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Sex-selective abortion bans and the birth outcomes of Asian immigrants

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ABSTRACT

The pro-life movement in the United States has achieved significant legislative victories in restricting abortion access. Among these, sex-selective abortion bans (SSABs)—prohibitions on abortions sought based on fetal sex—have garnered little scholarly attention. Advocates of SSABs often invoke xenophobic stereotypes, claiming that Asian immigrants hold a cultural preference for sons and engage in sex-selective abortions of female fetuses. This study examines the impact of SSABs on Asian immigrant mothers' birth outcomes, hypothesizing that these laws foster a stigmatizing social climate that exacerbates maternal stress and adversely affects infant health. Using natality data from the National Vital Statistics System (2005–2019) and a triple-difference approach, we find that SSABs significantly increased the likelihood of low birth weight and preterm births among infants born to Asian immigrant mothers. These findings highlight the broader health consequences of policies rooted in xenophobia, underscoring the need for nuanced policy discussions surrounding abortion access, anti-Asian hate, and immigrant well-being in the United States.

1. Introduction

The United States is undergoing a profound racial demographic shift, largely driven by the rapid growth of Hispanic and Asian immigrant populations (Budiman and Ruiz, 2021; Frey, 2020). While much attention has been given to Latino immigrants, Asian immigrants have become the fastest-growing immigrant group, accounting for significant demographic changes even in traditionally homogenous states such as North Dakota, South Dakota, and Oklahoma (Gebeloff et al., 2021; Krogstad, 2020). This demographic transformation has coincided with a rise in restrictive state policies that target immigrants, often reflecting a backlash to these shifts (National Conference of State Legislatures, 2012). Although the health consequences of restrictive immigration policies on Latino and Muslim immigrants are well-documented, there is a surprising lack of attention to the effects of anti-immigrant rhetoric and policies on Asian immigrant health outcomes.

This study addresses this gap by examining sex-selective abortion bans (SSABs), an understudied policy rooted in xenophobic stereotypes about Asian immigrants. Advocates of SSABs frequently justify these laws by claiming that Asian immigrants engage in sex-selective abortions due to a cultural preference for male offspring (Kalantry, 2015; Lee, 2014). While ostensibly race-neutral, these policies invoke derogatory stereotypes and contribute to a stigmatizing social climate for Asian immigrants (Citro et al., 2014; Kalantry, 2015). Despite their rapid proliferation over the past decade 12 states enacted SSABs between 2010 and 2020; see Appendix Map M1), empirical research has yet to assess their implications for the health of targeted communities.

Although SSABs are sometimes described as a symbolic or secondary element of broader anti-abortion efforts, their targeted focus on Asian immigrants warrants closer examination. These laws are distinct in the way they co-opt feminist rhetoric to justify abortion restrictions, framed as measures to combat gender discrimination while simultaneously reinforcing xenophobic stereotypes (Citro et al., 2014; Nash and Cross, 2021). Moreover, the vague language used in many SSABs, which allows for subjective interpretation by providers, has been criticized for disproportionately scrutinizing Asian immigrant women seeking abortion care, amplifying the stigmatizing social climate they face. This combination of racial targeting and the practical implications of the bans creates a unique policy context, making SSABs an important case for understanding how immigration, racialized stigma, and reproductive health intersect in the U.S. context. By focusing on SSABs, this study not only sheds light on the broader social and health consequences of symbolic policies but also challenges the assumption that their impact is limited to the abortion landscape. Instead, it demonstrates how these policies contribute to structural stigma, reinforcing social inequalities and adversely affecting the health and well-being of marginalized groups.

Building on prior studies linking restrictive immigration policies to

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adverse health outcomes among Latino and Muslim immigrants (Samari, 2016; Torche and Sirois, 2019), we argue that SSABs harm Asian immigrant mothers and their infants by reinforcing structural stigma and stress through xenophobic narratives. This study contributes to the literature by demonstrating how policies that appear superficially neutral can produce unequal health outcomes through symbolic exclusion rather than material deprivation. Specifically, we test whether SSABs are associated with increased rates of low birth weight (LBW) and preterm birth (PTB) among Asian immigrant mothers, two critical indicators of infant health with lifelong consequences (Behrman and Rosenzweig, 2004; Strully et al., 2010). Additionally, we examine whether these policies achieve their intended effect of altering infant sex ratios. Using natality data from the National Vital Statistics System (2005–2019) and a triple-difference analytical strategy, we analyze over 12 million birth records to estimate the causal impact of SSABs on Asian immigrant mothers' (i.e., foreign-born Asian mothers) birth outcomes. We hypothesize that SSABs, by stigmatizing Asian immigrants, increase maternal stress and lead to worse birth outcomes. We further hypothesize that SSABs fail to meaningfully alter infant sex ratios, undermining the rationale behind these laws.

This study makes three key contributions. First, we shift attention to the health outcomes of Asian immigrants, a group often neglected in the literature on immigration and health despite their growing prominence in the U.S. population. Second, we document how policies with xenophobic undertones, such as SSABs, influence health outcomes by amplifying structural stigma and symbolic exclusion, complementing existing research that primarily focuses on resource deprivation as a driver of structural racism and health inequities (Bailey et al., 2017; Gee et al., 2009). Third, we provide timely policy insights into the consequences of abortion-related legislation, highlighting how such laws intersect with racial and immigration politics to exacerbate health disparities.

2. Policies and immigrants' birth outcomes

A longstanding body of research highlights how policies and societal factors shape the health and well-being of immigrant populations. Restrictive immigration laws and other policies, often driven by anti-immigrant sentiment, have been shown to adversely impact birth outcomes of various immigrant groups. For example, Arizona's SB 1070, a 2010 law enabling police to demand immigration documentation during routine stops, increased stress and anxiety among Latina mothers, leading to poorer birth outcomes such as LBW and PTB (Torche and Sirois, 2019). Similarly, the rise in Islamophobia following 9/11 was associated with increased rates of LBW and PTB among women with Arabic-sounding names (Lauderdale, 2006). Pregnant women respond to external stressors with fluctuations in biomarkers such as cortisol, blood pressure, and inflammation, which can negatively affect the mental and physiological development of fetuses (Davis and Sandman, 2010; Guardino et al., 2016; Keane et al., 2021; Miller et al., 2017). These findings align with the stress process model, which suggests that social stressors, particularly chronic or structural ones, can lead to adverse health outcomes by overtaxing individuals' adaptive capacities (Pearlin et al., 1981).

More broadly, research has increasingly highlighted how structural racism and discrimination shape health disparities through both direct and indirect pathways, including chronic stress and social exclusion (Bailey et al., 2017; Hatzenbuehler and McLaughlin, 2014). Policies that symbolically target minority groups can generate stigmatizing social climates, leading to unequal health outcomes even when material deprivation is minimal, a concept known as "structural stigma" (Hatzenbuehler, 2016; Hatzenbuehler and McLaughlin, 2014). For example, Torche and Sirois (2019) found that Arizona's SB 1070 immigration law, despite limited enforcement, worsened birth outcomes among Latina mothers by fostering stress and fear rather than increasing detentions or deportations. Such findings underscore the broader implications of policies that reinforce racialized stigma, amplifying psychological burdens and health inequities (Lauderdale, 2006; Torche and Sirois, 2019). This growing body of literature emphasizes the need to examine how symbolic policies, beyond their material effects, contribute to health harms through structural stigma and exclusion.

However, there is limited research on the health impacts of policies that disproportionately affect Asian immigrants, despite their rapid growth as the fastest-expanding immigrant group in the United States (Budiman and Ruiz, 2021). The "model minority" stereotype, which portrays Asians as a highly successful group with minimal health or social disadvantages, has likely contributed to this gap in the literature. This stereotype has diverted attention from the structural inequities and unique stressors faced by Asian immigrants, particularly those linked to symbolic exclusion and xenophobic perceptions of being "perpetual foreigners" (Xu and Lee, 2013). Exploring how such policies specifically affect Asian immigrant mothers, compared to other groups, offers a critical opportunity to examine how intersecting forms of structural stigma can shape health outcomes. This study addresses these gaps by focusing on SSABs, shedding light on how policies that intertwine racial and gendered stigmas can harm the health of vulnerable populations.

3. Sex-selective abortion bans as structural stigma

SSABs are a unique policy that combines anti-abortion rhetoric with xenophobic stereotypes. These policies make it illegal for a doctor to provide abortion care if they suspect that a patient seeks the procedure due to a preference for the sex of the fetus. Violations can result in fines, jail time, revocation of medical licenses, and liability to civil suits. Appendix Table S1 provides the exact legislative language for states that implemented SSABs. Proponents frame SSABs as a moral imperative to counter gender discrimination, often citing cultural practices of son preference among Asian immigrants as justification (Kalantry, 2015; Lee, 2014). In doing so, policymakers utilize their bully pulpit and policymaking processes to rhetorically single out and stigmatize Asian immigrants in their state. Specifically, they invoke invidious stereotypes about the unassimilable and dissimilar nature of Asian cultures and immigrants, framing these communities as incompatible with American values of gender equality (Citro et al., 2014; Kalantry, 2015). This rhetoric positions SSABs as a tool to address these perceived issues but simultaneously perpetuates harmful narratives that marginalize Asian communities. However, there is inconsistent evidence that sex-selective abortion is a prevalent issue in the United States, including among Asian immigrant communities (Nandi et al., 2015).

Instead, SSABs may be pursued as a proxy for broader political and social objectives. The widespread national and local news coverage of SSABs, often emphasizing their rationale rooted in nativist stereotypes about Asian immigrants, underscores the plausibility of this hypothesis (Ali, 2019; Yeung, 2015). Meanwhile, civil liberty advocacy groups (e.g., the ACLU) and women's rights organizations (e.g., Rewire News Group, The National Asian Pacific American Women's Forum) denounced the legislative passage of SSABs as "a solution in search of a problem that does not exist" (Jorawar, 2014; National Asian Pacific American Women's Forum, 2021; Wilson, 2014). Notably, advocacy organizations raised concerns about the psychological impact of SSABs on Asian women, arguing that they "feel stigmatized under this law as having backward values and looked down upon by their friends and neighbors simply because of their country of origin" (Jorawar, 2014).

The sudden interest in enacting SSABs may reflect two converging trends. First, the increasingly conservative Supreme Court majority has emboldened state legislatures to challenge the right to abortion, contributing to a proliferation of anti-abortion policies nationwide. Among the 1381 state-level abortion restrictions enacted since *Roe v. Wade* (1973), half were passed since 2011 (Guttmacher Institute, 2022; Nash and Cross, 2021). SSABs often appear alongside other restrictive measures, such as bans on abortions for genetic defects or near-total abortion bans, as part of coordinated legislative efforts to limit access

to abortion (Haberkorn, 2015). These policies disproportionately affect women of color and socioeconomically disadvantaged women, further exacerbating existing health inequities (Ely and Dulmus, 2010).

Second, the pursuit of SSABs specifically can be understood as a nativist response to the rapidly growing Asian immigrant population in the United States, particularly in southern and midwestern states (Citro et al., 2014; Kalantry, 2015). This connection is evident in the rhetoric of state representatives sponsoring such laws. For example, during South Dakota's legislative debate on SSABs, state representative Don Haggar stated:

> *"Let me tell you, our population in South Dakota is a lot more diverse than it ever was … There are cultures that look at a sex-selection abortion as being culturally okay. And I will suggest to you that we are embracing individuals from some of those cultures in this country, or in this state. And I think that's a good thing that we invite them to come, but I think it's also important that we send a message that this is a state that values life, regardless of its sex."*

Similarly, Stacey Nelson, another South Dakota state representative, remarked:

> *"Many of you know I spent 18 years in Asia … And sadly, I can tell you that the rest of the world does not value the lives of women as much as I value the lives of my daughters."* (Lee, 2014).

Such statements underscore the racialized undertones of SSABs, which frame Asian immigrants as culturally incompatible with American norms. These sentiments may be fueled by demographic trends; for instance, South Dakota experienced one of the largest growths in Asian immigrant populations over the past decade (Gebeloff et al., 2021). Similar growth in the Asian population has been observed in other states like North Dakota, North Carolina, and Indiana, all of which have passed or proposed SSABs in recent years. Research shows that 70percent of states experiencing high rates of Asian immigrant population growth considered or adopted SSABs, compared with 51 percent of states with lower growth rates (Kalantry, 2015).

The inclusion of SSABs in anti-abortion legislative packages is further suggestive of their symbolic purpose. By framing these laws as a response to gender inequality, proponents can co-opt feminist rhetoric to position abortion restrictions as moral acts that counter sex discrimination. This strategy serves to rebut critiques that abortion bans undermine women's rights (Citro et al., 2014). However, the selective targeting of abortion as the sole means of preventing sex selection is revealing. Anti-abortion legislators have made no efforts to regulate alternative methods of sex selection, such as sperm sorting or pre-implantation genetic diagnosis, suggesting that the primary goal of SSABs is to restrict abortion access rather than combat gender discrimination (Citro et al., 2014).

4. Conceptual framework and mechanisms

The conceptual framework presented in Fig. 1 illustrates the pathways through which SSABs influence adverse birth outcomes, particularly among Asian immigrant mothers. SSABs operate as a form of structural stigma, perpetuating stereotypes and xenophobic narratives that marginalize Asian immigrant communities. This stigma fosters a hostile social climate that impacts maternal and infant health outcomes through multiple interrelated pathways, including both individual behaviors and institutional practices. For example, the stigma associated with SSABs may manifest as changes in physician practices, such as racial profiling or differential treatment of expectant Asian mothers by healthcare providers. These changes can compromise the quality of care, leading to adverse birth outcomes.

Importantly, SSABs may have substantive consequences on birth outcomes even if individual-level awareness of these laws within the broader Asian immigrant community remains limited. Notably, media coverage and public discourse surrounding SSABs may help create a

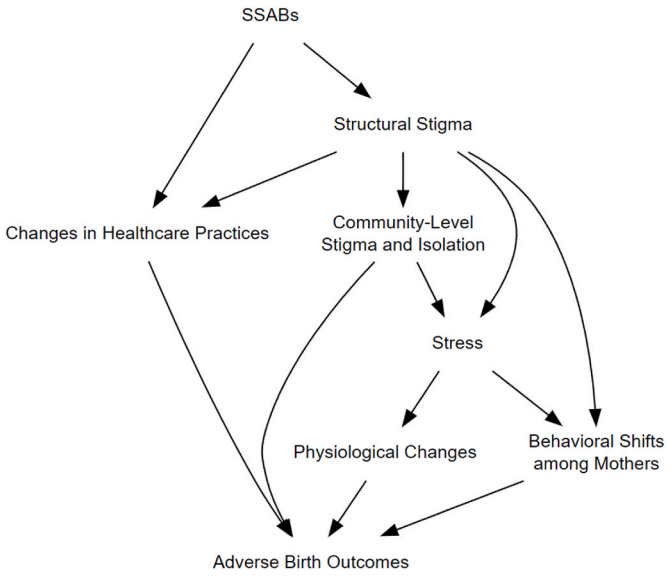

Fig. 1. Conceptual diagram linking sex-selective abortion bans (SSABs) and adverse birth outcomes among Asian immigrant mothers.

hostile social environment for Asian immigrants, perpetuating a climate of heightened xenophobia and stigmatization. Such a climate may influence health outcomes by exacerbating stress and altering social dynamics. For instance, community isolation can amplify these effects by weakening social support networks, leaving mothers with fewer resources to navigate pregnancy challenges. Additionally, community-level stigma can lead to adverse birth outcomes by limiting access to community resources, such as culturally sensitive healthcare providers or safe and supportive environments. The lack of these resources may exacerbate physical and emotional health challenges during pregnancy, compounding the risk of adverse outcomes.

Another key mechanism in the framework is the influence of structural stigma and stress on behavioral shifts among mothers. Stigma and stress may discourage women from seeking timely prenatal care or lead to other changes in health-seeking behaviors. These behavioral shifts further heighten the risks of adverse birth outcomes by limiting access to critical healthcare services or by increasing the likelihood of delayed interventions.

The framework proposed in Fig. 1 also accounts for the interconnectedness and feedback loops between these mechanisms. For instance, community-level stigma reinforces maternal stress, while stress contributes to behavioral changes, creating a cycle of compounded effects. These dynamic interactions demonstrate how structural stigma not only operates at an individual level but also shapes broader community dynamics, ultimately influencing maternal and infant health. This conceptual model thus highlights the multifaceted ways in which SSABs, as a form of structural stigma, impact birth outcomes. By recognizing both direct and indirect pathways, the model provides a comprehensive lens for understanding how stigmatizing policies harm vulnerable populations, offering critical insights for addressing health disparities among marginalized groups.

Besides structural sigma, an alternative pathway is that SSABs directly alter healthcare practices for women. For instance, SSABs could contribute to fewer available abortion providers or create legal and logistical barriers that disproportionately affect economically disadvantaged women who lack material resources. These barriers could lead to adverse birth outcomes if women are forced to carry unintended or high-risk pregnancies to term without adequate support or preparation. However, this mechanism is unlikely to be the primary pathway affecting the birth outcomes of Asian immigrant mothers specifically. Unlike other economically disadvantaged groups, Asian immigrant

mothers may not experience widespread material deprivation.

Building on this conceptual model, we formulate two hypotheses to empirically test the impact of SSABs. First, we hypothesize that the adverse social environment created by SSABs negatively affects birth outcomes for infants of Asian immigrant mothers, specifically increasing the incidence of LBW and PTB (**H1**). Second, we examine whether SSABs achieved their stated objective of addressing sex-selective practices by altering the infant sex ratio among Asian immigrants. If proponents' claims of a strong cultural preference for male offspring were accurate, one might expect SSABs to reduce male-biased sex ratios. However, the availability of reproductive technologies that enable sex selection in the earlier stages of pregnancy likely diminishes the reliance on sex-selective abortion, making it an improbable mechanism. Consequently, we hypothesize that the passage of SSABs had little to no effect on the probability of having a male child among Asian immigrant mothers (**H2**).

5. Data and measures

We obtained 2005–2019 natality birth data from the National Vital Statistics System, which is compiled annually by the National Center for Health Statistics (NCHS) and provides information on all registered U.S. births. We chose this timeframe because it spans from 2005, five years before the earliest SSAB we analyze (Oklahoma in 2010), to 2019, five years after the most recent SSAB we examine (South Dakota in 2014); we exclude data from 2020 due to disruptions in data collection processes caused by the COVID-19 pandemic. Additionally, certain variables, such as educational attainment and prenatal care, have relatively consistent measurements during this period.

We obtained immigrant mothers' countries of origin and states of residence in the U.S. from the restricted-access version of the data. Immigrant mothers are defined as those who were not born in the 50 U.S. states or the District of Columbia. In our dataset, about 22.2 percent of the Asian immigrant mothers were born in India, 17.9 percent in China, 12.4 percent in the Philippines, 10.5 percent in Vietnam, and 6.2 percent in South Korea. The remaining countries each contribute less than 5 percent of the total population of Asian immigrant mothers.

We restricted our sample to singleton births to foreign-born mothers residing in the 50 U.S. states or D.C. (n = 12,518,410). We excluded births with missing maternal birthplace (6.57 percent of all births), births to mothers outside the 50 states and D.C. (3.25 percent), and multiple births (n = 366,735), which are at elevated risk for LBW and PTB (Torche and Rauf, 2021). Robustness checks including multiple births yielded similar results. To preserve sample size and minimize bias from missing covariates, we treated missingness as its own category. Final analytic samples vary slightly by outcome due to missingness: 12,509,932 births for LBW, 12,490,366 for PTB, and 12,518,410 for sex ratio analyses. Descriptive statistics appear in Table 1.

Table 2 presents an overview of the characteristics of Asian immigrants in both SSAB and non-SSAB states in our sample. Notably, the prevalence of LBW and PTB is higher in SSAB states when compared to non-SSAB states. Conversely, SSAB states have a higher average level of mothers' educational attainment and a greater prevalence of marriage status. Additionally, a larger percentage of mothers in non-SSAB states fall within the normal range (5–10) of prenatal care visits. Turning our attention to fathers' characteristics, we observe that fathers in non-SSAB states are on average older, have lower educational attainment, and a higher percentage identify as Asian. Nevertheless, overall, the two groups exhibit relative comparability, with the aforementioned differences being relatively modest.

5.1. Birth outcomes

We focus on two key measures of infant health: LBW and PTB. The World Health Organization defines LBW as a birth weight of less than 2500 g (5 pounds, 8 ounces) (World Health Organization, 2004). Infants with LBW are more likely to suffer from health complications and face far higher risks of infant mortality (Hauck et al., 2011). They may also suffer long-term consequences, such as respiratory difficulties throughout childhood and hypertension as adults (Belbasis et al., 2016; Caudri et al., 2007). Similarly regarded as a problematic indicator of infant health and associated with complications over the life course (Cutland et al., 2017), PTB describes infants born before 37 weeks of pregnancy (World Health Organization, 2022). We additionally examine whether an infant was male as the third outcome variable to examine whether SSABs had their intended effect of increasing the proportion of girls born to Asian immigrants. All outcomes were measured as binary variables. Appendix Figures A1-A4 show that LBW and PTB rates remained stable for White and Hispanic immigrants and lower for Black immigrants in SSAB states over time, but both increased for Asian

Table 1
Descriptive statistics of births born to immigrant mothers.

	N	Mean (SD)/%
Low birth weight	12,509,932	5.66 %
Missing	8478	0.07 %
Preterm birth	12,490,366	9.66 %
Missing	28,044	0.22 %
Male infant	12,518,410	51.24 %
Live birth order		
1	4,382,941	35.01 %
2	4,022,288	32.13 %
2+	4,050,039	32.35 %
Missing	63,142	0.50 %
Maternal age	12,518,410	29.65 (5.92)
Maternal race/ethnicity		
Non-Hispanic White	1,813,087	14.48 %
Non-Hispanic Black	1,114,324	8.90 %
Hispanic	6,767,279	54.06 %
Non-Hispanic Asian	2,715,148	21.69 %
Non-Hispanic Other	9345	0.07 %
Missing	99,227	0.79 %
Maternal educational attainment		
< High school	3,322,013	26.45 %
High school	2,412,534	19.27 %
Some college	1,832,759	14.64 %
Bachelor's degree	1,763,299	14.09 %
Graduate degree	1,125,147	8.99 %
Missing	2,062,658	16.48 %
Marital status		
Married	7,965,269	63.63 %
Not married	4,077,174	32.57 %
Missing	475,967	3.80 %
# prenatal visits		
<5	727,013	5.81 %
5–10	4,812,738	38.45 %
> 10	6,765,656	54.05 %
Missing	213,003	1.70 %
Paternal age		
≤ 30	4,205,778	33.60 %
31 - 40	5,610,670	44.82 %
41–50	1,473,813	11.77 %
> 50	208,947	1.67 %
Missing	1,019,202	8.14 %
Paternal race/ethnicity		
Non-Hispanic White	1,761,916	14.07 %
Non-Hispanic Black	768,348	6.14 %
Hispanic	5,752,395	45.95 %
Non-Hispanic Asian	1,740,933	13.91 %
Non-Hispanic Other	13,906	0.11 %
Missing	2,480,912	19.82 %
Paternal educational attainment		
< High school	2,219,938	17.73 %
High school	1,770,355	14.14 %
Some college	1,307,327	10.44 %
Bachelor's degree	1,276,352	10.20 %
Graduate degree	1,065,126	8.51 %
Missing	4,879,312	38.98 %

Note: Means and standard deviations (SD) were reported for continuous variables. Percentages were reported for categorical variables.

Table 2
Characteristics of Asian immigrants in SSAB states and non-SSAB states.

	SSAB states	Non-SSAB states
Low birth weight	6.92 %	6.54 %
Missing	0.20 %	0.05 %
Preterm birth	9.21 %	8.44 %
Missing	0.10 %	0.18 %
Male infant	51.50 %	51.75 %
Live birth order		
1	44.79 %	45.67 %
2	36.55 %	37.16 %
2+	18.20 %	16.80 %
Missing	0.46 %	0.36 %
Maternal age	30.83	31.38
Maternal educational attainment		
< High school	8.73 %	7.31 %
High school	10.89 %	11.87 %
Some college	11.57 %	15.18 %
Bachelor's degree	25.78 %	28.65 %
Graduate degree	23.64 %	21.22 %
Missing	19.39 %	15.78 %
Marital status		
Married	90.35 %	82.95 %
Not married	9.63 %	10.46 %
Missing	0.01 %	6.59 %
# prenatal visits		
<5	4.30 %	3.37 %
5–10	33.43 %	36.30 %
>10	60.25 %	58.74 %
Missing	2.02 %	1.59 %
Paternal age		
≤ 30	23.33 %	21.33 %
31 - 40	59.82 %	59.33 %
41–50	11.93 %	14.13 %
>50	1.88 %	2.13 %
Missing	3.04 %	3.08 %
Paternal race/ethnicity		
Non-Hispanic White	11.37 %	9.64 %
Non-Hispanic Black	1.24 %	1.24 %
Hispanic	1.68 %	2.41 %
Non-Hispanic Asian	59.95 %	62.50 %
Non-Hispanic Other	0.13 %	0.10 %
Missing	25.63 %	24.12 %
Paternal educational attainment		
< High school	6.66 %	5.30 %
High school	9.01 %	9.35 %
Some college	10.03 %	11.99 %
Bachelor's degree	19.95 %	20.53 %
Graduate degree	24.92 %	20.85 %
Missing	29.43 %	31.99 %
N	362,045	2,353,103

immigrants after 2013, coinciding with SSAB policy enactments. This timing suggests a potential link between policy implementation and worsening birth outcomes for Asian immigrants.

5.2. Covariates

We include covariates that have been significantly associated with infant health in prior studies (Bennett, 1992; Conway and Deb, 2005; Green and Hamilton, 2019). They include infant sex (male = 1, only for LBW and PTB), live birth order (1, 2, or 2+), mother's age (quadratic form), father's age (<30, 31–40, 41–50, or >50), maternal and paternal educational attainments (less than high school, high school, some college, bachelor's degree, or graduate degree), mother's marital status (married = 1), mother's number of prenatal visits (<5, 5–10, or >10), paternal race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, non-Hispanic Asian, and non-Hispanic Other), and information on birth months (categorical). Because a relatively small proportion of families has more than two children, we included a live birth order category of >2 in addition to 1 and 2. Following previous studies (Carter et al., 2016), we categorized the number of prenatal visits to distinguish underutilization (<5) and overutilization (>10) from normal utilization (5–10). Because the missing rate for paternal age is relatively large, we measured it as a categorical variable that includes a missing category instead of as a continuous variable.

6. Methods

During the study period, six states—Oklahoma (2010), Arizona (2011), Kansas (2013), North Carolina (2013), North Dakota (2013), South Dakota (2014)—successfully implemented SSABs, thereby serving as our designated treatment states. States that never successfully implemented SSABs in our study period are our control states. Notably, we emphasize the date of enactment as the pivotal reference point rather than the date of proposal, for both theoretical and empirical reasons. While our framework acknowledges that stigmatizing effects may begin during legislative debate, we conceptualize implementation as the moment when SSABs become structurally embedded. Enactment marks formal state endorsement of the law, potentially heightening its salience for both community members and healthcare providers. It is also more likely to trigger operational changes in clinical settings, such as increased provider scrutiny or racial profiling, that can directly affect maternal stress and behavior. In contrast, debate periods are often ambiguously defined and inconsistently documented across states, making them unsuitable as a standardized analytic cutoff.

Illinois and Pennsylvania, which enacted bans in 1984 and 1989 respectively, were excluded from our analyses because these bans were implemented in significantly different historical and policy contexts, including the absence of rhetoric explicitly targeting Asian immigrants (Kalantry, 2015). Additionally, since these states were always treated throughout our study period, they do not contribute to the variation required for our analysis. Furthermore, we excluded Indiana, Kentucky, and Arkansas because court rulings prevented SSABs from taking effect, limiting institutional response. Robustness checks using these three states as the treatment do not show a significant effect. While stigma can emerge from public debate, we expect its physiological consequences to be more pronounced when laws are implemented and begin shaping provider behavior. Consequently, the remaining states, all of which did not enact SSABs, served as our control states. Missouri implemented a SSAB in August 2019, while Tennessee and Mississippi enacted SSABs in 2020, thus rendering them eligible to be categorized as control states. Using this information, we constructed a state-year panel dataset in which SSAB enactment is a binary variable that varies across time and states. We estimated the following triple-difference model:

$$y_{ist} = \beta_0 + \beta_1 SSAB_{ist} + \beta_2 Asian_i + \beta_3 SSAB_{ist} \times Asian_i + \beta_4 Asian_i \times \sum_s State_s + \beta_5 Asian_i \times \sum_t Year_t + \beta_6 \sum_s State_s \times \sum_t Year_t + \beta_7 X_i + \sum_s State_s + \sum_t Year_t + \epsilon_{ist}, \quad (1)$$

where y_{ist} is the birth outcome (i.e., LBW, PTB, or male infant) for individual i in state s and year t, $SSAB_{ist}$ is time-varying and captures whether an SSAB was enacted in state s and in year t, $Asian_i$ is an indicator of Asian immigrants versus other immigrants, and X_i includes individual covariates. We also included state fixed effects and year fixed effects in the model, as well as the interaction terms between being Asian and state, between being Asian and year, and between state and year. β_3 is the treatment effect of our interest, capturing the causal effect of SSABs on Asian immigrants' birth outcomes.

Our primary model compares Asian immigrant mothers (i.e., foreign-born Asians) with non-Asian immigrant mothers. This broad grouping reflects both conceptual and empirical considerations. SSABs draw on pan-ethnic stereotypes that blur distinctions among Asian subgroups, and the resulting stigma likely affects the broader Asian immigrant population. Moreover, the natality data include only country-of-birth—not ethnicity—so restricting the analysis to a few countries would likely miss affected individuals and underestimate the policy's reach. To

assess robustness, we also conducted subgroup analyses of mothers from China, India, South Korea, and North Korea—countries most directly linked to the ethnicities invoked in public discourse surrounding SSABs (discussed later).

Our triple-difference strategy addresses potential confounding factors, including broader contextual influences such as environmental factors, residential segregation, and socioeconomic class, by accounting for differential time trends and state-level heterogeneity. State fixed effects control for time-constant characteristics unique to each state, such as long-term institutional norms related to abortion policies and underlying levels of anti-immigrant sentiment. These fixed effects ensure that our estimates are not biased by unchanging characteristics that might make certain states more likely to pass SSABs. Similarly, year fixed effects account for temporal shocks that could influence birth outcomes nationwide, such as economic recessions or major political events.

More importantly, the inclusion of state-year interaction terms addresses differential trends in birth outcomes across states, which may result from variations in anti-Asian sentiment or other contextual factors influencing both the likelihood of SSAB passage and adverse birth outcomes, such as demographic shifts in immigrant populations, economic conditions like unemployment rates, or differences in healthcare access and state-level abortion policies. Interaction terms between being Asian and state, and between being Asian and year, further allow the effects of being an Asian immigrant on birth outcomes to vary across time and geographic context, capturing the unique dynamics of social climates for Asian immigrants. Specifically, the interaction terms between being Asian and state account for variation in birth outcomes due to selective migration patterns, as Asian immigrants may self-select into states with particular social or political climates. For example, conservative Asian immigrants may be more likely to reside in conservative states, which could influence both their exposure to SSABs and their baseline birth outcomes. Similarly, the interaction terms between being Asian and year account for temporal variation in birth outcomes, such as an increasing or decreasing trend in anti-Asian sentiment across all states over time.

By focusing on the enactment date of SSABs rather than their proposal date, our analysis isolates the effects of the laws themselves, reducing the risk of conflating the impact of pre-existing anti-Asian sentiment with the effects of SSAB implementation. Additionally, our robustness checks include subgroup analyses and comparisons of states with high and low proportions of Asian immigrant populations to test the consistency of our findings (results available upon request). These checks confirm that the observed effects are not solely driven by pre-existing social climates but are amplified by the enactment of SSABs, which institutionalize stigma and exacerbate its consequences.

The triple-difference estimator effectively separates the causal impact of SSABs from confounding factors by leveraging variation in birth outcomes for Asian versus non-Asian immigrants across states and over time. Unlike a conventional difference-in-differences (DID) approach, which compares outcomes before and after SSAB enactment between treatment and control states under the assumption of parallel trends, our triple-difference model relaxes this assumption. Specifically, the triple-difference estimator only requires that there are no other shocks to birth outcomes in states and years that passed SSABs that differentially affect Asian immigrants relative to all other immigrants. This approach provides a more robust framework for causal identification, as it accounts for potential biases arising from non-parallel trends.

The triple-difference estimator calculates the difference between two DID estimators: one comparing birth outcomes for Asian immigrants across treatment and control states, and the other comparing birth outcomes for non-Asian immigrants across the same states. Even if these individual DID estimates are biased due to confounders like changes in abortion access policies, state-level healthcare environments, or obstetric practice due to anti-abortion activism, the triple-difference estimator can still yield unbiased results as long as these biases affect both groups in a similar way. Our investigation of the two DID estimators reveals biases in the same direction, with both showing significantly positive estimates (results available upon request). This pattern suggests the presence of time-varying confounders, such as increasingly restrictive abortion policy environments for all immigrants, that may contribute to adverse birth outcomes.

To further ensure the robustness of our findings, we conducted several additional checks, which are detailed in the Robustness Check section. These tests examined the underlying assumptions of the triple-difference model, including the potential for differential trends and state-specific factors that could confound the estimates. By effectively controlling for these shared confounders, the triple-difference strategy isolates the additional impact of SSABs on Asian immigrants' birth outcomes. This methodological advantage ensures that our findings reflect the causal effects of SSABs rather than broader social or policy climates that may have preceded their implementation.

7. Results

Fig. 2 plots the coefficients from the main triple-difference analyses. They indicate that SSABs increased the probability of LBW and PTB among Asian immigrant mothers by 0.3 and 0.5 percentage point, respectively. Although modest in percentage terms, these increases are meaningful in absolute terms. Based on the 362,045 births to Asian immigrant mothers in SSAB states during our study period, the estimated effects translate to approximately 1086 additional LBW infants and 1810 additional PTB infants. These estimates underscore the population-level significance of SSAB-induced disparities. Consistent with **H1**, these results provide evidence that SSABs had a negative effect on the infant birth outcomes of Asian immigrants. The full results are shown in Appendix Table S3. Meanwhile, consistent with **H2**, we do not find evidence that the bans had an effect on infant sex for Asian immigrant mothers relative to all other immigrant mothers.

While prior studies have shown that acute population-level stressors, such as natural disasters or terrorist attacks, can reduce male-to-female sex ratios due to early selective loss of male fetuses (Fontanesi et al., 2024), SSABs appear to operate through different mechanisms. Our dynamic analysis (Table 3) suggests that SSABs trigger a buildup of chronic stress, with birth outcomes worsening only after two years post-enactment. Biologically, the pathways leading to LBW and PTB typically arise in the second or third trimester, whereas stress-induced fetal loss that alters the sex ratio likely occurs earlier in gestation (Fontanesi et al., 2024). Moreover, because we rely on data from live births, any subtle shifts in early pregnancy loss may be undetectable in our data. Thus, SSABs may not act early or acutely enough to influence the sex ratio, even as they exert measurable harm later in pregnancy.

Next, we assessed whether SSABs had varying impacts based on mothers' education, infant sex, and country of origin. Fig. 3 presents the key findings. Detailed results are shown in Appendix Table S4. Panel A shows that the harmful effects of SSABs are more consistent among Asian immigrant mothers with a college degree. This finding aligns with the theoretical framework, suggesting that material or resource deprivation is not the primary mechanism driving adverse outcomes. In particular, more-educated mothers may be more attuned to changes in the social climate due to higher news consumption and greater interracial contact, which can heighten sensitivity to shifts in stigma and xenophobia within their state. Testing the coefficients between education levels confirms that the harmful effects were statistically greater among mothers with a college degree than those without. This result also serves as a robustness check against the possibility that SSAB effects are primarily driven by restricted access to abortion or prenatal care services, which would disproportionately affect less-educated and socioeconomically disadvantaged mothers. Instead, the heightened stress and anxiety linked to structural stigma may be a plausible pathway.

We further examined heterogeneity by infant sex, as prior research suggests that male fetuses are more vulnerable to external stressors than female fetuses (Alur, 2019; Kraemer, 2000; Walsh et al., 2019). If SSABs

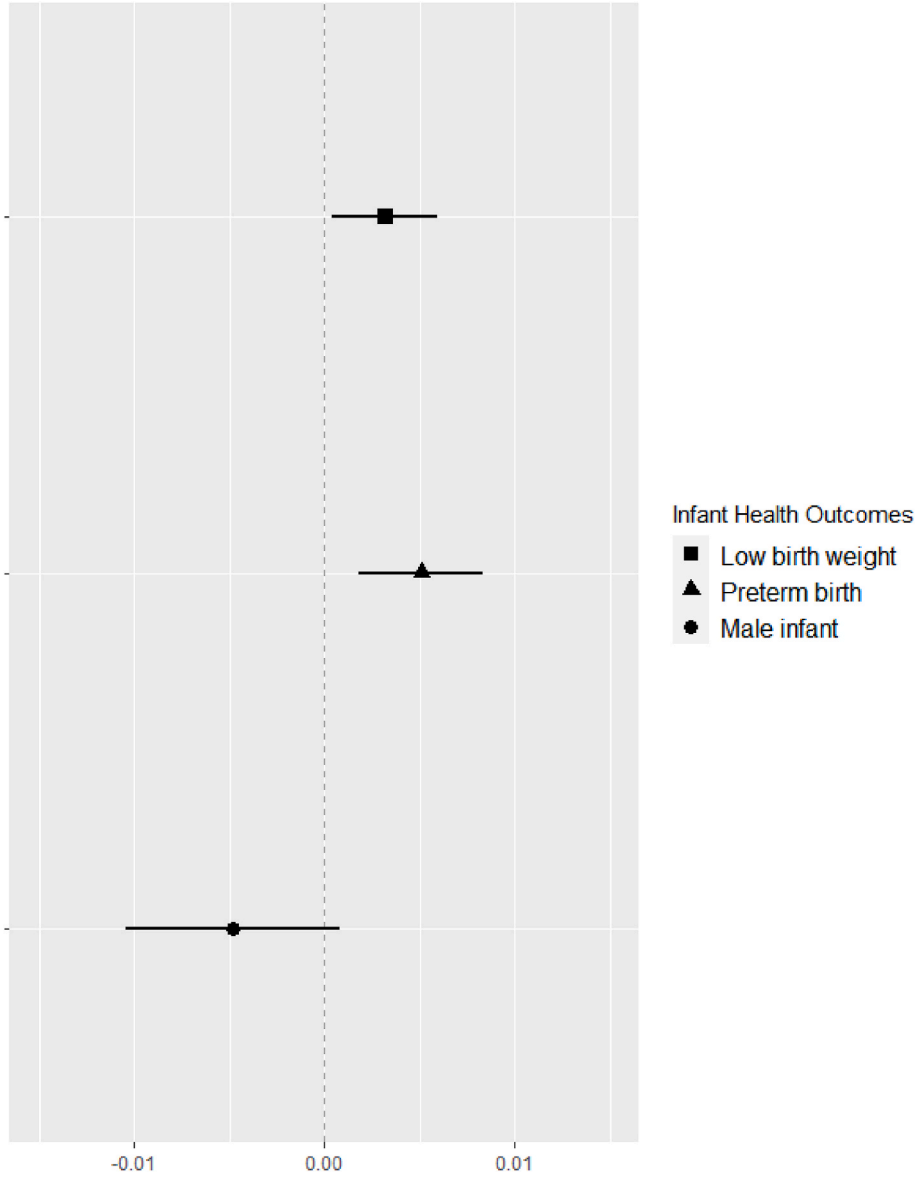

Fig. 2. Effects of sex-selective abortion bans on infant health outcomes among Asian immigrant mothers
Note: Plotted coefficients from the triple-difference models represent the probabilities of low birth weight, preterm birth, or having a male infant.

exacerbate xenophobia and stigmatization, leading to higher stress levels among Asian immigrant mothers, one might expect disproportionate harm to male infants. However, as shown in Panel B, we did not find evidence to support this hypothesis, indicating that the effects of SSABs do not differ significantly by infant sex.

Finally, we analyzed variations based on mothers' countries of origin among Asian immigrants to address the association of certain ethnicities, such as Chinese, Indian, and Korean, with sex-selection practices. That is, the negative effects of SSABs may be more pronounced among Asian immigrants from countries such as China, India, North Korea, and South Korea because these nations are closely associated with the ethnic groups most explicitly tied to the stigmatizing narratives underpinning SSABs. We find evidence for this hypothesis. Panel C shows that SSABs had particularly detrimental impacts on health outcomes for immigrants from these countries compared to Asian mothers from other nations. Pre-policy sex ratios were similar between these subgroups (51.88 percent) and other Asian immigrants (51.58 percent), suggesting minimal baseline differences and reinforcing our interpretation that post-policy divergence reflects SSAB-related stigma rather than pre-existing cultural patterns.

8. Robustness and auxiliary analyses

8.1. Exploring potential mechanisms

We examined several potential pathways through which SSABs may affect Asian immigrants' birth outcomes. First, we examined the possibility that the negative effects of SSABs are mediated through material or resource deprivation. For example, we assessed inadequate utilization of prenatal care services using three indicators: 1) fewer than five prenatal visits, 2) no prenatal care during pregnancy, and 3) no prenatal care in the first two trimesters. While it is plausible that Asian immigrant mothers aware of SSABs might avoid prenatal care to reduce exposure to discrimination, our results (Appendix Table S5) show that SSABs actually increased prenatal care usage among this group. This pattern may reflect heightened stress and anxiety prompting more frequent prenatal visits, consistent with evidence linking excessive prenatal visits to pregnancy interventions like cesarean delivery, which are associated with negative selection (Carter et al., 2016).

Another potential mechanism is reduced prenatal care quality due to SSABs altering physician behavior. Profiling and questioning foreign-

Table 3
Dynamic effects of sex-selective abortion bans (SSABs) on birth outcomes among Asian immigrant mothers.

	Low birth weight	Preterm birth	Male infant
Asian immigrant * SSABs (Ref. All other immigrants)			
Asian immigrant * 0–2 years	−0.000 (−0.004, 0.003)	0.003 (-0.001, 0.007)	−0.003 (−0.010, 0.004)
Asian immigrant * After 2 years	0.006*** (0.003, 0.009)	0.007*** (0.003, 0.011)	−0.006 (−0.013, 0.000)
Years after the ban was passed			
0–2 year	0.615*** (0.249, 0.982)	0.442** (0.078, 0.806)	−0.560** (−0.921, −0.200)
After 2 years	0.627*** (0.260, 0.994)	0.480** (0.116, 0.844)	−0.642*** (−1.003, −0.281)
Asian immigrant	0.008** (0.002, 0.014)	0.030*** (0.022, 0.038)	0.013 (−0.001, 0.026)
Male	−0.007*** (−0.007, −0.007)	0.012*** (0.011, 0.012)	
Sample size	11,484,173	11,465,075	11,490,531

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Low birth weight is defined as infants who were born weighing less than 2500 g. Preterm birth is defined as mothers whose gestational age were less than 37 weeks. Birth months dummies, state fixed effects, birth year fixed effects, and the interaction terms between Asian and state, between Asian and year, and between state and year are included in all models. All models control for covariates including live birth order, maternal age, maternal educational attainment, marital status, number of prenatal visits, paternal age, paternal educational attainment, and paternal race/ethnicity.

born Asian women about their reasons for seeking abortions could disproportionately stress these mothers and negatively affect fetal health. Additionally, such scrutiny might discourage abortions, leading to unintended pregnancies, which are associated with higher risks of adverse birth outcomes (Sable et al., 1997). While we could not directly test these hypotheses due to data limitations, we explored indirect evidence by comparing SSAB effects in states with stricter physician requirements (e.g., Oklahoma and Missouri) versus those with more lenient regulations (e.g., Arizona and Kansas). Our results (available upon request), however, did not indicate stronger effects in states with more stringent requirements. These findings suggest that while SSABs may indirectly affect birth outcomes through stress and stigma, the role of material deprivation and changes in healthcare practices is limited.

8.2. Exploring dynamic effects

We conducted a dynamic analysis of SSABs' effects on birth outcomes by year since enactment. As shown in Table 3, we did not find statistically significant effects within the first two years, but adverse impacts on LBW and PTB became evident beginning in the third year. This pattern is consistent with research showing that the consequences of exclusionary laws may unfold gradually as stress accumulates and institutional responses evolve (Torche and Rauf, 2021). While some laws, like Arizona's SB1070, triggered immediate health effects through intense public attention (Torche and Sirois, 2019), SSABs were more

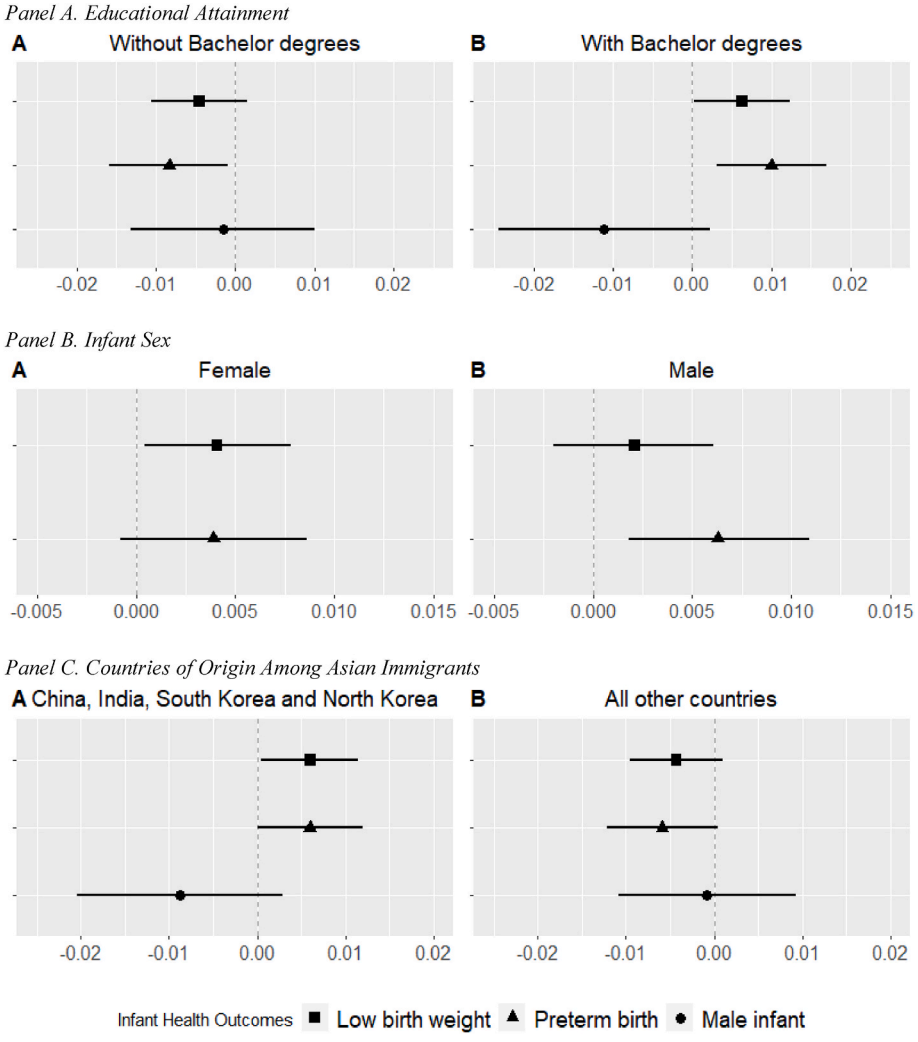

Fig. 3. Heterogeneous effects
Note: Plotted coefficients from the triple-difference models represent the probabilities of low birth weight, preterm birth, or having a male infant.

muted in national discourse and framed in the language of gender equity. One possible explanation is that their stigmatizing effects emerged more gradually, potentially through mechanisms such as a slow buildup of community anxiety, increased provider scrutiny, or racialized interactions in healthcare. Although our data do not permit direct testing of these pathways, future research could assess how cumulative exposure to stigmatizing sociopolitical climates shapes maternal health outcomes. These results suggest that the effects of structural stigma may not require acute shocks but could manifest over time.

8.3. Robustness checks

Although it is not possible to formally test the primary assumption of the triple-difference model (i.e., that no other shocks to birth outcomes in states and years that passed SSABs differentially affect Asian immigrants compared to all other immigrants), we conducted several robustness checks to ensure the reliability of our results. First, we re-estimated our models using White immigrant and White U.S.-born mothers as alternative reference groups instead of other immigrants. The consistent results across these comparisons, as shown in Appendix Figure A5, bolster confidence in our findings. For our estimates to be biased, there would need to be other shocks coinciding with SSAB enactments that differentially affected Asian immigrants compared to these diverse reference groups.

A common concern in studying the effects of SSABs is that they are often implemented alongside other restrictive abortion policies, which could confound the results. For example, North Dakota simultaneously enacted a heartbeat law in 2013 (Peralta, 2013), and Kansas passed sweeping anti-abortion legislation in the same year. Such policies could affect birth outcomes independently of SSABs (Hodges, 2013). However, our triple-difference approach mitigates this issue by comparing the effects of SSABs on Asian immigrants relative to other immigrants. Restrictive abortion policies are expected to have a similar impact across immigrant groups, reducing the likelihood that our results are driven by broader abortion policy environments. Similarly, anti-immigrant environments, which might accompany SSAB enactments, are unlikely to differentially impact Asian immigrants while leaving other immigrant groups unaffected.

To further rule out potential bias, we conducted a comprehensive review of abortion- and immigration-related policies enacted in the same states and years as SSABs. We found no other policies specifically relevant to Asian immigrants during these periods (see Appendix Table S2 for a list of all abortion-related policies implemented around the time SSAB policies were enacted.). Additionally, we tested whether SSABs had similar impacts on other racial/ethnic minority groups, including both immigrants and non-immigrants. If our results were confounded by non-SSAB policies, we would expect to observe similar effects across these groups. However, the results in Appendix Table S6 indicate no adverse effects on these populations, further supporting the specificity of SSAB impacts on Asian immigrants.

We conducted several additional robustness checks, all of which support our primary findings. Full results are available upon request. Briefly, these checks include: (1) incorporating the specific month of SSAB enactment into our models, as a refinement to our main approach, which coded the entire enactment year as "post-policy" for states that passed the law partway through the calendar year; (2) performing leave-one-out analyses by sequentially excluding each treated state to ensure that results were not driven by any single case; and (3) testing whether SSABs increased the likelihood of multiple births, which could signal greater reliance on assisted reproductive technologies like in vitro fertilization in response to these policies (Kulkarni et al., 2013). We found no evidence of increased multiple births. These robustness checks collectively provide strong evidence that our findings reflect the causal impact of SSABs rather than broader social, policy, or contextual factors.

9. Discussion and conclusion

SSABs have proliferated in the United States, particularly in states with rapidly growing Asian immigrant populations. Advocates of these laws have invoked racial stereotypes about Asian immigrants, framing them as culturally inclined toward aborting female fetuses due to a preference for sons. This study examines the impact of such policies on birth outcomes among infants of Asian immigrant mothers. We argue that SSABs harmfully reinforced a stigmatizing social climate, amplifying racial stereotypes and the perception of Asian immigrants as foreign "others." The prenatal period is especially sensitive to these stressors, with pregnant mothers and their infants particularly vulnerable to the adverse effects of structural stigma. Our findings suggest that SSABs are linked to poorer birth outcomes, such as LBW and PTB, among Asian immigrant mothers, but not among other immigrant or non-immigrant groups of color (Appendix Table S6). Moreover, SSABs did not significantly alter the infant sex ratio, undermining their purported rationale and effectiveness.

While SSABs are framed as responses to alleged sex-selective abortion practices, our intention is not to suggest that such practices are entirely absent among Asian immigrant populations. Rather, we argue that their prevalence has been overstated and mischaracterized in the legislative discourse surrounding these laws. Empirical evidence does not support the claim that sex-selective abortion is widespread in the U. S. context, even among groups historically associated with son preference abroad (Citro et al., 2014). At the same time, we acknowledge that modern reproductive technologies, such as sperm sorting and preimplantation genetic diagnosis, offer alternative means of sex selection that are not regulated by SSABs and may be more accessible to higher-resourced families. If sex selection occurs, it is likely pursued before pregnancy through these channels, rather than through abortion. Thus, we are skeptical that SSABs offer an effective remedy of the alleged problem at hand.d

This study makes three contributions. First, it highlights the underexplored relationship between structural discrimination and infant birth outcomes among Asian immigrant mothers, addressing a significant gap in the fields of sociology and population health (Gee and Ford, 2011; Gee et al., 2009). While much of the existing literature focuses on other racial and ethnic groups, the unique challenges faced by Asian immigrants remain understudied, despite their growing demographic significance. Asians now outpace Hispanics in immigration rates and are projected to become the largest immigrant group in the United States by mid-century (Budiman and Ruiz, 2021; Budiman et al., 2020). This shift underscores the urgency of understanding how structural stigma uniquely impacts this population.

Second, this study sheds light on the largely unnoticed structural-level manifestations of anti-Asian racism in contemporary American society. By examining the consequences of SSABs—policies that explicitly invoke racialized stereotypes—this research brings attention to a subtle but harmful form of structural discrimination that often goes unrecognized. While much of the existing literature emphasizes material deprivation or resource scarcity as primary mechanisms of structural racism (Bailey et al., 2017; Misra et al., 2021), our findings highlight the role of symbolic exclusion in perpetuating health disparities. SSABs amplify harmful stereotypes and deepen the stigma surrounding Asian immigrant communities, creating a toxic social climate that can adversely affect maternal and infant health outcomes. By broadening the scope of inquiry to include these symbolic effects, this study contributes to a more nuanced understanding of how structural racism operates and its implications for population health. Highlighting these broader effects can stimulate more inclusive conversations around racial justice and policy reform.

Finally, examining the consequences of SSABs is of timely public policy interest given the rapid expansion of such laws across the United States over the past decade. To our knowledge, only one other study has empirically investigated the effects of SSABs (Nandi et al., 2015). The

authors examined the sex ratios of Asian newborns in Illinois and Pennsylvania relative to their neighboring states before and after SSABs were passed in 1984 and 1989. The study found no evidence that the policies had any impact on the alleged practice of sex selection, suggesting that such laws were ineffectual (Nandi et al., 2015). However, advocates of SSABs in the 1980s invoked no xenophobic rhetoric about Asian immigrants (Kalantry, 2015). In contrast, our present study shifts attention to SSAB enactment over the past decade and its consequences on Asian immigrants' birth outcomes. In this pursuit, we also delve into an increasingly important subject: the convergence of xenophobia, racism, and structural sexism and its impact on the health of Asian immigrant communities. We specifically document how an abortion policy motivated by the fear of foreign "Others" can have harmful health consequences on those populations.

This study has several limitations. First, while our triple-difference model, along with extensive robustness checks, provides a strong foundation for causal inference, unobserved confounding remains a possibility, as in all observational studies. Our specification incorporates flexible state-specific trends, but finer-grained temporal autocorrelation may still exist. The best approach for addressing such autocorrelation in difference-in-differences designs with staggered policy adoption remains under debate and is an important area for future research. Moreover, by defining exposure based on enactment dates, we may underestimate effects that began during earlier public debate or media attention. Second, we cannot directly observe the mechanisms linking SSABs to adverse birth outcomes. We theorize that these laws fostered a stigmatizing climate that heightened stress and may have altered clinical care, but institutional responses, such as changes in provider behavior, are difficult to capture with available data. Future studies using administrative records could help unpack these pathways. Third, while we did not detect spillover effects among U.S.-born Asian Americans, outcomes like mental health may be more sensitive to SSAB-related stigma. Additional research is also needed to assess whether regional spillovers affected nearby states.

Despite these limitations, our study makes an important and timely contribution to an understudied population as SSABs have spread rapidly across the United States. Because of the ongoing nature of anti-abortion policies, additional states are likely to pass SSABs in the coming decade. Our findings suggest that these future SSABs will harm the population health of Asian immigrants in the United States, all the while failing to address the alleged concern about possible practices of sex selection. Of course, we also acknowledge that in the wake of the Supreme Court reversal of *Roe v. Wade*, the future of anti-abortion legislation is likely to focus on state bans on abortion entirely—including restricting access to contraception—rather than piecemeal legislation chipping away at abortion rights. Such measures are likely to disproportionately harm women from vulnerable and disadvantaged backgrounds. We call on future studies to examine the population-level consequences of such draconian policies.

Our investigation into the consequences of SSABs also comes at a time when hate crimes targeting Asians have spiked—increasing by more than 339 percent from 2020 to 2021—owing largely to the rise in anti-Asian sentiment in the wake of the COVID-19 pandemic (Tessler et al., 2020; Yam, 2022). We argue that there are striking parallels between these two phenomena. We speculate that the anti-Asian rhetoric associated with the pandemic (e.g., "Chinese virus" and "Wuhan Flu") likewise gave rise to a stigmatizing social climate that likely harmed the health of Asian individuals in the United States. We call on future research to devote more attention to the ways in which structural forms of stigma, such as xenophobic rhetoric and scapegoating, can be the basis of adverse health consequences.

CRediT authorship contribution statement

Emma Zang: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Keitaro Okura:** Writing – review & editing, Writing – original draft. **Melissa Tian:** Writing – review & editing.

Ethics statement

This study did not involve the collection of primary data from human subjects and relied solely on secondary data sources that are publicly available or de-identified. As such, ethics approval was not required for this research.

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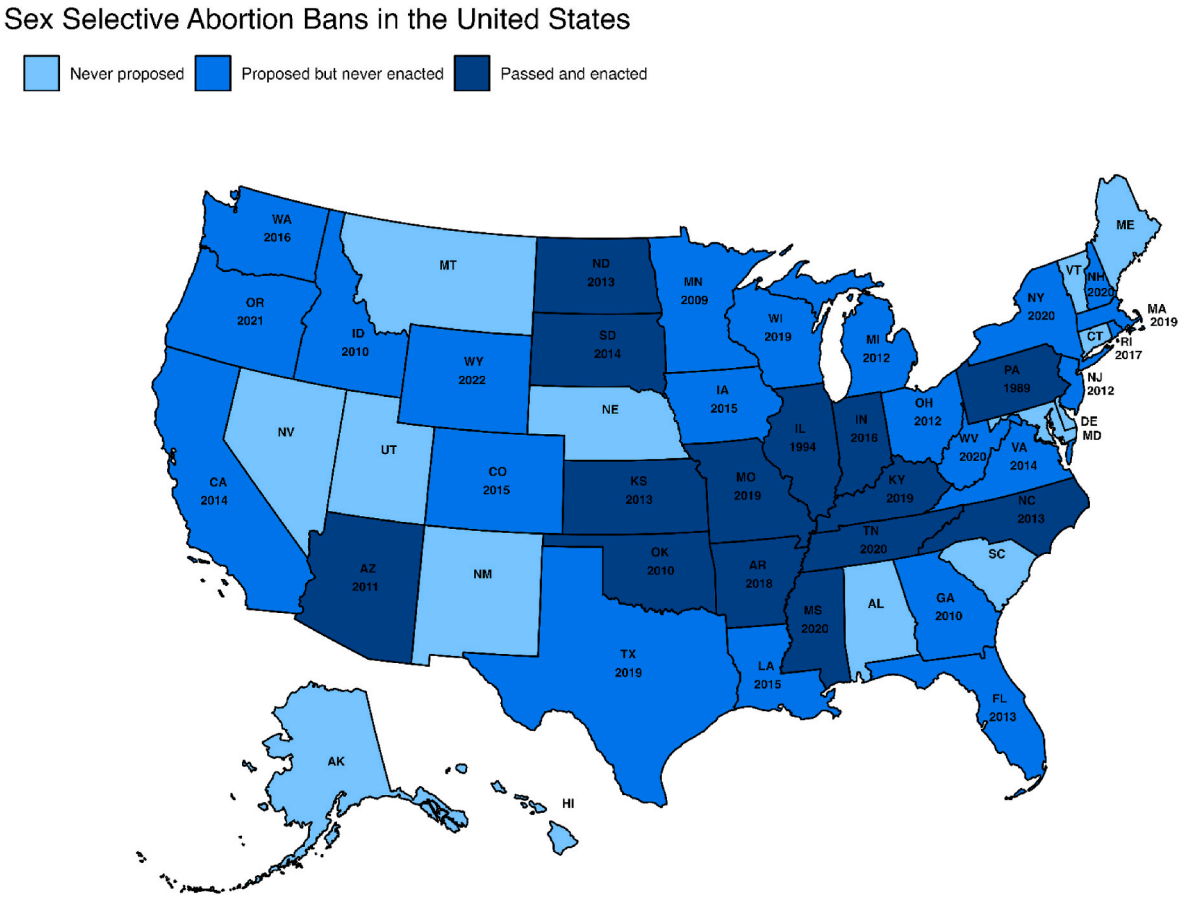
Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2025.118442.

Appendix. Map M1



Data availability

The authors do not have permission to share data.

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