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Hypertension Disorders and the 287(g) Policy in Cobb and Gwinnett Counties

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By

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B.S.
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Abstract

Hypertension Disorders and the 287(g) Policy in Cobb and Gwinnett Counties, Georgia, US

By Eva Portillo Molina

Background: Immigration policies shape diverse contexts among immigrant groups in the United States (US), often placing undocumented individuals at a heightened risk for identification and deportation. Enforcement policies such as the 287(g) program exacerbate health inequities, which often manifest across several life stages, including pregnancy – a period particularly susceptible to sociopolitical stressors. Hispanic/Latine immigrant populations face disproportionate barriers to healthcare and heightened exposure to stress due to immigration enforcement. These factors can increase the risk of hypertensive disorders of pregnancy (HDP), a group of conditions with serious consequences for both maternal and fetal outcomes.

Methods: Using restricted use US natality data from 2016 to 2022, we investigated changes in HDP among Hispanic/Latine immigrant individuals living in the state of Georgia, following the removal of 287(g) immigration policy in Cobb and Gwinnett counties. We employed a difference in difference approach. Parallel trends tests were first conducted to help ensure causal assumptions were met.

Results: A total of 45,788 records were reviewed across the study period. During the pre- and post-policy removal periods, 2,038 Hispanic/Latine individuals experienced hypertension during pregnancy. Gestational hypertension was the most prevalent diagnosis across all groups and time periods (3.2% to 4.4% in control counties and 3.1%, to 5.4% in treatment counties), followed by chronic hypertension (0.7% to 0.9%, and 0.7% to 0.9%) and eclampsia (0.2% to 0.3% and 0.1% to 0.1%). There was an overall increase in the prevalence of HDP from the pre- to post-policy removal period in both the treatment (3.9% to 6.4%) and control (4.1% to 5.6 %) counties. The DID analysis estimated a 0.5 percentage point increase in HDP incidence among Latine pregnant individuals in Cobb and Gwinnett counties post-policy repeal compared to control counties' trends (0.5 %, 95% CI: -0.7, 1.7). This estimate was not statistically significant.

Conclusions: Despite the removal of immigration policy enforcement through 287(g) agreements in Cobb and Gwinnett counties, the incidence of pregnancy-related hypertension disorders among Hispanic/Latine individuals compared to other Georgia counties was largely unaffected. Future research should examine alternative mechanisms through which reduction in or removal of immigration enforcement may influence pregnancy related outcomes in Hispanic/Latine communities.

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Chapter I

Background

Immigration Policy as a Determinant of Health

Federal, state and local immigration policies shape the lives of immigrants across many domains [1-4]. These policies explicitly restrict foreigners from or include them into United States (US) political and social institutions, further defining or blurring the boundaries between them and US born Americans. They determine access to publicly funded health services (e.g. health insurance or federally funded health care services provisions), the availability of socio-economic resources (e.g. access to driver's licenses and publicly funded postsecondary education benefits) and heighten the risk of identification and deportation of undocumented immigrants [5-8]. Sanctuary city policies and Deferred Action for Childhood Arrivals (DACA) are good illustrations of inclusive policies. Sanctuary policies broadly limit local enforcement cooperation with federal immigration authorities. DACA protects eligible immigrant youth from deportation and provides renewable work authorization biannually. While these inclusive policies exist, notable examples of exclusionary policies include The Personal Responsibility and Work Reconciliation Act of 1996 (PRWORA), qualifying immigrants' eligibility to accessing federally funded health and socio-economic resources. Section 287(g) of the Illegal Immigration Reform and Immigrant Responsibility Act also grants state and local

law enforcement the opportunity to enforce federal immigration laws. While the federal government enables such legislation, state, county and municipal (city) governments also implement policies that, although not explicitly based on race, often disproportionately impact specific groups, like Latine populations - given the higher proportion of non-citizens within this group – and consequently induces profiling based on ethnicity, language, and skin-color [2, 9].

Exclusionary immigration policies contribute to significant health inequities in immigrant communities, reinforcing immigration policy as a critical yet often overlooked health determinant [3]. Anti-immigration rhetoric and policies have important implications for health outcomes – as several studies reveal their adverse impacts on mental [6, 10] and physical health [11] and overall well-being [11, 12]. Worsening poverty, poor health and wellbeing seeking behaviors [10, 13], limited access to health care, housing and other public services, and increased fear [14] and mistrust of law enforcement are all consequences of these policies. As suggested by social stress theory, repeated exposure to chronic stressors (e.g., exclusionary policies) can trigger psychological and stress responses leading to poor health outcomes [5, 6]. Public benefit ineligibilities and immigration fears also contribute to healthcare underutilization patterns [15], which prevent earlier detection and treatment of health conditions [10, 16].

Moreover, these negative health effects extend beyond immigrants themselves. Among the diversity of migrants in the US, Hispanic/Latine populations are a substantial portion of the immigrant population affected by

restrictive policies. This demographic comprises the largest share of undocumented immigrants [2], with Mexicans and Central and South Americans representing 73% of total residing unauthorized immigrants in 2017 – two thirds of whom have been in the US for more than 10 years [6] - and a slightly lower 66% in 2021 [5, 17-19]. Immigration policy vulnerability is often felt throughout Hispanic/Latine, and other immigrant communities, irrespective of US nativity (i.e., whether individuals were born in the US) among family and friends [9, 20]. These broader health inequities highlight the extensive consequences of immigration policies that reach several life stages, such as pregnancy – a period particularly susceptible to sociopolitical stressors.

Concern in Pregnant Immigrant Women

Pregnancy is a critical and particularly vulnerable period for the health of both mothers and babies. Immigration policies can affect perinatal health by influencing access to care and increasing stress during this time. Neuroendocrine processes during pregnancy are significantly altered under distressed conditions, affecting hormone levels that aid in stress management [21]. Studies have shown that intensified anti-immigrant policies and enforcement, as well as presidential elections, such as the 2016 US Presidential election [22] have been linked to adverse birth outcomes (e.g. preterm and previable births) [22, 23] among both US- and foreign-born Latine mothers, and psychological distress among early-pregnancy Latine women [20]. Migration experiences and deportation fears have also been shown to heighten immigrant Latine's risk of depression and anxiety pre- and postpartum [24].

Threats of bill passages, such as that of Arizona's SB1070 bill, found harmful effects on birthweight among Latina immigrant women [9], which were explained through the mother's physiological, neuroendocrine and immune stress responses. Given these findings, it is evident that the psychological and physiological impacts of immigration policy-induced stress during pregnancy are substantial.

In addition to stress, immigration policies have also been linked to poor prenatal care utilization [8, 16, 25, 26] - likely resulting from lack of healthcare access or fear of being caught. One mixed methods study explored the impact of new immigration enforcement policies on prenatal service utilization of Hispanic/Latine mothers through difference-in-difference methods and focus groups. This study found that participants reported profound mistrust and avoidance of health services – a level so significant that they were sacrificing their own health and that of their family members (Rhodes et al., 2015). When assessing differences in usage among these Hispanic/Latina mothers [in non-matched individual level data], greater levels of delayed and inadequate prenatal care were found compared to Non-Hispanic/Latina mothers [25]. These findings align with other studies that observed this population not seeking prenatal care at all as a result of immigration policies [26]. Studies early in the 20th century have recognized the power absence of documentation and the fear associated with it have on obtaining necessary care [15]. This research continues to stress the relevance and prominence of such deterrent on achieving improved health outcomes among Hispanic/Latine populations, especially among undocumented communities.

Importance of Hypertensive Disorders of Pregnancy (HDP) for Maternal Health

Burden Overall and Among Latine Immigrants

Hypertensive disorders of pregnancy (HDP) refer to conditions characterized by elevated blood pressure before, during, and after pregnancy. These conditions are commonly categorized into three or four categories that include gestational hypertension, preeclampsia and eclampsia, and chronic hypertension [27].

HDP affects approximately 6-8% of all pregnancies globally and its association with high maternal and infant morbidity [28] underscore the importance of addressing this public health issue in vulnerable populations. Individuals with a history of hypertension, diabetes, obesity, and other cardiovascular conditions, those with a risk of development of comorbidities with previously mentioned conditions, and individuals of increasing age have a greater risk of hypertension during pregnancy [29]. Other predisposing factors for HDP include having a family history of HDP, being of lower socioeconomic status (SES) or being of Black or Hispanic race/ethnicity [29].

Among US Hispanic/Latine populations specifically, HDP prevalence ranges between 4.5% and 9.1% [28] – a rate generally lower than US non-Hispanic White (7.2% - 12.5%)[30, 31] and non-Hispanic Black women in the US (9.8% to 15.8%) [30]. Another study examining trends in maternal mortality by racial and ethnic groups in the US similarly found that Hispanic individuals often fare better than other

racial and ethnic minority groups [32]. This trend is consistent for other health conditions, including cardiovascular disease and hypertensive disorders [33, 34].

Limitations of Hispanic Health Research

However, it is important to recognize the limitations of categorizing Hispanic/Latine individuals as a monolith. Many studies fail to distinguish diverse ethnic subgroups, despite variations in health outcomes [22, 32]. Similarly, US-born and non–US-born Hispanic individuals are often analyzed together [28]. This common practice fails to recognize the distinct sociocultural factors that shape the health experiences, behaviors and outcomes of individuals from different nationalities, as well as immigration statuses [35]. Further, the purported benefits of the Hispanic and Immigrant Health Paradox, which refers to the observation that Hispanic and Immigrant individuals, particularly those who settle in the US, often experience better health outcomes than expected given their socioeconomic disadvantages, have been challenged by several studies [35, 36]. These studies reveal inconsistencies in the true health advantages with identifying as Hispanic or as an immigrant. Benefits are often not generalizable across races, ethnicities, age groups and genders, and other factors such as acculturation, health behaviors, immigration and insurance status, and length of residence in the US can influence these beneficial effects. Furthermore, the lack of adequate representation in population samples of those who are statistically underrepresented, such as the poor, the undocumented, or the uninsured, and the sampling of only those that are paradoxically healthy, reveal the inadequacy of the epidemiological approaches used

and the limited generalizability of the findings seeking to understand the health of these populations. This stresses the need to ensure accurate representation of all Hispanic and immigrant subgroups within health research.

Long-term Effects - Cardiometabolic risk

HDP not only pose significant adverse risks during perinatal periods [37] but are also associated with long term risks after pregnancy that affect both maternal and fetal outcomes [29, 38]. Babies born from pregnancies complicated with incident or chronic hypertension had greater risks of developing hypertension later in life, in addition to other health outcomes including increased risk of type 2 diabetes, altered cardiac structure, and childhood asthma [39, 40]. Mothers who experience HDP more specifically, have a greater risk for long-term cardiovascular disease (CVD), including heart failure, coronary artery disease, peripheral arterial disease, and ischemic stroke, compared to those with uncomplicated term deliveries [38, 41]. Women with a history of HDP have a two- to eight-fold greater risk of developing CVD compared to women with normotensive pregnancies [29]. More specifically, HDP are linked to earlier onset of CVD and a higher risk of all-cause cardiovascular mortality [27, 28, 38]. For Hispanic women, CVD is the leading cause of death [34]. This population is disproportionately affected by social determinants of health - particularly immigration-related stressors - which contribute to barriers in accessing health care services [34]. Together, these factors pronounce the risk for poor cardiovascular outcomes in Hispanic women and their offspring. While it is hypothesized that pregnancy can serve as a cardiometabolic stress test and can help

identify those at high CVD risk later in life [28], this potential is undermined when policies, like immigration policies, hinder proper diagnosis and care.

Link Between Immigration Policy and HDP

Given that immigrant health is influenced both by the situation and presence of risk factors in the homeland and in the host country, dedicating research for the study of such a distinct group would contribute greatly to public health studies - specifically those concerning global and immigrant health. Despite studies reporting lower HDP prevalence among Hispanic populations [28] and the possibility of diagnosing HDP at delivery, it is valid to consider multiple factors that prevent earlier treatment options and influence HDP rates. As evidenced by a 2013 meta-analysis, Zhang et.al found an increased risk of gestational hypertension and preeclampsia associated with mental stress [21]. This evidence supports the plausibility of associations between social stressors and HDP incidence and may explain how immigration policies contribute to cardiovascular maternal health in immigrant populations. Additionally, underreporting as a result of fear and variability in access to healthcare resources linked to heightened immigration-related tensions, as well as the lack of clear distinctions between diverse Hispanic subgroups warrant deeper studies into HPD outcomes for Hispanic immigrant populations. Despite existing investigations on the detrimental effect of immigration policies on physical and mental health of pregnant Latine women, studies specifically addressing HDP in the context of immigration policies are notably lacking. Especially given the increasing political tensions around

immigration in the US, it's crucial to explore immigration policies' implications for perinatal health, particularly in relation to HDP - which disproportionately affect minority populations.

Two potential mechanisms connect immigration policy to HDP: stress and healthcare utilization. There is substantial evidence of stress as a critical factor in the development of HDP [21, 42]. Furthermore, limited access to healthcare services, a common consequence of restrictive immigration policies, results in inadequate prenatal care [25] and poor management of HDP – which together contribute to increases in HDP risk. To date, no one has studied immigration policy in the context of HDP despite these plausible pathways.

287(g) as an Immigration Policy

One of the more prominent enforcement policies impacting immigrant communities is the 287(g) policy. 287(g) is a program that enables state and local law enforcement to enforce immigration laws on behalf of the federal agency Immigration and Customs Enforcement (ICE). Local law officers are given the authority and discretion to question individuals about their immigration status and detain and begin immigration proceedings if necessary [26]. The 287(g) policy is a prime example of a sociopolitical stressor for immigrant communities. It has been linked to fear, marginalization and loss in Latinx communities with significant implications for mental and physical health for youth [43] and women [25] alike.

While previous studies have examined the impact of events like presidential elections and anti-immigration legislation (e.g., OIL laws [6], SB 1070 [44] and 287(g)

itself) on health outcomes [26], few have focused on how the removal of such policies might reinstate a sense of security and well-being under immigrant-friendly governance. The potential for 287(g) to influence health outcomes, particularly for perinatal health, is significant, yet understudied.

In Georgia specifically, January 2021 marked the dates where newly elected Democratic sheriffs in Gwinnett and Cobb counties ended their participation in the federal program [45]. These counties are exemplary case studies in Georgia as they represent well-publicized endings of 287(g). Notably, both counties had sheriff candidates campaigning on ending 287(g) thereby promoting trust within and gaining support from immigrant communities – a great feat from the persistent activism against the program since its introduction to metro Atlanta in 2007.

Addressing Gaps in Research on 287(g) Policy and Maternal Health

There is a critical need for research examining the impact of 287(g) immigration enforcement policy on maternal health outcomes. While some studies have explored the health consequences of immigration policies, they primarily focused on child health outcomes rather than maternal outcomes. Moreover, extant literature has yet to investigate the effects of removing such policies, specifically in relation to how the restoration of rights and perceived security may influence health among immigrant populations. To address this gap, we propose to investigate the change in incidence of hypertensive disorders among pregnant Latine immigrants in two Georgia counties following the removal of 287(g) enforcement. To our knowledge, this is the first study of the impact of 287(g) policy removal on HDP.

Public health and policy research of this nature captures immediate shifts in health outcomes resulting from changes to immigration enforcement. Understanding the broader implications of this policy on the maternal health of one of the largest minorities in the US may offer critical insights into the intersection between immigration policy, public health and health equity.

Chapter II

Manuscript

Introduction

Anti-immigration rhetoric and policies have important implications for mental [6, 10] and physical health [11] and overall well-being [11, 12].Worsening poverty, poor health and well-being seeking behaviors [10, 13], limited access to health care, housing and other public services, and increased fear [14] and mistrust of law enforcement are all consequences of these policies. Public benefit ineligibilities and immigration fears contribute to healthcare underutilization patterns [15] which prevent earlier detection and treatment of health issues [10, 16]. The social stress theory also suggests how repeated exposure to chronic stressors (e.g., exclusionary policies) can trigger psychological and stress responses leading to poor health outcomes [5, 6]. Among the Hispanic/Latine demographic, which comprise the largest share of unauthorized immigrants in the US, immigration policy effects are felt throughout entire communities, including US-born family and friends [9, 20]. These health inequities highlight the extensive consequences of immigration policies that often manifest during several life stages, such as pregnancy – a period particularly susceptible to sociopolitical stressors.

Pregnancy is a critical and particularly vulnerable period for the health of both mothers and babies. Hypertensive disorders of pregnancy (HDP) are among the most serious conditions, with significant consequences extending beyond the

perinatal period, affecting long-term maternal and fetal outcomes [29, 37-39]. HDP risk is largely influenced by access to care and exposure to stress during this time. These modifiable risk factors are disproportionately impacted in immigrant communities as a result of immigration enforcement. Substantial evidence links stress as a critical factor in the development of HDP [21, 42].Furthermore, limited access to healthcare services, a common consequence of restrictive immigration policies, results in inadequate prenatal care[25] and poor management of HDP, which can contribute to increases in HDP rates. Among Hispanic/Latine populations specifically, HDP prevalence is between 4.5% and 9.1% [28]. This lower HDP prevalence among Hispanic populations [28] may be attributed to underreporting and delays in seeking care due to fear of deportation and mistrust in institutions. This disparate access to healthcare resources and the lack of clear distinctions in health outcomes between ethnic groups within the Hispanic/Latine category warrant further studies into HDP outcomes for Hispanic immigrant populations. Despite existing investigations on the detrimental effect of immigration policies on physical and mental health of pregnant Latine women, studies specifically addressing HDP in the context of immigration policies are notably lacking. As political tensions around immigration continue escalating in the US, it is increasingly and critically relevant to investigate how such policies impact perinatal health outcomes.

January 2021 marked the dates where newly elected Democratic sheriffs in Gwinnett and Cobb county, Georgia ended their participation in the federal 287(g) program [45]. This policy gives local law officers the authority and discretion to

question individuals about their immigration status and detain and begin immigration proceedings [26, 46] on behalf of the federal agency Immigration and Customs Enforcement (ICE). Cobb and Gwinnett counties are exemplary case studies in Georgia as they represent well-publicized endings of 287(g). Notably, both counties had sheriff candidates campaigning on ending 287(g), thereby promoting trust within and gaining support from immigrant communities – a great feat from the persistent activism against the program since its introduction to metro Atlanta in 2007.

While previous studies have examined the impact of events like presidential elections and anti-immigration legislation (e.g. OIL laws [6], SB 1070 [44] and 287(g) itself) on health outcomes [26], few have focused on how the removal of such policies might reinstate a sense of security and well-being under immigrant-friendly governance. The potential for immigration policy repeals to improve health outcomes, particularly for perinatal health can be significant, but is understudied. Thus, we propose to investigate the change in incidence of hypertensive disorders among pregnant Hispanic/Latine individuals in two Georgia counties following the removal of a 287(g) immigration policy.

This is the first study of the impact of 287(g) policy removal on HDP. Public health and policy research like this can capture immediate changes in health resulting from the removal of immigration laws. Understanding the broader implications of this policy on maternal health of one of the largest minorities in the US is essential. It can reveal important insights into the associations between

immigration enforcement, public health, and the resulting health disparities. We hypothesize a decrease in hypertension rates following the policy repeal as a result of a decrease in stress levels and hesitance to continue prenatal care visits.

Methods

Data and Sample

We used data from the US restricted use natality files from 2016 to 2022 (National Vital Statistics System 2022). We started the analysis in 2016 as a result of that year being the last time memorandum of agreements for 287(g) policies were updated. Our selected study period allows inclusion of significant expansions of the Immigration Nationality Act (INA) that may explain changes in HDP rates in Hispanics/Latines.

2016 to 2022 data included information from revised birth certificates from Georgia. Our inclusion criteria were birthing individuals of Hispanic/Latine ethnicity who resided in the state of Georgia, which excluded records for individuals that were not of Hispanic/Latine ethnicity (n = 197,74,246), missing ethnicity (n = 245,400) or were unknown or not stated (n = 945,547) from the total dataset. Of those Hispanic/Latine individuals, those that did not reside in the state of Georgia (n=5213159) or were unknown (n = 45240), were excluded. This target population of Hispanic/Latine birthing people are likely to be affected by the removal of 287(g) agreements as these individuals and/or their partners or loved ones may be detained and processed under these policies. This targeting is pronounced as

Hispanic/Latine individuals are very likely to be perceived as immigrants and profiled and discriminated against based on their skin color [47].

Time Unit of Analysis

Time was defined in months, as the earliest/estimated date of conception. To estimate the conception month for each individual, birthdates were standardized by assigning births to the 15th day of their recorded birth month using gestational age. Conception time is an appropriate unit of measure as it accounts for exposure during pregnancy where stress mechanisms manifest and develop into more severe health outcomes. To stay within the 2016 study period of interest, births with conception dates occurring in 2015 (n = 11,710) or births with an unknown conception date (n = 2740) were excluded.

Comparison Groups

Classification of individuals in our index group included those whose residence county were from Cobb or Gwinnett counties. Cobb and Gwinnett counties are two of all metro Atlanta counties with the greatest share of Hispanic residents, making up 23% and 15% [48] respectively, of the total share of the Hispanic population in the metro area.

Of all Georgia births conceived by Hispanic/Latine birthing people between 2016 and 2022 (n = 107723), we subset for records from metro Atlanta counties (n = 30806): Fulton, Dekalb, Clayton, Fayette, Forsyth, Douglas, Coweta, Henry, Cherokee, Paulding, which compared with Cobb and Gwinnett counties (n = 31097) in urbanicity.

Exposure

Cobb and Gwinnet counties both repealed their 287(g) policies in January of 2021. Both counties had newly elected sheriffs who had campaigned on ending 287(g), which strengthened their trust and support from immigrant communities. Consequently, exposure was classified as having repealed a 287(g) policy that was implemented before 2016.

A binary exposure variable was created which indicated whether a record happened in a county that repealed 287(g) agreements (Cobb and Gwinnet). Thus, any birth that occurred in a county other than Cobb or Gwinnett would have 0 as a value. Pre-exposure was classified as conception before June 2020, which includes records that were not exposed to a repeal of the 287(g) policy. Post-exposure was classified as conception after Jan 2021, which accounts for conceptions that happened after the repeal of 287(g) policies. Individuals with estimated conception dates between June 2020 and January 2021 (n = 6122) were excluded due to partial exposure to both pre-policy repeal and post-policy repeal periods. These pregnancies spanned the timeframe during which the immigration enforcement policy was still in effect, and continue into the post-policy removal period, resulting in mixed exposure status.

Primary Outcome

A binary variable categorized whether the record had presence or absence of HDP, where HDP was defined as gestational hypertension, chronic hypertension or preeclampsia/eclampsia. We estimated HDP rates as the proportion of monthly

HDP cases per 100 live births. Counts of live births were summarized by county and month level. Groups with less than 50 births, which included 9,947 records, were excluded due to unstable estimates. Records with missing HDP (n = 46) were also excluded to avoid inaccurate estimates of HDP rates. Further categorization included binary indicators of births conceived pre-June 2020 or post-January 2021 to assess changes in rates before and after the policy repeal.

Covariates of interest that were explored included sociodemographic variables including mother's age, mother's marital status, mother's Hispanic origin, mother's education, insurance status at birth, parity, WIC, month prenatal care (PNC) started, number of PNC visits and pregnancy-related variables including gestational age, diabetes, gestational diabetes, chronic diabetes, and BMI.

Statistical Analysis

To address our research question, we employed a difference in difference approach, a widely applied method for estimating causal effects of policy and program changes. The difference in difference analysis (DID) enables the ability to see the immediate changes associated with a policy by comparing HDP incidence for our index and reference groups before and after the policy implementation, or in this case, the policy repeal. A difference in difference approach requires the parallel trends assumption be met – that the treated and untreated groups would have had the same trends in the absence of treatment. Parallel trend assumption tests, evaluated through line tests, were conducted as preliminary data analysis to also help inform adequate makeup of comparison groups. After evaluation and

confirmation of adequacy in comparison groups selected, DID analysis was conducted.

The DID model captures the difference in HDP rate between Hispanic/Latine birthing people in Cobb and Gwinnett counties and those same individuals in the group of metro Atlanta counties. The model is as follows:

$$Y = \beta_0 + \beta_1*[\text{Time}] + \beta_2*[\text{Intervention}] + \beta_3*[\text{Time*Intervention}]$$

Where Y identifies the dependent variable of HDP rate, β_0 represents the baseline average rate of HDP, β_1 represents time or estimated month of conception, β_2 represents our binary exposure variable of whether county of conception time has repealed the 287(g) agreement or not and β_3 represents the interaction term between the time and repeal variables. All analysis was conducted using RStudio v2024. 12.1+563.

Results

Our final analytic sample contained 45,788 records from Hispanic/Latine pregnant women who reside in Georgia and had information regarding their HDP status. Our full subject selection method is displayed in **Figure 1**. In the pre-policy period, there were 21,372 treatment and 13,692 control records. After applying all exclusion criteria, the final analytic sample included 21,372 individuals in the treatment group before the policy change and 6,567 after the policy change (Cobb and Gwinnett Counties), and 13,692 individuals in the control group before the policy change and 4,157 after (other GA counties).

Descriptive statistics highlight similarities and differences between mothers in Cobb and Gwinnett counties and those in other Georgia counties for five years before and 1.5 years following the removal of the 287(g) program (**Table 1**). During the pre- and post-policy removal periods, 2,038 Hispanic/Latine women experienced hypertension during pregnancy. Among the three hypertensive disorders considered, gestational hypertension was the most incident condition across all groups and time periods (3.2% to 4.4% in control counties and 3.1%, to 5.4% in treatment counties), followed by chronic hypertension (0.7% to 0.9% in both groups) and eclampsia (0.2% to 0.3% and 0.1% to 0.1%). There was an overall increase in the incidence of HDP from the pre- to post-policy removal period in both the treatment counties (3.9% to 6.4%) and control counties (4.1% to 5.6%). There is a similar trend in diabetes among participants, with a 1.3 percentage increase across time periods (5.8% to 7.1%). There were slight increases in higher BMI among our population of interest compared to control group (Overweight: 31.8% to 33.1% and Obese 29.1% to 30.7%). The percentage of women carrying to term remained stable across exposure periods at around 85% for both comparison groups. Similarly, preterm births (~12%) and very preterm births (~2.0%) showed little variation over time.

Women aged 25-35 made up the majority of the sample in both time periods and comparison groups, accounting for a little more than half of all records. Those younger than 25 comprised approximately 30%, while those older than 35 represented about 16% of the sample. Marriage rates declined over time in treatment (50.6% to 44.8%) and control groups (42.4% to 39.2%). Mothers of

Mexican origin represented the largest proportion of the sample in all time periods and comparison groups, accounting for over half of the sample, followed by those originating from Central and South America, and much smaller proportions identifying as Puerto Rican and Cuban. Overall, most women completed high school or a GED (~ 45%-50%), followed by those with a bachelor's degree or higher.

Majority of the women were not enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (about 75%). However, there was an increase in the use of government insurance among women in Cobb and Gwinnet counties (49.5% to 54.4%). Most women were on their second or higher pregnancy, and an increasing number of mothers initiated prenatal care within their first to third month of pregnancy. Notably, there was an increase in number of prenatal visits, particularly in the 7 to 8 visit category (5.7% to 12.1%) and the 9 to 10 visit category (20.6% to 27.2%) in treatment and comparison counties (8.9% to 15.3% and 20.0% to 29.8% respectively).

In the DID analysis, there was a 0.5 percentage point increase in HDP incidence among Latine pregnant individuals in Cobb and Gwinnett counties post-policy repeal compared to what we would have expected based on comparison group temporal trends (DID estimate: 0.5, 95% CI: -0.7, 1.7) (**Table 2**). While this estimate suggests a potential increase in rates and its confidence interval is precise, the interval contains the null value of 0. A null value would indicate no differences in estimates and thus no effect resulting from the policy removal. Thus, this estimate is not statistically significant.

Discussion

Despite the removal of immigration policy enforcement through 287(g) agreements in Cobb and Gwinnett counties, the incidence of pregnancy-related hypertension disorders among Hispanic/Latine individuals compared to other Georgia counties was largely unaffected. To our knowledge, this is the first study using a DID approach to investigate hypertension rates among Hispanic/Latine pregnant mothers in Georgia following the removal of local immigration policy. While there were increases in overall HDP prevalence across years, the findings were not significant enough to state that the removal of this policy could explain those increases.

Our main DID analysis found null results between policy removal and HDP rates. These results are not consistent with prior research showing the negative effects of exclusionary immigration policies on perinatal outcomes - such as increases in adverse birth outcomes like preterm birth [49, 50] and low birth weight [9, 51]. Related studies have also found decreases in fertility [52], and inadequate prenatal care utilization [25], which underscores the broader impact of immigration enforcement on reproductive and maternal health. In the same degree, extant literature provides evidence of the benefits of inclusive policies for birth outcomes. Moinester et. al for example observed improvements in birth outcomes in states that extended driver's licenses to undocumented immigrants [53], providing compelling evidence that the restoration of legal rights to immigrants can improve the health of immigrant mothers and their children [53]. Plausible explanations for

our findings follow, but it is important to keep in mind that no current studies examine the health effects of the removal of 287(g) policies or immigration policies in general. This demonstrates how immigration policies have considerable effects on birth outcomes and leads us to consider more nuanced questions of how removal of restrictive policies may restore tranquility or remove fear from communities.

Our results may be explained by several factors. Discontinuation of 287(g) for this study was defined by the removal of existing policy by local law enforcement agencies (LEAs). Discontinuation of 287(g) would reflect a reduction in or ending of county police collaboration with ICE, however, ICE activity might still operate outside of this policy removal. While we assumed that the policy repeal was a true change in immigration climate, immigration enforcement and anti-immigrant rhetoric from other long-standing policies and beliefs remained. These residual effects of immigration enforcement may have sustained stress levels, limiting any potential stress reduction that could have resulted from the local policy change. This suggests that the stress or prenatal care utilization pathways implied in this association may not have been significantly influenced by this policy removal. Moreover, heightening tensions between US federal and state government officials regarding comprehensive immigration policy and reform heavily influence the political climate. The compounding effect of rapidly changing and intensifying political climates might also attenuate immediate changes following policy removal. Another plausible explanation is the limited post-policy removal period. While we

included all births through 2022, this only captures 16 months or almost 1.5 years of data post-policy removal, compared to 5.5 years of pre-policy data.

While this study found that HDP incidence was largely unchanged, HDP rates still appeared to have a slight increase among our population of interest. We considered several risk factors which may have changed differentially over time in our exposure groups, this included sustained effects of COVID-19, PNC utilization, diabetes status, and BMI levels. Perceived immigration policy vulnerability, measured through sustained maternal stress resulting from COVID-19, was concerningly high during the early pandemic period among Hispanic/Latina women in the US [54]. However, given our DID method, these factors were accounted for as this exposure would impact both exposure groups similarly. PNC utilization patterns were another pathway described to contribute to changes in HDP rates as previous studies have found associations between exclusionary immigration policies and reduced PNC access [25]. Post-policy repeal, the number of mothers with no PNC usage decreased and there were increases in the start of early PNC within the first 3 months in counties of interest - potentially demonstrating improvements in PNC usage following policy removal. This increase in healthcare utilization may indicate improvements in HDP diagnoses and thus may have counteracted expected reductions in HDP rates as were seen in our null findings. To comprehensively evaluate potential sources of bias in our data, we assessed variation in lack of entry into PNC (**Supplemental Figure 3**). Our trend analysis showed that 'no entry into

PNC' changed differentially over time, which may have influenced our results due to differential selection into HDP categories between our comparison groups.

We also observed that gestational hypertension was the most incident condition among the other two hypertension conditions considered - chronic hypertension and eclampsia. Our sample largely included women aged 25 – 35, which are ages with decreased risk of gestational hypertension, but given that Hispanic women are less likely to develop any type of hypertensive disease[55] ,it is concerning that slight increases were observed at all and warrants continued efforts to investigate this potential public health issue. This rise in HDP may be linked to diabetes, which is highly prevalent in Hispanic/Latine populations [56] and a known risk factor for HDP [30]. Diabetes increased by 1.3 percentage points post-policy removal, which could partially explain the observed trends. Thus, we also explored changes in participants with chronic diabetes across our study period to assess potential biases. However, we saw that chronic diabetes levels remained relatively similar across time periods (**Supplemental Figure 1**), thus did not further explain our null findings.

Changing cardiovascular health in this population that may be undetected before pregnancy might drive potential changes in the underlying population demographic. Thus, we also assessed changes in obese participants measured with BMI levels across our time period. We saw that BMI levels over 30 remained relatively the same across time periods, and thus also did not help further explain our null findings (**Supplemental Figure 2**). Given that nearly two-thirds of our

sample were on their second or higher pregnancy, it is also plausible that risk from previous pregnancies also contributed to increased incidence. Additionally, demographic shifts in Cobb and Gwinnett counties may also explain our observed results where individuals of riskier health may have moved into our counties of interest relative to the rest of Metro Atlanta. However, we lacked data on these measures in order to explore these other potential sources of bias further.

These above-mentioned factors may help explain the findings from this study, but it is relevant to consider there truly being no association between the policy and hypertension disorders. There may be other pathways that explain the slight increases in HDP rates, but ultimately, the 287(g) policy may not have been as impactful of a stressor to influence HDP in Hispanic/Latine women.

This study has several strengths. Use of birth records provides the opportunity to assess records that represent a census of births, including all residents, regardless of documentation status. This source of data allows us to examine population-level birth outcomes and maternal demographics among a broad population. Also, the use of DID analyses allows assessment of the impact of policy or program implementation, adoption or removal more immediately. This is relevant for mobilizing efforts to aid affected communities and address downstream effects of immigration policy.

Our study is not without limitations, however. The lack of information on documentation status reported on the data prevented any specific effect estimates on unauthorized immigrants. The limited information of immigrants' duration of

US residence also prevented adequately understanding heterogeneity in HDP-related outcomes within immigrant populations with varying levels of acculturation, which may also mask effects of immigration policies. The use of proxies of foreign-born status for documentation status along with measures of mixed status family may better inform future studies. As previously mentioned, concerns of sample size may also be a limitation of our study as there was a significant decrease in the sample post-policy removal, this might have impacted the true effect estimate. Additionally, misclassification bias, resulting from the possibility of misdiagnoses or incorrect classification on birth certificates, may also be a concern for this study [57] - validation studies confirming accurate information from birth certificates may address this potential bias. In addition, healthcare provider biases might be reflected through low quality care offered to patients, resulting in poor attention to detail in diagnosing or even reporting such details when completing administrative tasks. Methods to adjust for these inaccuracies should be employed in future studies. Beyond that, the categorization of HDP as 3 classes of hypertension including chronic hypertension, gestational hypertension and eclampsia may have obscured more nuanced effects of sociopolitical stressors on specific hypertension disorders as the various disorders may develop through distinct pathways [55]. Finally, it is important to acknowledge the difficulty of understanding prenatal care usage from birth certificate data.

Conclusion

We investigated changes in the incidence of hypertensive disorders among pregnant Hispanic/Latine individuals in Cobb and Gwinnett counties, Georgia following the removal of 287(g) immigration enforcement. Using a DID analytical approach, we found incidence in HDP was not significantly associated with the repeal of 287(g) enforcement in the two counties. While the findings were null, this study contributes to the growing body of literature seeking to understand the health implications of immigration enforcement policies on maternal health. By focusing on the removal of 287(g), this study offered valuable insights into how structural and policy-level factors may shape the health of mothers in immigrant communities. Future research should examine alternative mechanisms through which reduction in or removal of immigration enforcement may influence pregnancy related outcomes in Hispanic/Latine communities. This can guide the development of equitable health policies and interventions that address potential health issues for Hispanic/Latine communities.

Chapter III

Public Health Implications

While our study did not find a statistically significant association between 287(g) removal and hypertension disorders of pregnancy (HDP), this does not imply that immigration laws do not influence maternal health. Rather, it emphasizes the need to continue revealing how structurally oppressive and discriminatory factors, like immigration policies, can shape the lived experiences and health outcomes of pregnant Hispanic/Latine women and the broader immigrant population.

Prior research, such as the analysis by Forrester and Nowrasteh at the CATO Institute, assessed the true effect of immigration enforcement under 287(g) on changes in crime rates – the policy's original intent. Their findings revealed that immigration enforcement under 287(g) was statistically unrelated to changes in crime rates [58] – raising concerns about its efficacy and broader societal impacts. In fact, 287(g) has been associated with institutionalized racial profiling and questionable police conduct, which are particularly harmful for maternal and child health outcomes as they exacerbate stress, discrimination and economic instability. Immigration policies such as 287(g) disrupt employment and family stability, reduce economic contributions from immigrant communities and capitalize on their pre-existing strain and fear. Furthermore, such programs pose a significant financial burden on local jurisdictions [59, 60] - resources that could otherwise be

invested in community trust-building, healthcare access and public health infrastructure.

The 287(g) program consistently fails to fulfill its original intent to assist local law enforcement to fight crime, and has potentially detrimental implications for the health and wellbeing of immigrant communities and friends [61]. These study findings can be used by public health professionals to further evaluate whether a removal of these factors repairs the harm these communities have been subjected to. Repealing restrictive immigration policies may create safer environments for immigrant communities that help contribute to improved maternal health during pregnancy, such as improved cardiovascular health. These improvements may arise through mechanisms such as reduced exposure to racial discrimination, improved SES stability, and reinvestment in community-driven services.

Given that HDP are major contributors to poor birth outcomes and remain a significant barrier to improvements in maternal health in the US and globally, expanding research to establish evidence based and casual explanations for its incidence is essential. This can help inform public health interventions and guide the development of policies aimed at improving cardiovascular and pregnancy related outcomes in Hispanic/Latine immigrant communities.

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Tables and Figures

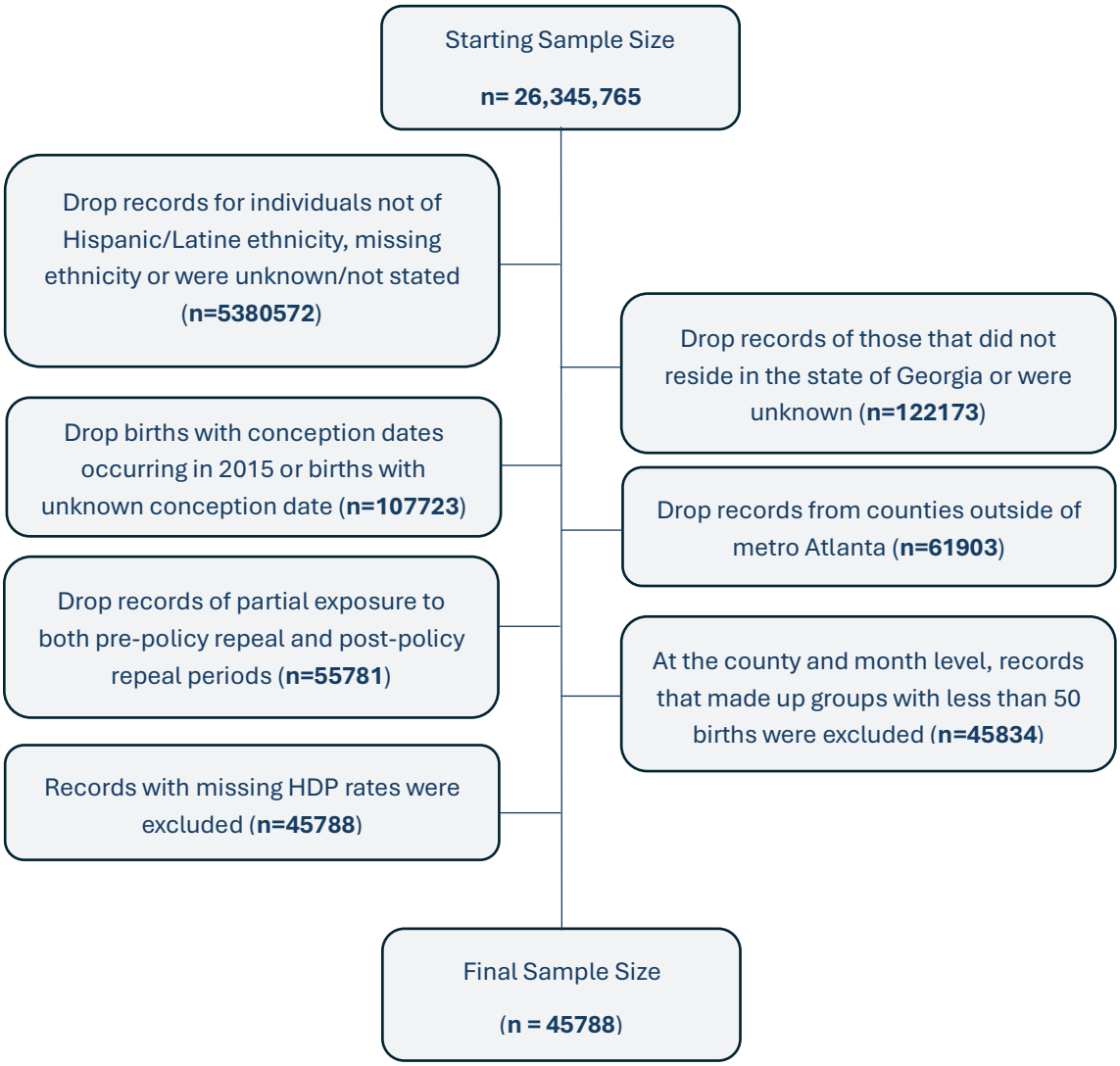

Figure 1. Sample selection method for difference in difference analysis of 287(g) immigration policy repeal on HDP Incidence

Table 1: Pregnancy and Demographic Characteristics in Hispanic/Latine Women with Live Births in The State of Georgia by Repeal County Pre-June 2020 and Post-January 2021 (n = 45,788)

	Pre-Jun 2020 n (%)		Post-Jan 2021 n (%)	
	Comparison (n=13692)	**Cobb + Gwinnett (n=21372)**	**Comparison (n=4157)**	**Cobb + Gwinnett (n=6567)**
Pregnancy				
Hypertension				
Yes	560 (4.1)	827 (3.9)	234 (5.6)	417 (6.3)
No	13132 (95.9)	20545 (96.1)	3923 (94.4)	6150 (93.7)
Chronic Hypertension				
Yes	91 (0.7)	140 (0.7)	39 (0.9)	56 (0.9)
No	13601 (99.3)	21232 (99.3)	4118 (99.1)	6511 (99.1)
Gestational Hypertension				
Yes	444 (3.2)	660 (3.1)	181 (4.4)	356 (5.4)
No	13248 (96.8)	20712 (96.9)	3976 (95.6)	6211 (94.6)
Hypertension Eclampsia				
Yes	25 (0.2)	27 (0.1)	14 (0.3)	5 (0.1)
No	13667 (99.8)	21345 (99.9)	4143 (99.7)	6562 (99.9)
Gestational Age				
Very Preterm Birth (<32 Weeks)	311 (2.3)	435 (2.0)	78 (1.9)	129 (2.0)
Preterm Birth (32 – 37 Weeks)	1895 (13.8)	2672 (12.5)	505 (12.1)	746 (11.4)
Full-Term Birth (37 - 43 Weeks)	11486 (83.9)	18265 (85.5)	3574 (86.0)	5692 (86.7)
Diabetes				
Yes	833 (6.1)	1241 (5.8)	322 (7.7)	468 (7.1)
No	12859 (93.9)	20131 (94.2)	3835 (92.3)	6099 (92.9)
Gestational Diabetes				
Yes	710 (5.2)	1033 (4.8)	281 (6.8)	417 (6.3)
No	12982 (94.8)	20339 (95.2)	3876 (93.2)	6150 (93.7)
Chronic Diabetes				
Yes	123 (0.9)	208 (1.0)	41 (1.0)	51 (0.8)
No	13569 (99.1)	21164 (99.0)	4116 (99.0)	6516 (99.2)
BMI				
Underweight <18.5	388 (2.8)	516 (2.4)	98 (2.4)	133 (2.0)
Normal <24.9	5398 (39.4)	7844 (36.7)	1674 (40.3)	2241 (34.1)
Overweight <29.9	4419 (32.3)	6802 (31.8)	1351 (32.5)	2176 (33.1)
Obese >30	3487 (25.5)	6210 (29.1)	1034 (24.9)	2017 (30.7)

Table 1: Continued

	Pre-Jun 2020 n (%)		Post-Jan 2021 n (%)	
	Comparison (n=13692)	Cobb + Gwinnett (n=21372)	Comparison (n=4157)	Cobb + Gwinnett (n=6567)
Demographics				
Mother's Age				
<25	4011 (29.3)	6344 (29.7)	1279 (30.8)	1888 (28.7)
25 - 35	7363 (53.8)	11486 (53.7)	2209 (53.1)	3645 (55.5)
>35	2318 (16.9)	3542 (16.6)	669 (16.1)	1034 (15.7)
Mother's Marital Status				
No	7880 (57.6)	10556 (49.4)	2526 (60.8)	3624 (55.2)
Yes	5810 (42.4)	10814 (50.6)	1628 (39.2)	2943 (44.8)
Missing	2 (0.0)	2 (0.0)	3 (0.1)	-
Mother's Hispanic Origin				
Mexican	8407 (61.4)	12538 (58.7)	2555 (61.5)	3806 (58.0)
Puerto Rican	819 (6.0)	1290 (6.0)	232 (5.6)	340 (5.2)
Cuban	252 (1.8)	373 (1.7)	93 (2.2)	114 (1.7)
Central And South American	4214 (30.8)	7171 (33.6)	1277 (30.7)	2307 (35.1)
Mother's Education				
< 8th Grade	2042 (15.0)	2843 (13.4)	533 (12.8)	760 (11.6)
9th - 12th Grade	1717 (12.7)	2682 (12.7)	400 (9.6)	670 (10.2)
High School Graduate or GED Completed	6198 (45.7)	9376 (44.3)	2047 (49.3)	3155 (48.1)
Some College/ Associate's	1289 (9.5)	2880 (13.6)	462 (11.1)	963 (14.7)
Bachelor's Degree or Higher	2325 (17.1)	3390 (16.0)	712 (17.1)	1013 (15.4)
Missing	121 (0.9)	201 (0.9)	3 (0.1)	6 (0.1)
Insurance				
Uninsured	4268 (31.2)	5065 (23.7)	1461 (35.2)	1439 (21.9)
Government Insurance	5455 (39.9)	10568 (49.5)	1701 (40.9)	3573 (54.4)
Self-Pay	683 (5.0)	903 (4.2)	92 (2.2)	73 (1.1)
Commercial (Private)	3271 (23.9)	4821 (22.6)	902 (21.7)	1481 (22.6)
Missing	15 (0.1)	15 (0.1)	1 (0.0)	1 (0.0)
Parity				
Single Pregnancy	4428 (32.3)	6263 (29.3)	1431 (34.4)	2118 (32.3)
More Than 1 Pregnancy	9264 (67.7)	15109 (70.7)	2726 (65.6)	4449 (67.7)

Table 1: Continued

	Pre-Jun 2020 n (%)		Post-Jan 2021 n (%)	
	Comparison (n=13692)	**Cobb + Gwinnett (n=21372)**	**Comparison (n=4157)**	**Cobb + Gwinnett (n=6567)**
WIC				
Yes	3792 (27.9)	7109 (33.6)	680 (16.4)	1568 (23.9)
No	9818 (72.1)	14062 (66.4)	3473 (83.6)	4994 (76.1)
Missing	82 (0.6)	201 (0.9)	4 (0.1)	5 (0.1)
Month PNC Started				
No Prenatal Care	935 (7.0)	1049 (5.1)	236 (5.7)	188 (2.9)
1st to 3rd Month	9376 (70.1)	15220 (73.9)	3077 (74.1)	5164 (78.8)
4th to 6th Month	1916 (14.3)	3023 (14.7)	536 (12.9)	808 (12.3)
7th to Final Month	1148 (8.6)	1313 (6.4)	301 (7.3)	393 (6.0)
Missing	317 (2.3)	767 (3.6)	7 (0.2)	14 (0.2)
# Of Prenatal Visits				
No Visits	935 (6.9)	1049 (5.1)	236 (5.7)	188 (2.9)
1 to 2 Visits	206 (1.5)	207 (1.0)	48 (1.2)	42 (0.6)
3 to 4 Visits	352 (2.6)	303 (1.5)	122 (2.9)	98 (1.5)
5 to 6 Visits	710 (5.3)	665 (3.2)	246 (5.9)	263 (4.0)
7 to 8 Visits	1203 (8.9)	1190 (5.7)	637 (15.3)	794 (12.1)
9 to 10 Visits	2693 (20.0)	4267 (20.6)	1239 (29.8)	1781 (27.2)
11 to 12 Visits	3454 (25.6)	5006 (24.1)	994 (23.9)	1551 (23.7)
13 to 14 Visits	1580 (11.7)	2837 (13.7)	278 (6.7)	826 (12.6)
15 to 16 Visits	1699 (12.6)	3198 (15.4)	220 (5.3)	615 (9.4)
17 to 18 Visits	238 (1.8)	726 (3.5)	41 (1.0)	180 (2.7)
19 Visits	423 (3.1)	1315 (6.3)	90 (2.2)	220 (3.4)
Missing	199 (1.5)	609 (2.8)	6 (0.1)	9 (0.1)

Table 2: DID Estimate in (Percentage Point Change) Hypertension Disorders of Pregnancy Incidence Following Repeal of 287(g) in Cobb and Gwinnett Counties, Georgia, US

Outcome	**Beta (95% CI)**
Hypertension Disorders of Pregnancy	0.5 (-0.7, 1.7)

Supplemental Material

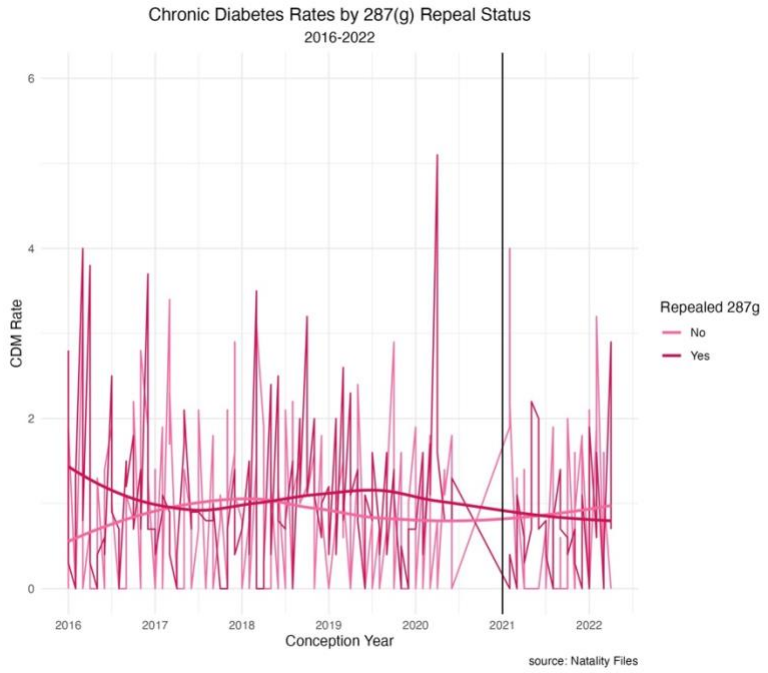

Figure 1. Chronic Diabetes per 100 Live Births to Hispanic/Latine people, monthly rates, 2016-2022

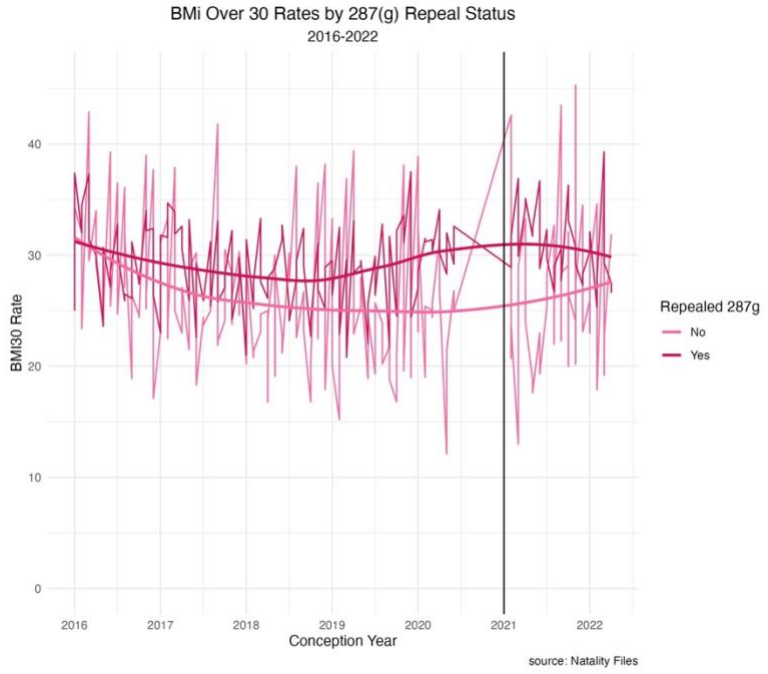

Figure 2. BMI >30 Rates per 100 Live Births to Hispanic/Latine people, monthly rates, 2016-2022

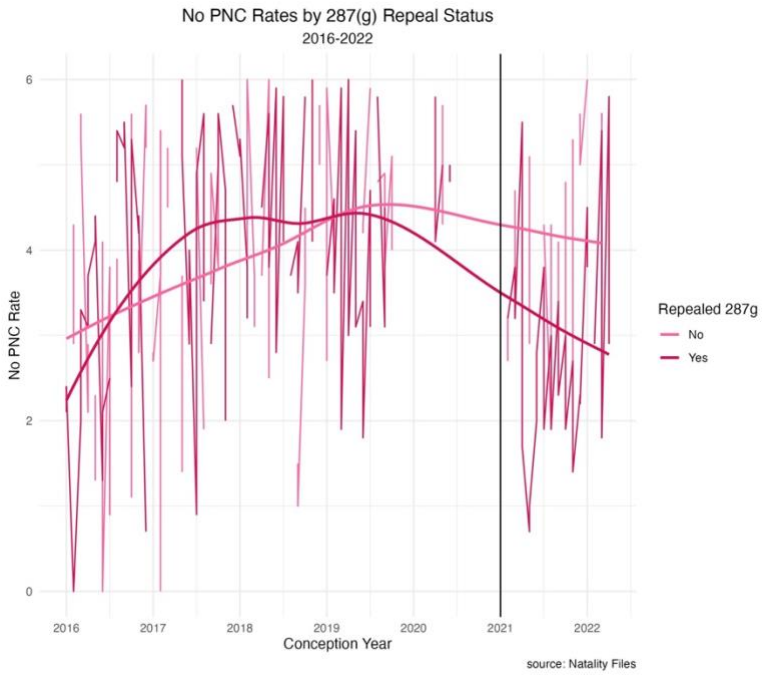

Figure 3. No PNC Rates per 100 Live Births to Hispanic/Latine people, monthly rates, 2016-2022