital health care for women, was closed as a result of Trump's gag rule on Title X, which aligns with the higher rates of maternal and infant mortality in women of color. In more than half of the states, clinics withdrew by over 25%, which might have contributed to the high rates of infant and fetal mortality in non-Hispanic Black and Latina women.

The first limitation of the study is that we do not know the exact cause of infant and fetal deaths. Many fetal deaths are caused by unspecified cardiovascular, nervous, and other related organ failures (Ko et al. 2017). Additionally, both birth defects and the prior health of the mother were not considered in the study. Since the study is observational, it cannot determine causality.

Additionally, it is also important to consider what the effects of increased funding for Title X might look like. The Guttmacher report demonstrates that doubling the funding of Title X would result in the ability to help about 1.4 million more patients. The reduction in unintended births would also save the government about 794 million dollars because most of them come from Medicaid patients (Dreweke 2006). To really demonstrate how much money Title X saves the government, according to the National Women's Law Center, for every one dollar that is put into the Title X program, it saves Medicaid $3.80 (Dreweke 2006). Thus, Title X can be a potential aid to the government program Medicaid. In addition, the increasing number of women needing subsidized care, even a drastic increase in the Medicaid program will not be enough. To reach the women who need subsidized care, expanding Title X could be a potential mechanism to help alongside Medicaid.

Conclusion

As funding changes for Title X clinics are subject to change every four years due to potential new presidential administrations, it is important to understand how these changes impact both infant and fetal mortality rates, especially in women of color. By examining the usage of Title X clinics by women of different races across regions, this study established a correlation between Title X clinic usage and infant mortality rates. The relationship was less clear between Title X users and fetal mortality rates.

Future research into infant and fetal mortality based on the number of Title X users should focus on establishing a clearer picture of how racial inequities impacts infant and fetal mortality rates. It would be helpful to identify some of the main causes of infant and fetal mortality among marginalized groups to create policies to mitigate the disparity. Additional research should also investigate how Title X can be used to track infant and fetal mortality rates. A potential way that this can be done would be to not only monitor the Title X family planning users but to work in conjunction with the National Vital Statistics Team to provide more information on how Title X is impacting Infant and fetal deaths by race and ethnicity. This would be helpful because through hopeful policy changes that increase the number of users of Title X, the quality of care could also be measured.

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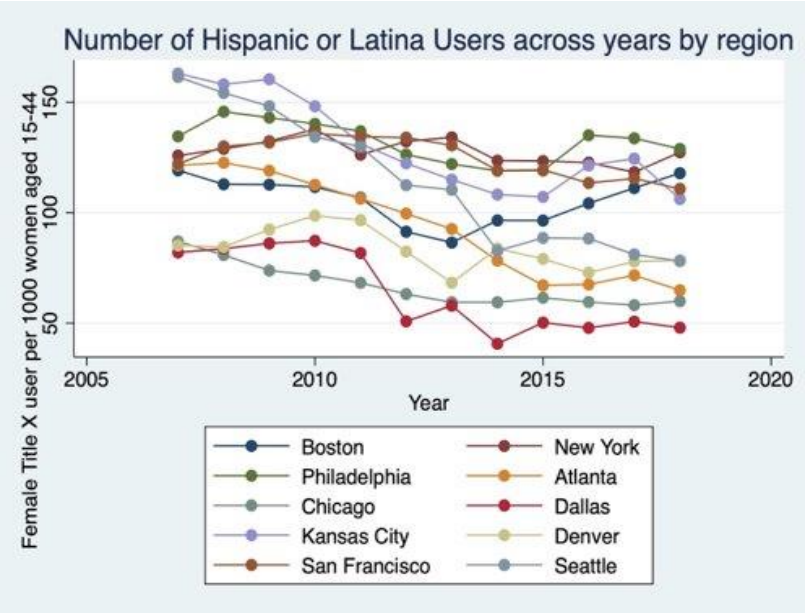
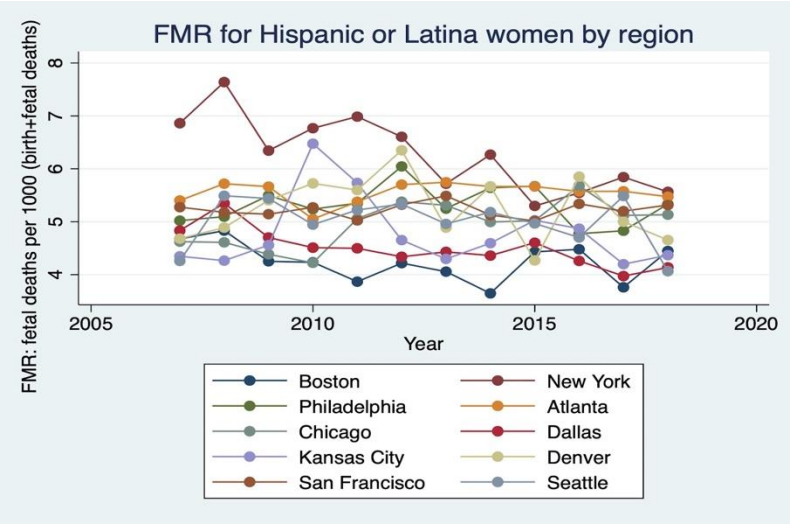
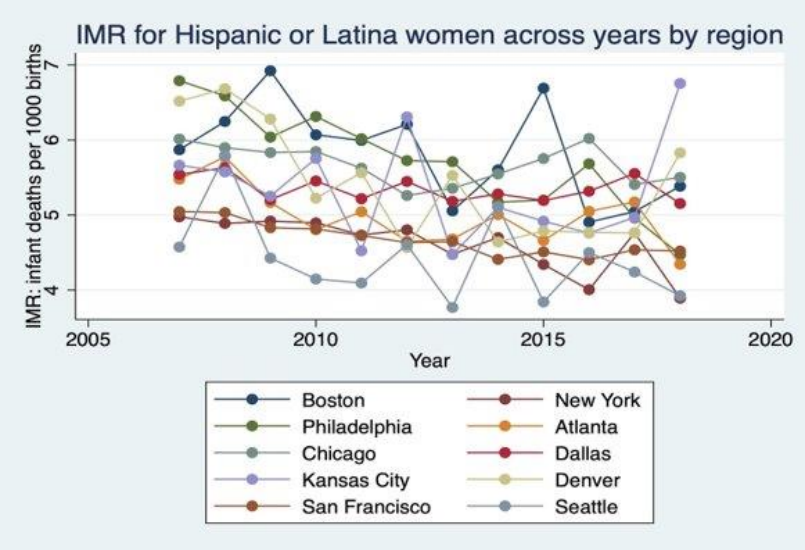
Figure 1. Title X users and infant and fetal mortality rates for Hispanic/Latina women across years by region.




FMR for Hispanic or Latina women by region
FMR: fetal deaths per 1000 (birth+fetal deaths)
4
5
6
7
8
2005
2010
2015
2020
Year
Boston
New York
Philadelphia
Atlanta
Chicago
Dallas
Kansas City
Denver
San Francisco
Seattle


IMR for Hispanic or Latina women across years by region
IMR: infant deaths per 1000 births
4
5
6
7
2005
2010
2015
2020
Year
Boston
New York
Philadelphia
Atlanta
Chicago
Dallas
Kansas City
Denver
San Francisco
Seattle

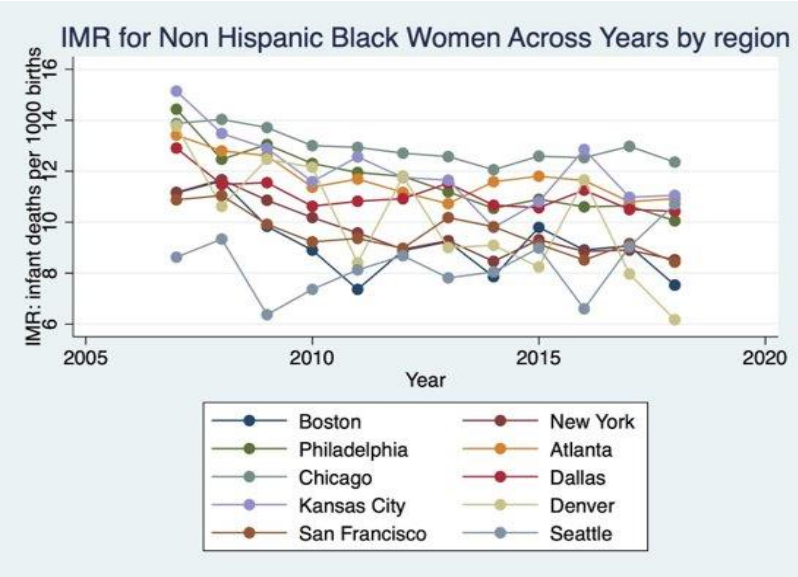
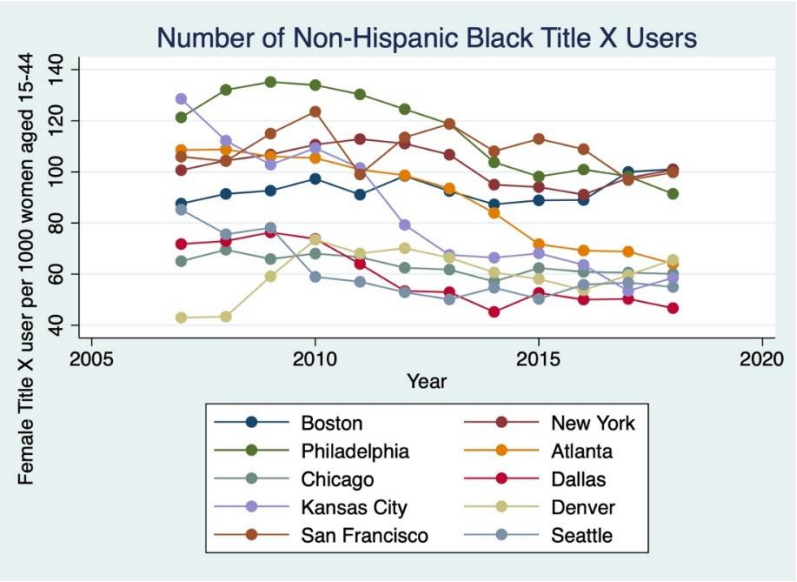
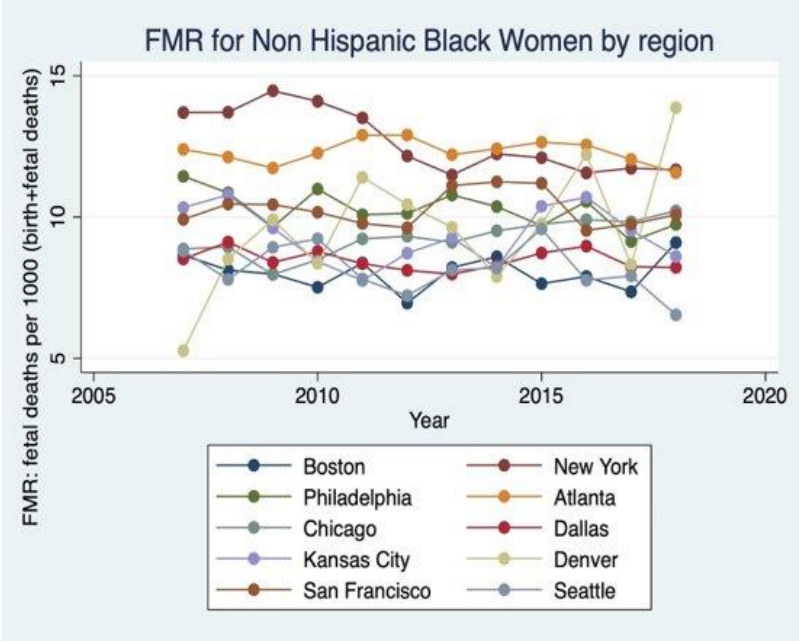
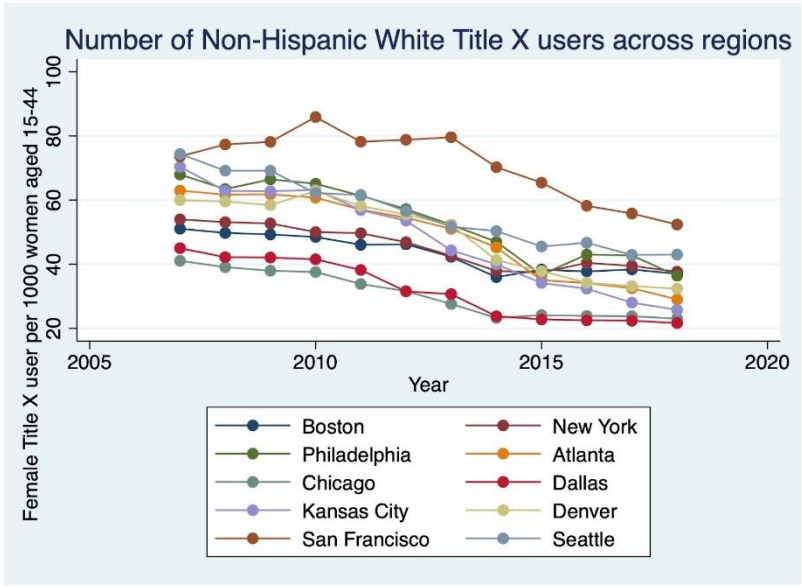
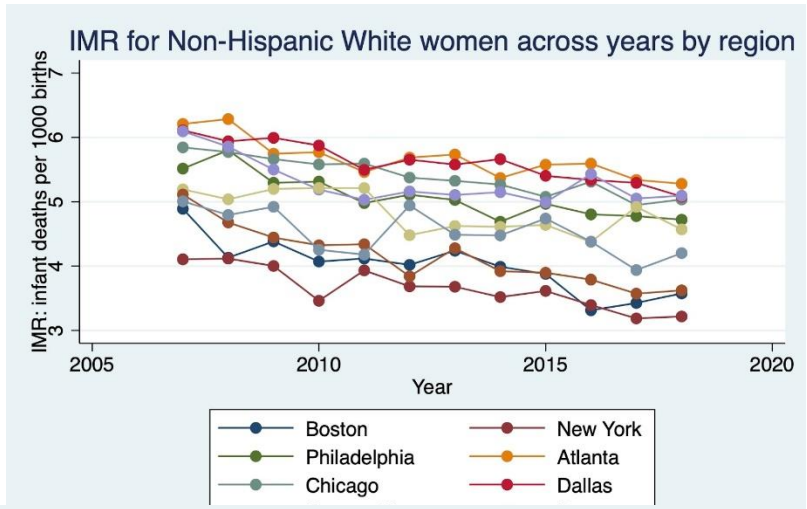


Figure 2. Title X users and infant and fetal mortality rates for non-Hispanic Black women across years by region


Number of Non-Hispanic Black Title X Users
Female Title X user per 1000 women aged 15-44
40
60
80
100
120
140
2005
2010
2015
2020
Year
Boston
Philadelphia
Chicago
Kansas City
San Francisco
New York
Atlanta
Dallas
Denver
Seattle


FMR for Non Hispanic Black Women by region
FMR: fetal deaths per 1000 (birth+fetal deaths)
5
10
15
2005
2010
2015
2020
Year
Boston
Philadelphia
Chicago
Kansas City
San Francisco
New York
Atlanta
Dallas
Denver
Seattle





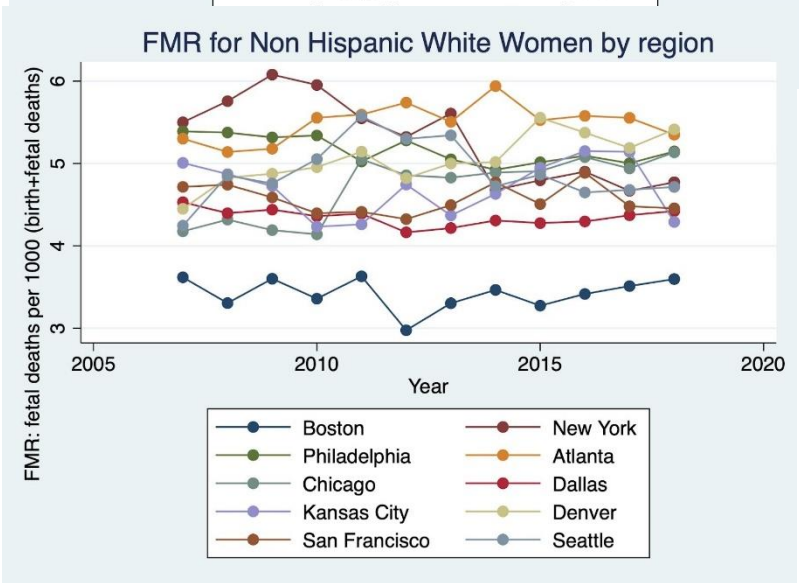


Figure 3. Title X users and infant and fetal mortality rates for non-Hispanic white women across years by region

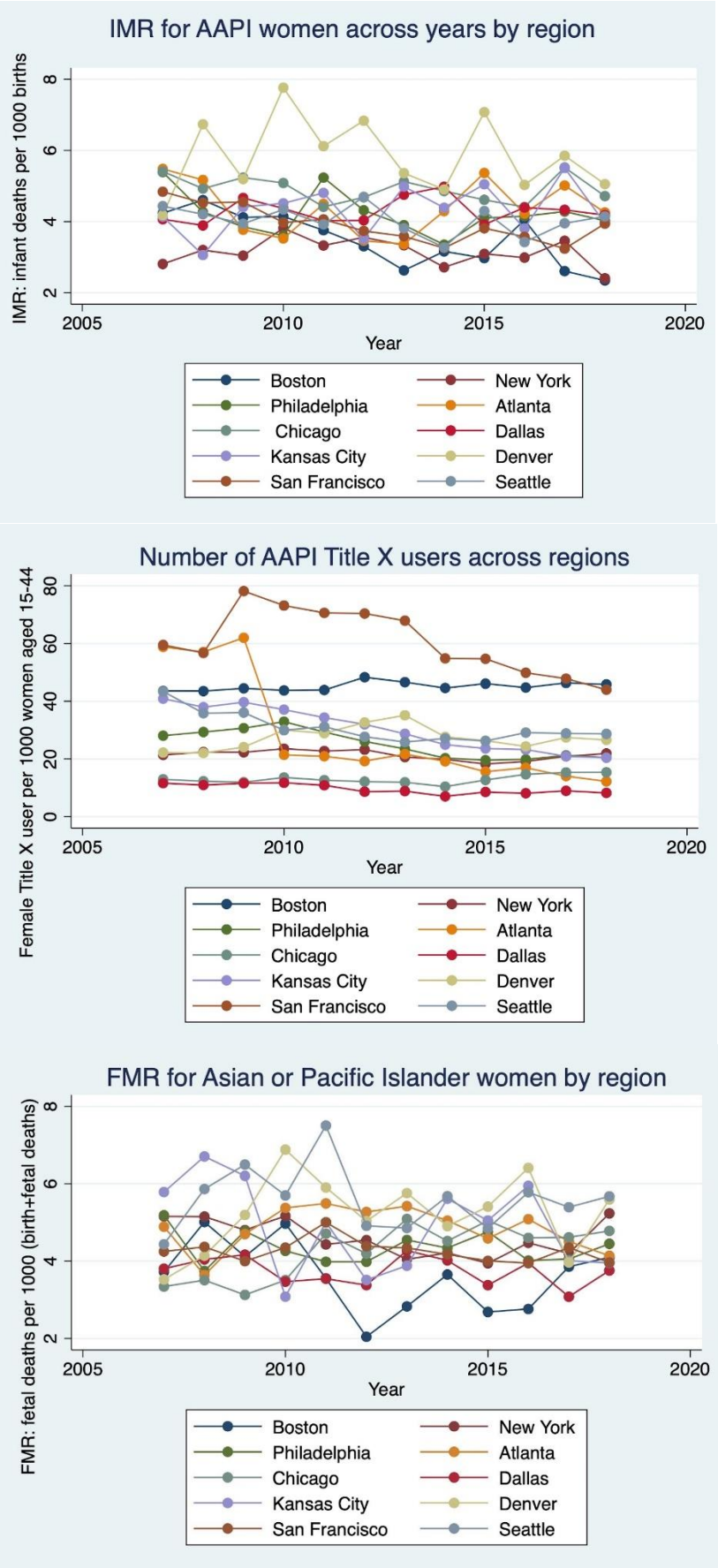


Figure 4. Title X users and infant and fetal mortality rates for non-Hispanic Asian American and Pacific Islanders across years by region

Figure 5. Relationships between infant mortality rates and Title X users differentiated by race and ethnicity

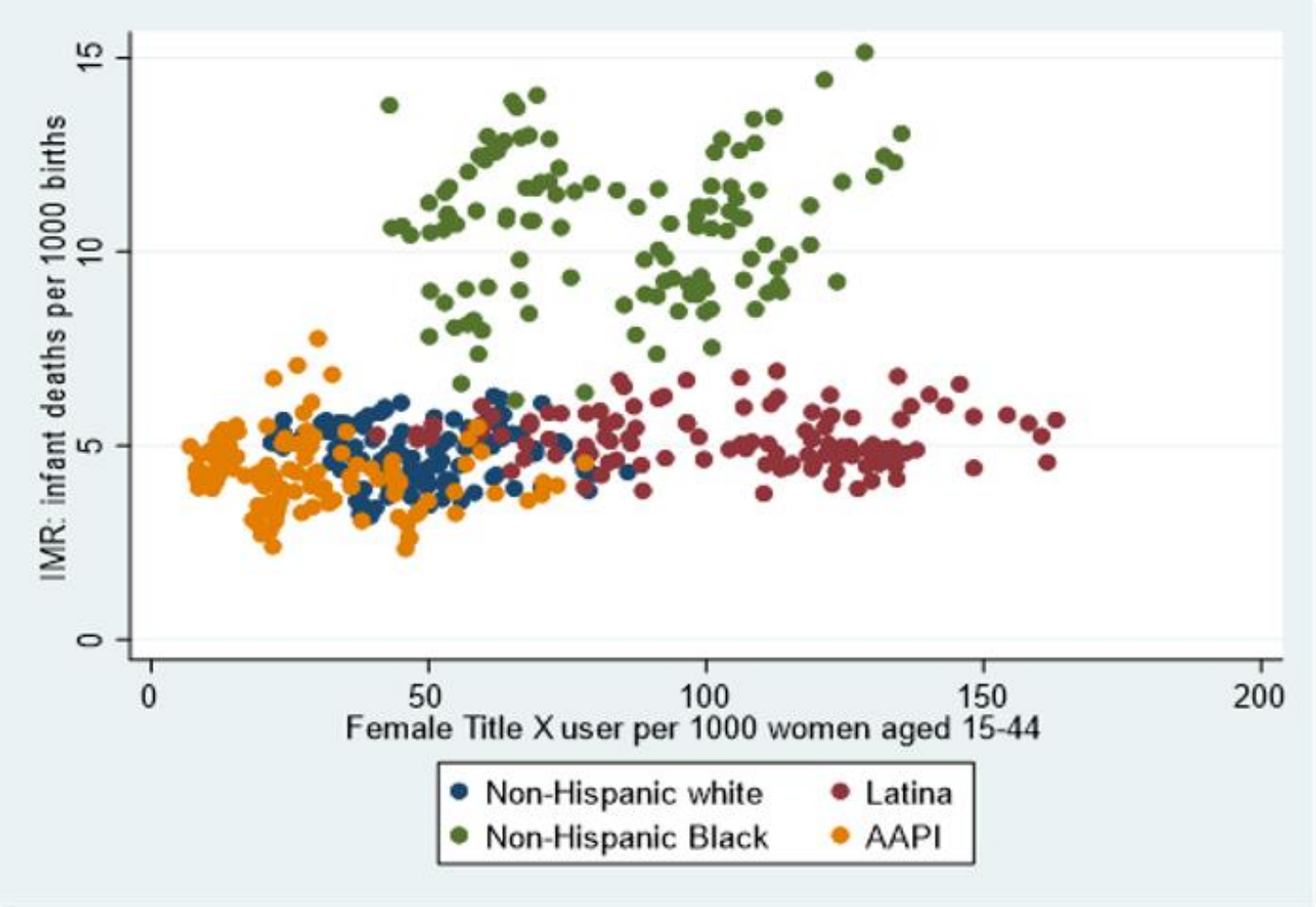


Figure 6. Relationships between fetal mortality rates and Title X users differentiated by race and ethnicity

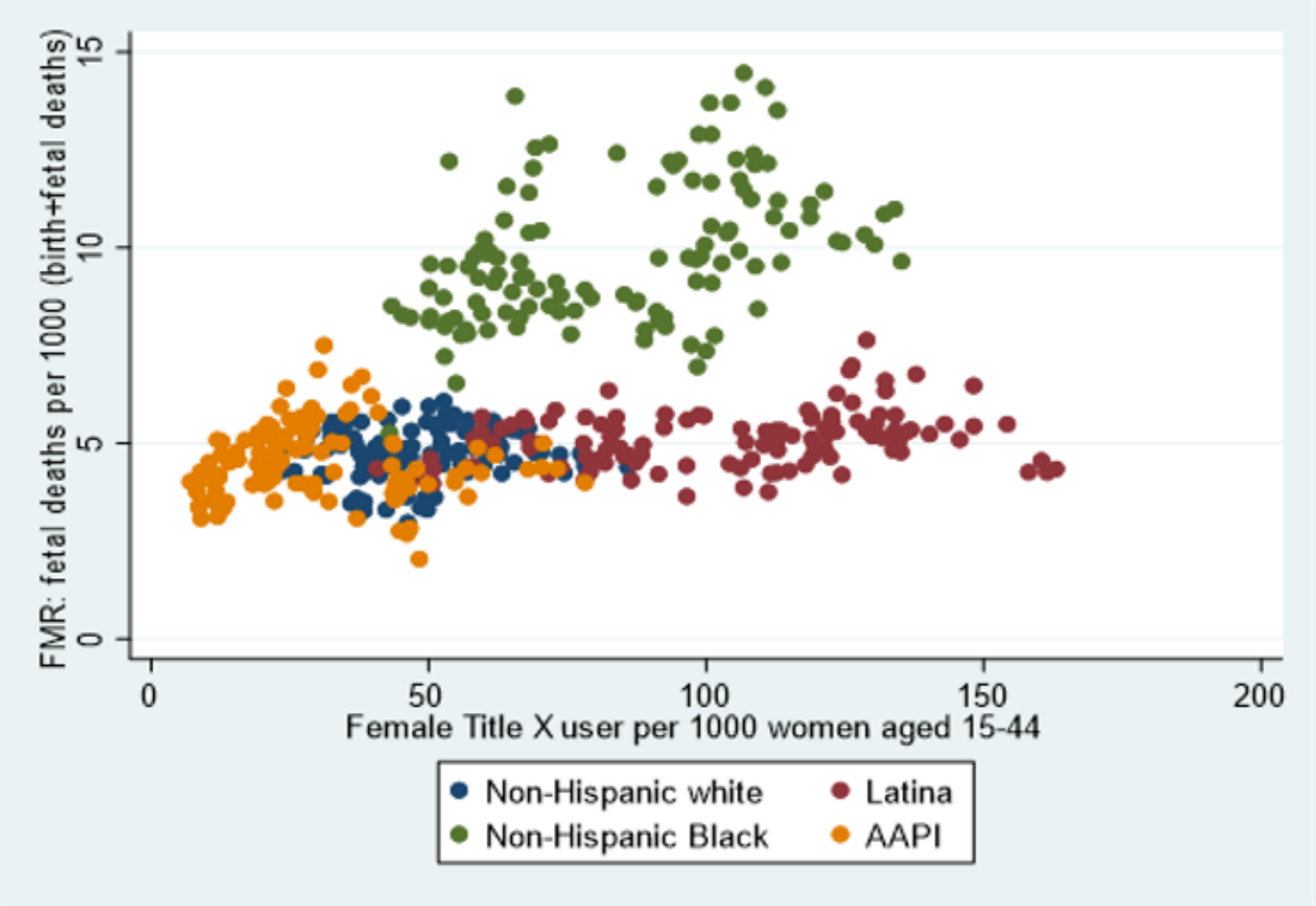


Table 1. Multivariate regression of infant mortality rates over rate of Title X users among women 15-44

```
. regress imr xuser_rate i.raceth i.hhs i.year

      Source |       SS           df       MS      Number of obs   =       600
-------------+----------------------------------   F(25, 574)      =     41.14
       Model |  4029.02155        25  161.160862   Prob > F        =    0.0000
    Residual |  2248.53506       574  3.91730847   R-squared       =    0.6418
-------------+----------------------------------   Adj R-squared   =    0.6262
       Total |  6277.55661       599  10.4800611   Root MSE        =    1.9792

------------------------------------------------------------------------------
         imr | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
  xuser_rate |  -.0110574   .0042672    -2.59   0.010    -.0194385   -.0026762
             |
      raceth |
Hispanic or Latina  |   1.002896   .3514051     2.85   0.004     .3126992    1.693092
Non-Hispanic Black  |   6.200975   .2983438    20.78   0.000     5.614996    6.786954
Asian or Pacific Islander  |  -.7727608    .267511    -2.89   0.004    -1.298181   -.2473409
AIAN  |    -.7727608   .2555185     3.74   0.000     .4528818
1.456612
             |
         hhs |
New York: NJ NY  |  -.2462561   .3617246    -0.68   0.496    -.9567214    .4642091
Philadelphia: DE DC MD PA VA WV  |   1.059246   .3717541     2.85   0.005     .3290821    1.789411
Atlanta: AL FL GA KY MS NC SC TN  |   2.788674   .3630219     7.68   0.000     2.075661    3.501688
Chicago: IL IN MI MN OH WI  |   2.802107   .3786018     7.40   0.000     2.058493    3.545721
Dallas: AR LA NM OK TX  |   1.937222   .3797221     5.10   0.000     1.191407    2.683036
Kansas City: IA KS MO NE  |   1.699881   .3615328     4.70   0.000     .9897925     2.40997
Denver: CO MO ND SD UT WY  |   2.579964   .3683683     7.00   0.000      1.85645    3.303478
San Francisco: AZ CA HI NV  |    1.78622   .3733176     4.78   0.000     1.052985    2.519455
Seattle: AK ID OR WA  |   1.546308   .3628023     4.26   0.000     .8337255     2.25889
             |
        year |
2008  |  -.2156708   .3958791    -0.54   0.586    -.9932191    .5618776
2009  |  -.5892113    .395845    -1.49   0.137    -1.366693      .18827
2010  |  -.7890527   .3958466    -1.99   0.047    -1.566537   -.0115682
2011  |   -1.04864   .3962739    -2.65   0.008    -1.826964   -.2703166
2012  |  -.9915012   .3971494    -2.50   0.013    -1.771545   -.2114578
2013  |  -1.273547   .3990163    -3.19   0.001    -2.057257   -.4898365
2014  |  -1.523908   .4019036    -3.79   0.000    -2.313289   -.7345268
2015  |  -1.055043   .4019927    -2.62   0.009    -1.844599    -.265487
2016  |  -1.102136   .4005436    -2.75   0.006    -1.888846   -.3154265
2017  |  -1.081199   .4004581    -2.70   0.007    -1.867741    -.294657
2018  |  -1.531424   .4014646    -3.81   0.000    -2.319943   -.7429051
             |
       _cons |    4.69196    .478067     9.81   0.000     3.752986    5.630934
------------------------------------------------------------------------------
```

Table 2. Multivariate regression of fetal mortality rates over rate of Title X users among women 15-44

```
. regress fmr xuser_rate i.raceth i.hhs i.year

      Source |       SS           df       MS      Number of obs   =       600
-------------+----------------------------------   F(25, 574)      =     34.03
       Model |  2980.95905        25  119.238362   Prob > F        =    0.0000
    Residual |  2011.33569       574  3.50406915   R-squared       =    0.5971
-------------+----------------------------------   Adj R-squared   =    0.5796
       Total |  4992.29474       599  8.33438187   Root MSE        =    1.8719

------------------------------------------------------------------------------
                         fmr | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-----------------------------+------------------------------------------------
                  xuser_rate |  -.0070257   .0040358    -1.74   0.082    -.0149525    .0009011
                             |
                      raceth |
          Hispanic or Latina |   .7437634   .3323537     2.24   0.026     .0909857    1.396541
          Non-Hispanic Black |   5.339078   .2821691    18.92   0.000     4.784869    5.893288
  Asian or Pacific Islander |  -.3566819    .253008    -1.41   0.159    -.8536162    .1402524
                       AIAN |  -.3177655   .2416656    -1.31   0.189    -.7924222    .1568911
                             |
                        hhs |
            New York: NJ NY |   1.945885   .3421137     5.69   0.000     1.273937    2.617832
 Philadelphia: DE DC MD PA VA WV |   1.932661   .3515995     5.50   0.000     1.242082    2.623239
Atlanta: AL FL GA KY MS NC SC TN |   3.010643   .3433407     8.77   0.000     2.336286    3.685001
  Chicago: IL IN MI MN OH WI |   1.955267    .358076     5.46   0.000     1.251968    2.658566
      Dallas: AR LA NM OK TX |   1.066367   .3591354     2.97   0.003     .3609871    1.771747
    Kansas City: IA KS MO NE |   1.557321   .3419323     4.55   0.000     .8857303    2.228913
   Denver: CO MO ND SD UT WY |   2.487987   .3483972     7.14   0.000     1.803698    3.172276
  San Francisco: AZ CA HI NV |    2.50481   .3530782     7.09   0.000     1.811328    3.198293
        Seattle: AK ID OR WA |   2.082027    .343133     6.07   0.000     1.408077    2.755976
                             |
                        year |
                        2008 |   .5190498   .3744166     1.39   0.166    -.2163438    1.254443
                        2009 |   .0515064   .3743843     0.14   0.891    -.6838238    .7868367
                        2010 |   .0577545   .3743858     0.15   0.877    -.6775787    .7930876
                        2011 |   .5261078   .3747899     1.40   0.161    -.2100192    1.262235
                        2012 |   .2377471    .375618     0.63   0.527    -.5000063    .9755005
                        2013 |   -.026711   .3773837    -0.07   0.944    -.7679323    .7145103
                        2014 |   .0509618   .3801144     0.13   0.893     -.695623    .7975466
                        2015 |   .3487211   .3801987     0.92   0.359    -.3980292    1.095471
                        2016 |    .443324   .3788282     1.17   0.242    -.3007344    1.187382
                        2017 |   .0317532   .3787472     0.08   0.933    -.7121463    .7756527
                        2018 |  -.0325979   .3796993    -0.09   0.932    -.7783673    .7131714
                             |
                       _cons |   3.061732   .4521487     6.77   0.000     2.173665      3.9498
------------------------------------------------------------------------------
```