ABSTRACT

Title of Dissertation:	EXAMINING THE IMPACTS OF PUBLIC POLICY CHANGES ON IMMIGRANT CHILDREN'S INSURANCE COVERAGE, ACCESS TO CARE, AND HEALTH OUTCOMES
	Jun Chu, Doctor of Philosophy, 2022
Dissertation directed by:	Dr. Michel Boudreaux, Associate Professor Department of Health Policy and Management

A large body of evidence shows that public policies that expanding public insurance eligibility to children would lead to improvements in health care access and health outcomes during childhood. Growing up in the US, immigrant children face multifaceted barriers related to "not from here", including economic constrains, acculturation pressure, immigration status of self and family members. It is unclear if immigrant children may respond to a public policy that expand public insurance eligibility to them. Prior research showed that immigrants would adjust their participation in public programs and health care utilization based on their perceived immigration climate. However, less is known about the impact of a national immigration enforcement program on immigrant children's health care access and health outcomes. In this study, I examined two public policies: Children's Health Insurance Program Reauthorization Act of 2009, the public policy that expanded public insurance eligibility to immigrant children under the five-year bar; and Secure Communities, a national immigration enforcement program that linked federal immigration enforcement activities to local authorities.

I found that immigrant children in states that adopted CHIPRA's option experienced a 6.35 percentage points decrease in uninsurance, and 8.1 percentage points increase in public insurance coverage, while estimated changes on private coverage were not statistically

significant. I did not observe any statistically significant effects of CHIPRA on immigrant children's access to care and health outcomes. My estimates suggested that activation of SC significantly decreased immigrant children's public insurance coverage by 8.2 percentage points, while the estimates on other outcomes were not statistically significant.

EXAMINING THE IMPACTS OF PUBLIC POLICY CHANGES ON IMMIGRANT CHILDREN'S INSURANCE COVERAGE, ACCESS TO CARE, AND HEALTH OUTCOMES

by

Jun Chu

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2022

Advisory Committee:
Professor Michel H Boudreaux, PhD, Chair
Professor Dylan H. Roby, PhD
Professor Jie Chen, PhD
Professor Tianzhou Ma, PhD
Professor Amy B. Lewin, PhD

Dedication

This dissertation is dedicated to my family:

To my wife Yan Fang-Chu. Yan, word cannot express my deepest gratitude towards your love and sacrifice. You are my everlasting light.

To my daughter April Bellamy Chu. Thank you for making a girl dad. I am proud of you, and I love you.

To my son Caleb Fang Chu. Thank you for being a good boy! Remember, always listen to mommy and daddy!

致敬我的父母：寒窗五年，終收穫碩果。謝謝爹媽一路的陪伴與支持。

(To my parents: studied hard for 5 years, now I finally did it. Thank you very much for your love and support.)

Acknowledgements

This project was generously supported by the Agency for Healthcare Research and Quality R36 dissertation grant number 1R36HS028532-01A1. The content does not represent the official views of the Agency of Healthcare Research and Quality.

I extend my profound gratitude to my committee member, Drs Michel Boudreaux (Advisor), Dylan Roby, Jie Chen, Tianzhou Ma and Amy Lewin. Each of you has played a major role in my doctoral studies. I am especially grateful for Michel Boudreaux and Dylan Roby for their thoughtful mentorship.

I worked as a researcher assistant under Michel Boudreaux. It was the best job I've ever had. Michel, it is my honor and privilege to call you my advisor. Thank you very much, for literally everything! Not just showing me the rope on how to be a good researcher, per se. You taught me be proud of my work. Thank you being patient with me, even when I was still a hot-headed, ignorant young grasshopper that did not appreciate constructive criticism. Thank you for never giving up on me. I am eternally grateful for your encouraging words.

I also served as a research assistant of IT infrastructure coordinator at my home department. I am grateful to my department chair Luisa Franzini and interim chair Jie Chen for their support, guidance and confidence.

Yan and I started attending Christian Church in Clarksburg in 2015. Through thick and thin, the church members and co-labors are always there for us. I feel truly blessed to be able to call CCC my home.

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Chapter 1. Introduction

1. Motivation and aims

Extensive research suggests that public policies that increases eligibly for public insurance programs among children can improve their insurance coverage, access and utilization of health care services, and health outcomes.[1–6] However, few studies have focused on public policies that specially target immigrant children despite the fact that immigrant children living in the United States face unique barriers related to economic status, language difficulties, pressure to acculturate, and xenophobia.[7–12] These barriers are exasperated by the immigration climate—both formal legal arrangements and the broader social environment.

In this project, I focus on two separate policies that target immigrant children: the Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA), and the Secure Communities (SC) program. The project is motivated by a single underlying question: Do policies specifically targeting immigrant children significantly impact their health care access and health outcomes?

Five-Year Bar and CHIPRA

Immigrant children face unique hardships in accessing federally-funded programs such as Medicaid and the Children's Health Insurance Program (CHIP). The Personal Responsibility and work opportunity reconciliation act of 1996 (PROWRA) contained key provisions for legal immigrants which changed their eligibility for federal public assistance programs. PRWORA restricted immigrants from being eligible to receive any federally-funded public benefit programs like Medicaid or Food Stamp in their first five years after their arrival. This is also known as the "five-year bar" in the literature.[13] Several states provided Medicaid to immigrant children under the five-year bar using their own funding. Figure 1-1 shows the status of state-funded program.

The Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) gave states the option to use federal funds to expand public health insurance coverage to low income immigrant children under the five-year bar.[2] Figure 1-2 displays that between 2009 to 2016, 34 states and the District of Columbia eliminated the five-year bar restriction for Medicaid and CHIP coverage.[6,7]

To my knowledge, there are only three studies examining the effects of CHIPRA on immigrant children, and only two studies focused on examining the effects of CHIPRA on immigrant children's health care access.[14–16] Despite finding positive effects of CHIPRA on immigrant children's health insurance coverage, both studies focused on the first year states adopted CHIPRA adoption instead of all adoption years, leaving the results less generalizable. In addition, when estimating the effects of CHIPRA on immigrant children, previous studies did not account for pre-existing state-funded insurance programs for immigrant children under the five-year bar. This may lead to biased estimates.

Secure Communities

While affordable insurance options are likely an important tool in supporting the well-being of immigrant children, they are likely insufficient. The well-being of immigrant children is also likely affected by immigration enforcement activates. For instance, fear that program participation will lead to immigration enforcement depresses program take-up—a phenomenon referred to as the 'chilling effect'.[17–19] The chilling effect might also extend to health service use more generally, conditional on program eligibility. Enforcement activity is also a general stressor that could directly impact health.

In this project I consider the case of Secure Communities(SC). SC was one of the most prominent immigration enforcement programs in recent history. Figure 1-3 shows the SC activation progress year over year. Rolled out to all counties by the federal government from

2008 to 2014, SC connected federal immigration enforcement agencies to local authorities and delegated specific immigration enforcement activities directly at local level.[20]

A small, but insightful literature has examined the effect of Secure Communities, and found that SC was associated with declines in public program participations among citizens with immigrant relatives.[21,22] However, no study has examined the effects of SC on health care access or health care outcomes among immigrant children. Previous studies found a similar immigration enforcement program called ICE 287(G) decreased care utilization and mental health among Latino immigrant mothers.[23,24] However, the results are less generalizable due to ICE287(G) being more restrictive and less popular among local authorities. [23,24]

Conceptual Model, Aims, and Approach

I present a conceptual model that suggests both policies can exert an effect on access to care and health outcomes. In brief, under the Aday-Andersen model, CHIPRA directly improve immigrant children's access to insurance an enabling factor that promotes utilization by reducing the price of health care. As a result, immigrant children's access to health care services and health outcomes will improve. In contrast, because immigrants fear that participating in public programs may lead to unwanted immigration enforcement, SC may negatively impact eligible immigrant children's participation in public insurance programs. In turn, it will also negatively impact access to care and health outcomes. SC may also have direct effects on utilization of services if immigrant communities more generally withdraw from mainstream institutions in response to deportation threat. Furthermore, the stress of deportation threat may have a direct effect on health.

Using quasi-experimental methods, I examine the effects of CHIPRA's option to expand eligibility to immigrant children under the five-year bar. I consider the effects on health insurance coverage, access to, health care and physical and mental health. Separately, I examine if

Secure Communities, a restrictive immigration enforcement act, may impact immigration children's coverage, access and health.

My specific aims are:

Aim 1: To measure the impacts of eligibility expansion under CHIPRA on immigrant children's health insurance coverage

Aim 2: To measure the effects of eligibility expansion under CHIPRA on immigrant children's access to care, and health outcomes

Aim 3: To assess the effect of Secure Communities, a national restrictive immigration enforcement act on immigrant children's health insurance coverage, access to care, and health outcomes.

This project measures the effects of policies using a natural experimental design that leverages different policy environments across time and geography to measure the effects of interests, after controlling for covariates. Both CHIPRA and SC had staggered treatment timing, meaning various geography adopted the policy at different times. This staggered roll-out allows me to estimate program effects independent of both geographic specific fixed effects and time effects that are constant across geographies.

Recent work in econometrics suggests that the standard way of leveraging variation in treatment timing in a two-way fixed effects model (TWFE) model can be biased. To account for that, I use state-of-the-art estimators that are not subject to the bias present in TWFE estimates. More details are presented in later chapters.

2. Chapter Summaries

Chapter 2 presents a conceptual model that is mainly based on the Aday-Andersen's behavioral model of health care utilization.[25,26] The conceptual model considers a range of

factors that may impact immigrant children's health care access and health outcomes. These factors arise from mainly three categories: predisposing, enabling, and needs.

In Chapter 3, I estimate the effect of CHIPRA's option on health insurance coverage among immigrant children. This chapter begins with a brief review of immigrant children in the US, restrictions that they have experienced in the past, the passage and adoption of CHIPRA. I then described the estimation data, the National Health Interview Survey, and the empirical strategy. My estimates suggest that CHIPRA adoption decrease the likelihood of being uninsured by 6.35 percentage points, and 8.1 percentage points increase in public insurance among immigrant children.

Chapter 4 considers whether adopting CHIPRA's option had any impact on immigrant children's health care access and health outcomes. Data comes from National Interview Survey, which contains a large collection of health care access and health outcome measures. I selected having a usual source of care, delayed care due to cost as measures of access to care, and had excellent/very well self-reported health, had emotional difficulties and missed a school day in 12 months as health outcome measures. I do not find any significant effects of CHIPRA's adoption on immigrant children's access to care or health outcomes. The results suggest further investigations are necessary.

In Chapter 5, I examine the effects of Secure Communities on immigrant children's health insurance coverage, health care access and health outcomes. I start with the current states immigrants are in, a brief history lesson on policies that both restricted and expanded eligibility of immigrants, and introduction of Secure Communities. Using data from National Health Interview Survey, I find SC activation reduces immigrant children's participation in public insurance programs. However, my estimates of SC activation's impact on health care access and outcomes are imprecise and my findings are inconclusive.

The volume concludes in Chapter 6 with a discussion of limitations, policy implications and directions for future research. Evidence from this project suggests that expanding Medicaid and CHIP coverage to include more immigrant children who were previously ineligible can significantly improve insured rate of the group. This finding supports the push for more states to adopt CHIPRA's option to cover immigrant children under the five-year bar. In addition, it provides additional evidence for the effort to cover all immigrants under public insurance programs beyond immigration status.

Chapter 2. Conceptual Framework

The conceptual framework in Figure 2-1 is based on the Aday-Andersen's behavioral model of health care utilization.[25,26] The model is supported by the literature review found in chapters 3,4, and 5. It suggests that health care use and health outcomes can be impacted by predisposing, enabling and need factors. Predisposing factors include characteristics that tend to be inherent to the individual, such as age, gender and immigrant's country of origin. Enabling factors include ones that facilitate access to health care, like family income, health insurance status, and residing state's immigration climate. These enabling factors can be thought of as either increasing an individual's resources that enable the purchase of health care services or changing the price of care. Insurance reduces the price of care leading to more utilization. The immigration climate can be thought of as increasing the price as it induces consequences for utilizing services. Need factors include health status which determines the urgency to use care.

As shown in Figure 1, CHIPRA's option to expand eligibility of Medicaid/CHIP could increase health insurance coverage by reducing the price of coverage to $0. In turn, coverage will increase access and utilization of health care by rendering services more affordable.[18] This is a direct improvement of the enabling factors. Better access and more frequent utilization of health care services will result in better health outcomes.[27–29] It is also possible that the financial protection provided by coverage could have positive effects on health by freeing up household budgets for health promoting investments. However, predisposing, and other enabling factors need to be controlled since they can impact the health care use and health outcomes and could be correlated with a state's decision to implement CHIPRA or a counties decision to implement SC at a specific time

Figure 1 also presents that as an immigration enforcement act, Secure Communities may also impact immigrant children participating public programs.[18,21,30,31] Prior research showed that fearing enrolling into Medicaid/CHIP may lead to exposure family members to deportation, eligible immigrant children residing in counties that activated Secure Communities may choose not to enroll in Medicaid/CHIP.[18,21,31–33] Lack of access to insurance coverage, which is a part of the enabling factors, will lead to less health care, which in turn may results worse health outcomes.[27–29,34] On the other hand, a restrictive immigration enforcement act like Secure Communities could bring additional stressors onto immigrant children, which may lead to worsening physical and mental health.[24,30,34] During this process, I must control predisposing and other enabling in order to provide a fair assessment of the policy effects. Chapters 3,4, and 5 discuss the measurement of these confounders in detail.

Chapter 3. The Effects of CHIPRA on Health Insurance Coverage of Immigrant Children

1. Introduction

Nearly 2.5 million children in the United States are foreign-born.[35] Commonly referred as "immigrant children", they face a number of barriers related to economic status, language difficulties, acculturation pressures, and xenophobia.[7,9–12,36] These barriers have important implications for health care access. Immigrant children are 15 percent more likely to be uninsured compared to their native born counterparts, and they have less access to health care services even when insured.[37,38]

In addition to the social pressures that immigrant children experience, they also face explicit legal barriers to public programs. The Personal Responsibility and Work Opportunity Act (PRWORA) of 1996 excluded immigrants with less than five years of legal residency from federally funded safety-net programs—a policy known as the as the "five-year bar".[39] This exclusion included programs like Medicaid and the Children's Health Insurance Program (CHIP). Table 1-1 and Figure 1-1 presents states that provided such programs to immigrant children under the five-year bar.

The Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009, passed and signed into law in 2009, was the first major legislation during President Obama's first year in office.[40] Under CHIPRA's option 214 ("the CHIPRA option"), states could eliminate the five-year bar and obtain dedicated federal funding to cover previously excluded children through a separate Medicaid waiver.[40] 21 states and DC immediately adopted CHIPRA's option in January 2010 and 15 more states adopted between 2011 and 2019. The detailed information of CHIPRA adoption year by each state is presented in Table 1-1.

Despite the significance of CHIPRA for immigrant children, only three studies have examined the impact of the CHIPRA option on immigrant children. Using 3-waves of the National Survey of Child Health, Saloner et al. (2014) found that the CHIPRA option was associated with a 14.9-percentage-point increase in insurance through 2012 and a 13.7 percentage point decline in unmet health care needs.[14] Mahmud (2016) used data from Current Population Survey and a similar study period and found that CHIPRA was associated with an 8 percentage point decrease in the uninsured rate in immigrant children. The study found no evidence of crowd-out.[15] A more recent study examined the effects of the CHIPRA option on interstate migration and failed to find evidence of an association.[16]

While these studies provide important insights about the effect of CHIPRA, they leave several important questions unanswered. First, both Saloner et al. (2014) and Mahmud (2016) focused only on states that expanded CHIPRA in 2010 and estimates might not generalize to the 15 states that adopted after 2010. Presented in Figure 3-0, there are 15 states that expanded CHIPRA after 2010. Furthermore, it is unclear if the gains estimated in previous work were sustained after the initial years of implementation.

It is also unclear how pre-existing state-funded insurance programs may have shaped the effects of CHIPRA adoption. On one hand, CHIPRA's impact may have been smaller in states with pre-existing programs if CHIPRA primarily acted as a substitute. On the other hand, CHIPRA's effects may have been larger in states with pre-existing programs if those programs "primed the pump" through establishing effective outreach strategies or through fostering network effects in immigrant communities.[41] While Mahmud (2016) did account for state-funded programs in his study, the findings were inconclusive since only 3 of 22 CHIPRA adoption states in his study did not have state-funded programs.

Lastly, there is also no existing evidence if the effects of CHIRA were heterogeneous across subgroups of immigrant children. For instance, compared to other immigrants in other

racial/ethnic subgroups, Latino immigrant adults tend to have fewer years of schooling, are less likely to have legal US residency, and are less likely to be English proficient.[42–44] Such factors could likely impact their ability to enroll their children in coverage that is available to them. Residency time in the US could also moderate the effects of CHIPRA through two mechanisms. First, while many data sources capture residence time, they do not capture legal status. Because children with shorter residency times are more likely to lack a qualified immigration status to be eligible for public benefits.[45] Second, residency time is correlated with acculturation and English proficiency which might facilitate take-up for children that are eligible.,[10,46–48]

In this study, I revisit the effects of CHIPRA's option 214 on immigrant children's access to health insurance outcomes using data from 2000-2016. Our study includes 35 states and DC that adopted the option between 2010 and 2016 and employs the latest econometric techniques to handle variation in treatment timing.[49,50] I estimate effects separately for Latino and Asian immigrant children, in states with and without a pre-existing program, and by residency time in the US.

2. Methods

2.1 Data

I analyzed data from the restricted version of the National Health Interview Survey (NHIS) for years 2000-2016.[51] The NHIS is an on-going cross sectional survey sponsored by the Centers for Disease and Prevention (CDC) that monitors the health care access, utilization and health outcomes of the US population. Data is collected from personal interviews that gather information on every member of a sampled household. All household children provide key information about demographics, health insurance status and immigration status. Available immigration-related measures include country of birth, US citizenship, and years lived in the US. The survey does not gather information on legal residency status. More extensive information,

including usual source of care, health care utilization, and specific physical and mental health conditions, is collected about one randomly selected child per family (the "sample child"). [51]

Using consolidated policy information from various reports by the Kaiser Family Foundation, Migration Policy Institute, Urban Institute, annual Medicaid state waivers from Medicaid.gov, I created a policy dataset detailing: (1) the status of whether states provided state-funded insurance programs covering immigrant children under the five-year bar prior to CHIPRA adoption, and (2) the status of whether states adopted CHIPRA's option in each year between 2000 and 2016. Using state identifiers, this dataset was merged with restricted NHIS data by a Research Data Center analyst from National Center for Health Statistics Research Data Center. All analyses were performed in a US Census Bureau's Federal Statistical Research Data Center, and all study results were reviewed and approved for disclosure risk by National Center for Health Statistics. The study was an exemption of review by the University of Maryland Institutional Review Board because the data were publicly available and anonymized.

2.2 Study Population

The study sample consisted of children who were born outside the US and were non US citizens. Consistent with prior research examining the effect of CHIPRA policy on immigrant children, we limited our sample to children less than 18 years of age, and had family incomes <300 percent of the Federal Poverty Line (FPL).[14,15] I selected this income threshold to capture children who were most likely to be eligible based on income.[14] The analytical sample consisted of 12,448 children, representing 1,485,664 weighted immigrant children with family incomes less than 300 percent of FPL.

2.3 Dependent variables

For Aim 1, I examined three binary outcomes related to point-in-time health insurance coverage: uninsured, public insurance (Medicaid/CHIP/Other state program), and had private insurance. The reason to record all three insurance categories was to examine potential crowd-out effects caused by CHIPRA expanding Medicaid eligibility.

2.4 Independent variable

The independent variable of interest assessed the status and year that states adopted CHIPRA's 214 option. CHIPRA was signed into law in 2009, and 2010 was the first year states could adopt CHIPRA's option to expand eligibility. Consistent with previous studies examining the effects of Medicaid expansion, I considered a state to have adopted CHIPRA's option if the expansion approval from CMS was effective on or before September 1 of that year.[15,52] Appendix 1 presents the status and year of states adopting CHIPRA's option.

2.5 Covariates

The covariates for this study are selected based on the conceptual model described in Chapter 2. I controlled several predisposing factors include individual child characteristics, such as their age, sex, race/ethnicity. Next I controlled for enabling factors such as parents' education attainment, employment status, and marital status, family income family income as a categorical variable (relative to the FPL), and parental structure (a two-parent household vs a single parent household).

2.6 Statistical analyses

I assessed whether adoption of the CHIPRA option was associated with improvements of immigrant children's health insurance coverage, health care access and health outcomes. I estimated linear probability models of the form:

$$y_{ist} = \alpha + \beta_1 CHIPRA_{st} + \eta X_{ist} + \delta\, YEAR_t + \gamma\, STATE_s + \epsilon_{ist}.$$

In this model, y_{ist} represents a dependent variable of interest for person *i*, in a state *s*, and in year t. $CHIPRA_{st}$is an indicator equal to one if a state had expanded coverage under the CHIPRA option in year *t*. X_{ist} is a vector that includes covariates described above. I also include year fixed effects ($YEAR_t$) to flexibly account for time trends common to all states and state fixed effects ($STATE_s$) to account for unobserved time-invariant state characteristics. β_1 measures the effect of CHIPRA expansion on outcomes. All analyses use survey weights and standard errors are clustered the state level.

In addition to the two-period difference-in-differences specification described above, I also estimate event-study specifications that allow us to measure the evolution of outcomes over time. In these models the binary CHIPRA adoption variable is replaced with indicators of relative time where the year prior to adoption is the omitted reference. I combined individuals in states with relative time of greater than 4 years after CHIPRA adoption with the group of 4 years after CHIPRA adoption.

2.7 TWFE and Variation in Treatment Timing

Recent work in econometrics show that the estimated coefficients from the two-way fixed effects (TWFE) models described above can be biased when the timing of treatment varies (as is the case in our study) and treatment effects vary over time.[30,33,34] I take two approaches to handling that. First, in addition to the TWFE implementation of the two-period difference-in-differences design describe above, I conducted the two-stage difference-in-differences(DID) method developed by John Gardner in Ole Miss.[49]That method first identifies group and period effects from the sample of untreated observations. Assuming effects from covariates, treatment group assignment and period effect not changing with time, I removed effects from covariates,

treatment group assignment and period effort. Hence, the average treatment effects are the difference between the treated and untreated outcomes.

Second, I conducted an alternative event-study analysis using the "interaction-weighted" estimator developed by Sun and Abraham.[50] Traditionally when running event study model with varying treatment times, because of varying treatment effects and treatment timing, the estimated coefficient could fall out of the convex average of the treatment effects on the treated. In the alternative model, the Interaction-Weighted (IW) estimator was formed by first estimating the cohort average treatment effect (CATT) on the treated with a regression saturated in cohort and relative period indicators, and then averaging estimates of cohort effects across groups at a given time period. Both IW and CATT estimators are easy to implement and robust to heterogeneous treatment effects across cohorts. In addition, without introducing any additional biases, the IW estimators associated with a single time period can estimate the corresponding convex average of CATT using same weights that are sample share of each cohort.

2.8 Subgroup analyses

We examined CHIPRA effects in states that did and did not have a pre-existing state-funded programs for immigrant children under the five-year bar, for children born in Latin or Asian countries, and by length of US residence (<5 years versus 5-14 years). Heterogeneity by region of birth and time in the US reflects both differences in enabling resources that determine take-up among the eligible and differences in legal status that determine eligibility. Appendix 3 presents estimates of the TWFE DID model for all subgroups.

3.Results

Table 3-1 presents descriptive statistics of overall sample immigrant children, and by status of having state-funded insurance programs prior to CHIPRA. The preponderance of immigrant

children resided in states that provided state-funded insurance programs (78.75%). Over half of immigrant children in our study sample were of Latino ethnicity (65.28 percent), and Asian immigrant children were the second largest ethnic group. In addition, close to half of immigrant children in both groups of states lived in households with family incomes below 99% federal poverty level (45.88 percent). Nearly 50% of immigrant children's parents had less than high school education (46.98 percent) and the majority resided with two parents (76.67 percent), and parents were married (89.44 percent).

Figure 3-1 presents the trends in uninsurance and public insurance coverage for CHIPRA adoption states that had a pre-existing programs, CHIPRA-adoption only states, and states that never adopted CHIPRA. In 2000, 65.3 percent of immigrant children residing in states that never adopted CHIPRA (labeled as "Neither" in Figure 1) were uninsured, compared to 47.7 percent in CHIPRA adoption states that had a pre-existing programs, and 43.5 percent in CHIPRA only states. The uninsured rate for all three groups fluctuated and declined slightly from 2000 to 2009, but the difference among the groups persisted. From 2010 to 2016, the uninsured rate among immigrant children decreased by 10 percentage points in CHIPRA adoption states that had a pre-existing program, and decreased by 14 percentage points in CHIPRA-adoption states. On the contrary, uninsured rate in states that did not adopt CHIPRA option declined by only 0.3 percentage points.

The steady decline of uninsured rate among immigrant children residing in CHIPRA adoption states appears to be associated with the increasing enrollment in public insurance programs: 22.8 percent of immigrant children in CHIPRA states that had a state-run program were insured with public insurance in 2000, verses 14.1 percent of immigrant children in CHIPRA-adoption only states, and 12.1 percent in "Neither" states. The gaps remained essentially unchanged between 2000 and 2009, but increased from 2010 to 2016. By the end of our study period, 55.2 percent of immigrant children in CHIPRA adoption states that had a pre-existing program, had

public insurance, compared to 48.1 percent in CHIPRA adoption only states and 28.5 percent in "Neither" states.

Table 3-2 displays the adjusted associations between CHIPRA adoption, insurance coverage, access to care, and health outcomes of low-income immigrant children using the TWFE and two-stage DID estimators described above. The TWFE estimates suggest that adopting CHIPRA's option was associated with a 6.35 percentage-point (95% CI: -11.25 to -1.45) decrease in uninsurance ($p<.05$). This represents a 12.35 percent decrease from the baseline rate. Public insurance coverage increased by 8.12 percentage points (95% CI: 1.26 to 14.98). Private coverage declined by -3.04 percentage points (95% CI: -8.33 to 2.25), though the change was not statistically significant.

Figure 3-2 displays the event-study coefficients in the main sample for selected outcomes using the TWFE and interacted-weights event-study estimators. Both estimators suggest similar results. The coefficients on pre-adoption relative time suggest little evidence of differential pre-treatment timing. The post-adoption coefficients suggest that on coverage abated after 3 years of CHIPRA adoption.

Figure 3-3 presents coefficients from the two-period difference-in-differences comparisons (using the TWFE method), across subgroups. Effects on uninsurance were generally consistent across groups, although estimates for some groups were less precisely estimated. The major exception was for children with less than 5 years of residence in the US whose coefficient was nearly zero and not significant. Estimates for public coverage suggested larger effects for children in CHIPRA-only states and for children born in Asian countries had statistically significant increases in public insurance coverage, and children in CHIPRA-only states had statistically significant decrease in private insurance coverage.

The placebo tests estimated for immigrant children with household income over 300 percent FPL, and US-born children with household income over 300 percent FPL suggested small and

non-significant associations between CHIPRA adoption with insurance coverage, access to care or health outcomes. These null-effects suggest that CHIPRA adoption was not correlated with other factors related to the outcomes.

4.Discussion and Conclusion

Through CHIPRA's 214 option, the federal government provided states with an option to expand eligibility of public insurance coverage to immigrant children within their first five years of legal US residency. Thirty-six states, including twenty-one states and DC that provided state-funded insurance programs prior to CHIPRA, adopted CHIPRA's option between 2010 and 2016. Our findings suggest that the CHIPRA option decreased the uninsured rate to by 6.35 percentage points through 2016. The magnitude of changes to uninsurance was slightly smaller than the change in public coverage suggesting some potential crowd-out. However, the confidence intervals cannot rule out zero crowd-out and estimates on private coverage (while negative) were not significant.

Our results are generally consistent with previous evaluations.[14,15] However, this study presents new evidence that program effects tended to fade out over time. One reason to explain the diminishing effects may be the combination of unexpected disenrollment related to eligibility renewal and decline of immigrant children in US. The population of immigrant children residing in the US declined from 3 million in 2000 to only 2.7 million in 2016, indicating a slowed growth.[35] The decline in immigrant children may result in less additional new applications in Medicaid/CHIP annually. In addition, similar to other insurance eligibility expansion programs in the past, states that adopted CHIPRA option may experience an initial surge in Medicaid/CHIP enrollment among immigrant children.[53,54,55(p)] To maintain their newly gained insurance coverage, immigrant children must comply with renewal every 6 to 12 months, or they would face disenrollment from Medicaid/CHIP.[56,57]The renewal process previously required mail-in

forms to be signed and validated by parents/guardians of children.[58,59] In addition, processing renewals were time consuming. [32,33] It is plausible immigrant children loss coverage due to incomplete/lost forms or delayed processing time.[56–61] To release pressures from the renewal process, states in 2015 began to implement automatic renewal process for Medicaid and CHIP through electronic data matches.[60] However, to further prevent immigrant children "churning" in Medicaid and CHIP, states should consider the option to guarantee immigrant children's Medicaid/CHIP eligibility for 12 months.[61] As of 2021, only 27 states offer continuous eligibility in CHIP, and 21 states offered in Medicaid coverage for children.[62]

Another explanation of program effects diminishing over time may be related to the full implementation of the Patient Protection and Affordable Care Act(ACA). In 2014, the ACA phased in the individual mandate and employer mandate to purchase and provide insurance, opened the insurance exchange, and permitted eligibility expansion of Medicaid in expansion states.[63–65] Despite living in non CHIPRA expansion states, immigrant children who were legal permanent residents were required to maintain insurance coverage or to pay the individual Shared Responsibility Payment.[66] Figure 1 in our study suggest that the fade-out may have occurred not because of eroding coverage in adoption states. Instead, the improvement of insured rates in states non CHIPRA adoption states is likely related to the ACA's individual mandate and improved access to insurance through Marketplace.

Our study found that compared to the immigrant children residing in states that had both state-funded programs and adopted CHIPRA's option, immigrant children in CHIPRA-only states experienced a greater increase in public insurance coverage (15.5 percentage points in CHIPRA only states vs 7.73 percentage points in CHIPRA adoptions that had a pre-existing program). This difference may be related to the early exposure to eligibility expansion in states covering immigrant children prior to CHIPRA. Immigrant children living in CHIPRA-only states did not experience any eligibility expansion prior to CHIPRA adoption. In contrasts, state-funded

insurance programs started to cover immigrant children under the five-year bar as early as 1997.[14,15,27] Our results suggest in states that provided a state-funded programs covering immigrant children under the five-year bar prior to CHIPRA, the CHIPRA adoption served as a continuation of pre-existing programs. With existing coverage programs in place, these states may adopt CHIPRA's option by simply switching funding sources from states to the federal government.[13,42,] This also suggests that any effort of "priming the pump" from state-funded programs prior to CHIPRA was likely to be modest.

In analyses of subgroups, our study found the effects of CHIPRA adoption varied by immigrant children's residence length and country of birth. There are two possible explanations. First, eligibility to public insurance may vary across groups due to varying immigration status across groups. Latino immigrants have the highest proportion of individuals without permanent residency, and highest of undocumented immigrants.[42–44] For instance, over 53 percent of Mexican immigrants in the US are without legal immigration status.[44] Separately, because of application backlogs in the US Citizenship and Immigration Services (USCIS), the average wait-time to obtain permanent residency is now close to 6 years.[45] Hence, immigrants with less than 5 years of US residency may not have the immigration status to be eligible for Medicaid. The second explanation is that enabling factors that's unique to immigrants, such as acculturation, language barriers, and knowledge of the US health care system, may impact public insurance take-up.[47] For instance, Latino immigrants are more likely to have language barriers compared to other immigrant racial/ethnic groups; while levels of acculturation and knowledge of US health system are both positively correlated with years living in US. [46,47] Such variations in enabling factors between subgroups may differentially affect insurance take-up among immigrants.

5. Limitations

This study is not without limitations. First, the CHIPRA's 214 option specially targets immigrant children that established legal residence in the past five years. NHIS does not ascertain the legal status of immigration children, nor keeps a measure on years of obtain legal residency. Hence, our estimates apply to all immigrant children residing in states that adopted CHIPRA's option. Second, the size of NHIS sample child for immigrant children were relatively small in all survey years. This may limit our ability to detect more modest effects related to access to care and health outcome measures. In addition, because of the limited sample size, I could not perform analyses on additional subgroups, such as by age groups, country of birth, and household incomes. Third, despite conducting several thorough robustness tests, our study design of two-way fixed effect model could be subjected to unobserved biases. Lastly, we could not adjust for all potential confounding factors that could have contributed to observed changes related to the CHIPRA adoption.

6. Conclusion

Despite these limitations, this study presents new evidence about the role that CHIPRA option plays in health insurance, health access, and health of low-income foreign born children. The uninsured rate of overall children living in states that did not adopt CHIPRA was 7.71 percent in 2020.[68] Our study results suggest that eliminating the five-year bar at the federal level would be an effective way of reaching universal coverage for children in states that has not adopted CHIPRA's option.

Chapter 4. The Effects of CHIPRA on health care access and health outcomes of Immigrant Children

1. Introduction

Largely related to lack of adequate insurance coverage, immigrant children are significantly less likely to have access to regular ambulatory and emergency health care.[37] In addition, immigrant children have less overall health care expenditures than US-born children, but their emergency department expenditures were more than three times higher.[38]

Despite limited access and utilization of care, immigrant children tend to be healthier than most-born children, mostly due to the initial "Healthy Immigrant Effect".[69,70] For instance, Guendelman et al (2001) found proportions of immigrant children who lacked health insurance, not having a usual source of care, and to seek care when need was significantly smaller than US born children.[11] Garcia-Perez (2016) found compared US-born children, immigrant children are far less likely to have doctor visits and less likely to be obese.[70] Subramanian et al (2009) found immigrant children had a lower lifetime prevalence of asthma than US born children,[71] Gfroere and Tan (2001) noted that less immigrant children had a lower rate of heavy alcohol use than their US-born counterpart.[72]

While it has been difficult to establish a link between public coverage and the health of children over short-time horizons, a clear goal of coverage expansions is to improve health.[28] Prior studies demonstrated positive associations between expanding the eligibilities of public programs and health care utilization, but impacts on health outcomes were mixed.[73] For instance, Currie and Gruber (1996) found that making a child eligible for Medicaid increased the likelihood of physician visits and a decrease in child moratlity.[1] Separately, Currie et al (2008) found eligibility for public health insurance improved current utilization of preventive care, but it

had little effect on current health status.[2] In addition, they showed the health effects could materialize a few years after the initial expansion.[2] Dafny and Gruber (2005) discovered that while hospitalization increased after Medicaid expansion to children, the increase was largely associated with unavoidable stays.[4]

Similar to prior Medicaid expansion, Children's Health Insurance Program Reauthorization Act of 2009(CHIPRA) expanded the Medicaid and CHIP eligibility to immigrant children under the five-year bar restriction.[67] Despite the significance of CHIPRA to immigrant children, there is only one study that examined the effects of CHIPRA adoption on the health care access of immigrant children; while no study looked at health outcomes. Saloner et al (2014) found that in addition to improving the insurance rate, adopting CHIPRA decreased immigrant children's unmet health need by 13.5 percentage points; while no significant effects were observed with other access to care measures.[14] Being the first study examining the effects of CHIPRA, the authors chose to focus only on states that expanded CHIPRA in 2010. The decision to exclude later adopting status could lead the estimates not generalize to the 15 states that adopted after 2010. Furthermore, the study included only one year of post CHIRPA expansion. Hence, it is unclear whether the estimated effects of CHIPRA on unmet needs were sustained during the initial year of expansion.

In addition, it is less clear how state-funded coverages for immigrant children under the five-year bar prior to CHIPRA may affect CHIPRA adoption. Immigrant children in states with pre-existing programs may have already experienced improvements in access to care before CHIPRA adoption, and CHIPRA became a continuation of state-programs. In contrast, despite limited eligibility and services offered by state-funded programs, states with pre-existing programs may have established effective outreach strategies. Hence, CHIPRA's effects on access to care and health outcome may have been larger in these states.

Lastly, immigrant children of various subgroups may react to the CHIPRA's adoption differently. For example, studies found the "healthy immigrant effect" was particularly stronger among newly-arrived immigrants and Latino immigrants.[70,74] However, the effect would slowly erode as immigrants acculturating in the US, except for Latino immigrant children who continues to be less likely to be obese.[69,70,74] Hence, healthier immigrant children may not react to insurance expansion strongly due to lack to needs.

In this study, I examined the effects of CHIPRA's option 214 on immigrant children's access to care and health outcomes using data from 2000-2016. Our study includes 35 states and DC that adopted the option between 2010 and 2016 and employs the latest econometric techniques to handle variation in treatment timing.[29,30] Similar to Aim 1, I estimate effects separately for Latino and Asian immigrant children, in states with and without a pre-existing program, and by residency time in the US.

2. Methods

2.1 Data

I analyzed data from the restricted version of the National Health Interview Survey (NHIS) for years 2000-2016.[31] The NHIS is an on-going cross sectional survey sponsored by the Centers for Disease and Prevention (CDC) that monitors the health care access, utilization and health outcomes of the US population. Data is collected from personal interviews that gather information on every member of a sampled household. All household children provide key information about demographics, health insurance status and immigration status. Available immigration-related measures include country of birth, US citizenship, and years lived in the US. The survey does not gather information on legal residency status. More extensive information, including usual source of care, health care utilization, and specific physical and mental health conditions, is collected about one randomly selected child per family (the "sample child"). [31]

Using consolidated policy information from various reports by the Kaiser Family Foundation, Migration Policy Institute, Urban Institute, annual Medicaid state waivers from Medicaid.gov, I created a policy dataset detailing: (1) the status of whether states provided state-funded insurance programs covering immigrant children under the five-year bar prior to CHIPRA adoption, and (2) the status of whether states adopted CHIPRA's option in each year between 2000 and 2016. Using state identifiers, this dataset was merged with restricted NHIS data by a Research Data Center analyst from National Center for Health Statistics Research Data Center. All analyses were performed in a US Census Bureau's Federal Statistical Research Data Center, and all study results were reviewed and approved for disclosure risk by National Center for Health Statistics. The study was an exemption of review by the University of Maryland Institutional Review Board because the data were publicly available and anonymized.

2.2 Study Population

Our study sample consisted of children who were born outside the US and were non US citizens. Consistent with prior research examining the effect of CHIPRA policy on immigrant children, we limited our sample to children less than 18 years of age, and had family incomes <300 percent of the Federal Poverty Line (FPL).[14,18] I selected this income threshold to capture children who were most likely to be eligible based on income.[14] Health care use and health outcome survey questions were only answered by "sample child" cohort. Our analytical sample consisted of 5,644 sample children, representing 673,609 weighted immigrant children with family incomes less than 300 percent of FPL.

2.3 Dependent variables

Consistent with previous studies examining insurance eligibility expansion on children's health and health care access, I examined two categories of dependent variables.[1,2,27] First, I

assessed binary measures related to access to care: whether immigrant children had a usual source of care, and whether immigrant children delayed care due to cost in past 12 months. Secondly, I examined three health outcomes: whether physical health was excellent/very good, had difficulties with emotion, concentration, behavior, or social interactions, and whether students had missed more than one day of school in past 12 months.

2.4. Independent variable

Similar to Aim 1, our independent variable of interest is the status and year that states adopted CHIPRA's 214 option. Consistent with previous studies examining the effects of Medicaid expansion, I considered a state to have adopted CHIPRA's option if the expansion approval from CMS was effective on or before September 1 of that year.[18,32] Appendix 1 presents the status and year of states adopting CHIPRA's option.

2.5 Covariates

Similar to Aim 1, I included several categories of covariates in our analyses. First, I controlled for individual child characteristics: age, sex, race/ethnicity. Second, I controlled for parental characteristics: education attainment, employment status, and marital status. Lastly, I adjusted for family income as a categorical variable (relative to the FPL), and parental structure (a two-parent household vs a single parent household). I selected these covariates based on my proposed conceptual model in Chapter 2.

2.6 Statistical analyses

I assessed whether adoption of the CHIPRA option was associated with changes of immigrant children's health care access and health outcomes. I estimated linear probability models of the form:

$$y_{ist} = \alpha + \beta_1 CHIPRA_{st} + \eta X_{ist} + \delta\, YEAR_t + \gamma\, STATE_s + \epsilon_{ist}.$$

In this model, y_{ist} represents a dependent variable of interest for person *i*, in a state *s*, and in year t. $CHIPRA_{st}$is an indicator equal to one if a state had expanded coverage under the CHIPRA option in year *t*. X_{ist} is a vector that includes covariates described above. I also include year fixed effects ($YEAR_t$) to flexibly account for time trends common to all states and state fixed effects ($STATE_s$) to account for unobserved time-invariant state characteristics. β_1 measures the effect of CHIPRA expansion on outcomes. All analyses use survey weights and standard errors are clustered the state level.

Additionally, I was interested in the effects of CHIPRA adoption over time on access to care and health outcomes. I conducted an estimate using event-study specification. In this design, I replaced the binary CHIPRA adoption variable with indicator of relative time to adoption. I omitted the year prior to adoption. The model is as follow:

$$y_{ist} = \eta X_{ist} + CHIPRA_S * [\sum_{k=-5}^{-2} \beta_k 1\{t - t^* = k\} + \sum_{k=0}^{4} \pi_k 1\{t - t^* = k\}] + \delta\, YEAR_t + \gamma STATE_s + \epsilon_{ist}.$$

In this model, the CHIPRA adoption indicator interacted with relative time indicator. I included the period from five years prior to CHIPRA adoption, to four years after CHIPRA adoption. One year prior to CHIPRA adoption was omitted. I aggregated individuals in states with relative time greater than 4 years after CHIPRA adoption with individuals with exactly 4 years after adoption. The vector of β_k before the year of CHIPRA adoption activation measures changes in outcomes before CHIPRA was put in place. The vector after the year of CHIPRA adoption traces the evolution of program's effects on outcomes over time.

2.7 TWFE and Variation in Treatment Timing

Similar to Aim 2, I was concerned that variation in CHIPRA adoption timing and its varying effects may introduce biases.[30,33,34] I take two approaches to test the validity of my approach. First, in addition to the TWFE implementation of the two-period difference-in-differences design

describe above, I conducted the two-stage difference-in-differences(DID) method developed by John Gardner in Ole Miss.[29] That method first identifies group and period effects from the sample of untreated observations. Assuming effects from covariates, treatment group assignment and period effect not changing with time, I removed effects from covariates, treatment group assignment and period effort. Hence, the average treatment effects are the difference between the treated and untreated outcomes.

Second, in addition to the TWFE estimates of the event-study coefficients, I present estimates from Sun and Abraham's (2021) interacted event-study approach that interacts the event-time indicators with treatment timing cohorts and limits comparisons for each treatment timing cohort to states that never adopted CHIPRA's option.[30]

2.8 Subgroup analyses

Similar to Aim 1, I examined if immigrant children in states that had pre-existing state-funded insurance programs prior to CHIPRA adoption may experience different effects of the policy, since they were exposed to insurance coverage prior to the CHIPRA adoption. Pre-existing programs may "primed the pump" for CHIRPA adoption on health care access and outcomes, or these pre-existing programs may absorb the effects of CHIPRA adoption.

Heterogeneity by region of birth and time in the US reflects both differences in enabling resources that determine take-up among the eligible and differences in legal status that eligibility. Hence, I examined whether CHIPRA had differential effects on immigrant children under the five-year bar or with 5-14 years of US residency, and immigrant children born in Latin or Asian countries.

3.Results

Descriptive statistics in Chapter 3 showed that immigrant children were generally older in age and of Hispanic ethnicity. 46.98 percent of immigrant children had parents not graduating high school. Despite over 93.31 percent of immigrants with at least one working parent in the household, 45.88 percent residing in households under 100% of the federal poverty level. Immigrant children tends to have stable households, with 89.44 percent reporting parents being married, less than 15 percent living in a single-parent household. Immigrant children are generally healthier, with 73.95 percent reporting in excellent/very good health. Characteristics of ones residing states with or without pre-existing insurance programs were not significantly different.

Table 4-1 displays the adjusted associations between immigrant residing in states that adopted CHIPRA and their access to care measures and health outcomes, with both the TWFE model and two-stage DID estimators described above. The estimates for access to care measures and health outcomes had expected signs However, the estimates were not statistically significant, and the confidence intervals were large. Thus, I am not able to reject the hypothesis that adoption CHIPRA's option had no effect on immigrant children's access to care and health outcomes.

Figure 4-1a and 4-1b presents the event-study coefficients from both TWFE event-study model and the interaction-weighted event-study model with our main sample of low-income immigrant children. For measures of access-to-care and health outcomes, coefficients on pre-adoption relative time fluctuated significantly, suggesting potential unobserved factors that could impact immigrant children's access to health care and health outcomes. The post-adoption coefficients of both measures tracked along 0 with large confidence intervals crossing zero, suggesting the if existed, effects of CHIPRA adoption were small and not significant.

Figure 4-2a and 4-2b presents coefficient plots of health care access and health outcomes from two-period difference-in-differences comparisons using the TWFE method across

subgroups. The estimated coefficient for subgroups were either close to zero, or had large confidence intervals with the range including zero. No subgroups experienced any significant changes in access to care and health outcomes related to adopting CHIPRA's option.

4. Discussion

This study considered a larger set of health care access and health outcomes than previous work on the CHIPRA options. I did not find significant impacts of CHIPRA adoption on immigrant children's access to care. The findings were consistent with prior study by Saloner et al (2014).[14] One may be related to the "healthy immigrant effect".[69] Recently arrived immigrants are more likely to be healthy compared to their long-term counterparts and US-born population, which indicates less needs for health care.[26] As immigrant children acculturate over time, such effect may diminish.[74] In addition, immigrant child may acquire knowledge on how to navigate the U.S health system, hence their access and utilization of care may begin to resemble that of long-term US immigrants.[7,46–48]

I could not reach a conclusion confidently with the effects of CHIPRA adoption and immigrant children's health. The estimates were not statistically significant and the confidence intervals included zeros and were very large. However, our finding on health outcomes is consistent were findings from previous studies.[2,75,76] This provides additional evidence to the theory of eligibility expansion of public insurance coverage having little effect on children's current health status.[2,73] One explanation, as pointed out by Currie et al (2008), is that health should be viewed as a stock, represents the results of cumulative investments.[2] Changing one aspect of immigrant children's lives such as Medicaid's eligibility expansion may not yield significant changes. Another explanation is that as a stock, health outcomes may not immediately be impacted after policies change. Currie et al(2008) found that children in states with more generous Medicaid policies when they were very young became healthier as 9-17

year olds.[2] Thus, it may be several years after states adopting CHIPRA that immigrant children may begin to improvements in their health stocks. Lastly, one explanation that's unique to immigrant children is related to the "healthy immigrant effects". Immigrant children may be healthier than US-born children, hence they may be less sensitive to benefits from their residing states adopting CHIPRA.

5. Limitations and Future Directions

A potential limitation of Aim 2 is that I lack adequate sample size for the overall sample to reach confident conclusions for all outcomes. One major contributing factor was the survey design. One child from each sampled household is selected to respond to the health care utilization and health outcomes section of the survey (the exception is health status which is asked of all household members). This has dramatically reduced the sample size. I have considered other options, such as the American Community Survey, the Current Population Survey, the restricted use California Health Interview Survey, the Behavioral Risk Factor Surveillance System, the National Survey for Child Health. However, I chose NHIS survey as my analyses sample because it was the only survey that is nationally representative, asked immigration status and health outcomes, and have state and local identifiers available.

For Aim 2, I chose to continue analyses with immigrant children solely. This decision helps me to align this work with my Aim1. Further, foreign-born non-citizen children should be directly impacted by CHIPRA's eligibility expansion in theory since CHIPRA directly impacted immigrant children who were under the five-year bar.

The next step for this Aim would be to repeat the analyses with datasets that can better identify legal immigrant children. CHIPRA's primary target was immigrant children who obtained legal permanent residency less than five years ago. With NHIS, I could not identify immigrant children who were not legal permanent residents. Hence, the current sample of my study

included two group of immigrant children who would not directly benefit from CHIPRA: immigrant children who had permanent residency for more than five years, and immigrant children who did not have permanent residency. To overcome that challenge, a potential option for future research is restricted use California Health Interview Survey (CHIS). California has a large immigration population. CHIS asked survey respondents whether they are a permanent resident with a green card. In the CHIS I could compare immigrant children targeted by CHIPRA (in the five-year bar), before and after CHIPR adoption, to immigrant children not targeted (undocumented, citizen, or legal residents with more than 5 years of residence).

Future research should also consider additional measures of health care access and outcomes. Studies have shown that Medicaid's eligibility expansion improves children's health outcomes by increasing hospital visits, emergency room visits; in addition, annual visits may go up along with preventive dental and vision care, flu vaccine take-up, and mental health visits.[1,2,4,73] However, adding additional outcome variable requires amendments to my Data Using Agreement with the National Center for Health Statistics. The process is both lengthy and costly.

6. Conclusion

Despite these limitations, this aim provided consistent findings on the effect of CHIPRA's 214 option on immigrant children's health care access and outcomes. Similar to prior research, I did not find significant effects of CHIPRA's adoption on immigrant children's health care access and health outcomes. The results suggest the need of further investigations of the effects of the policy on impact of health care access and health outcomes.

Chapter 5: The Effects of Secure Communities on Immigrant Children's Health Insurance, Health Care Access and Health Outcomes

1. Introduction

Immigrants face stressors related to lack of legal immigration status, acculturation pressure, language difficulties, economic disadvantages, and being unfamiliar with the US. In addition, they must contend with xenophobia, racism and fear of consequences from immigration enforcement activities.[7–9,12,77–80] These stressors and barriers have important implication for immigrants' access and use of health care and their health. For instance, immigrants of all age groups had large gaps in insurance coverage and health care access compared to their US-born counterparts.[37,47,48] For instance, compared to 39.6 percent of citizen children and 17.2 percent of citizen adults insured through Medicaid, the proportions of immigrant children and non-citizen adults insured with Medicaid was 23 percent and 8.7 percent respectively.[37] Over 37.4 percent of immigrant adults and 25% of immigrant children did not have a usual source of care, compared to 19 percent of citizen adults and 6 percent of citizen children.[37,47]

In the past two decades, public policies, such as state-funded insurance programs for immigrant children under the five-year bar and Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009, were aiming to improve immigrant children's insurance coverage through expanding immigrant children's Medicaid/CHIP eligibility.[67,81] In addition, the Affordable Care Act implemented several key provisions that benefited immigrant families such as Medicaid expansion, the health insurance marketplaces, and premium tax credits.[7,47,82–84] However, the gaps in insurance coverage and access to care between immigrants and US-born residents remained. [47,48] For example, 21.73 percent of Latino US citizens were uninsured prior

to the ACA, while 38.47 percent of Latino legal permanent residents (LPR) and 55.93 percent of undocumented Latino immigrants were uninsured.[48] All three Latino ethnic groups experienced a similar degree of decrease (roughly 10 percentage points) in uninsured rate that's related to the ACA, suggesting the differences in uninsurance among groups did not change significantly.[48]

While take-up of social benefits is imperfect in every population, immigrants are unique in that immigration enforcement activities may depress their participation.[77] The "chilling effect" is when eligible individuals not participate in public programs due to unfriendly policy climate.[77] The "chilling" may be caused by unfriendly language that discourage participation in public programs. For instance, Royer (2005) found that noncitizen Medicaid take-up declined for states that denied benefit to new immigrants due to PRWORA. Borjas (2003) found noncitizen Medicaid participation fell more in less generous states. For immigrants specifically, fear of immigrant enforcement leading to deportation and informal discussion among themselves may also play a major role with lowering program participation.[85] Hungerman (2005) acknowledged differential impacts of PRWORA on noncitizens in his study on the associations of government policy and church spending.[86] Kaushal and Kaestner (2005) contributed their null finding of new immigrants Medicaid participation in more or less generous states to the "chilling effect".[29] Watson(2014) directly linked fear of immigration enforcement to declines in immigrants participating in Medicaid.[77]

One of the most prominent recent immigration enforcement programs was Secure *Communities (SC).*[87] Administered by the Immigration and Custom Enforcement (ICE) from 2008 to 2014, the goal of program was to identify and remove individuals who were in violation of federal immigration laws, including those who failed to depart from the US after a final order of removal being issued.[20,21] SC accomplished these goals by establishing data-sharing partnerships between Immigration and Customs Enforcement (ICE) and state and local law

enforcement entities., requiring all counties in the US to participate. Before Secure Communities was in place, the only way to discover if an arrestee also violated immigration law was to conduct in-person in the jail cell. Under the SC program, states and counties sent fingerprints of arrested individuals to the Federal Bureau of Investigation (FBI), which in turn sent the data to the Department of Homeland Securities for immigration violation checks. Arrestees who ICE identified as in violation of federal immigration laws would be issued a detainer, and subjected to deportation proceedings.[21] All counties were forced to participate in the program, which rolled out on a county basis. The program began on October of 2008, and by 2013, SC was fully activated in every county.[87] SC was temporarily suspended across the entire country by the Department of Homeland Security in 2014, reactivated by President Trump in 2017, and re-paused again in 2021 under President Biden.

Being touted as a success story by the federal government, ICE reported that that over 363,400 criminal aliens from the US were removed as a result of SC.[88] To put these numbers in perspective, all of ICE's activities in 2015 resulted in 235,413 deportations. [89] Not only did SC result in marked increase in the volume of deportations, but it did so through the assistance of state and local governments – the same governments that immigrant families must interact with to obtain social benefits. Thus, SC likely could have had a substantial chilling effect on immigrant families.

A small, but insightful literature has examined the effects of SC. Miles and Cox (2014) found that the SC program essentially had no observable effect on the overall crime rate in the US.[90] Alsan and Yang (2018) used data from two nationally representative surveys to find SC was associated with significant declines in Supplemental Nutrition Assistance Program (SNAP) and Supplemental Security Income (SSI) enrollment among Latino citizens, who were not eligible for immigration removal.[21] Bellows (2019) implemented similar analyses and found that the SC roll-out was associated with decreases in average achievement for Latino students.[30] East et al.

(2021) found that SC decreased employment and wages of likely undocumented immigrants.[91] East and Velasquez (2021) found SC had an unintended spillover effect of increasing the unemployment rate of US-born female workers.[22]

To my knowledge, no study has examined the effects of SC on health care access or health outcomes. However, studies of related programs have found that immigration enforcement can decrease utilization and impact health. For example, previous studies have shown that the implementation of ICE 287(g), a more restrictive immigration enforcement program similar to SC at local level led to decreases in prenatal care among Latino immigrant mothers, decreases in perceived physical and mental health.[23,24] There are two differences between SC and ICE287(g). First, unlike SC, less counties actively participated in ICE 287(g) program. As of November 2021, ICE has participation agreements only from 66 counties in 19 states.[92] Second, The effects of SC might also differ because SC was less aggressive. SC only required fingerprints to be sent for scanning and all enforcement activity was carried out by ICE. 287(g) requires local agencies to actively participate in arrests, perform duties that's only designated to immigration enforcement officials, and even perform duties as immigration officers.[77,92] Hence, the strong effects of 287(g) on immigrants may not be generalizable to ICE. Other studies have examined the effects of deportation volume, regardless of the enforcement program. For example, Watson (2014) used data from Current Population Survey along with immigration enforcement measures constructed using deportation data found that increases in immigration enforcement activities was negatively associated with Medicaid participation among children of immigrants in the US.[77]

A final stream of literature that informs my work considers how immigration liberalization policies effect immigrants who were previously in an unlawful status, principally the Deferred Action for Childhood Arrivals(DACA). Giuntella and Lonsky (2020) discovered gaining DACA status was positively associated with insured rate, but a small and non-significant increase in

health care use.[93] Hainmueller et al (2019) found previously undocumented mothers gaining legal status through DACA significantly decreased adjustment and anxiety disorder diagnosed among their children.[94]

In this study, I examined the effects of Secure Communities activation on immigrant children's access to health insurance, access to care, and health outcomes. I take advantage of SC's gradual rollout across counties using data from 2000 to 2013 to identify effects.

2. Data and Methods

2.1 Data source

Similar to analyses in Aim 1 and 2, data for Aim 3 came from restricted version of the National Health Interview Survey (NHIS) for years 2000-2013. The NHIS is an on-going cross sectional survey sponsored by the Centers for Disease and Prevention (CDC) that monitors the health care access, utilization and health outcomes of the US population. Data is collected from personal interviews that gather information on every member of a sampled household. I selected this study period to be from 2000 to 2013 due to the fact that all counties had activated SC in 2013.

Using the USCIS Secure Communities Report of 2014, I created a policy dataset detailing the status of whether counties adopted Secure Communities program in each year between 2008 and 2013.[95] Using county identifiers, the dataset was merged with restricted NHIS data by a Research Data Center analyst at NCHS. Similar to Aim 1 and 2, all analyses were performed in a US Census Bureau's Federal Statistics Research Data Center, and all study result were reviewed and approved for disclosure risk by NCHS.

From 2000 to 2014, 35 states and DC in US provided insurance programs covering immigrant children under the five-year bar. Using consolidated policy information from various reports by the Kaiser Family Foundation, Migration Policy Institute, Urban Institute, annual

Medicaid state waivers from Medicaid.gov, I created a policy dataset identifying the year that states had any programs providing insurance coverage to immigrant children under the five-year bar in low-income household from 2000 to 2013.

2.2 Study Population

This study sample consisted of children who were born outside of the US and had not been naturalized (i.e. non-citizens) at the time of survey. Foreign-born children are likely especially at risk to experience a chilling effect (versus children in mixed status households). Consistent with prior research examining immigration enforcement impacting public programs take-up, I limited our study sample to children under the age of 18 years old, and with family income of less than 250 percent of the Federal Poverty Level(FPL).[77] Consistent with prior research on immigration policies and program take-up, I selected this income threshold to capture children who were likely to be eligible for public insurance programs based on income threshold.

2.3 Dependent variables

II examined three categories of dependent variables. First, I examined three binary outcomes related to point-in-time health insurance coverage: uninsured, insured under public insurance programs, and insured under private coverage. Second, I assessed binary outcomes related to access to care: having a usual source of care, and delayed medical care due to cost in past 12 months. Finally, I examined two health outcomes: whether physical health was excellent/very good, and had difficulties with emotion, concentration, behavior, or social interactions.

2.4 Independent variable

The main independent variable of this study is the activation of Secure Communities program at each county. According to USCIS ICE, the first group of counties that ever activated

Secure Communities was in 2008, and the last group to adapt was in 2013. Counties initiating Secure Communities on or before September 1 of that year would be considered as activated Secure Communities of that year.

2.5 Covariates

Similar to approach in Chapters 3 and 4, covariates were selected based on the conceptual framework in Chapter 2. First, I included predisposing factors of immigrant children, such as age, sex, race/ethnicity. Second, I controlled for enabling factors that may impact children's insurance take-up and health, including parental education, parental employment status, parents' marital status, family income level relative to FPL and family structure. Lastly, I included survey year to adjust for linear trends that's consistent across counties, and counties characteristics that's consistent across time.

In addition, I controlled for state-level policy changes that may impact insurance take-up. In 1996, a welfare reform policy restricted immigrant children with less than five years of US residency from access federally funded insurance programs. From 2000 to 2009, states expanded Medicaid and CHIP eligibility to immigrant children under the five-year bar. Starting in 2010, federal agencies provided states an option to expand Medicaid's eligibly using federal funding. Both programs aimed to improve insurance take-up among immigrant children under the five-year bar. In this study, I defined a state covering immigrant children under the five-year bar if such state provided state-funded insurance program from 2000 to 2009, or expanded Medicaid's eligibility under CHIPRA's option from 2010 to 2013.

2.6 Statistical analyses

I assessed whether county level activation of Secure Communities was associated with decrease of immigrant children's health insurance coverage, health care access and health outcomes. I estimated linear probability models of the form:

$$y_{ict} = \alpha + \beta_1 SecureCommunities_{ct} + \beta_2 Cover5YRBar_t + \eta X_{ict} + \delta\ YEAR_t + \gamma\ County_c + \epsilon_{ict}.$$

In this model, y_{ict} represents a dependent variable of interest for person *i*, in a county *c*, and in year t. $SecureCommunities_{ct}$is an indicator equal to one if a county had activated Secure Communities in year t. $Cover5YRBar_t$ equals to one if individual in states providing insurance to immigrant children under the five-year bar at year t. X_{ict} is a vector that includes covariates described above. We also include year fixed effects $(YEAR_t)$ to flexibly account for time trends common to all counties and county fixed effects $(County_c)$ to account for unobserved time-invariant county characteristics. β_1 measures the effect of Secure Communities adoption on outcomes. All analyses use survey weights and standard errors are clustered the county level.

In addition to the two-period difference-in-differences specification described above, I also estimate event-study specifications that allow us to measure the evolution of outcomes over time. The model is as follow:

$$y_{ist} = \eta X_{ict} + SecureCommunities_c * \left[\sum_{k=-5}^{-2} \beta_k 1\{t - t^* = k\} + \sum_{k=0}^{4} \pi_k 1\{t - t^* = k\}\right] + \delta\ YEAR_t + \gamma County_c + \epsilon_{ict}$$

In these models the binary activation of Secure Communities variable is replaced with indicators of relative time where the year prior to activation is the omitted reference. I combined individuals in counties with relative time of greater than 4 years after Secure Communities activation with the group of 4 years after activation. The vector of β_k before the year of Secure Communities activation measures differences between counties adopted and not adopted Secure Communities program. The vector after the year of policy activation traces the evolution of program's effects on outcomes over time.

To test whether the two-way fixed effect model may bias the estimates, I conducted alternative event-study analyses developed by Sun/Abraham (2021). In this model, I specified counties activated Secure Community in 2013 as the group that did not receive treatment group (not treated group), and readjusted the study period to exclude measures in 2013. I then used interaction of treatment timing cohort to the counties that did not activate Secure Communities before 2012.

3. Results

Descriptive statistics in Chapter 3 showed that immigrant children were generally older in age and of Hispanic ethnicity. 46.98 percent of immigrant children had parents not graduating high school. Despite over 93.31 percent of immigrants with at least one working parent in the household, 45.88 percent residing in households under 100% of the federal poverty level. Immigrant children tends to have stable households, with 89.44 percent reporting parents being married, less than 15 percent living in a single-parent household. Immigrant children are generally healthier, with 73.95 percent reporting in excellent/very good health.

Figure 5-1 presents the unadjusted trends of uninsurance and public coverage for immigrant children. In 2000, close to half of all immigrant children were uninsured. The trend remained steady until 2007 when the uninsured rate declined by 10 percentage points. The uninsurance inched up by 10 percentage points in 2008 and 2009, and the fell back to year 2007 level from 2010 to 2013. The decline of uninsured rate among immigrant children seems to be correlated with the increasing take-up in public insurance programs: less than 20 percent of immigrant children were insured with public insurance in 2000; the level remained steady until 2007 when the public insurance take-up increased by 10 percentage points. The increase was slow by steady after 2009. At the end of the study period, over 40 percent of immigrant children had

public insurance coverage. Descriptive statistics of immigrant children in Aim 3 is similar to results presented in Aim 1 and 2.

Table 5-1 shows the adjusted association between SC activation, measures of insurance coverage, access to care and health outcomes among low-income immigrant children using the two-way fixed effect DID estimators. The model suggests that SC was associated with a statistically significant 8.2 percentage point decline in public insurance coverage (95%CI: -16.18, -0.22). The point estimates in the uninsured and privately insured model were positive, but not statistically significant.

Presented in Table 5-1, the point estimates for measures of access to care and health outcome had the expected signs. However, the estimates were not statistically significant. Thus I could not reject the hypothesis that SC activation did not have any significant impact on immigrant children's access to care measures and health outcomes.

Figure 5-2 presents graphs of adjusted event-study coefficients from selected outcomes using TWFE and interacted-weights event-study estimator. Estimators from both models suggest similar results as presented in Table 5-1. The post-activation estimators suggest that the effects of SC activation on public insurance take-up were greater in the first three years after counties activating Secure Communities, and the effects slowly diminished after the 3rd year. The coefficients on time period before SC activation suggest little evidence of differential pre-treatment timing. Lastly, I found our event-study models that SC activation did not significantly impact immigrant children's uninsurance, access to care and health outcomes measure.

The placebo tests estimated for US-born children with household income less than 300 percent FPL suggested small and non-significant associations between SC activation and insurance coverage, access to care and health outcomes among them (Appendix 1). These null findings suggest SC activation was not correlated with other factors related to the outcomes.

4. Discussion

Under the Obama administration, the federal government rolled out Secure Communities program to all counties in the United States. With its original goal to identify and remove unlawfully presented immigrants, previous studies found that SC to have a spillover effect, negatively impacting citizen Latino Americans' take-up in safety-net programs.[21] Using data from a national survey and quasi-experimental design, this finding suggest SC activation decreased the non-citizen immigrant children's public insurance take-up by 8.2 percentage points since 2008. My estimates suggest that the chilling effect of SC on public coverage take up is substantial- the point estimate is more than half the absolute size of the effect of ACA expansion – the largest expansion of Medicaid since its introduction.

My finding on public coverage is consistent with previous studies on immigration enforcement's "chilling effect".[18,32,77] One explanation of such decrease is the fear of exposing family members to deportation risks. There were estimated 1.1 million immigrant children residing with at least one unauthorized immigrant parent, representing 30% of immigrant children population.[96] Prior research showed that unauthorized immigrants who reported high levels of fear of deportation were more likely to report an inability to acquire medical and dental care, less likely to seek care in physician's office, and more likely to delay care for more than two months.[32,97,98] States' Medicaid and CHIP applications ask applicants to provide family members' personal information, include name, birthdates, social security number and source and amounts of family income.[99] In addition, states may require additional information from applicants that may further expose family members. For instance, Mississippi and Tennessee require face-to-face interviews with all applicants. During the study period e Missouri, South Carolina, Texas and Utah required family to submit financial documents for the "asset test".[100] Such contacts from state agencies may bring additional stress to immigrant families. To avoid the risk immigrant family with unauthorized immigrants may forgo Medicaid for their children.

The event study models found that the effects of SC activation remained steady but it slowly diminished 3 years after the initial SC activation. The diminishing effect may be explained by parents' changing perception regarding the local immigration climate. When counties first activate Secure Communities, perhaps with increasing media coverage on the policy and presenting immigrants arrests, immigrants parents and guardians may perceive the local immigration climate as restrictive and harsh.[101] To avoid the risk of being arrested, they may choose not to enroll their children in Medicaid even if children were eligible. As media coverage diminishes, the *perceived* immigration climate becomes less restrictive, hence parents of immigrant children may enroll in greater numbers.

Effects on other outcomes were less clear. I did not observe significant increase in uninsurance or private insurance coverage. However, the point estimates were suggestive of reverse crowd-out (private coverage being substituted for public coverage). I also considered a large set of health care access and outcomes. I did not find any significant effects of SC activation on immigrant children's access to care or health outcomes. The size of my confidence intervals clearly suggests that my study was likely underpowered.

5. Limitations and Future Directions

The analyses presented in this chapter provide important new information about the effects of immigration enforcement on child health and health care access. However, the clearest limitation is that I lacked adequate sample size to reach confident conclusions for most outcomes. For example, I cannot exclude effects on mental health from a 8 point decline in emotional distress to a 20 percentage point increase.

A major contributing factor to small sample sizes was my decision to focus the analysis on non-citizen children. That decision helps me to align this work with the other chapters of the dissertation and non-citizen children are theoretically likely to experience a stronger chilling

effect than other immigrant populations. However, other studies have found that SC lead to declines in public program participation among Latino citizen children of foreign-born parents.[21]

The next phase of this project will re-estimate the models presented here on all children with at least 1 non-citizen adult living in the household. That will substantially increase my sample size. However, carrying out that analysis will require amendments to my Data Using Agreement with the National Center for Health Statistics. The process is lengthy and costly.

Limiting my analysis to citizen children with non-citizen parents will solve another limitation of the analyses presented here. Some children studied here were likely ineligible for public benefits because they lacked legal immigration status. Other children may have had legal residency, but been under the 5-year bar restriction. While I controlled for state policy covering that population, it is plausible that those controls did not fully solve the issue. Focusing on citizen children will remove those threats to validity.

6. Conclusion

Despite these limitations, my study presents new evidence on the impact of the activation of Secure Communities program, an immigration enforcement policy, on immigrant children's insurance coverage, access to health and health outcomes. I find strong evidence that SC reduced take-up of public health insurance. This results suggest the key to improve take-up in Medicaid among immigrant children should focus on improving local immigration climate. Steps like iterating program participation does not lead to immigration enforcements at local level, and also by keep immigration enforcement activities out of local governments who also provide safety-net programs and services.

Chapter 6. Conclusion

In this study, I examined two public policies: Children's Health Insurance Program Reauthorization Act of 2009, the public policy that expanded public insurance eligibility to immigrant children under the five-year bar; and Secure Communities, a national immigration enforcement program that linked federal immigration enforcement activities to local authorities. The conceptual model presented in Chapter 2, which is based on Aday-Andersen behavioral model of health care utilization, shows that both policies could impact insurance coverage. In turn, changes in insurance coverage may lead to variations in health care access and health outcomes.

In Chapter 3, I examined the effects of adopting CHIPRA's option on immigrant children's insurance coverages. I found that immigrant children in states that adopted CHIPRA's option experienced a 6.35 percentage points decrease in uninsurance, and 8.1 percentage points increase in public insurance coverage, while estimated changes on private coverage were not statistically significant. Chapter 4 presented findings on effects of adopting CHIPRA's option on immigrant children's health care access and health outcomes. I did not observe any statistically significant effects of CHIPRA on immigrant children's access to care and health outcomes. Chapter 5 presented findings on the effects of Secure Communities activation at county level on immigrant children's insurance coverage, health care access and health outcomes. My estimates suggested that activation of SC significantly decreased immigrant children's public insurance coverage by 8.2 percentage points, while the estimates on other outcomes were not statistically significant.

1. Policy Implications

Health insurance coverage plays an essential role in the children's developmental years. Prior studies show overwhelming evidence that children low-income having public insurance coverage can lead to higher health care utilization, better physical and mental health outcomes, less avoidable hospitalization and emergency department visits, better school outcomes and better labor outcomes for parents. Additionally, having access to adequate insurance coverages in childhood can help reverting disadvantages that may extend into adulthood. Boudreaux et al (2016) discovered that exposure to Medicaid coverage in early childhood significantly improved adult health.[6] A recent study by Goodman-Bacon found early childhood eligibility led to reduction in unemployment in adulthood, less mortality and disability, and reduced receipt of disability transfer programs up to 50 years later.[102] Hence, it is crucial ensure children in low-income household can access public insurance when in need.

This project demonstrated that immigrant children's health insurance coverage is sensitive to public policy changes in the US. CHIPRA's option to eliminate the five-year bar indeed lowered the uninsurance and improve public insurance coverage. There is an urgent need to expand health insurance eligibility beyond immigration status. Bustamante et al (2018) found that even after eligibility expansion and creation of health insurance market from the ACA, lack of legal status remains a major roadblock to health insurance coverage. The state of California expanded Medicaid coverage to all children in May 2016. A recent study by Lipton et al (2021) found the eligibility expansion produced a 34 percent decline in uninsurance rate among noncitizen children.[103] It is a crucial step in supporting the well-being of immigrant children.

However, my results also indicate that expansion of coverage to recently arrived immigrants was not associated with significant changes in health care access, utilization, or health outcomes, at least in the short run. This suggests that coverage expansions also need to be tied to broader health system initiatives. One key factor that may lead to increase in access and utilization can be eliminating language barriers from immigrant children and their parents. For

instance, Flores et al (2005) found that parents with limited English proficiency (LEP) had much higher odds of having children in fair/poor health status, and experienced significant barriers to care.[10] Bustamante et al (2018) examined the effects of the ACA on Latino immigrants in California, and found that LEP contributing the disparities in access and utilization of health services between Mexican and Other Latino immigrants.[48] To better improve access and utilization of care, policy makers should include additional funding for services that eliminate language barriers between patients and providers.

In order for such initiatives to be successful, they must be carried out in a broader societal context that limits, rather than exacerbates the precariousness of immigrant families. My work shows that the implementation of a national immigration enforcement program substantially reduced public insurance program participation among immigrant children. The SC program was perhaps particularly pernicious as it relied on the participation of local government officials. Local governments, which are the main providers of safety-net programs and services in the communities. It is possible that participating in immigration enforcement could erode trust from immigrant communities.

2. Future Work

Limitations from each aim provides me directions of future works. First, with NHIS not tracking immigration status, my study sample included immigrant children who were over the five-year bar, or did not have legal permanent residence. In addition, insufficient sample in Aim 2 limited my ability to determine the effects of CHIPRA on immigrant children's access to care and health outcomes. To address the issue with sample selection, I would like to repeat the analyses for Aim 1 and Aim 2 using data from restricted California Health Interview Survey (CHIS). CHIS survey asked immigrants if they have LPR status, years arrived to US, employment information and detailed information on health outcomes, access and utilization of

health care services. In addition, UCLA Center for Health Policy Research has developed an algorithm that identify potential undocumented immigrants in CHIS. Using the combination of CHIS and its proprietary algorithm, I will be able to better select the study sample to increase the sample size for both aims. There are several foreseeable drawbacks. First, if using data from California, then the estimated effects are only applicable to immigrant children in state of California. Second, there is a substantial immigration policy variation at county-level geographies. It will be difficult to track start and end dates of each policy.

My analyses in aim 3 focused on immigrant children solely. Previous studies indicate that immigration enforcement activities have negative impacts on all family members of immigrant families, including children who were born in US to foreign parents. Alsan and Yang (2018) in their NBER paper found that activation of Secure Communities had spillover effects on US-born children of Latino immigrant parents, lowering their SNAP and SSI participations. However, it is unclear if SC would have similar impacts on Medicaid/CHIP participation among children of immigrants. The restricted NHIS would be a plausible data source as it contains parental linkage to children, citizenship status and birth place. This research question is beyond the scope of my original NHIS data request proposal, and the process to file an amendment to include this question is both lengthy and costly.

Additionally, would Secure Communities have a broader spillover effect, impacting individuals living in the same household with likely undocumented immigrants? Cohen and Schpero (2017) found that residing with likely undocumented immigrants dampened the effect of ACA's eligibility expansion for targeted population. To answer this question, the Current Population Survey would be a good option. It has both state and county identifiers and insurance status. However, one drawback about CPS is that it stopped tracking public insurance coverage after 2013.

3. Conclusion

Increasing health insurance coverage is essential to improve immigrant children's health care access and utilization. Results from this project suggests eliminating immigration-related restrictions on access to public health insurance is an effective way to improve insurance coverage, but an oppressive and restrictive immigration climate results in a chilling effect that hamper the program participation among immigrant children.

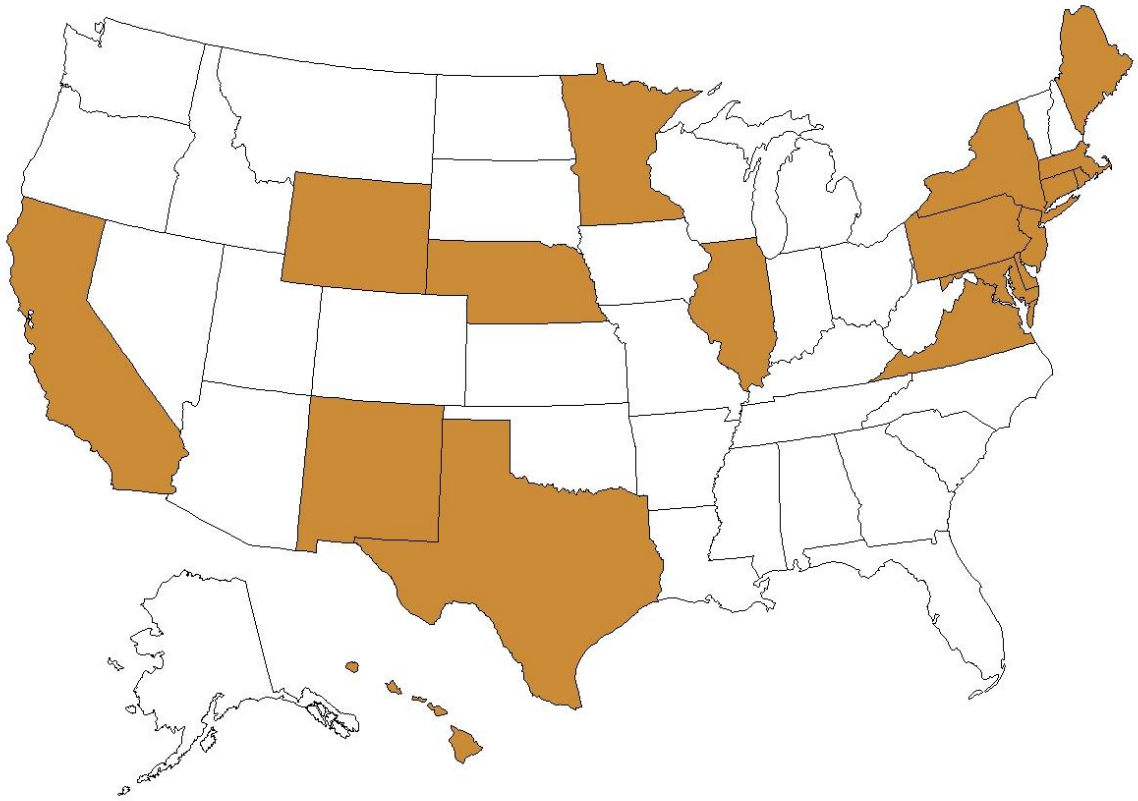
Tables and Figures

Table 1-1. Status of states with state-funded programs before CHIPRA, CHIPRA adoption and years (As of 2016)

	State-Funded Programs Before CHIRPA	CHIPRA Adoption	CHIPRA Adoption Year		State-Funded Programs Before CHIRPA	CHIPRA Adoption	CHIPRA Adoption Year
Alabama	No	No	-	Montana	No	Yes	2011
Alaska	No	No	-	Nebraska	Yes	Yes	2011
Arizona	No	No	-	Nevada	No	Yes	-
Arkansas	No	Yes	-	New Hampshire	No	No	-
California	Yes	Yes	2010	New Jersey	Yes	Yes	2010
Colorado	No	Yes	2015	New Mexico	Yes	Yes	2010
Connecticut	Yes	Yes	2010	New York	Yes	Yes	2010
Delaware	Yes	Yes	2011	North Carolina	No	Yes	2011
District of Columbia	Yes	Yes	2010	North Dakota	No	No	-
Florida	No	Yes	2016	Ohio	No	Yes	2015
Georgia	No	No	-	Oklahoma	No	No	-
Hawaii	Yes	Yes	2010	Oregon	No	Yes	2010
Idaho	No	No	-	Pennsylvania	Yes	Yes	2012
Illinois	Yes	Yes	2011	Rhode Island	Yes	Yes	2010
Indiana	No	No	-	South Carolina	No	Yes	-
Iowa	No	Yes	2010	South Dakota	No	No	-
Kansas	No	No	-	Tennessee	No	No	-
Kentucky	No	Yes	2015	Texas	Yes	Yes	2011
Louisiana	No	Yes	-	Utah	No	Yes	2016
Maine	Yes	Yes	2010	Vermont	No	Yes	2012
Maryland	Yes	Yes	2010	Virginia	Yes	Yes	2012
Massachusetts	Yes	Yes	2012	Washington	No	Yes	2010
Michigan	No	No	-	West Virginia	No	Yes	2015
Minnesota	Yes	Yes	2011	Wisconsin	No	Yes	2011
Mississippi	No	No	-	Wyoming	Yes	No	-
Missouri	No	No	-				

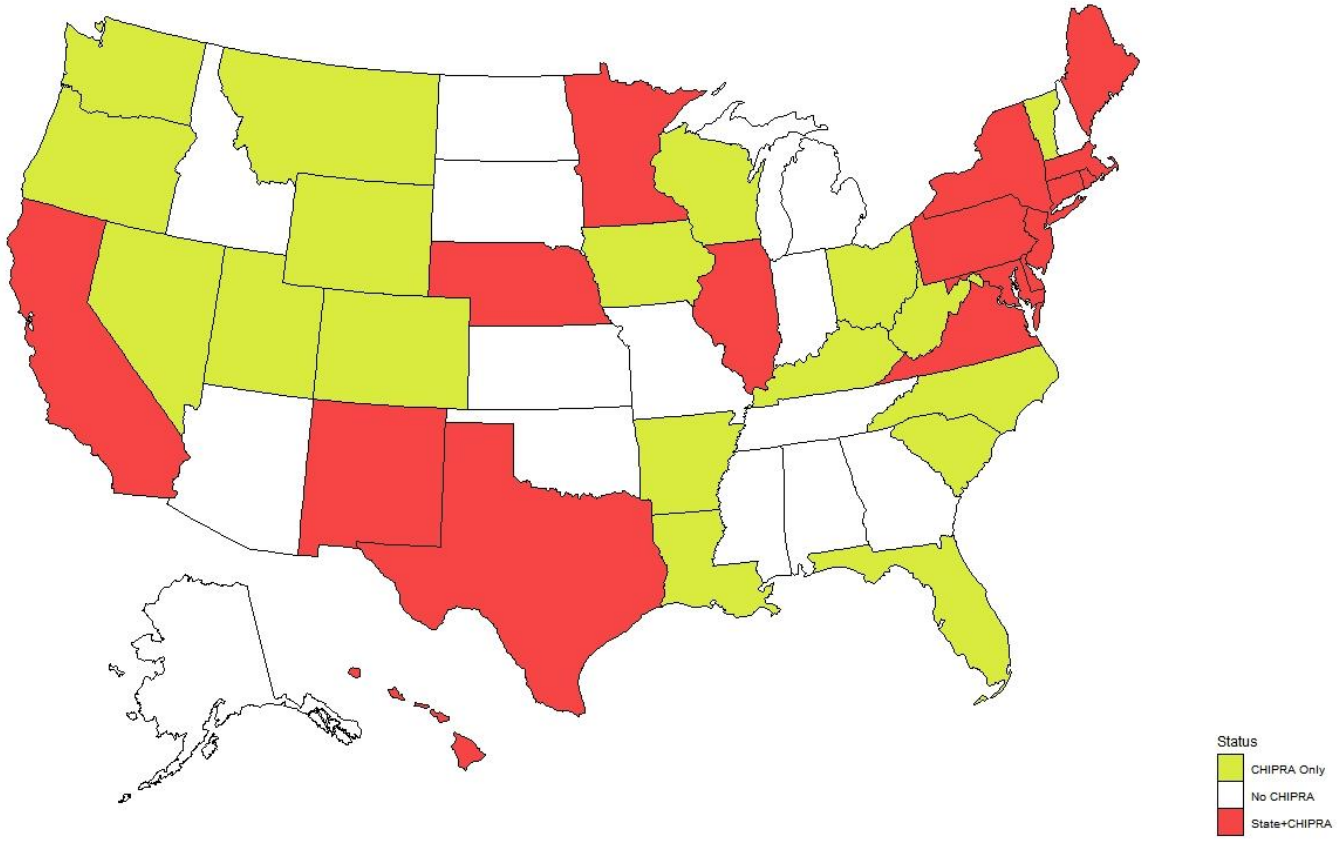
Sources: Medicaid policy reports from Kaiser Family Foundation, Migration Policy Institute, Urban Institute; Medicaid/CHIP state waivers.
Notes: CHIPRA is Children's Health Insurance Program Reauthorization Act.

Figure 1-1 States that Had State-funded Programs for Immigrant Children Under the Five-year Bar, 2009



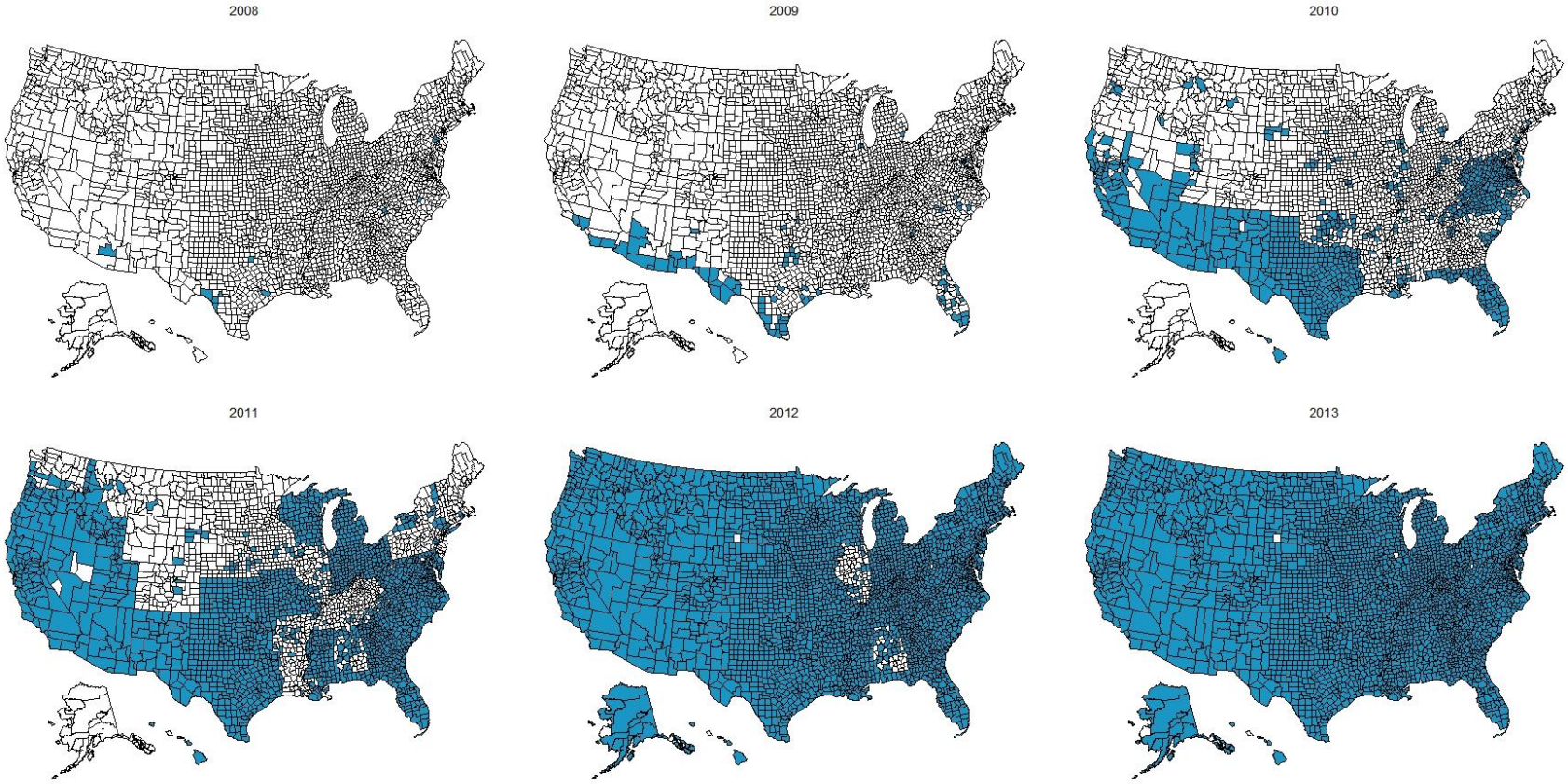
Data Sources: Medicaid policy reports from Kaiser Family Foundation, Migration Policy Institute, Urban Institute
Note: Maps are produced with R package ggplot2

Figure 1-2. States that Had State-funded Programs and Adopted CHIPRA vs States That Only Adopted CHIPRA



Data Sources: Medicaid policy reports from Kaiser Family Foundation, Migration Policy Institute, Urban Institute; Medicaid/CHIP state waivers.
Note: CHIPRA is Children's Health Insurance Program Reauthorization Act. State+CHIPRA indicates a state had both state-funded programs prior to CHIPRA and also adopted CHIPRA; CHIPRA only indicates a state only adopted CHIPRA, no previous state-funded programs. Maps are produced with R package ggplot2

Figure 1-3 Maps of Secure Communities Activation in the US, 2008-2013



Data Source: US Immigration and Customs Enforcement Secure Communities Monthly Statistics, 2014
Note: Maps are produced with R package ggplot2

Figure 2-1. Conceptual Model

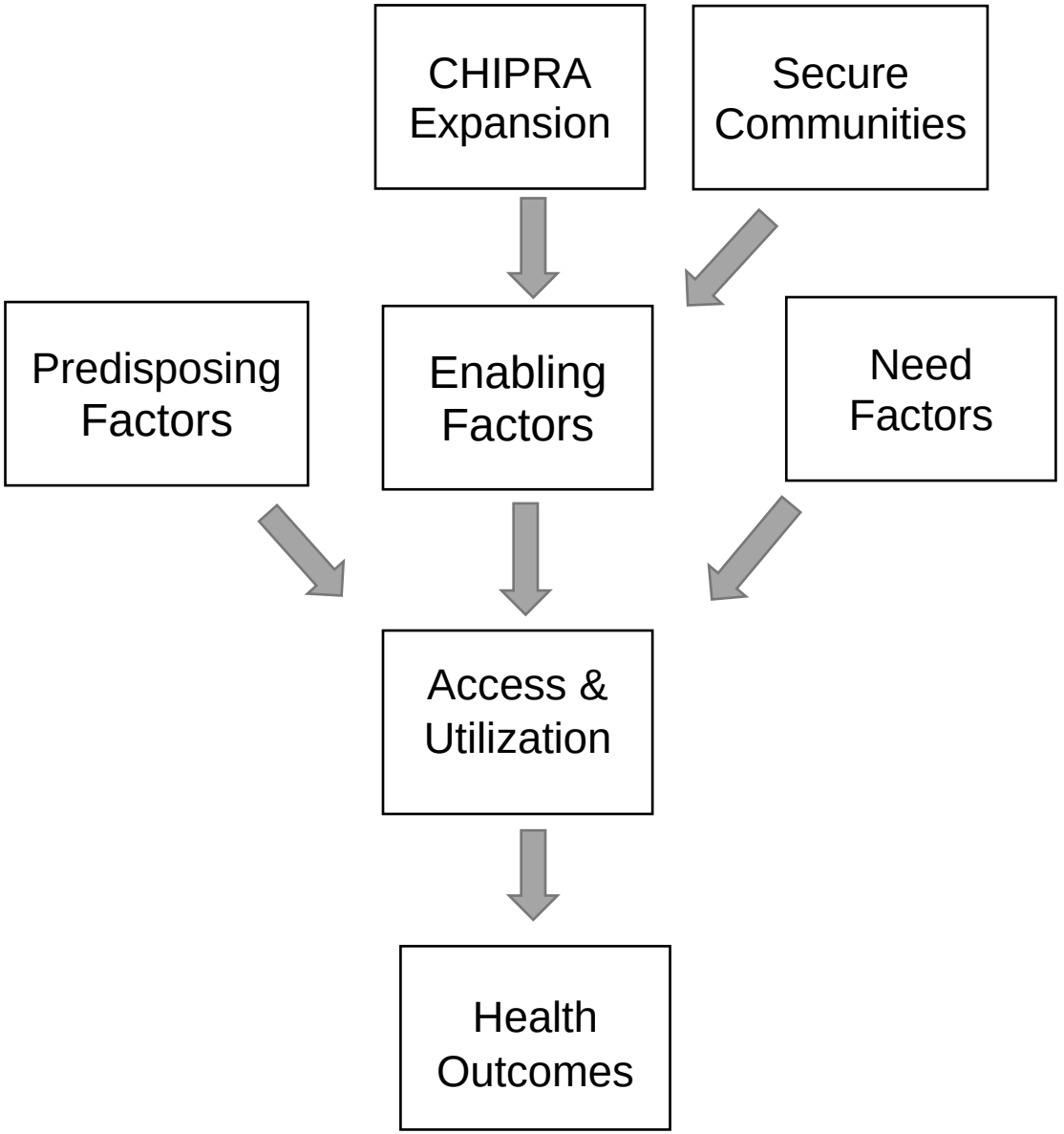
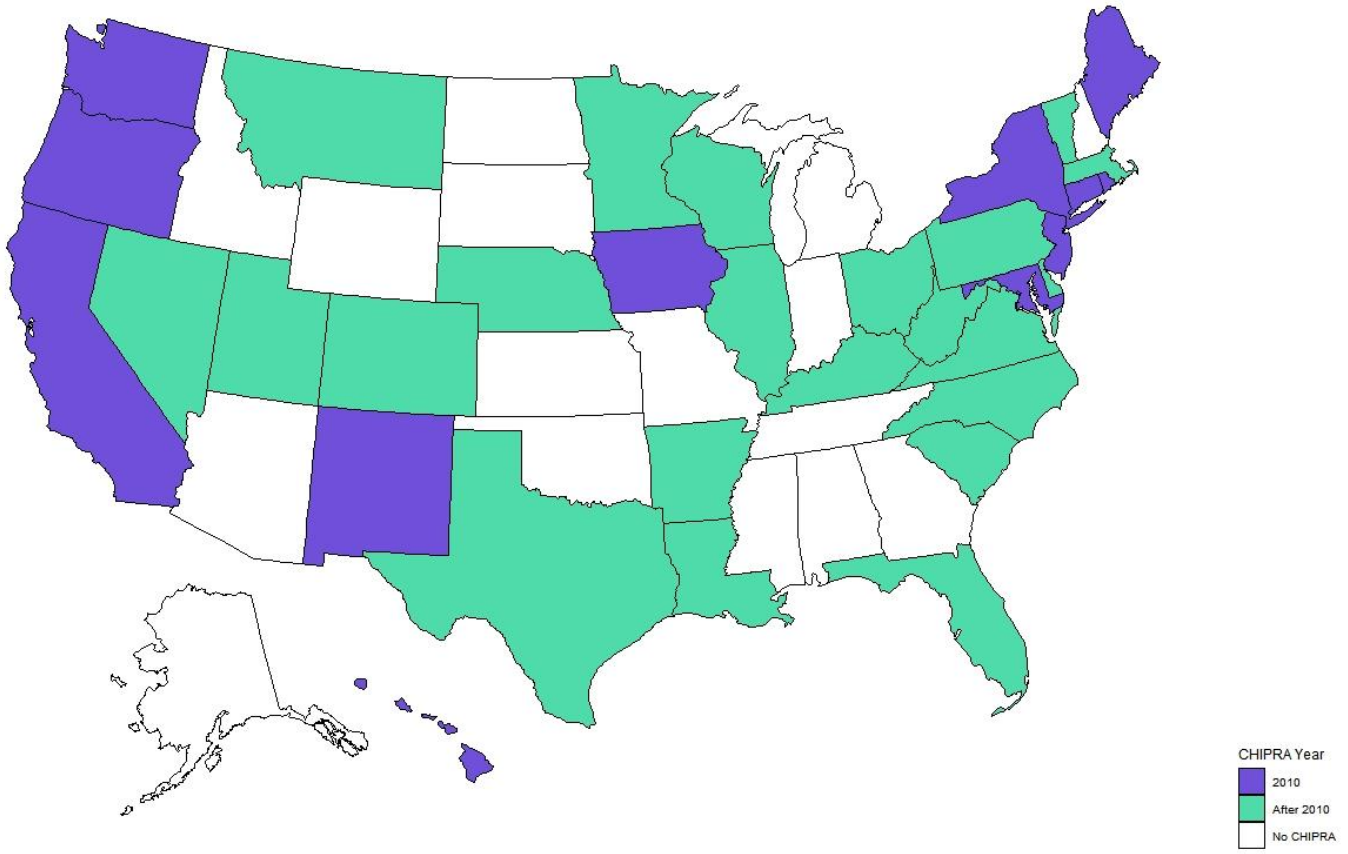


Figure 3-0. Year of CHIPRA Adoption: 2010 vs After 2010



Data Sources: Medicaid policy reports from Kaiser Family Foundation, Migration Policy Institute, Urban Institute; Medicaid/CHIP state waivers.
Note: CHIPRA is Children's Health Insurance Program Reauthorization Act. 2010 indicates a state adopted CHIPRA's option in 2010.After 2010 refers to states that adopted CHIPRA's option after 2010. No CHIPRA means a state has not adopted CHIPRA yet. Maps are produced with R package ggplot2

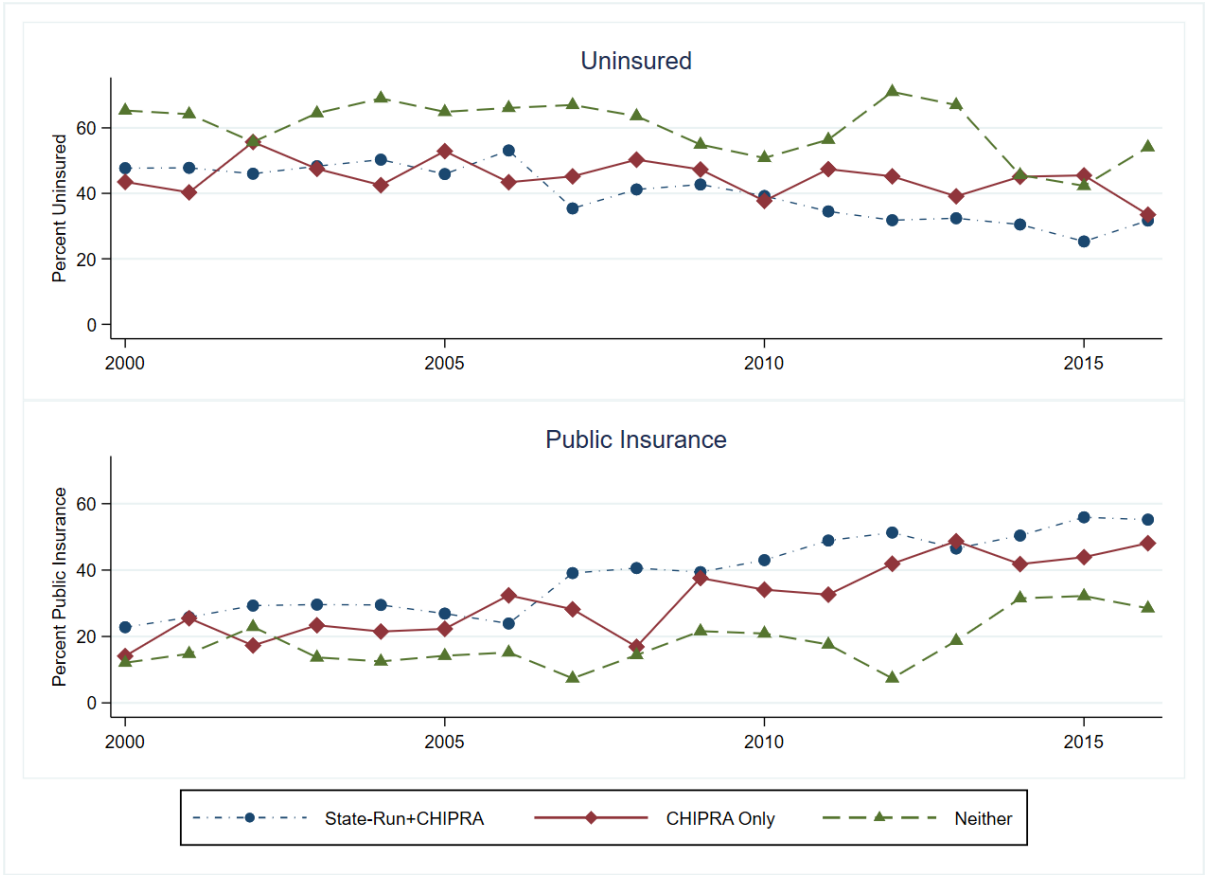
Table 3-1. Descriptive Characteristics of Immigrant Children, by whether or not their states had state-run insurance programs prior Children's Health Insurance Reauthorization Act (CHIPRA)

	Overall		States w/ state-run insurance programs		States w/o state-run insurance programs	
Characteristics	Mean (%)	95% CI	Mean (%)	95% CI	Mean (%)	95% CI
Age Groups						
0-5 Years old	12.44	(11.65,13.22)	12.17	(11.36,13.02)	14.39	(12.17,16.92)
6-11 Years old	34.56	(33.58,35.54)	34.46	(33.41,35.52)	35.8	(33.02,38.69)
12-18 Years old	53	(51.78,54.21)	53.38	(52.07,54.68)	49.81	(46.44,53.19)
Race/Ethnic Groups						
NH white	11.54	(10.08,12.99)	11.76	(10.28,13.42)	10.6	(7.25,15.25)
NH black	7.41	(6.449,8.370)	7.59	(6.65,8.65)	6.95	(4.19,11.3)
NH Asian	15.35	(13.80,16.89)	15.9	(14.25,17.7)	13.07	(10.16,16.65)
Hispanic	65.28	(63.10,67.45)	64.35	(61.96,66.68)	68.88	(62.8,74.37)
NH Others	0.42	(0.224,0.616)	0.4	(0.23,0.68)	0.5	(0.14,1.75)
Sex						
Male	51.3	(50.32,52.28)	50.87	(49.81,51.93)	54.2	(51.55,56.83)
Female	48.7	(47.72,49.68)	49.13	(48.07,50.19)	45.8	(43.17,48.45)
Highest Parental Education						
Less than HS	46.98	(45.07,48.88)	46.3	(44.31,48.3)	52.15	(46.1,58.14)
High School	19.54	(18.28,20.79)	19.86	(18.54,21.26)	16.63	(13.39,20.46)
Some College	12.91	(11.93,13.89)	13.07	(12.03,14.19)	10.76	(8.84,13.04)
BS or higher	20.58	(19.07,22.08)	20.76	(19.22,22.39)	20.46	(15.95,25.84)
Parents' Marital Status						
Single/Separated	6.8	(6.153,7.446)	7.29	(6.61,8.04)	3.74	(2.6,5.36)
Divorced/Widowed	19.54	(18.28,20.79)	3.92	(3.38,4.53)	2.57	(1.62,4.04)
Married	89.44	(88.59,90.28)	88.79	(87.83,89.68)	93.69	(91.63,95.27)

Family Income (in FPL)						
<99% FPL	45.88	(44.27,47.48)	45.59	(43.83,47.36)	48.07	(43.83,52.33)
100-199% FPL	39.15	(37.68,40.62)	39.16	(37.6,40.75)	38.79	(34.78,42.96)
200-299% FPL	14.98	(13.88,16.07)	15.25	(14.09,16.49)	13.14	(10.4,16.47)
Parental Employment Status						
Both parents are not employed	6.69	(5.768,7.611)	6.7	(5.74,7.8)	6.99	(4.89,9.9)
At least one parent is employed	93.31	(92.38,94.23)	93.3	(92.2,94.26)	93.01	(90.1,95.11)
Self-Reported Health Status						
Excellent/Very Good	73.95	(72.65,75.24)	73.05	(71.61,74.45)	78.91	(75.22,82.19)
Good/Fair/Poor	26.05	(24.75,27.34)	26.95	(25.55,28.39)	21.09	(17.81,24.78)
Family Structure						
Single parents household	14.31	(13.29,15.32)	15.21	(14.12,16.35)	8.9	(6.94, 11.13)
Two biological parents	76.67	(75.41,77.92)	75.87	(74.52,77.17)	81.62	(77.65, 85.02)
At least one step parent	9.02	(8.294,9.745)	8.92	(8.2,9.7)	9.48	(7.29, 12.25)

Source, Analyses of data from National Health Interview Survey, 2000-2016.
Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. NH is non-Hispanic. CI is confidence interval. FPL is federal poverty level.

Figure 3-1. Unadjusted Uninsured Rate and Public Insurance Rate among Low-Income Immigrant Children, 2000-2016



Source: Analyses of data from National Health Interview Survey, 2000-2016
Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. State-Run+CHIPRA is states that both had state-run programs prior to CHIPRA, and adopted CHIPRA option. CHIPRA Only is states that only adopted CHIPRA's option. Neither is states that did neither state-run programs nor adopted CHIPRA's option. Estimates are survey weighted.

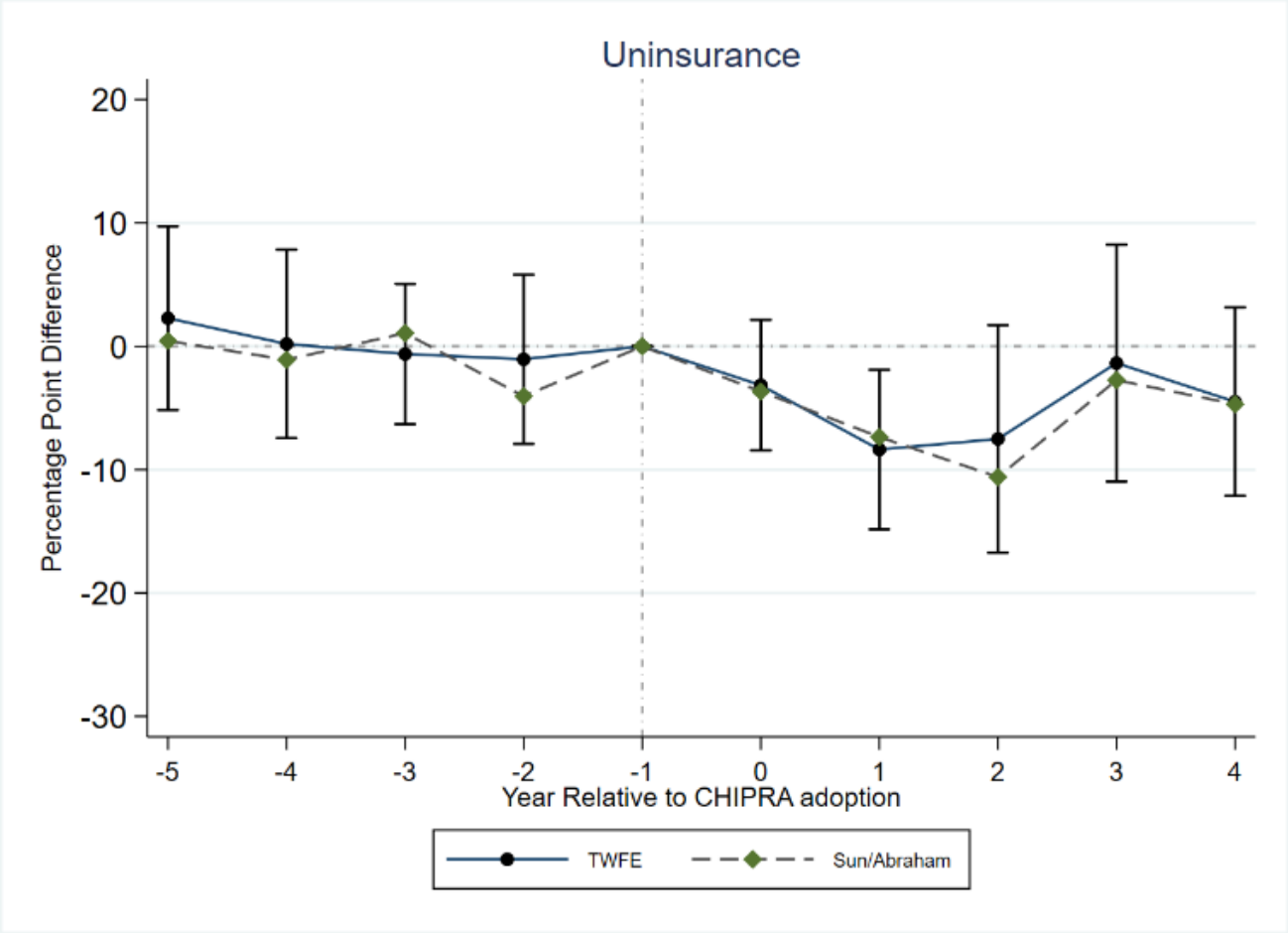
Table 3-2. Estimated Effects of Children's Health Insurance Reauthorization Act (CHIPRA) Adoption on Low-Income Immigrant Children, 2000-2016

	TWFE DID		2-Stages DID		Baseline average (%)	Percent change
	Estimated Effects (percentage point)	95% CI	Estimated Effects (percentage point)	95% CI		
Insurance						
Uninsured	-6.35*	(-11.25, -1.45)	-6.4*	(-11.3,-1.5)	51.4	-12.35%
Public Insurance	8.12*	(1.26, 14.98)	7.9*	(1.04,14.76)	26.61	30.51%
Private Insurance	-3.04	(-8.33, 2.25)	-2.8	(-8.09,2.49)	24.34	-12.49%

Source: Analyses of data from the National Health Interview Survey (NHIS), 2000-2016.

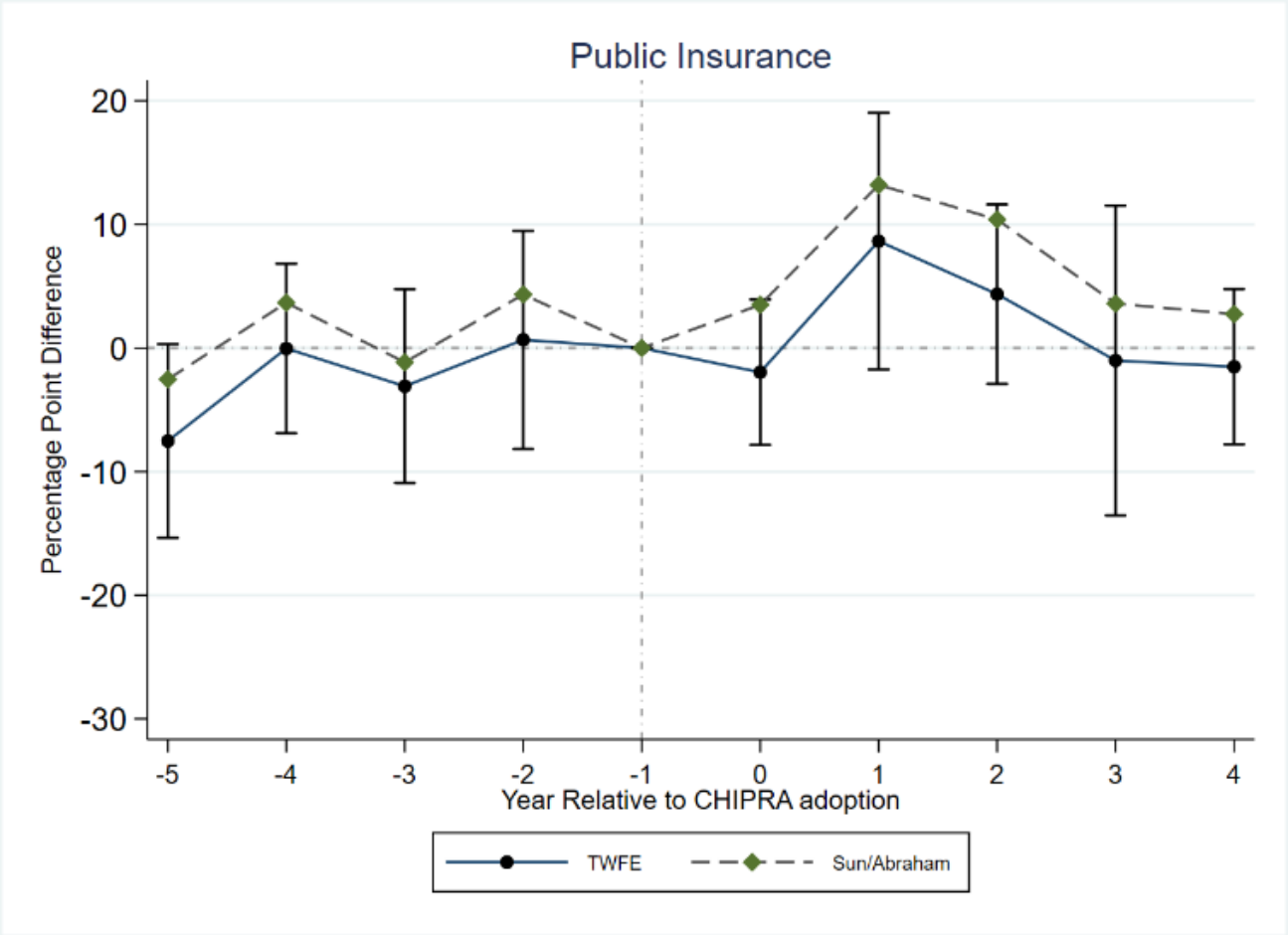
Notes: The estimated effect represent coefficients from a difference-in-differences model regression model, relative to not states that didn't adopt CHIPRA. The baseline average is calculated using 2000-2009 public use NHIS. The measures represent the means of outcomes for immigrants prior to any CHIPRA expansion. The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, paren education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. Standard errors were clustered at the state level. TWFE is two-way fixed effects; DID is difference-in-differences; CI is confidence interval. *p<0.05.

Figure 3-2a. Adjusted Percentage Point Differences in *Uninsurance* for Immigrant Children Living in States that Adopted CHIPRA's Option, 2000-2016



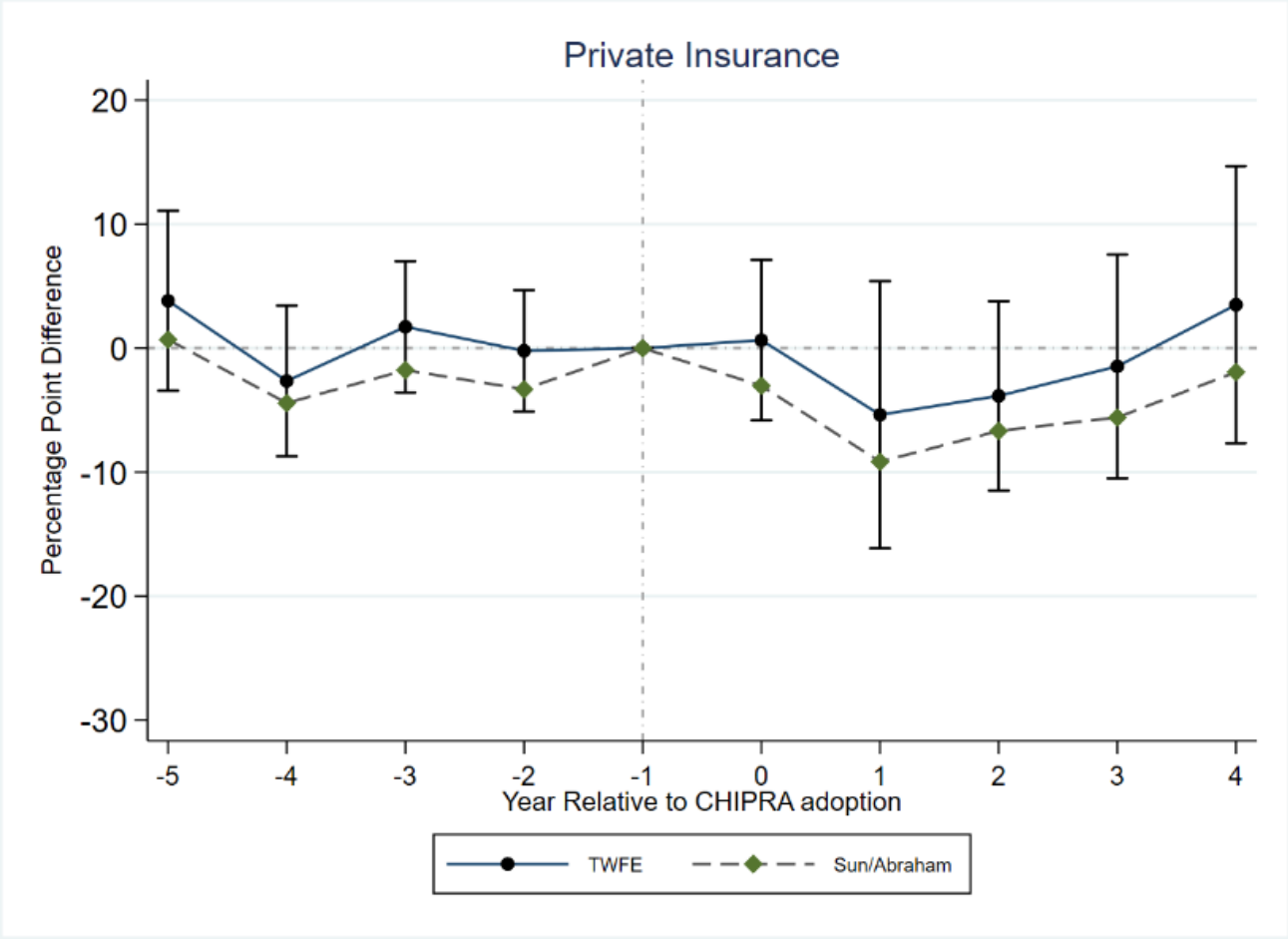
Source: Analyses of data from National Health Interview Survey, 2000-2016
Notes: Percentage point differences come from estimates by event-study models. The year before CHIRPA adoption (-1) is the omitted reference category. Year 0 is the first year of CHIPRA adoption. The error bars indicate 95% confidence intervals. TWFE is two-way fixed effect event-study model. Sun/Abraham is the alternative event-study model that is unbiased in the presence of heterogeneous treatment effects.

Figure 3-2b. Adjusted Percentage Point Differences in *Public Insurance* for Immigrant Children Living in States that Adopted CHIPRA's Option, 2000-2016



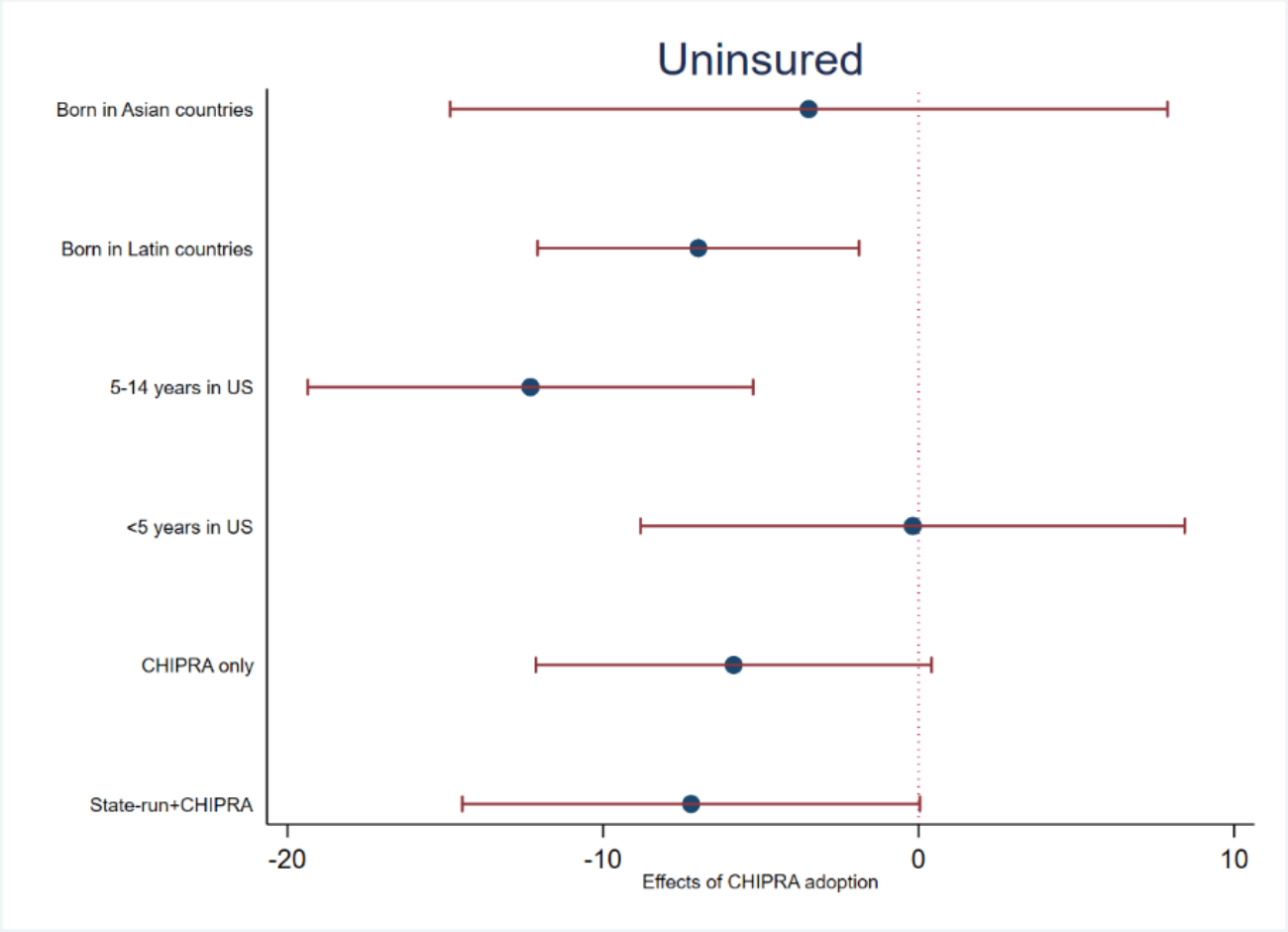
Source: Analyses of data from National Health Interview Survey, 2000-2016
Notes: Percentage point differences come from estimates by event-study models. The year before CHIRPA adoption (-1) is the omitted reference category. Year 0 is the first year of CHIPRA adoption. The error bars indicate 95% confidence intervals. TWFE is two-way fixed effect event-study model. Sun/Abraham is the alternative event-study model that is unbiased in the presence of heterogeneous treatment effects.

Figure 3-2c. Adjusted Percentage Point Differences in *Private Insurance* for Immigrant Children Living in States that Adopted CHIPRA's Option, 2000-2016



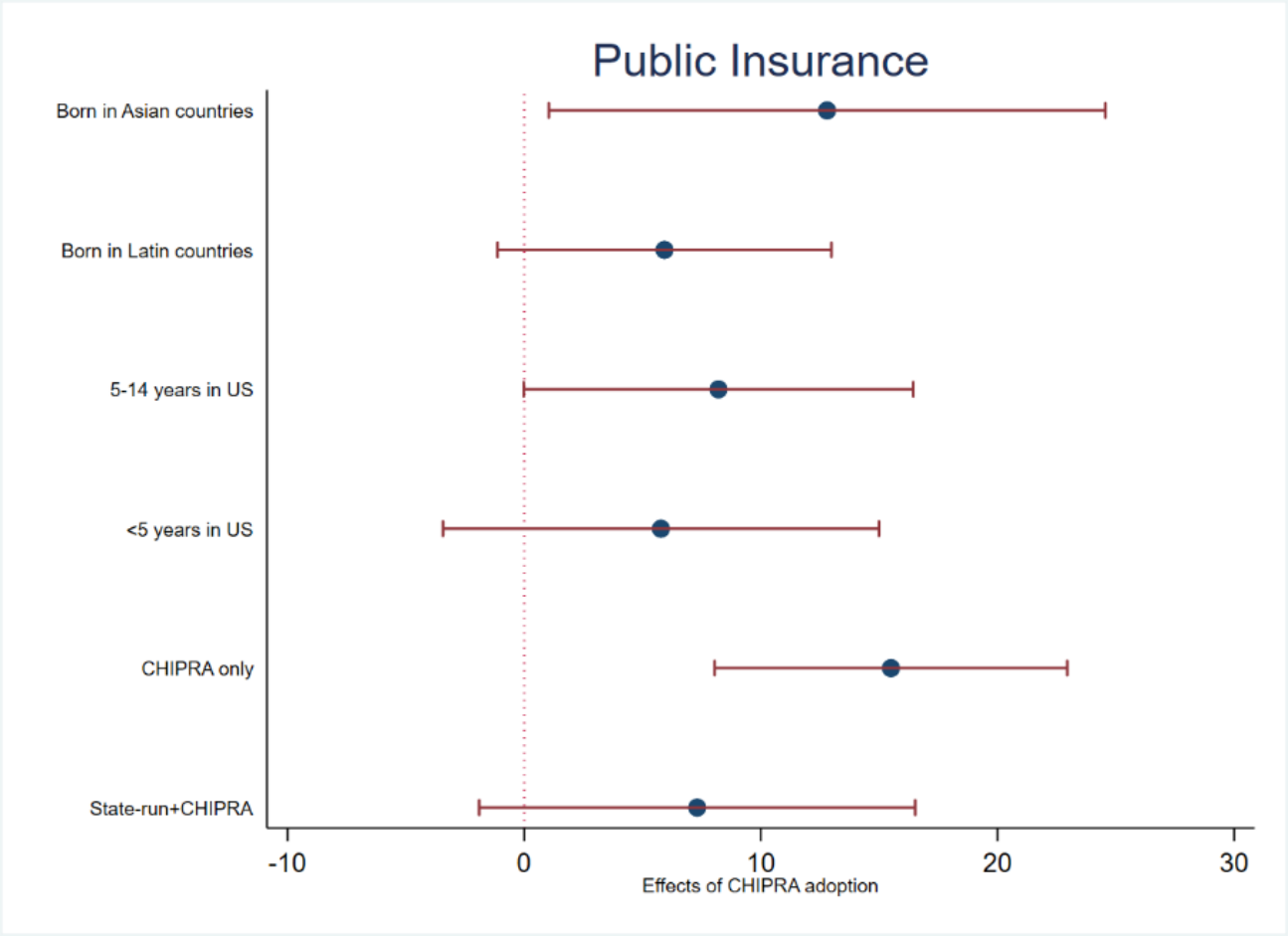
Source: Analyses of data from National Health Interview Survey, 2000-2016
Notes: Percentage point differences come from estimates by event-study models. The year before CHIRPA adoption (-1) is the omitted reference category. Year 0 is the first year of CHIPRA adoption. The error bars indicate 95% confidence intervals. TWFE is two-way fixed effect event-study model. Sun/Abraham is the alternative event-study model that is unbiased in the presence of heterogeneous treatment effects.

Figure 3-3a. Estimated Effects of CHIPRA Adoption on *Uninsurance* Subgroups of Low-Income Immigrant Children, 2000-2016



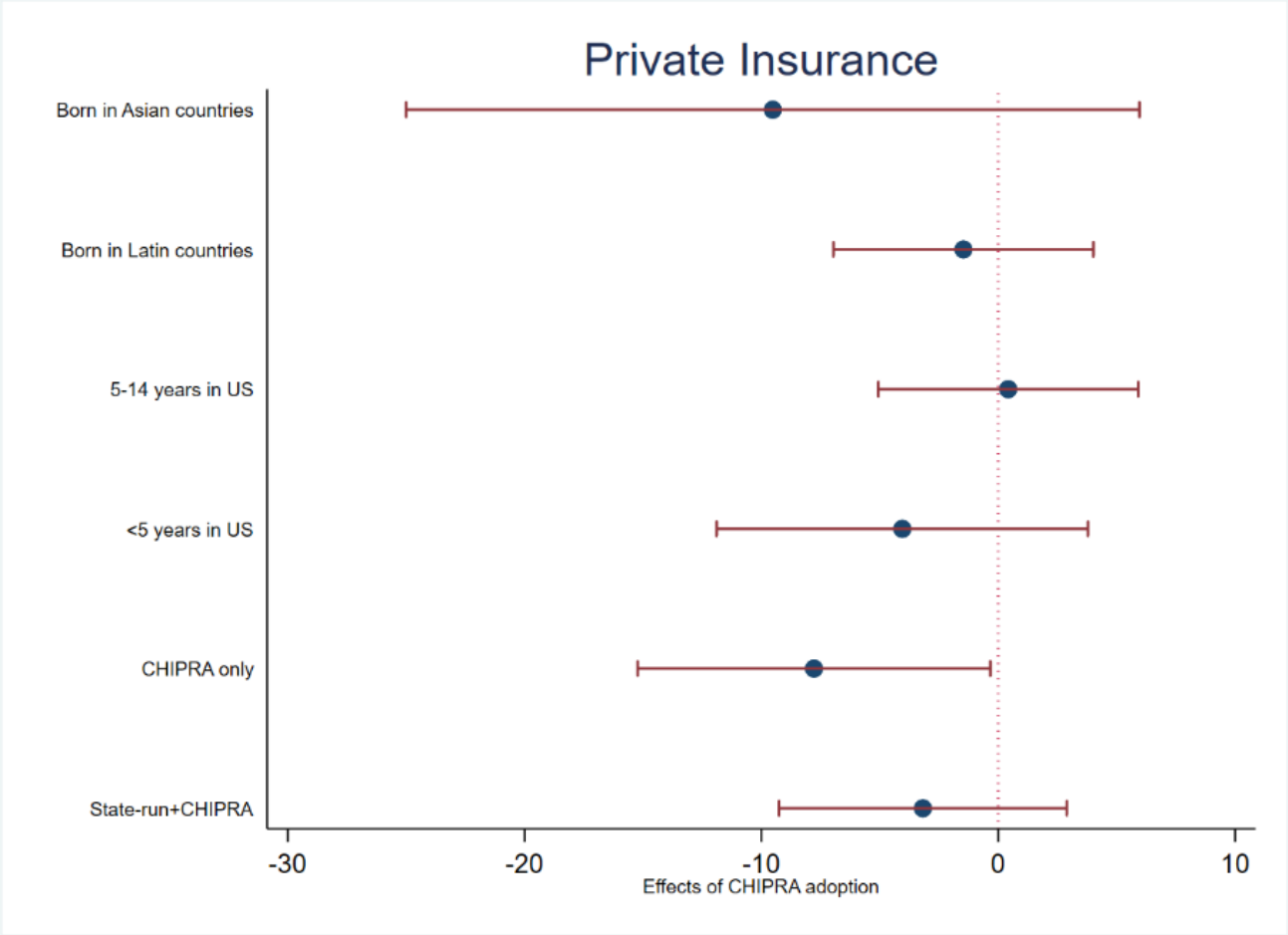
Source: Analyses of data from National Health Interview Survey, 2000-2016
Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is is percentage points. State-run+CHIPRA is states that both provided state-run insurance programs and adopted CHIPRA option. CHIPRA only is states that only adopted CHIPRA option. <5 years in US is immigrants living in the US for less than 5 years. 5-14 years in US is living in the US between 5 and 14 years.

Figure 3-3b. Estimated Effects of CHIPRA Adoption on *Public Insurance* Subgroups of Low-Income Immigrant Children, 2000-2016



Source: Analyses of data from National Health Interview Survey, 2000-2016
Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is is percentage points. State-run+CHIPRA is states that both provided state-run insurance programs and adopted CHIPRA option. CHIPRA only is states that only adopted CHIPRA option. <5 years in US is immigrants living in the US for less than 5 years. 5-14 years in US is living in the US between 5 and 14 years.

Figure 3-3b. Estimated Effects of CHIPRA Adoption on *Private Insurance* Subgroups of Low-Income Immigrant Children, 2000-2016



Source: Analyses of data from National Health Interview Survey, 2000-2016
Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is is percentage points. State-run+CHIPRA is states that both provided state-run insurance programs and adopted CHIPRA option. CHIPRA only is states that only adopted CHIPRA option. <5 years in US is immigrants living in the US for less than 5 years. 5-14 years in US is living in the US between 5 and 14 years.

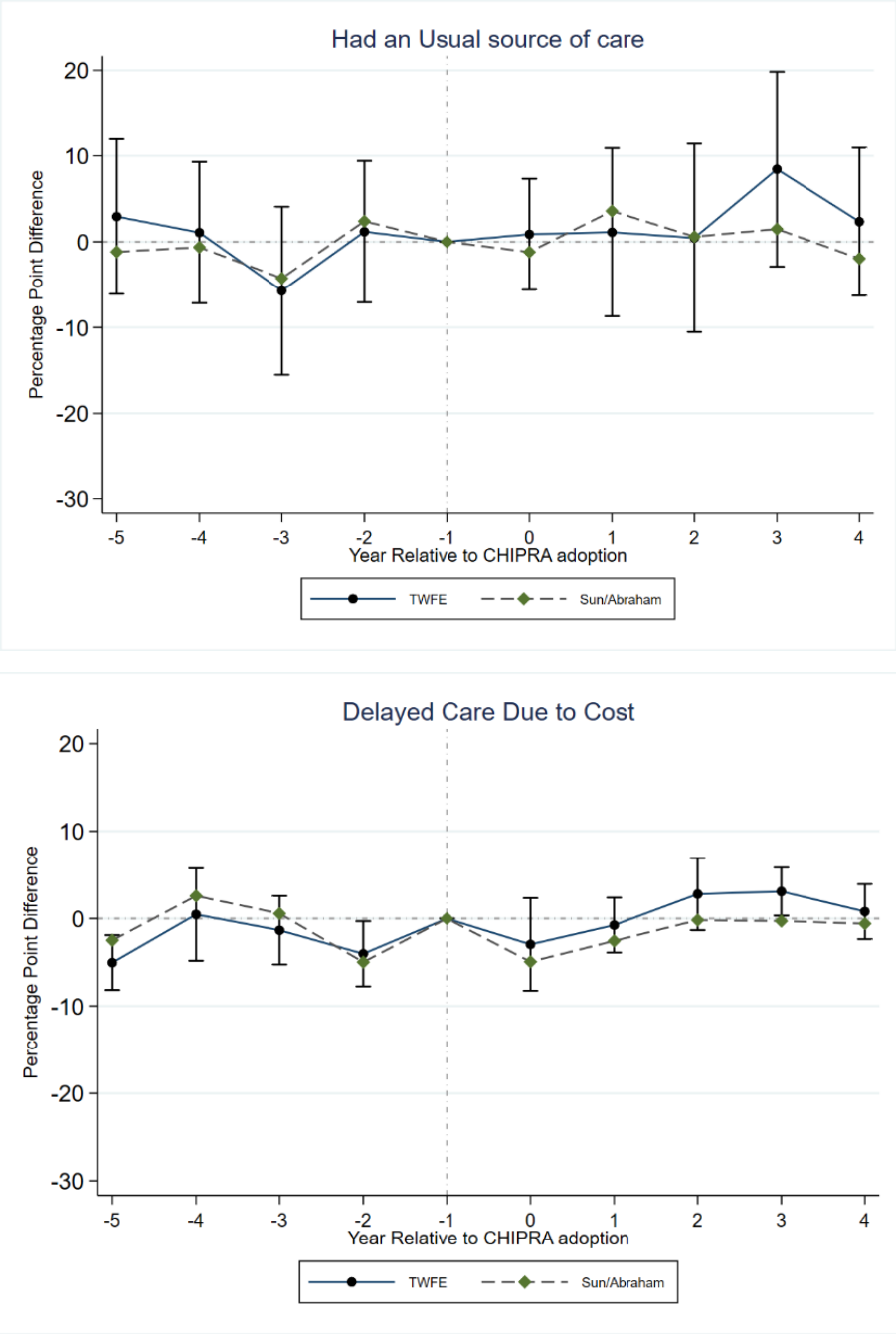
Table 4-1. Estimated Effects of Children's Health Insurance Reauthorization Act (CHIPRA) Adoption on Low-Income Immigrant Children, 2000-2016

	TWFE DID		2-Stages DID		Baseline average (%)	Percent change
	Estimated Effects (percentage point)	95% CI	Estimated Effects (percentage point)	95% CI		
Access to Care						
Delayed care due to cost	-1.47	(-7.35, 4.41)	-1.5	(-4.24,1.24)	8.18	-17.97%
Had an Usual source of care	2.76	(-3.71, 9.23)	2.8	(-3.86,9.46)	69.63	3.96%
Health						
Health was Excellent/Very Good	1.73	(-8.66, 12.12)	1.6	(-8.89,12.18)	73.14	2.37%
Had Emotional Difficulties	0.17	(-6.10, 6.44)	0.2	(-6.27,6.67)	26.9	0.63%
Missed a school day	1.77	(-7.83, 11.37)	1.8	(-7.8,11.4)	50.54	3.50%

Source: Analyses of data from the National Health Interview Survey (NHIS), 2000-2016.

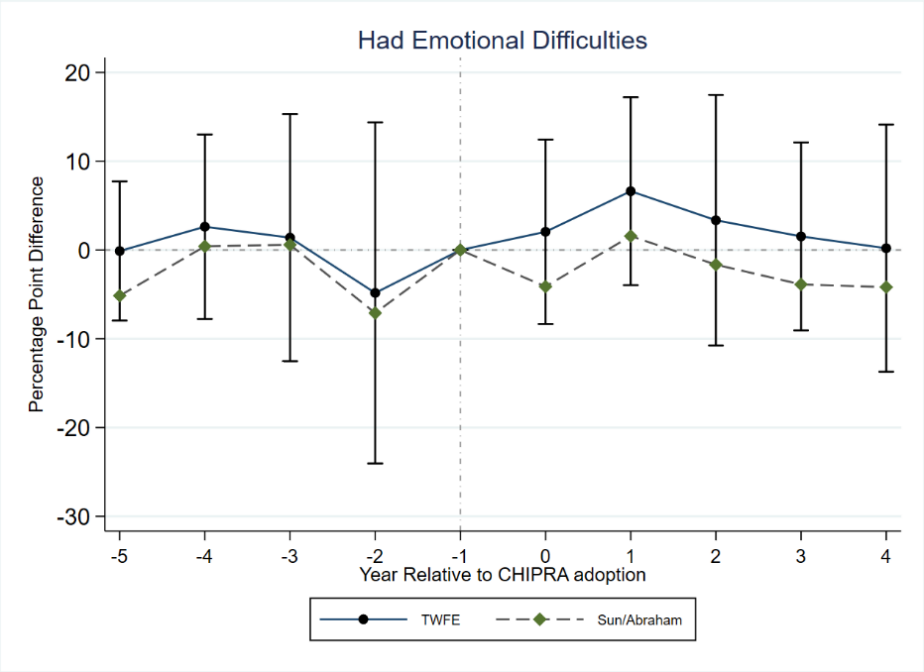
Notes: The estimated effect represent coefficients from a difference-in-differences model regression model, relative to not states that didn't adopt CHIPRA. The baseline average is calculated using 2000-2009 public use NHIS. The measures represent the means of outcomes for immigrants prior to any CHIPRA expansion. The study sample was restricted to fo born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental educ status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. Standard errors were clustered at the state level. TWF two-way fixed effects; DID is difference-in-differences; CI is confidence interval. *p<0.05.

Figure 4-1a. Adjusted Percentage Point Differences in Selected Outcomes for Immigrant Children Living in States that Adopted CHIPRA's Option, 2000-2016



Source: Analyses of data from National Health Interview Survey, 2000-2016
Notes: Percentage point differences come from estimates by event-study models. The year before CHIRPA adoption (-1) is the omitted reference category. Year 0 is the first year of CHIPRA adoption. The error bars indicate 95% confidence intervals. TWFE is two-way fixed effect event-study model. Sun/Abraham is the alternative event-study model that is unbiased in the presence of heterogeneous treatment effects.

Figure 4-1b. Adjusted Percentage Point Differences in Selected Outcomes for Immigrant Children Living in States that Adopted CHIPRA's Option, 2000-2016



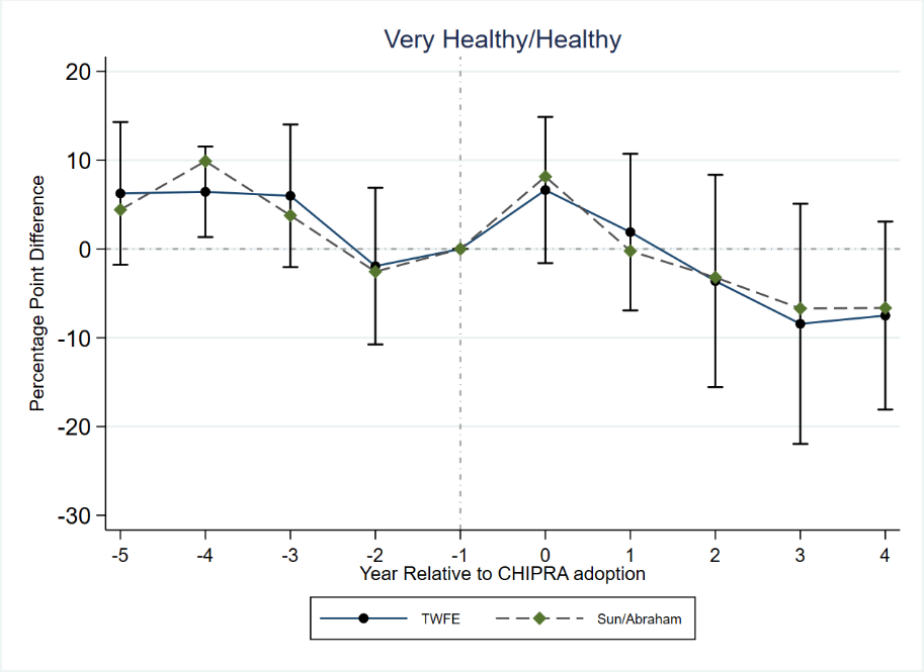
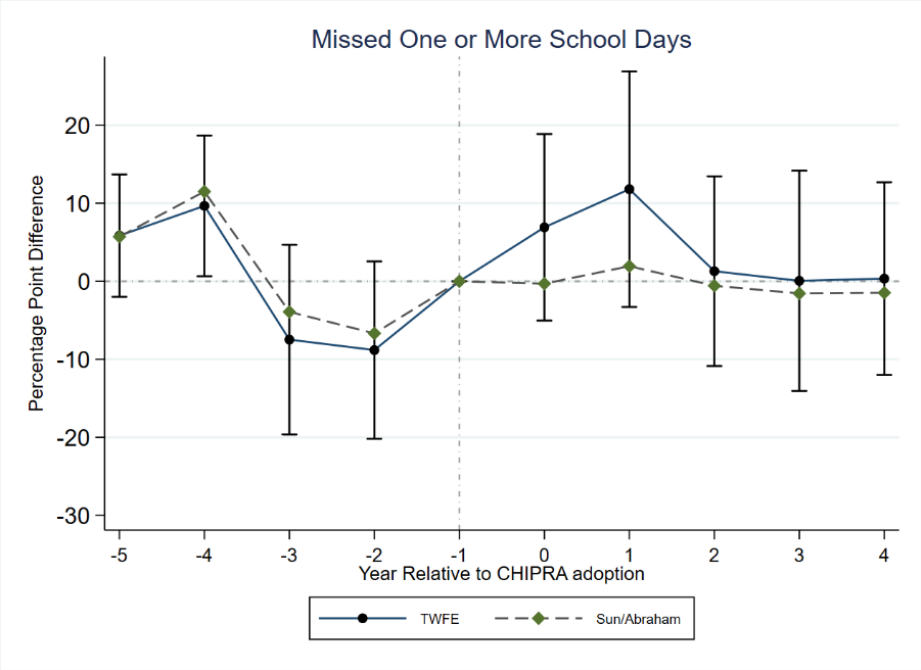
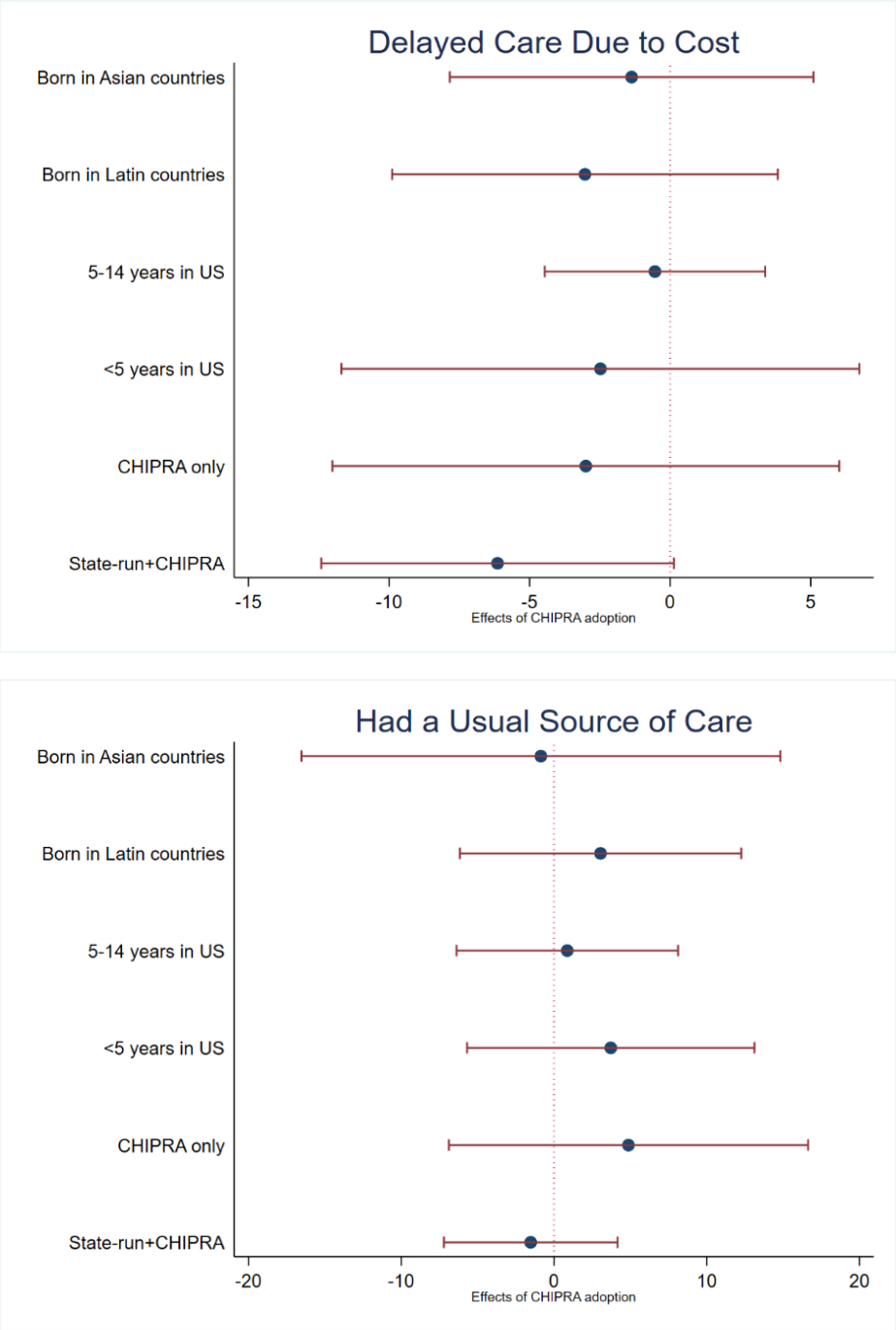


Figure 4-1b. Adjusted Percentage Point Differences in Selected Outcomes for Immigrant Children Living in States that Adopted CHIPRA's Option, 2000-2016 (Cont')



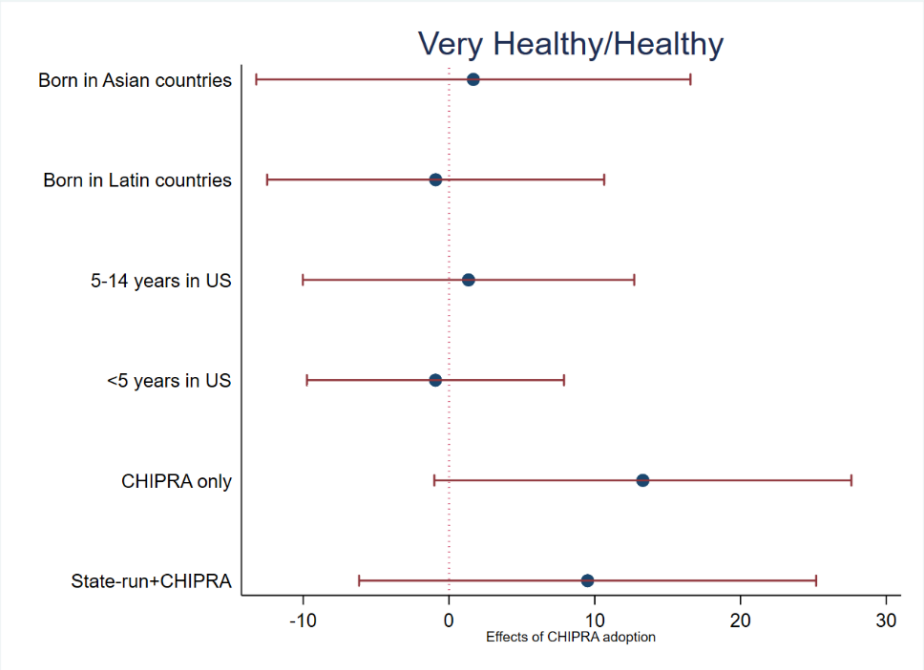
Source: Analyses of data from National Health Interview Survey, 2000-2016
Notes: Percentage point differences come from estimates by event-study models. The year before CHIRPA adoption (-1) is the omitted reference category. Year 0 is the first year of CHIPRA adoption. The error bars indicate 95% confidence intervals. TWFE is two-way fixed effect event-study model. Sun/Abraham is the alternative event-study model that is unbiased in the presence of heterogeneous treatment effects.

Figure 4-2a. Estimated Effects of CHIPRA Adoption on Subgroups of Low-Income Immigrant Children, 2000-2016



Source: Analyses of data from National Health Interview Survey, 2000-2016
Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is percentage points. State-run+CHIPRA is states that both provided state-run insurance programs and adopted CHIPRA option. CHIPRA only is states that only adopted CHIPRA option. <5 years in US is immigrants living in the US for less than 5 years. 5-14 years in US is living in the US between 5 and 14 years.

Figure 4-2b. Estimated Effects of CHIPRA Adoption on Subgroups of Low-Income Immigrant Children, 2000-2016



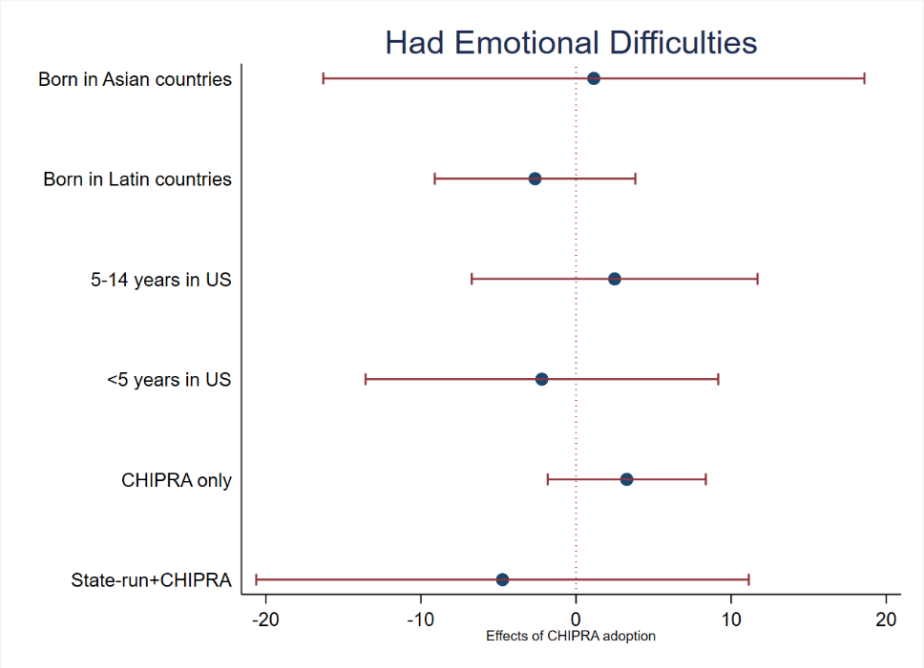
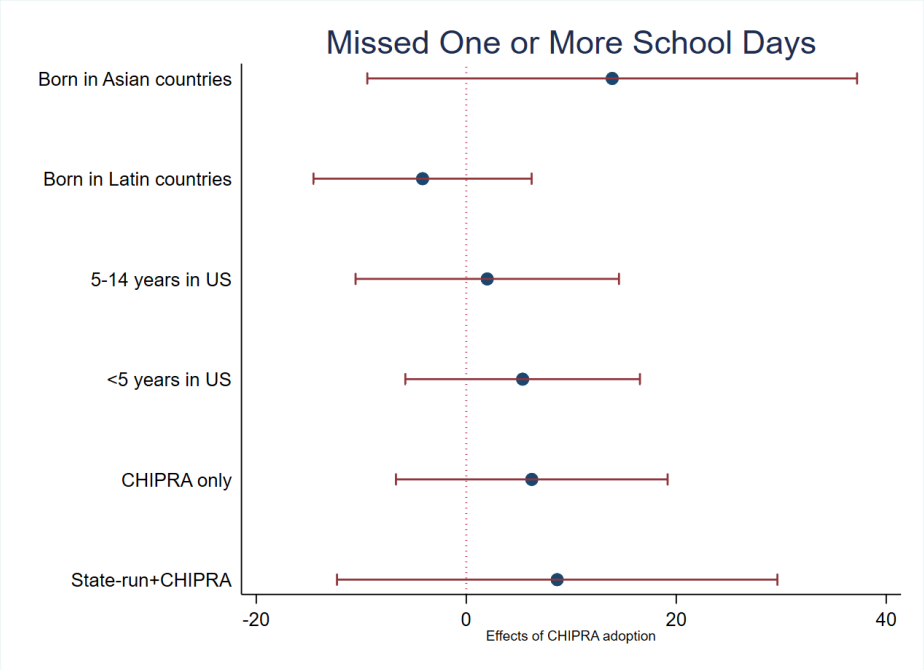
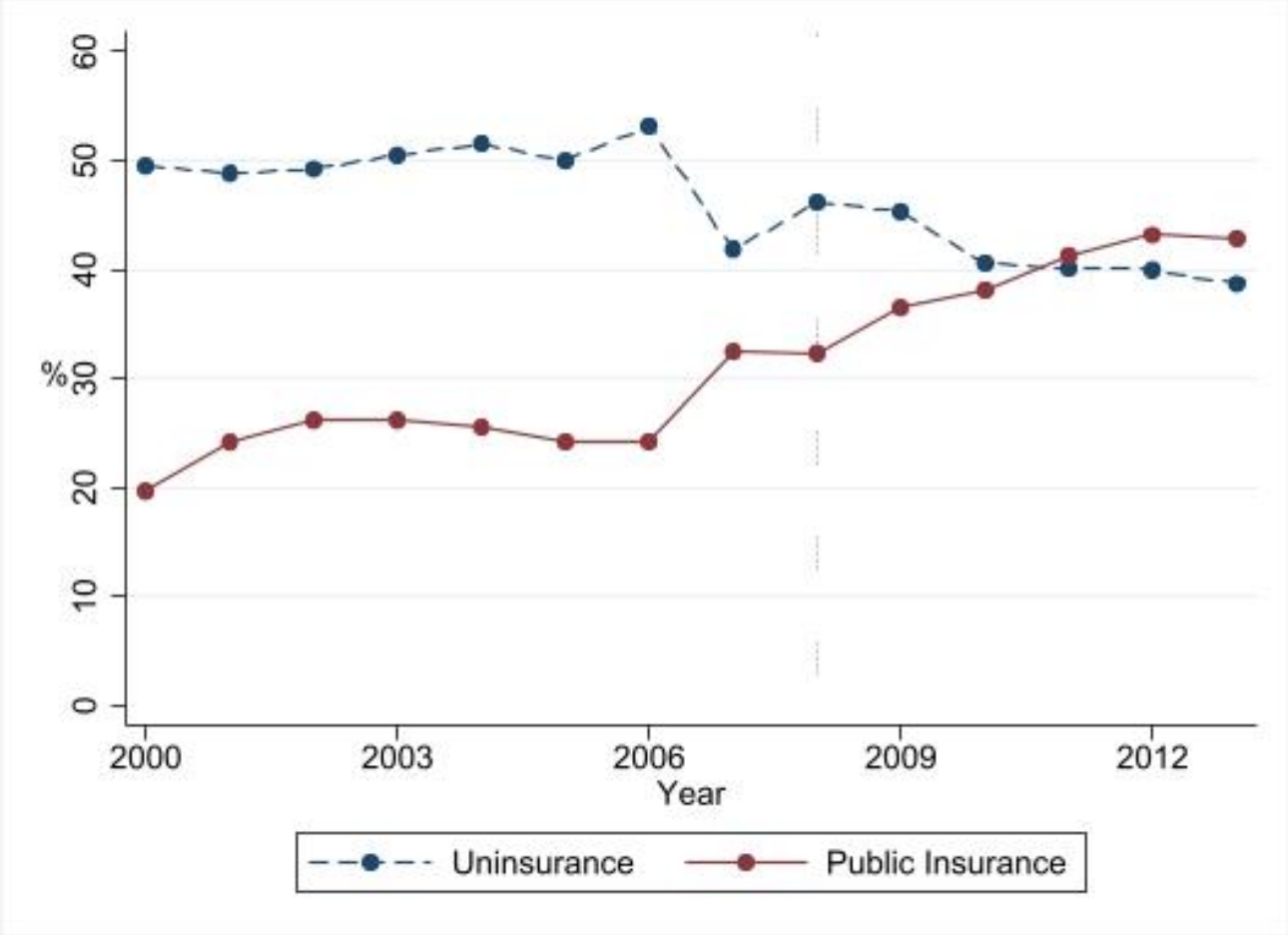


Figure 4-2b. Estimated Effects of CHIPRA Adoption on Subgroups of Low-Income Immigrant Children, 2000-2016 (cont')



Source: Analyses of data from National Health Interview Survey, 2000-2016
Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is percentage points. State-run+CHIPRA is states that both provided state-run insurance programs and adopted CHIPRA option. CHIPRA only is states that only adopted CHIPRA option. <5 years in US is immigrants living in the US for less than 5 years. 5-14 years in US is living in the US between 5 and 14 years.

Figure 5-1. Unadjusted Uninsured Rate and Public Insurance Rate among Low-Income Immigrant Children, 2000-2013



Source: Analyses of data from National Health Interview Survey, 2000-2013
Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 250 percent of federal poverty line. Estimated are survey weighted. Uninsurance is percent of immigrant children not having insurance, Public Insurance is percent of insured through public insurance programs.

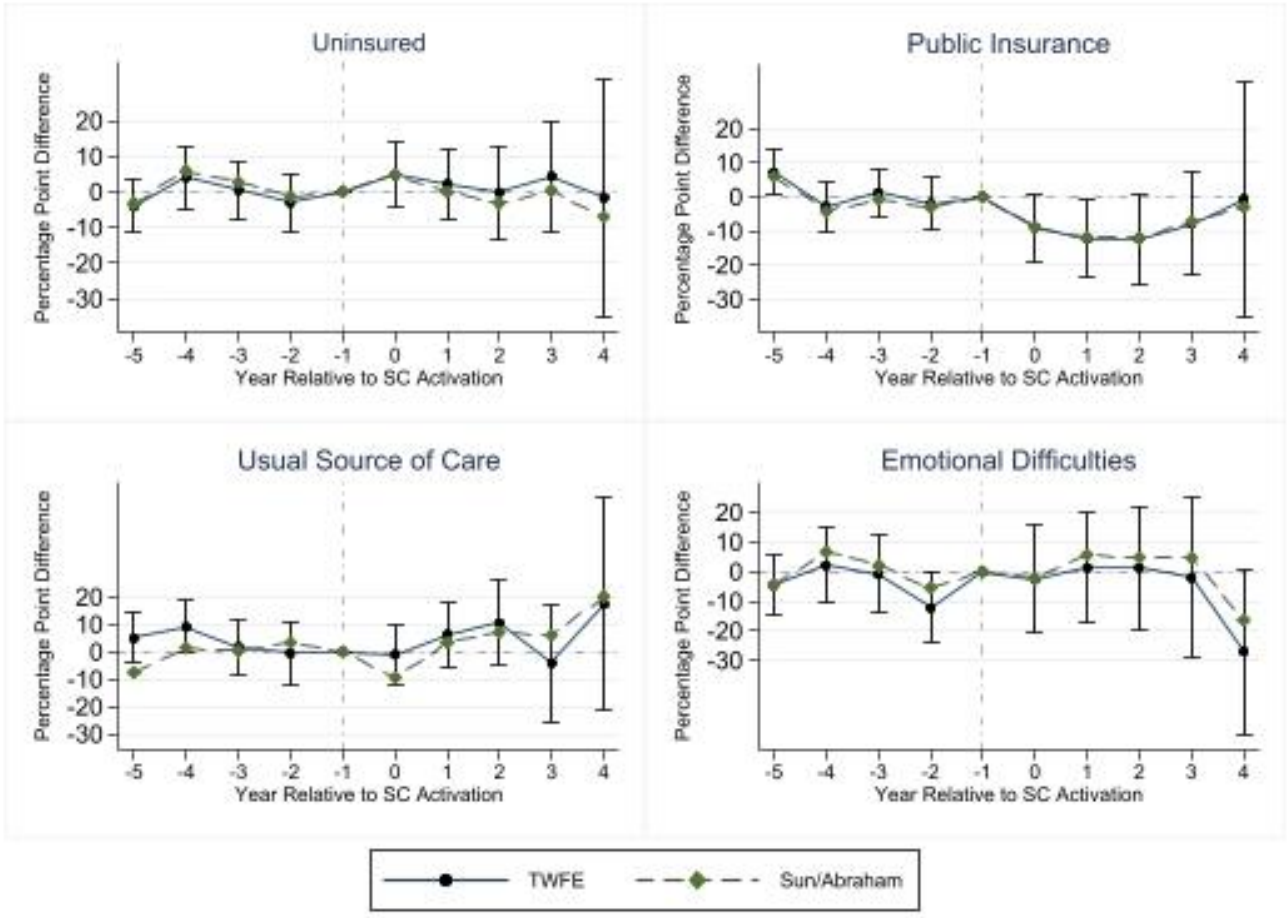
Table 5-1. Estimated Effects of Activation of Secure Communities Program on Low-income Immigrant Children, 2000-2013

	TWFE DID	
	Estimated Effects (percentage point)	95% CI
Insurance		
Uninsured	2.79	(-4.58,10.16)
Public Insurance	-8.2 *	(-16.18,-0.22)
Private Insurance	3.87	(-1.27,9.01)
Access to Care		
Delayed care due to cost	4.62	(-0.04,9.28)
Had an Usual source of care	-0.63	(-9.27,8.02)
Health		
Was Very Healthy/Healthy	-2.37	(-10.64,5.90)
Had Emotional Difficulties	5.48	(-8.06,19.02)
Missed a school day	5.16	(-6.76,17.08)

Source: Analysis of data from the National Health Interview Survey (NHIS), 2000-2013.

Notes: The estimated effect represent coefficients from a difference-in-differences model regression model, relative to counties that did not activate Secure Communities. The study sample was restricted to foreign-born, noncitizen children with family income below 250 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. Standard errors were clustered at the state level. TWFE is two-way fixed effects; DID is difference-in-differences; CI is confidence interval. *p<0.05.

Figure 5-2. Adjusted Percentage Point Differences in Selected Outcomes for Immigrant Children Living in Counties that Activated Secure Communities, 2000-2013



Source: Analyses of data from National Health Interview Survey, 2000-2013
Notes: Percentage point differences come from estimates by event-study models. The year before SC activation (-1) is the omitted reference category. Year 0 is the first year of SC activation. The error bars indicate 95% confidence intervals. TWFE is two-way fixed effect event-study model. Sun/Abraham is the alternative event-study model that is unbiased in the presence of heterogeneous treatment effects.

Appendices

Table A1. Comparison of TWFE Event-Study Estimates and Sun/Abraham Event-Study Estimates: Adjusted Trends of Immigrant Children in States Adopted CHIPRA, 2000-2016

1. Insurance Coverage

Uninsured

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to CHIPRA						
5 years before CHIPRA	2.28	-5.17	9.73	0.43	-7.41	8.27
4 years before CHIPRA	0.19	-7.45	7.84	-1.09	-7.17	4.99
3 years before CHIPRA	-0.62	-6.31	5.06	1.07	-4.22	6.36
2 years before CHIPRA	-1.05	-7.91	5.81	-4.05	-9.54	1.44
The year of CHIPRA	-3.15	-8.44	2.14	-3.66	-8.95	1.63
1 years after CHIPRA	-8.37*	-14.84	-1.90	-7.35	-14.60	-0.10
2 years after CHIPRA	-7.51	-16.72	1.70	-10.60*	-18.64	-2.56
3 years after CHIPRA	-1.36	-10.96	8.24	-2.74	-10.38	4.90
4 years after CHIPRA	-4.49	-12.13	3.15	-4.69	-11.35	1.97

Notes:The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

Public Insurance

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to CHIPRA						
5 years before CHIPRA	-7.52	-15.36	0.32	-2.53	-11.15	6.09
4 years before CHIPRA	-0.03	-6.89	6.83	3.67	-3.39	10.73
3 years before CHIPRA	-3.09	-10.93	4.75	-1.15	-8.21	5.91
2 years before CHIPRA	0.67	-8.16	9.49	4.33	-3.12	11.78
The year of CHIPRA	-1.96	-7.84	3.92	3.50	-2.97	9.97
1 years after CHIPRA	8.65	-1.74	19.04	13.20*	2.81	23.59
2 years after CHIPRA	4.36	-2.89	11.61	10.40*	1.58	19.22
3 years after CHIPRA	-1.01	-13.55	11.53	3.60	-6.98	14.18
4 years after CHIPRA	-1.51	-7.78	4.76	2.75	-6.46	11.96

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

Private Insurance

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper

Time Relative to CHIPRA						
5 years before CHIPRA	3.82	-3.43	11.07	0.69	-4.41	5.79
4 years before CHIPRA	-2.65	-8.73	3.43	-4.43	-9.92	1.06
3 years before CHIPRA	1.72	-3.57	7.01	-1.77	-6.87	3.33
2 years before CHIPRA	-0.21	-5.11	4.69	-3.32	-7.24	0.60
The year of CHIPRA	0.65	-5.82	7.11	-3.03	-7.54	1.48
1 years after CHIPRA	-5.37	-16.15	5.41	-9.16**	-14.65	-3.67
2 years after CHIPRA	-3.85	-11.49	3.79	-6.67*	-11.77	-1.57
3 years after CHIPRA	-1.47	-10.49	7.55	-5.59	-11.86	0.68
4 years after CHIPRA	3.50	-7.67	14.67	-1.93	-9.38	5.52

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

*2. **Access to Care***

Delayed Care Due to Cost

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to CHIPRA						
5 years before CHIPRA	-5.04**	-8.18	-1.90	-2.49	-6.80	1.82
4 years before CHIPRA	0.47	-4.82	5.76	2.58	-3.10	8.26
3 years before CHIPRA	-1.34	-5.26	2.58	0.57	-3.16	4.29
2 years before CHIPRA	-4.03*	-7.75	-0.31	-4.98*	-8.70	-1.26
The year of CHIPRA	-2.96	-8.25	2.33	-4.94*	-9.64	-0.24
1 years after CHIPRA	-0.75	-3.89	2.38	-2.56	-5.89	0.77
2 years after CHIPRA	2.79	-1.33	6.91	-0.18	-3.32	2.96
3 years after CHIPRA	3.09*	0.35	5.83	-0.29	-4.21	3.63
4 years after CHIPRA	0.80	-2.34	3.93	-0.59	-4.90	3.73

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

Had a Usual Source of Care

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to CHIPRA						
5 years before CHIPRA	2.93	-6.09	11.95	-1.18	-8.43	6.07
4 years before CHIPRA	1.07	-7.16	9.30	-0.64	-8.68	7.40
3 years before CHIPRA	-5.72	-15.52	4.08	-4.26	-13.47	4.95
2 years before CHIPRA	1.17	-7.06	9.40	2.39	-4.67	9.45

The year of CHIPRA	0.87	-5.60	7.34	-1.20	-7.28	4.88
1 years after CHIPRA	1.11	-8.69	10.91	3.58	-4.46	11.62
2 years after CHIPRA	0.45	-10.53	11.42	0.59	-10.78	11.96
3 years after CHIPRA	8.45	-2.92	19.82	1.48	-7.73	10.69
4 years after CHIPRA	2.34	-6.28	10.96	-1.96	-12.94	9.02

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

3. Health outcomes

Health was Excellent/Very Good

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Means	95% Lower	95% Upper	Estimated Means	95% Lower	95% Upper
Time Relative to CHIPRA						
5 years before CHIPRA	-6.26	-14.30	1.78	4.42	-1.46	10.30
4 years before CHIPRA	-6.44*	-11.54	-1.34	9.89**	4.01	15.77
3 years before CHIPRA	-5.99	-14.03	2.05	3.78	-2.88	10.44
2 years before CHIPRA	1.93	-6.89	10.75	-2.56	-7.46	2.34
The year of CHIPRA	-6.64	-14.87	1.59	8.15	-1.06	17.36
1 years after CHIPRA	-1.90	-10.72	6.92	-0.23	-7.09	6.63
2 years after CHIPRA	3.61	-8.35	15.57	-3.20	-12.41	6.01
3 years after CHIPRA	8.43	-5.09	21.95	-6.70	-17.48	4.08
4 years after CHIPRA	7.50	-3.08	18.08	-6.64	-17.22	3.94

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

Had Emotional Difficulties

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Means	95% Lower	95% Upper	Estimated Means	95% Lower	95% Upper
Time Relative to CHIPRA						
5 years before CHIPRA	-0.11	-7.95	7.73	-5.15	-12.40	2.10
4 years before CHIPRA	2.62	-7.77	13.01	0.41	-6.45	7.27
3 years before CHIPRA	1.39	-12.53	15.31	0.60	-7.44	8.63
2 years before CHIPRA	-4.84	-24.05	14.37	-7.10	-19.84	5.64
The year of CHIPRA	2.05	-8.34	12.44	-4.12	-12.55	4.31
1 years after CHIPRA	6.62	-3.96	17.20	1.57	-6.66	9.80
2 years after CHIPRA	3.35	-10.76	17.46	-1.65	-8.90	5.60
3 years after CHIPRA	1.53	-9.05	12.11	-3.88	-11.13	3.37
4 years after CHIPRA	0.20	-13.71	14.12	-4.18	-13.39	5.03

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

Missed a School Day

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Means	95% Lower	95% Upper	Estimated Means	95% Lower	95% Upper
Time Relative to CHIPRA						
5 years before CHIPRA	5.85	-1.99	13.69	5.71*	0.22	11.20
4 years before CHIPRA	9.66*	0.64	18.68	11.50**	4.84	18.16
3 years before CHIPRA	-7.48	-19.63	4.67	-3.92	-12.74	4.90
2 years before CHIPRA	-8.82	-20.19	2.55	-6.68	-16.48	3.12
The year of CHIPRA	6.91	-5.05	18.87	-0.31	-9.91	9.30
1 years after CHIPRA	11.80	-3.29	26.89	1.93	-11.40	15.26
2 years after CHIPRA	1.29	-10.86	13.44	-0.57	-13.31	12.17
3 years after CHIPRA	0.06	-14.05	14.17	-1.56	-15.08	11.96
4 years after CHIPRA	0.34	-12.01	12.69	-1.48	-13.24	10.28

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. * p<0.05, ** p<0.01. *** p<0.001

Table A2. Estimated Effects of CHIPRA adoption on Low-income Immigrant Children by subgroups, 2000-2016

Note: Estimated effects presented in Appendix 2 were from TWFE estimated models.

(1) State-run & CHIPRA vs CHIPRA only

	State-run & CHIPRA			CHIPRA Only		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Insurance						
Uninsured	-7.21	-14.46	0.04	-5.86	-12.13	0.41
Public Insurance	7.31	-1.90	16.52	15.50*	8.05	22.95
Private Insurance	-3.18	-9.26	2.90	-7.78	-15.23	-0.33
Access to Care						
Needed Care But Could not Afford	-6.14	-12.41	0.13	-3.00	-12.02	6.02
Had an Usual source of care	-1.52	-7.20	4.16	6.04	16.04	-3.96
Health						
Was Very Healthy/Healthy	9.51	-6.17	25.19	13.30	27.61	-1.01
Had Emotional Difficulties	-4.74	-20.62	11.14	3.27	8.37	-1.83
Missed a school day	8.66	-12.31	29.63	6.24	19.18	-6.70

Source: Analyses of data from National Health Interview Survey, 2000-2016

Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is percentage points. The study samples were restricted to two subgroups separately: 1)State-run+CHIPRA is states that both provided state-run insurance programs and adopted CHIPRA option, and 2) CHIPRA only is states that only adopted CHIPRA option. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. Standard errors were clustered at the state level. *p<0.05.

(2) Living in US for less than 5 years vs Living in US for 5 to 14 years

	<5 years in US			5-14 years in US		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Insurance						
Uninsured	-0.19	-8.81	8.44	-12.30***	-19.36	-5.24
Public Insurance	5.78	-3.43	14.99	8.21	-0.02	16.44
Private Insurance	-4.05	-11.89	3.79	0.42	-5.07	5.91
Access to Care						
Needed Care But Could not Afford	-2.48	-11.69	6.73	-0.54	-4.46	3.38
Had an Usual source of care	3.72	-5.69	13.13	0.87	-6.38	8.12
Health						
Was Very Healthy/Healthy	-0.93	-9.75	7.89	1.34	-10.03	12.71
Had Emotional Difficulties	-2.20	-13.57	9.17	2.49	-6.72	11.70
Missed a school day	5.37	-5.80	16.54	2.00	-10.54	14.54

Source: Analyses of data from National Health Interview Survey, 2000-2016

Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is percentage points. The study samples were restricted to two subgroups separately: 1) <5 years in US is immigrants living in the US for less than 5 years. and 2) 5-14 years in US is living in the US between 5 and 14 years. . The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. Standard errors were clustered at the state level. *p<0.05.

(3) Immigrant children born in Latin countries vs immigrant children born in Asian countries

	Born in Latin Countries			Born in Asian Countries		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Insurance						
Uninsured	-6.98*	-12.08	-1.88	-3.48	-14.85	7.89
Public Insurance	5.93	-1.13	12.99	12.80*	1.04	24.56
Private Insurance	-1.47	-6.96	4.02	-9.52	-25.00	5.96
Access to Care						
Needed Care But Could not Afford	-3.03	-9.89	3.83	-1.37	-7.84	5.10
Had an Usual source of care	3.05	-6.16	12.26	-0.86	-16.54	14.82
Health						
Was Very Healthy/Healthy	-0.92	-12.48	10.65	1.67	-13.23	16.57
Had Emotional Difficulties	-2.64	-9.11	3.83	1.15	-16.29	18.59
Missed a school day	-4.16	-14.55	6.23	13.90	-9.42	37.22

Source: Analyses of data from National Health Interview Survey, 2000-2016

Note: Effects of CHIPRA adoption come from generalized difference-in-differences models. Unit is percentage points. The study samples were restricted to two subgroups separately: 1) immigrant children born in Latin countries. and 2) immigrant children born in Asian countries.

. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. Standard errors were clustered at the state level. *p<0.05.

Table A3. Placebo Tests for CHIPRA Estimates.

	Immigrant children, >300%FPL			US-born children, >300%FPL		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Insurance						
Uninsured	2.27	-1.062	5.602	0.149	-0.243	0.541
Public Insurance	-0.623	-4.347	3.101	0.502	-0.282	1.286
Private Insurance	-2.88	-5.82	0.06	0.359	-0.621	1.339
Access to Care						
Delayed care due to cost	0.431	-1.333	2.195	0.012	-0.38	0.404
Had an Usual source of care	-3.09	-5.638	0.542	-0.141	-0.533	0.251
Health						
Was Very Healthy/Healthy	-4.45	-9.35	0.45	0.403	-0.381	1.187
Had Emotional Difficulties	-8.3	-16.336	0.264	-0.595	-2.751	1.561
Missed a school day	-7.8	-17.012	1.412	-1.15	-3.502	1.202

Source: Analyses of data from the National Health Interview Survey (NHIS), 2000-2016

Notes: The estimated effect represent coefficients from a difference-in-differences model regression model, relative to not states that didn't adopt CHIPRA. The study sample was restricted to (1) foreign-born, noncitizen children with family income above 300 percent of federal poverty line; (2) US-born children with family income above 300 percent FPL. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status, and status of state-funded programs for low-income immigrant children prior to CHIPRA. Standard errors were clustered at the state level. *p<0.05.

Table A4. Comparison of TWFE Event-Study Estimates and Sun/Abraham Event-Study Estimates: Adjusted Trends of Immigrant Children in Counties that Activated Secure Communities, 2000-2013

1. Insurance Coverage

Uninsured

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	-4.14	-11.5488	3.2688	-3.233	-10.093	3.627
4 years before SC	4.16	-4.6208	12.9408	5.933	-2.789	14.655
3 years before SC	0.425	-7.4542	8.3042	2.673	-5.069	10.415
2 years before SC	-3.06	-11.0764	4.9564	-1.363	-9.987	7.261
The year of SC	4.87	-4.244	13.984	4.829	-4.6574	14.3154
1 years after SC	2.24	-7.4424	11.9224	-0.08643	-10.21963	10.04677
2 years after SC	-0.202	-13.3732	12.9692	-3.14	-16.2328	9.9528
3 years after SC	4.38	-11.2608	20.0208	0.3595	-15.4185	16.1375
4 years after SC	-1.72	-35.1968	31.7568	-6.935	-36.2174	22.3474

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

Public Insurance

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	7.14	0.476	13.804	6.003	-0.269	12.275
4 years before SC	-2.87	-10.22	4.48	-4.207	-11.6746	3.2606
3 years before SC	1.2	-5.7188	8.1188	-0.7011	-8.0707	6.6685
2 years before SC	-2.13	-9.7544	5.4944	-3.052	-11.5584	5.4544
The year of SC	-8.86	-18.7972	1.0772	-8.975	-19.3826	1.4326
1 years after SC	-12.3	-23.57	-1.03	-11.98	-23.2108	-0.7492
2 years after SC	-12.3	-25.6672	1.0672	-12.05	-25.2016	1.1016
3 years after SC	-7.83	-22.8632	7.2032	-7.168	-21.77	7.434
4 years after SC	-0.703	-35.2382	33.8322	-3.024	-37.422	31.374

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

Private Insurance

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	-2.43	-8.2512	3.3912	-1.627	-7.8794	4.6254
4 years before SC	-0.378	-7.1204	6.3644	0.1251	-7.2053	7.4555
3 years before SC	-1.79	-7.6308	4.0508	-1.709	-7.9418	4.5238
2 years before SC	4.2	-1.974	10.374	3.575	-3.4418	10.5918
The year of SC	3.39	-3.1564	9.9364	3.831	-3.2054	10.8674
1 years after SC	6.14	-2.092	14.372	8.704	-0.0964	17.5044
2 years after SC	12.4	3.384	21.416	15.41	5.8648	24.9552
3 years after SC	6.45	-4.6436	17.5436	10.31	-0.1368	20.7568
4 years after SC	3.8	-6.6272	14.2272	11.62	-1.0808	24.3208

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

*2. **Access to Care***

Delayed Care Due to Cost

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	1.27	-3.2576	5.7976	2.248	-6.5328	11.0288
4 years before SC	-2.83	-6.652	0.992	2.714	-6.1256	11.5536
3 years before SC	-2.26	-7.0424	2.5224	-0.4293	-8.9945	8.1359
2 years before SC	-2.34	-6.2992	1.6192	-1.274	-10.2312	7.6832
The year of SC	2.51	-2.4096	7.4296	-0.4284	-9.7188	8.862
1 years after SC	-0.344	-6.028	5.34	6.354	-3.8576	16.5656
2 years after SC	3.68	-3.18	10.54	11.23	0.0384	22.4216
3 years after SC	-3.11	-10.8324	4.6124	0.8656	-13.9128	15.644
4 years after SC	-7.06	-29.208	15.088	17.66	-6.4284	41.7484

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

Had a Usual Source of Care

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	4.81	-4.2844	13.9044	-7.585	-16.5814	1.4114
4 years before SC	8.97	-0.536	18.476	1.279	-10.6574	13.2154
3 years before SC	1.64	-8.1208	11.4008	0.3287	-9.8241	10.4815
2 years before SC	-0.685	-11.759	10.389	3.314	-6.3096	12.9376
The year of SC	-1.09	-11.8896	9.7096	-9.519	-19.319	0.281
1 years after SC	6.31	-5.7832	18.4032	3.28	-9.7344	16.2944
2 years after SC	10.5	-5.0428	26.0428	7.122	-7.2056	21.4496
3 years after SC	-4.17	-25.5536	17.2136	5.93	-10.632	22.492
4 years after SC	17.4	-21.2708	56.0708	20.2	-4.3	44.7

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

Health was Excellent/Very Good

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	7.57	-1.7792	16.9192	3.816	-2.4168	10.0488
4 years before SC	9.76	2.2336	17.2864	7.462	1.9544	12.9696
3 years before SC	-6.19	-16.8132	4.4332	-7.245	-13.9286	-0.5614
2 years before SC	-0.452	-10.546	9.642	-1.093	-8.5018	6.3158
The year of SC	-1.75	-13.902	10.402	-0.1262	-8.1034	7.851
1 years after SC	-5.11	-17.3796	7.1596	2.027	-6.2246	10.2786
2 years after SC	1.94	-11.7996	15.6796	7.655	-3.0074	18.3174
3 years after SC	-9.85	-30.3516	10.6516	-7.717	-22.7306	7.2966
4 years after SC	-17.2	-35.4476	1.0476	-3.758	-33.8832	26.3672

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

Had Emotional Difficulties

	TWFE Event-Study	Sun/Abraham Event-Study

	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	-4.53	-14.33	5.27	-4.282	-13.004	4.44
4 years before SC	2	-10.642	14.642	6.782	-4.684	18.248
3 years before SC	-0.906	-13.9792	12.1672	1.875	-11.4922	15.2422
2 years before SC	-12.3	-24.3148	-0.2852	-5.555	-20.3726	9.2626
The year of SC	-2.7	-20.8496	15.4496	-2.276	-17.8188	13.2668
1 years after SC	1.35	-17.2112	19.9112	5.659	-11.099	22.417
2 years after SC	1.33	-19.2696	21.9296	4.777	-13.745	23.299
3 years after SC	-2.07	-28.9416	24.8016	4.559	-20.7054	29.8234
4 years after SC	-26.9	-54.7908	0.9908	-16.49	-40.01	7.03

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

Missed a School Day

	TWFE Event-Study			Sun/Abraham Event-Study		
	Estimated Effects	95% Lower	95% Upper	Estimated Effects	95% Lower	95% Upper
Time Relative to SC						
5 years before SC	0.175	-8.6646	9.0146	0.02273	-8.85607	8.90153
4 years before SC	-2.02	-11.6632	7.6232	-0.882	-10.9564	9.1924
3 years before SC	-6.1	-19.0948	6.8948	-4.485	-15.6178	6.6478
2 years before SC	-2.2	-14.4892	10.0892	-2.791	-14.1198	8.5378
The year of SC	3.6	-10.8256	18.0256	5.184	-6.674	17.042
1 years after SC	6.67	-8.9708	22.3108	6.095	-7.233	19.423
2 years after SC	1.09	-16.7264	18.9064	6.236	-9.346	21.818
3 years after SC	3.85	-19.3368	27.0368	8.177	-13.285	29.639
4 years after SC	-17.6	-41.12	5.92	-14.45	-34.9516	6.0516

Notes: The study sample was restricted to foreign-born, noncitizen children with family income below 300 percent of federal poverty line. The model adjusted for age, sex, race/ethnicity, family income, family structure, parental education status, parental employment status. SC is Secure Communities. * p<0.05, ** p<0.01. *** p<0.001

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