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Author
Cha, Paulette

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Essays on Health Economics and Immigration

by

Paulette Cha

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Committee in charge:

Professor William H. Dow, Chair
Professor Claire D. Brindis
Professor Sylvia Guendelman
Professor Hilary W. Hoynes

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Abstract

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Immigrants are more likely to be low income than their US-born peers, but they face more barriers to enrolling in government safety net programs. Children of immigrants, the majority of whom are US citizens, are less likely to enroll in some programs designed to protect their health and welfare. This dissertation explores issues of immigrant families' engagement with public health insurance and nutritional assistance programs in three chapters.

The first chapter describes levels and time trends of immigrant families' participation in key safety net programs. The study covers the years 1996 to 2013 using data from the Survey of Income and Program Participation (SIPP) and the New Immigrant Survey (NIS). For children, the study presents data and regression-adjusted estimates of the associations between being from an immigrant family, and having likely undocumented family members, and participation in each of five safety net programs: the Food Stamps Program; National School Lunch Program; School Breakfast Program; Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); and public health insurance.

The second chapter evaluates the effects of six state policies that implemented early Affordable Care Act (ACA) adult Medicaid expansions. The analysis focuses on citizen adults of immigrant and native families. It uses the American Community Survey (ACS) from 2008 to 2013 and a difference-in-differences method with synthetic control states to estimate the effects of the expansions on insurance coverage outcomes for citizen adults of immigrant and native family backgrounds. The policies produced a range of responses, from a 2 percentage point public insurance coverage increase in California to an 8 percentage point increase in Connecticut. There was some evidence of private insurance crowd-out in Connecticut, the District of Columbia, and Minnesota, but there were also net reductions in uninsurance for most states. Responses to the new policies were slightly lower among young adults than for the full adult population. In general, insurance coverage changes did not measurably differ among individuals from immigrant families as compared with those from native families.

The third chapter analyzes public health insurance expansions for children. Medicaid expansions have the potential to greatly increase coverage for children in immigrant families,

who have low levels of private insurance and high uninsurance rates. However, take-up may be lower in immigrant families than native families due to poor information and "chilling" anti-immigrant sentiment. I estimate take-up from 1996 to 2013 using instrumental variables regression and data from the Survey of Income and Program Participation (SIPP). This study finds that new eligibility for public insurance produces a 9-to-13 percentage point increase in public coverage among children of immigrants, which is indistinguishable from the 11-to-12 percentage point increase among children of natives. These findings reject a strong chilling effect, although the question will be important to revisit in the changing policy environment.

for David D.

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Chapter 1

Introduction

The health of immigrants and their children in the United States, many of whom are US citizens, is a topic that affects all who live in this country. While immigrants have high labor force participation, their families are more likely to be low income and lack health insurance. How, then, are they faring with respect to accessing public programs designed to alleviate material deprivation? In-kind programs such as public health insurance and nutritional assistance can maintain and bolster the health of children from immigrant families, but only if they actually enroll. This dissertation investigates immigrants, their children, and participation in health and nutrition safety net programs in three papers.

The time periods covered in this dissertation reflect increasing importance for food stamps within the safety net landscape. Aid to Families with Dependent Children, the primary cash assistance program for low income single mothers and their children, was eliminated in 1996, and replaced by Temporary Assistance to Needy Families, a time-limited program administered as block grants in each state. The financial cap on federal funds to states, combined with wide latitude for states to interpret appropriate use of funds, led to the result that many vulnerable families lost access to what was once an entitlement. Following welfare reform, food stamps, which remained available to all qualifying individuals, emerged as one of the primary components of the social safety net, providing needed countercyclical support during times of high unemployment. Also occurring during this time was a series of expansions to public health insurance eligibility at the federal and state levels.

In the late 1990s, welfare reform changed the eligibility determination from one concerning documented versus undocumented status to a new concept of "qualified" versus "not-qualified." In this new language, qualified immigrants after the law's enactment were documented immigrants who met certain conditions–most notably, at least 5 years as legal permanent residents. Not-qualified immigrants included all undocumented, and many documented, immigrants. The changes to immigrant eligibility included detailed policy decisions that were left to state option, resulting in confusion about which immigrants were qualified for which public programs. In addition, the rollback in eligibility and subsequent political battles about immigration could have produced a "chilling" effect in immigrant communities, deterring even immigrant families with citizen children from engaging with government agencies. Certainly, if this effect exists, we should expect it to be strongest among families with undocumented members, which have legitimate reason to fear discovery and its consequences.

Two of the studies contained here use publicly available data from the Survey of Income and Program Participation (SIPP). The SIPP is produced by the US Census Bureau, and contains high frequency longitudinal data on income and health insurance coverage. The SIPP is also the only nationally representative survey that includes variables on migration history and documentation status. This study uses the panels beginning in 1996, 2001, 2004, and 2008, which together cover most months from 1996 to 2013. One of the limitations of the SIPP, however, is its relatively small sample size. Investigating interventions that are expected to produce modest effect sizes requires larger samples than what the SIPP collects. American Community Survey (ACS) data, also collected by Census, is a large survey that can be used for subnational analyses. The drawback of the ACS, though, is that there are

no detailed migration variables available, and one can distinguish immigrants and natives, but it is not possible to easily proxy for legal status. Finally, a third dataset used here is the New Immigrant Survey (NIS). The NIS is a national panel survey of immigrants who adjusted to permanent residency (known informally as receiving a "green card") in 2003. It is fielded in two rounds, and collects data on many social and economic questions about the immigrants and their families. The NIS also includes some Department of Homeland Security administrative variables on the survey participants, including the category of permanent residency admission. Limitations of the NIS data are a small sample size, and low follow up percentages in the second round. There are no perfect resources when it comes to quantitative data on immigrants that include information about legal status.

The first chapter, "Safety net Program Participation Among Immigrants and Their Children," opens the discussion with a descriptive analysis of children's participation in public health insurance and nutritional assistance programs using the SIPP data. Public health insurance for children primarily takes the shape of Medicaid or the Children's Health Insurance Program (CHIP). Both are federal-state partnerships with considerable variation in eligibility rules across child age, state, and time. The food assistance programs addressed in this study include the Food Stamps Program, also known as the Supplemental Nutrition Assistance Program (SNAP); the National School Lunch Program; the School Breakfast Program; and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). These programs target specific low income populations. Food stamps serve individuals and families; the school nutrition programs serve school-aged children; and WIC serves infants, children under the age of 5, and pregnant or postpartum women at nutritional risk.

This first paper's contributions are disaggregating program participation trends for immigrants and children of immigrant families; describing the relationships between these outcomes, immigrant background, and undocumented status; and presenting nutritional program use data among legal permanent residents by their permanent residency admission categories. The analysis of children differs from past descriptions of program participation trends in that it disaggregates a nationally representative sample of children by their family nativity–children in entirely native born families; children in immigrant families, meaning that at least one member is foreign born; and children in immigrant families that have at least one likely undocumented member.

Food stamps is available to individuals and families under 130 percent of the federal poverty level, which translates to $30,615 for a family of 4 in 2013, in most states. Among the income eligible population, children from immigrant families participate in food stamps at substantially lower rates than children from native families. Immigrants' concerns specifically about participating in food stamps are well documented. In addition to changing the nature of cash assistance, welfare reform changed eligibility rules for immigrants for many public programs. While the undocumented had always been ineligible for food stamps, qualifying permanent residents also became subject to deeming requirements that had the potential to make their immigration sponsors financially responsible for their use of public programs. These new rules, combined with a myriad of state options to further reduce or bolster immigrants' access, led to much confusion and hesitancy among immigrants to engage with

the food stamps program. While food stamps adopted some of the more complex rules on immigrant eligibility, three other federal nutritional assistance programs continued to serve income eligible children without regard to permanent residency–indeed, without screening on immigration status at all.

WIC, which is a targeted nutrition program that offers specific foods to children under the age of 5, and federal lunch and breakfast programs for school-aged children, are safety net programs that income eligible children of immigrants participate in at high rates. Children with undocumented family members participate at especially high rates in WIC and school lunch. This study suggests that some of the high participation among undocumented or mixed-status families may be a direct result of the lack of immigration status screening. Comparing WIC with food stamps, both provide nutritional assistance, but WIC imposes constraints on types of food covered, and also provides a much lower total benefit, than food stamps. A maximum WIC package is unlikely to exceed a value of $40 in most local markets, the majority of which is attributable to the inclusion of costly infant formula. Food stamps, on the other hand, provides a more flexible ("near-cash") benefit that can be exchanged for almost all types of food, and the program provides substantially higher levels of benefit than WIC–to a maximum of $668 for a family of 4 in 2013, for example. Like WIC, the school breakfast and lunch programs provide relatively modest benefits that allow for limited flexibility to choose desired items. Immigrant families, then, are not relying more heavily on WIC and school nutrition because these programs provide more protection against poverty or hunger. Rather, they use these programs at high rates even though the benefits are modest, and they use food stamps at low rates even though the benefits would be substantially more generous.

Additionally, using data from the New Immigrant Survey (NIS), the study presents the categories of study members' permanent residency admission, including refugee/asylee, family reunification, and employment-related admission status. It describes food assistance participation rates by category for the two rounds of the survey. This portion of the paper helps to describe the diversity of reasons that immigrants admitted to permanent residency, and how the different groups engage with food stamps and WIC. The sample sizes are small and result in noisy data, but the summary conclusion is that most permanent residents increase participation in food assistance by 2007 - 2009, when the second round data are collected. Employment-related permanent residents, however, do not fit this pattern, and maintain low rates of program participation throughout the study.

The study also introduces a unifying topic across this dissertation: public health insurance, and how children of different family backgrounds with respect to immigration and legal immigration status interact with this component of the safety net. Raw participation rates in public insurance are similar across nativity groups, even for those immigrant families with undocumented members. Trends for all children are increasing over time, which reflects the gradual expansion of children's public insurance through federal mandates and state options. Eligibility for children's public insurance is not as easily defined by income level as it is for the nutritional assistance programs. Eligibility differs by child age, state, and time. In addition, some states and localities operate their own public insurance plans. Federal Medicaid

expansions over time, combined with state and local programs, and the introduction of the Children's Health Insurance Program in the late 1990s and early 2000s, produce an eligibility profile more appropriate to study through stronger research design than simply presenting the data. This first chapter sets the stage for the following two chapters, which are focused on evaluating the effects of specific public health insurance policy for immigrant families.

The second chapter, "Early ACA Medicaid Expansions: Coverage Effects for Low Income Adults, Young Adults, and Those from Immigrant Families," evaluates the effects of expanded Medicaid to cover nonelderly, nondisabled childless adults–a group that traditionally that has had limited access to public health insurance. Six states opted to expand Medicaid ahead of the 2014 deadline set in the Affordable Care Act. All of them had existing state or local health insurance programs for low income adults, and they used the early expansions as an opportunity to translate what they knew about serving this population to a Medicaid context. During the early expansion period, states had the opportunity to set income eligibility criteria that differed from the 138 percent of federal poverty set forth in the ACA.

This study uses a difference-in-differences method with synthetic control states to estimate the effects of the expansions on insurance coverage outcomes. The Medicaid expansions occurred around the same time that private insurance coverage was extended to dependent adult children to age 26, potentially dampening young adults responses to the public insurance changes. Immigrant families, however, have low levels of private insurance coverage in general, meaning that this channel of becoming insured is less likely for young adults from immigrant families. The study conducts subgroup analyses on young adults, and a heterogeneous response model for those from immigrant families. The policies generally produced increases in public insurance coverage. Positive effects ranged from a 2 percent point increase in California to an 8 percentage point increase in Connecticut. There was some evidence of private insurance crowd-out in Connecticut, the District of Columbia, and Minnesota, but there were also real reductions in uninsurance for most states. Responses to the new policies tended to be a bit lower among young adults than for the full adult population. In general, there were no measurable differences between individuals from immigrant families versus those from native families. Lower income groups generally were generally more responsive to the Medicaid expansions than moderate income groups.

Expansions of eligibility for children's public insurance should be most significant for children with low access to employer-supplied or other private health insurance. Children of immigrants have lower rates of private insurance, and higher uninsurance rates, than children of the native-born. Because of this low baseline, policies that expanded eligibility criteria for children's public insurance had the potential to disproportionately improve uninsurance rates, and possibly health care and health outcomes, for children of immigrants. There are, however, reasons to believe that children of immigrants may not take up public insurance when they become newly eligible.

Significant expansions of Medicaid and the introduction of the Children's Health Insurance Program (CHIP) in the past two decades had the potential to help many children in need of coverage. In fact, the level of public health insurance coverage has been higher for

immigrant families than for natives in recent years, possibly reflecting targeted outreach to minorities. Unfortunately, we have limited and conflicting evidence about whether there are differential changes in public insurance across the two groups due to eligibility expansions. Some earlier research finds that children of immigrants are more likely to be eligible for public insurance, but that they are no more responsive to new eligibility than their counterparts in native families.

The third chapter is a study that makes three contributions to the discussion on public insurance take-up by immigrant families. First, it incorporates additional years of analysis from 1996 to 2013 that reflect major changes in policy on public insurance, and in public sentiment about immigration and immigrants. These years include the Great Recession and its aftermath. Second, it contributes new estimates of children's public insurance take-up that help us understand the range of responses to new eligibility, and how responses differ by parent nativity. Similar to most of the research that defines the literature on differential public insurance take-up by immigrant families, this study employs instrumental variables to produce causal results. Third and finally, it describes and analyzes children of likely undocumented immigrants. Undocumented immigrants and their families are an understudied group, but they constitute a growing proportion of the uninsured, making it important to increase the understanding of this group's engagement with public insurance programs.

Combining all children, the study finds that take-up effects among children of immigrants are similar to those among children of natives. Becoming newly eligible for public insurance produces a 9 to 13 percentage point increase in public coverage among children of immigrants, which is statistically indistinguishable from the 11 to 12 percentage point increase among children of natives. Estimates among children of likely undocumented immigrants are too imprecise to draw firm conclusions from. Children in undocumented families came to constitute a large share of the pool of uninsured children during the implementation of healthcare reform, which excluded undocumented immigrants from all its provisions. The continuing debate on immigrant access to public programs highlights the importance of learning from past policy changes.

The three chapters describe how immigrants and their children interact with government safety net programs during periods of substantial policy change. The findings for nutritional assistance programs suggest that immigrants and their children are more likely to enroll in programs that do not screen on immigration status, and that screening may be a barrier to enrolling in food stamps. As a consequence, many low income immigrant families are not receiving the benefits that this relatively generous program offers. Responses to expansions in public health insurance, on the other hand, do not reflect the hypothesized chilling effect. In summary, there is no one final answer as to how immigrants and their children interact with the safety net. Instead, the specific programs, the policy environments that they operate in, and the types of benefits they supply may together determine whether immigrants determine the programs to be welcoming and worthwhile.

Chapter 2

Safety Net Program Participation Among Immigrants and Their Children

I thank Kathy Lui for assistance in coding policy data used in this chapter, and UC MEXUS for funding restricted data acquisition.

2.1 Introduction

Immigrants are more likely to be low income than their native-born peers, but they face more barriers to enrolling in federal safety net programs. Most government programs screen on immigration status and explicitly prevent undocumented immigrants from enrolling. Food stamps, which became a more prominent component of the safety net following welfare reform, screens for immigration status, and excludes the undocumented from participation. Immigrant eligibility rules for many programs such as the Food Stamps Program and Medicaid became more complex in the 1990s. There are three nutritional assistance programs do not screen on immigration, and as a consequence of this policy, they may be more likely to serve children from immigrant families. The National School Lunch Program, School Breakfast Program, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) are available to low income children regardless of immigration status. This study analyzes the program participation of immigrants, and children of immigrants, in several in-kind public safety net programs: the Food Stamps Program, also known as the Supplemental Nutrition Assistance Program (SNAP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the National School Lunch Program, the School Breakfast Program, and public health insurance–primarily Medicaid and the Children's Health Insurance Program (CHIP).

This study takes place between 1996 and 2013. Most of this is in the period following the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, known as Clinton welfare reform. The reform was primarily intended to change the nature of the cash welfare system. Aid to Families with Dependent Children (AFDC), the cash assistance entitlement program targeting low income single mothers and their children, was replaced by the Temporary Assistance for Needy Families (TANF) program, for which the federal government capped financial support to states. The reform of AFDC/TANF did not occur in a vacuum, however. Greatly reduced access to cash led low income families to rely more heavily on other safety net programs, in particular, the Earned Income Tax Credit and the Food Stamps Program [Bitler and Hoynes, 2010].

Immigrant families rely more on earnings and less on the safety net than native families, and this tendency has grown since welfare reform. Medicaid and CHIP are exceptions, with immigrant families' use of public insurance increasing during this period [Bitler and Hoynes, 2013]. Children of immigrants, who may be immigrants themselves or US citizens, are especially at risk of missing out on safety net protections for several reasons. Welfare reform greatly reduced many permanent resident children's eligibility for public programs such as Medicaid and food stamps, although some of the strictest provisions were eventually scaled back. It required that newly arriving legal immigrants wait five years before qualifying for public benefits. It also devolved much of the responsibility for developing policy on immigrants and public benefits to the state level.

States varied greatly in how they implemented the changes to immigrant eligibility triggered by welfare reform, resulting in immigration policy federalism [Bitler and Hoynes, 2013] [nat, 1992] [Zimmermann and Tumlin, 1999]. Despite some perceptions that the new

rules were designed to screen out the undocumented and allowed immigrants with legal status to access public programs, the reform actually affected the eligibility of the most immigrants for public programs. Undocumented immigrants were always ineligible for most programs, but after the reform, the distinction was not simply one of undocumented versus documented. Welfare reform defined immigrants as qualified or not-qualified for safety net programs. The not-qualified category includes the undocumented, but it also includes many documented immigrants [Broder et al., 2015].

Legal permanent residency (often referred to as having a "green card") for at least five years became a requirement for accessing many programs, but states had options to implement different requirements for different programs, or to use state funds to pay for not-qualified immigrants' participation. Naturalized citizens and refugees allowed to participate in public programs on the same terms as native born citizens, but permanent residents are governed by two additional considerations: deeming, and public charge designation. Deeming refers to the practice of considering the immigration sponsor's financial resources in determining the income eligibility of a permanent resident. The practice tends to decrease the likelihood of qualifying for the income thresholds. There is also concern among immigrants about being designated a public charge, or a person dependent on the state. Potential consequences of this designation are challenges to achieving citizenship, being required to pay back past benefits, or having the immigration sponsor become accountable for paying back the sum. This is rarely enforced, but it deters some immigrants from applying for programs they qualify for.

Children in immigrant families may be less likely to enroll in programs such as public health insurance due to lack of information, greater administrative burden, and a possible "chilling effect" of immigration policies [Ku and Matani, 2001] [Kaushal and Kaestner, 2005] [Aizer, 2007] [Sommers, 2010]. This is true even though during the welfare reform period, 75 percent of children in immigrant families were citizens [Fix et al., 2001]. One study documented considerable variation in immigrant access to several safety net programs, including Medicaid, CHIP, and food stamps. Barriers to participation in the programs included the complexity of applications and rules, administrative burden, cultural differences, lack of transportation, and fear. Some states, for example, requested unnecessary social security numbers for applicant parents who wished to enroll their children. Incorrect keying of names, including errors in spacing and hyphenation, led to mismatched records and further delays. Limited translation support for minority languages, and also low literacy were additional barriers to participation [Perreira et al., 2012]. It is also possible that cross-program chilling was operating during this period, in which concerns about the eligibility or screening requirements of certain programs led to immigrants' avoiding other programs as well [Fix and Passel, 1999].

Undocumented immigrants, who are present in the US without legal immigration status, are especially disadvantaged among immigrants, and their numbers are large enough to constitute a significant underclass in American society; one estimate found that about 28 percent of all immigrants are undocumented. [Johnson and Hill, 2006]. Despite high labor force participation rates, undocumenteds are less likely to enroll in college, they experience

wage penalties associated with their immigration status, and are typically employed in sectors without employer-supplied health insurance [Hall et al., 2010] [Greenman and Hall, 2013] [Zuckerman et al., 2011]. Their health care options are often limited to Federally Qualified Health Centers, charity care, safety net hospitals, cash payment for services, or emergency departments [Sommers, 2013]. The disadvantaged status of undocumented immigrants is partially determined by state and federal policies such as those governing safety net programs, higher education, driver licensing and identification, and immigration enforcement. Recent work illustrates how these multiple forms of social disadvantage circumscribe the opportunities of undocumented immigrants and their children, with negative consequences for their health [Rodriguez et al., 2015].

Complicating the designation of legal immigration status is the fact that the documented and undocumented categories are not mutually exclusive within families or over time. Households and families may comprise people of different immigration and documentation statuses, and individuals can cross the boundary from one status to another. For example, Jasso et al. find that among a cohort of new legal permanent residents, about 32 percent had at some point lived in the US without legal immigration status [Jasso et al., 2008]. Furthermore, those in quasi-lawful categories like Deferred Action for Childhood Arrivals or Temporary Protected Status, programs that authorize temporary residency for otherwise undocumented immigrants, could account for as much as 10 percent of undocumenteds [Passel and Cohn, 2016].

Aside from the immigration related eligibility rules, safety net programs have income eligibility requirements. Families must earn a combined income of less than 130 percent of federal poverty in order to qualify for food stamps, and the program is an entitlement, meaning that its enrollment is uncapped. For WIC, the income eligibility threshold is 185 percent of poverty, and there are also categorical requirements. Infants and children under the age of 5, and pregnant or postpartum women, are eligible for the program if they also are considered to be at "nutritional risk," although this latter requirement is rarely a barrier to participation. School breakfast and lunch programs offer free meals to school-aged children under 130 percent of poverty, the same threshold as food stamps. They offer reduced price meals–at a maximum price of 30 cents for breakfast, and 40 cents for lunch–to children under 185 percent of poverty, which lines up with the WIC threshold. Public health insurance for children–primarily Medicaid and CHIP–is highly variable in its income eligibility thresholds. Children's eligibility differs by child age, state, and time. For adults, Medicaid tends to be available only for the low income elderly and disabled, with few exceptions.

2.2 Data and Methods

Sources

This study primarily uses publicly available data from the Survey of Income and Program Participation (SIPP). The SIPP is produced by the US Census Bureau, and is a resource for high quality data on income and health insurance coverage. The SIPP is the only nationally representative survey that includes variables on migration history and documentation status. It is a longitudinal study comprising tri-annual surveys over several years, and it is organized in panels and waves. For each panel, the Census Bureau identifies approximately 40,000 households to participate. Each survey wave collects data about the preceding four months, allowing for high frequency measurement of income, family composition, and participation in public safety net programs. This study follows others in using only the fourth month of data to maximize accuracy and reduce seam bias, the tendency of survey responses to be the same within waves, and different across waves. Most waves include a module on a specific social topic. The topical modules relevant for this study are those with questions on immigration history. This study uses the SIPP panels that began fielding in 1996, 2001, 2004, and 2008. Each panel covers several years of data, and together, they cover most months between March 1996 and November 2013.
In addition, this study uses the New Immigrant Survey (NIS). The NIS is a nationally representative panel survey of about 8,500 immigrants admitted to legal permanent residence (informally referred to as receiving a "green card") during a specified period in 2003. The first NIS round was fielded in 2003 and 2004, and the second round was fielded between 2007 and 2009. The NIS collected survey data on a range of social, economic, geographic, and demographic topics. The restricted version also contains administrative data on survey respondents from the Department of Homeland Security, some of which is used in this study.

Variables and Definitions

The SIPP collects detailed immigration data on respondents 15 years of age and older. I define foreign born respondents as immigrants. Immigrants who report having come to the US to live, but who never converted to legal permanent residence, are predominantly undocumented immigrants. I define them as likely undocumenteds but cannot definitively verify their legal status in the data. Since immigration questions are only answered by those 15 and older, there is no reliable way to determine immigration status for most children. For the analyses of children in this study, I classify them by their family nativity type. I define a child as being from an immigrant family if anyone in her family (aged 15 and older) is an immigrant. A child is from an immigrant family with undocumented members if at least one family member is likely to be undocumented. Throughout, I use the Census definition of family, which is a group of people living in the same household related by birth, adoption, or marriage.

Flags for participation in the National School Lunch Program, Food Stamps Program, WIC, and public and private health insurance are collected from the SIPP. Uninsurance is defined as not having either public or private health insurance. Family income and family size are compared with poverty thresholds set by Health and Human Services to calculate each family's income as a percentage of federal poverty.

Analyses that describe legal permanent residents by their admission type use data from the NIS. The administrative data includes detailed categories of permanent residency admission, which I collapse into seven broader categories: (1) refugee or asylee; (2) diversity, which refers to admission based on one's country of origin but not as a refugee or asylee; (3) employment, which mostly refers to those with high education or special skills coming to the US to work; (4) family reunification, which refers to immigration in order to join family members already in the US; (5) deportation relief or registry, which is for immigrants who otherwise would have been subject to deportation; (6) religious workers; and (7) former employees of the US federal government or of an international organization.

Models

Equation 2.1 describes the model used to test whether children in immigrant families participate in specific programs at rates different from children in native families, and whether any such effect is heightened by the presence of likely undocumented family members. The safety net program outcome variables reflect participation in the Food Stamps Program, National School Lunch Program, School Breakfast Program, WIC, and public health insurance. In the model, X is a vector of individual characteristics including age and its square, sex, Latino/a ethnicity, and race dummy variables. Y contains state-by-month unemployment rates and state-by-month TANF caseloads. The former reflects macroeconomic conditions, and the latter is a proxy for the state policy environment, since states have wide flexibility over the use of TANF block grant funds. Finally, the models are adjusted with fixed effects for SIPP panel, calendar year, and state of residence.

Each model is restricted to children of appropriate age for the safety net program under study–all ages for food stamps, ages 5 to 18 for school lunch and breakfast programs, and under 5 for WIC. These analyses are performed for children under 130 percent of federal poverty (the income threshold for food stamps and free school breakfast and lunch), and 185 percent of poverty (the threshold for WIC and reduced price school breakfast and lunch). Since public health insurance, mainly Medicaid and CHIP, have highly variable eligibility requirements by state, time and child age, I analyze this outcome for children of all ages under 130 and 185 percent of federal poverty, and this only produces snapshots of income groups also eligible for nutritional assistance programs, but not the full picture of children's public insurance participation. In order to determine whether the effects of being from an immigrant family or having undocumented family members is stronger during the Great Recession, a period of stubbornly high unemployment, I produce versions of these

analyses restricted to the Great Recession years and recovery period. The period begins in December of 2007 and continues until the end of the 2008 SIPP panel in November 2013.

$$\text{Program}_{ist} = \alpha_0 + \alpha_1 \text{FamilyNativity}_i + \alpha_2 \text{UndocMembers}_i + \alpha_3 X_{it} + \alpha_4 Y_{st} + \gamma_p + \delta_t + \rho_s + \epsilon_{ist} \quad (2.1)$$

The analyses of immigrant adults focuses on demographic characteristics that could predict participation rates in certain safety net programs. For adults I focus on the Food Stamps Program and health insurance. I analyze public and private health insurance coverage, and uninsurance outcomes for adult immigrants. Equation 2.2 presents the model that tests adult immigrants' age, marital status, legal permanent residency status, and years since moving to the US as predictors for these outcomes. Y is the same set of state-by-month characteristics as in the Equation 2.1, and I include fixed effects for survey panel, calendar year, and state of residence.

$$\text{Program}_{ist} = \beta_0 + \beta_1 \text{DemogCharacteristic}_i + \beta_4 Y_{st} + \eta_p + \nu_t + \sigma_s + \upsilon_{ist} \quad (2.2)$$

2.3 Results

Children in Immigrant Families

Figures 2.1, 2.2, 2.3, and 2.4 present the time series of participation by children's family nativity type for food stamps, WIC, school lunch, and school breakfast. The figures present the trends for children under 130 and under 185 percent of federal poverty. Food stamps participation is consistently lower among children of immigrants than children of natives. Children with likely undocumented family members participate in food stamps at rates similar to those of children in immigrant families overall, except in the late 1990s when their participation rates were lower. Participation in the three nutritional assistance programs that do not screen on immigration status present different trends. Children with undocumented family members participate in WIC and school lunch at higher rates than children in all immigrant families, who in turn participate at higher rates than children of native families. School breakfast participation trends upward for all three groups, and with the exception of a large decrease around the year 2000 for children with undocumented family members, children from the different family nativity types show similar rates of participation.

Figure 2.5 presents participation trends in public health insurance for children, again by family nativity. There is more periodicity visible in the insurance data than for other outcome variables. The regression estimates control for survey panel and calendar year, which should help address this, but the trends in the figure do not show clear differences between public insurance participation among the three groups of children. Since eligibility for Medicaid and CHIP are highly variable across state, time, and child age, these figures

focused on children under 130 and 185 percent of federal poverty present only a partial picture of children's public insurance participation.

Table 2.2 presents estimates for how being from an immigrant family, and having likely undocumented family members, predicts participation in the five public programs. Each column presents the point estimates for these characteristics produced using the model in Equation 2.1. Since each outcome is binary, the estimates can be interpreted as the percentage point difference in likelihood of participating in each program associated with family immigration status and having undocumented family members. Since all families with undocumented members are also immigrant families, we can interpret the point estimates on immigrant families as main effects, and those on having undocumented members as interaction effects. The total association due to having undocumented family members is the sum of the two. Each model is restricted to the child age group targeted by the program. The models are restricted to children under 130 percent of poverty (for food stamps) or under 185 percent of poverty (for school lunch, school breakfast, or WIC). Since the income limits are complex and variable for public health insurance, I do not impose an income threshold for the insurance model.

Column (1) shows that being from an immigrant family is associated with a 13.8 percentage point lower likelihood of participating in food stamps compared to a child from a native family. Coming from a family with undocumented members reduces that further by 3 percentage points. Both of the estimates are precise.

The regression control for a variety of individual and state characteristics, but they reflect the same conclusions as the data we viewed in the figures. For food stamps, which screens applicants on legal immigration status, children in immigrant families are less likely to participate than their counterparts in native families, and this effect is stronger when they have undocumented family members. For WIC in Column (2) and the school-based nutrition programs in Columns (3) and (4), the associations are reversed–children in immigrant families are more likely to participate in these programs than children in native families, and those with undocumented family members are the most likely to participate. Children in immigrant families are about 1 percentage point more likely to receive free or reduced price lunch and breakfast, than children of native families. The subset of children with undocumented family members are an additional 3 percentage points more likely to participate in the school lunch program, and slightly less likely to participate in school breakfast, again compared with children of native families. WIC, presented in Column (4), is an interesting case. Children in immigrant families are slightly more likely to participate than children in native families, but this difference is small and imprecise. However, children with undocumented family members are an additional 7.5 percentage points more likely to participate in WIC. Since the models for the nutritional assistance programs are limited to children in the targeted income groups, this is unlikely to simply be reflecting economic disadvantage among immigrant families.

Column (5) presents the associations for participating in public health insurance. Children of immigrant families are about 2.7 percentage points less likely to participate in public health insurance than children of native families, and those with undocumented family

members are an additional 8.4 percentage points more likely to have public health insurance. The combined effect translates to about a 5.7 percentage point increase for the latter group. However, this model is not restricted to the target income group, which is not possible to define at national level over the period of the analysis. Thus, these associations are likely to reflect differences in income distribution between families of different nativity, as well as differences in the generosity of their state public insurance policies. Undocumented status is a key characteristic of social stratification among immigrants, and families with undocumented members are more likely to be low income than immigrant families in general. All of the associations presented in this table help describe children from immigrant families, but they should not be over-interpreted.

Adult Immigrants

Figure 2.7 presents food stamps participation data for adults who are immigrants, natives born in the US, and likely undocumented immigrants under 130 percent of federal poverty. Beginning in the late 1990s, as the structure of cash welfare changes to a state block grant and becomes substantially less available as an safety net program, the EITC and food stamps emerge as the primary safety net programs for the low income population. For adults without children, food stamps become the primary form of assistance. This increasing importance of the program is visible in the overall increasing participation trends among all three groups, even during strong economic times. In the period of the Great Recession, the participation rates rise markedly for all of the groups. There are also differences between the populations. Native adults participate in food stamps at a rate about 10 percentage points higher than the likely undocumented adults across the time series. Immigrants in general have a trend similar to the natives until the early 2000s, at which point they begin to look more like the likely undocumented adults. Note that while undocumented immigrants are officially excluded from participating in food stamps, they may have access to the program through other family members who are citizens or permanent resident immigrants.

Recent Legal Permanent Residents

Table 2.3 describes the permanent residency admission category of the NIS study members who are nonmissing on the food assistance question. Among the Round 1 analysis sample that includes respondents to the food assistance question, about 35 percent of the were admitted as refugees or asylees; diversity immigrants from specific targeted countries, employment-related immigrants, and those joining family members already in the US made up under 20 percent of the total each. Eight percent were relieved of deportation or were allowed to adjust through registry, a process that allows immigrants present in the US since the early 1970s to gain permanent residency even if they are undocumented. Religious workers and former employees of the US government or international organizations contributed very percentages to the total–well less than 2 percent each. Since not all study

members responded to the key question, and there is significant attrition between rounds, I also present permanent residency category for all study members, as well as for those who responded to the food assistance question in the second round of the survey.
Figure 2.8 presents food assistance participation for this group. Since there are so few people in the former religious worker and the US government or international organization categories, particularly by the second round, I do not present their data. The NIS asks study members whether their families receive either food stamps or WIC. Note that the unit of analysis can make a difference for measuring the program participation of immigrants. Van Hook found that larger unit of presentation, such as the household or family, leads to higher estimates of participation for immigrants rather than for natives due to differences in living arrangements [Van Hook et al., 1999]. In 2003 and 2004, participation rates were around 5 percent or lower. Refugees and asylees, diversity admits, those receiving deportation relief, and family reunification admits reported participation rates in the 3 to 5 percentage range in these years. Permanent residents admitted in employment-related categories and religious workers report essentially no food assistance receipt in their families. This reflects a lack of eligibility for food stamps for new permanent residents, although other members of the family could be receiving food assistance. The economy was also stronger in the years of the first survey round.
The second round of the survey takes place in 2007 to 2009. Although some of the survey was fielded during the Great Recession, most of the responses were gathered in the pre-recession period. Around 10 to 20 percent of refugees and asylees, and permanent residents admitted for family reunification purposes, reported receiving food assistance in this period, followed by slightly lower percentages of diversity admits and those receiving deportation relief. Employment-related permanent residents and religious workers continue to report low rates of food assistance, around 2 percent or less. Since there is substantial attrition between the first and second round surveys, I also present data on the balanced panel of study members who give data on food assistance in Figure 2.9.

Additional Analyses

In addition to investigating differences by immigration background, I also describe adult immigrants' program participation by age, marital status, permanent residency status, and year of arrival to the US. Aside from age effects, these analyses are not possible with the child population in the SIPP data since immigration variables are only collected for respondents at least 15 years old, and children are unlikely to be married. The analyses of demographic characteristics help us to understand the composition of adult immigrants participating in the safety net. Permanent residency status is likely to be associated with higher participation since more stringent immigrant eligibility rules following welfare reform prioritized access for permanent residents. Years living in the US proxies for a range of assimilation characteristics: knowing better how to navigate the US bureaucracy, improved English language skills, and American cultural literacy. Figure A1 presents data on how adult immigrants' food stamps program participation differs by demographic

characteristics. These figures focus on adults under 130 percent of poverty, the upper income threshold for food stamps. The graphs all show increasing food stamps participation over time, and higher participation rates are associated with older age and not being married (until around 2010, when the relationship changes sign). Legal permanent residency, one of the requirements for immigrants to be qualified for food stamps following welfare reform, is associated with higher participation for most of the period up to 2007, and then does not seem to have much effect from then until 2013. Year of arrival data look fairly noisy, but immigrants who arrived in the 2000s participated at low rates–likely because they were ineligible–before catching up with the earlier arrivals around 2010. It is difficult to be certain based on an 18 year time series, but one possibility is that newly arriving immigrants participate at low rate in food stamps due to ineligibility, but as they stay longer, they become more likely to qualify for the program and enroll at rates similar to immigrants who arrived earlier. It may also partially reflect the fact that longer spans of time living in the US are associated with higher likelihood of conversion to public residency status, opening the door to eligibility for some programs.

Figure A2 presents figures of public health insurance participation, again by age, marital status, permanent residency status, and year of arrival. Public health insurance for adults has tended to be limited to the low-income elderly, those with disabilities, some pregnant women, and some parents, so participation rates tend to be low for adults. The income limits are often different by state and category, so these figures present the data for all immigrant adults, regardless of income. The highest public insurance coverage rates are among the elderly, which is likely to reflect Medicare, which is available to qualifying seniors after age 65. The teenaged adults have a noisy trend, but also have high rates of coverage. This is most likely due to some states' covering individuals up to age 18 or 19 under children's Medicaid or CHIP. Unmarried immigrants are much more likely to have public insurance than their married counterparts, and permanent residents are more likely to have public insurance except for an anomalous period around 2006. Similar to the trends for food stamps, it appears that the most recent arrivals participate in public insurance at low rates–likely due to ineligibility–before catching up to the earlier arriving immigrants. Until the Affordable Care Act of 2010, public insurance has not been available to most working age adults, so I present additional insurance data on adult immigrants' private insurance coverage and uninsurance rates over time in Figures A3 and A4. These, too, are plotted by demographic characteristics. Middle aged immigrants are more likely than elderly immigrants or younger age groups to have private health insurance, probably reflecting higher access to employer-supplied insurance for those in the prime of their working years. The elderly are less likely to be working and more likely to have access to Medicare, and those in their 20s and younger may still be in school or training. Married immigrants and those with permanent residency status are more likely to have private insurance, as are those who arrived to the US in earlier years.

The arrival year data in the SIPP are coded down to the year for some panels and years, and ranges of varying spans, for others. Because of this data limitation, the graphs of food stamps and health insurance outcomes for adults are presented as decade ranges. The

married have two opportunities to gain private coverage–on their own, and through their spouse as a dependent–which probably explains the higher rates of private health insurance among this group. Permanent residents have authorization to work in most positions in the US, which probably increases their likelihood of having insurance through their employers. They and the earlier arriving immigrants are also likely to be more settled in the US. The younger immigrants are much more likely to be uninsured than older immigrants, due to the higher private health insurance coverage of the middle aged, and the higher public coverage of the elderly, that we saw previously. Uninsurance rates are much higher for the unmarried and those without permanent residency, and uninsurance is higher for more recent arrivals to the US.

Table A1 presents the point estimates on demographic characteristics that predict adult immigrants' participation in food stamps or public health insurance, as well as private insurance and uninsured status. The models for food stamps participation include only adult immigrants under 130 percent of federal poverty, whereas the insurance models do not impose an income cap. Because of the inconsistent way that the arrival years are coded in the survey, I do not attempt to run regression models to quantify the relationship between arrival years and the outcomes. When controlling for state characteristics and other fixed effects as described in Equation 2.2, we see in Column (1) that older age, being unmarried, and having permanent residency status does increase the likelihood of food stamps receipt. Each additional year of age is associated with about a 0.1 percentage point increase in likelihood of having food stamps. Being married decreases the likelihood by about 2 percentage points, and being a legal permanent resident increases food stamps likelihood by about 1 percentage point. All of these effects are precise despite their relatively small magnitudes.

The insurance models are presented in Columns (2) through (4). Each additional year of age is associated with a 0.3 percentage point increase in likelihood of public insurance, 0.1 percentage point increase in private insurance, and 3.8 percentage point decrease in uninsurance, which is consistent with the raw data in the figures. Being married is associated with a 6.6 decrease in likelihood of public insurance, 16.2 percentage point increase in private insurance, and 9.7 percentage point decrease in uninsurance. Permanent residence is associated with a 1.8 percent increase in likelihood of public insurance, a 22 percentage point increase in public insurance, and a 22 percentage point decrease in uninsurance, also consistent with what the raw data suggested.

2.4 Conclusion

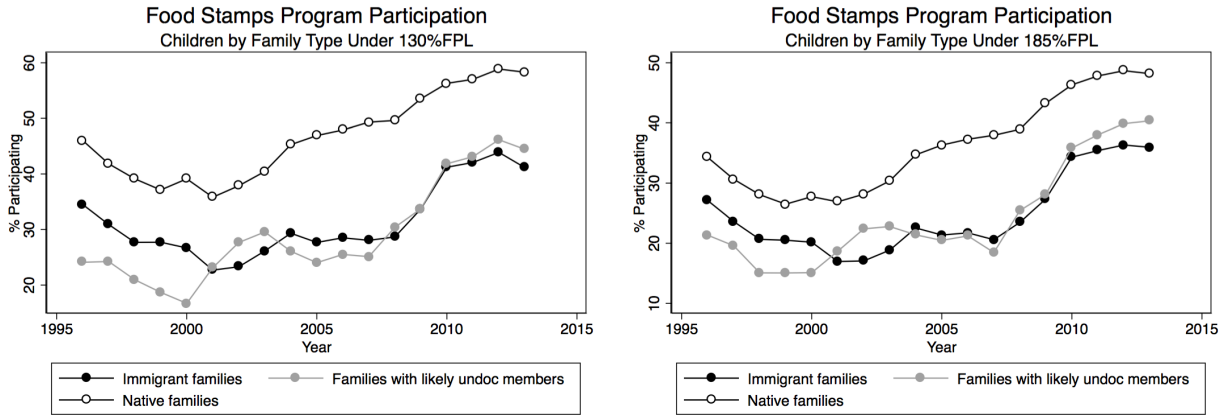
This study describes the safety net program participation of immigrants and their children, focusing on nutritional assistance and public health insurance. Public health insurance participation rates among children of immigrants, as well as adult immigrants, are higher than for their counterparts of native background, but in the analyses presented here, this finding also partially reflects immigrant families' lower income. Children from immigrant

families, as well as adult immigrants, are less likely to participate in the food stamps program than their counterparts of native-born background. Although food stamps is a more generous program than the other nutritional assistance programs considered in this study, the immigration screening questions associated with accessing food stamps may be deterring income eligible immigrants and their children. Children's participation in school-based feeding programs, especially school lunch, is associated with being from an immigrant family. The same holds for WIC, which serves income eligible children with undocumented family members at especially high rates. The fact that the school nutrition and WIC programs serve children of immigrants at such high rates despite their relatively modest benefit levels, while the more generous and flexible food stamps program serves this population at low rates, suggests that immigration screening or other characteristics of the food stamps program deters eligible children of immigrants from accessing one of the key components of the social safety net. Further study to determine the reasons food stamps does not better serve this demographic are needed, as well as evaluations of interventions to encourage enrollment of eligible members of vulnerable populations.

2.5 Figures

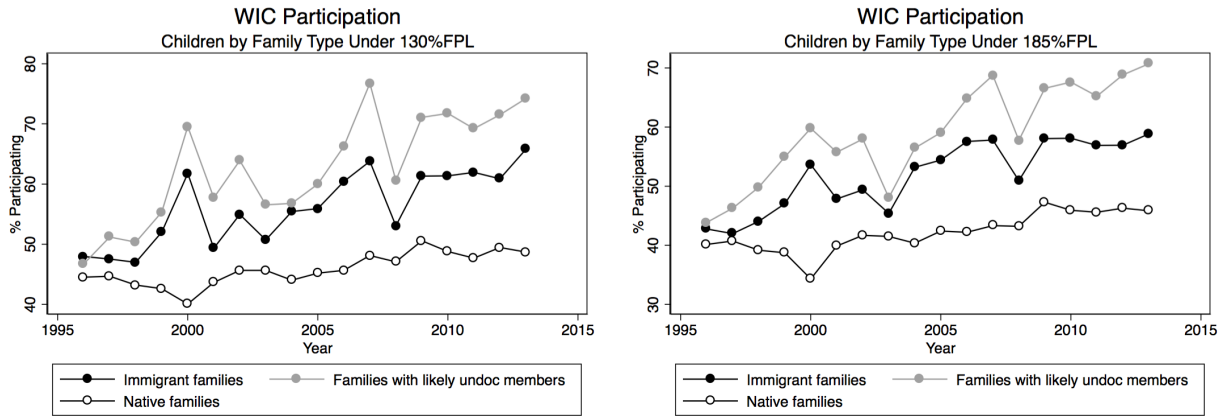
Children

Figure 2.1: Children's Food Stamps Participation by Family Nativity and Income



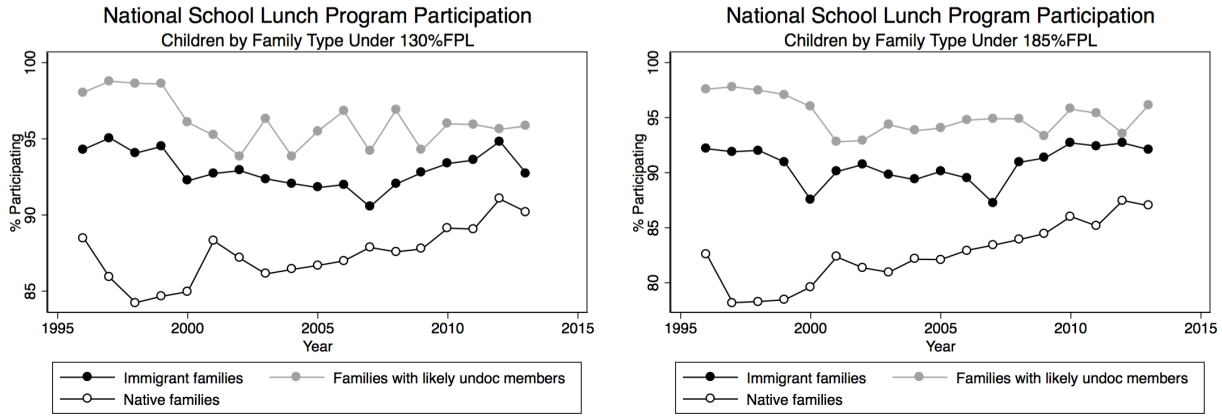
Source: SIPP 1996, 2001, 2004, 2008. Children aged 0-18 under 130%, 185% poverty included.

Figure 2.2: Children's WIC Participation by Family Nativity and Income



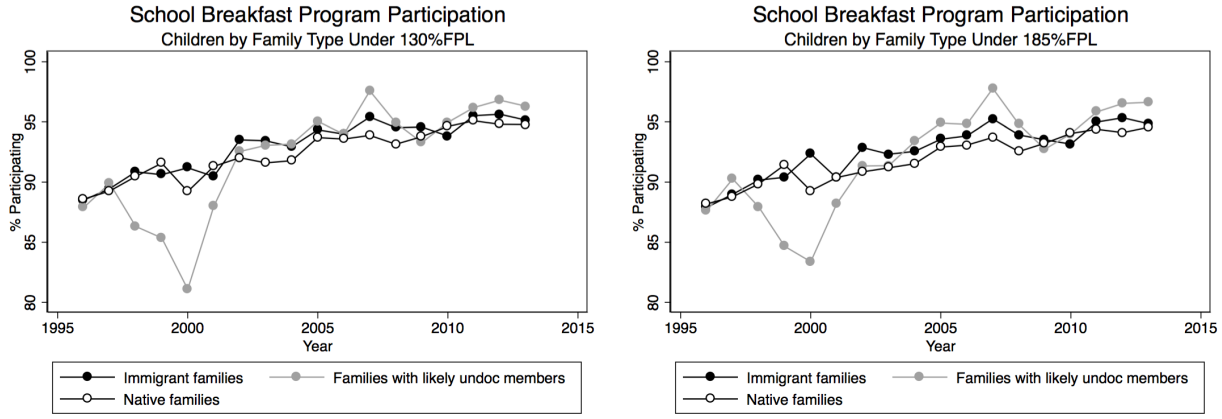
Source: SIPP 1996, 2001, 2004, 2008. Notes: Children aged 0-4 under 130%, 185% of federal poverty included. WIC's income threshold is 185% of poverty.

Figure 2.3: Children's National School Lunch Program Participation by Family Nativity and Income



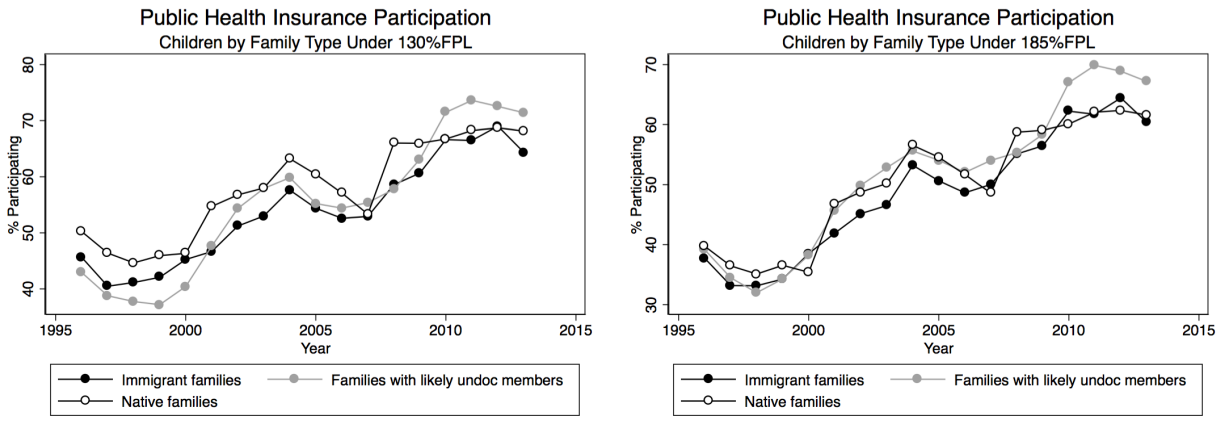
Source: SIPP 1996, 2001, 2004, 2008. Notes: Children aged 5-18 under 130%, 185% of federal poverty included. The National School Lunch Program offers a free lunch to children under 130% of poverty and a reduced price lunch (with a maximum price of $0.40) to children from 130 to 185% of poverty

Figure 2.4: Children's School Breakfast Program Participation by Family Nativity and Income



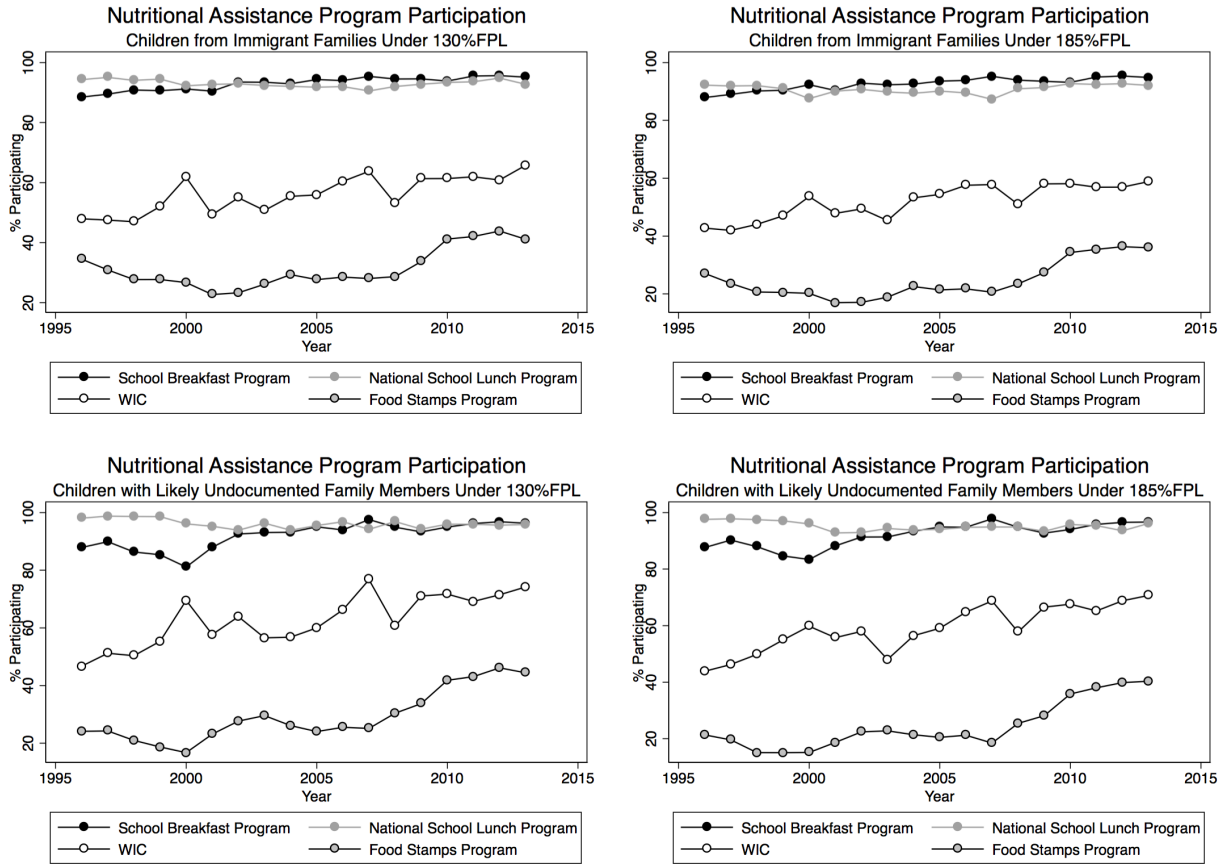
Source: SIPP 1996, 2001, 2004, 2008. . Notes: Children aged 5-18 under 130%, 185% of federal poverty included. The School Breakfast Program offers a free breakfast to children under 130% of poverty and a reduced price breakfast (with a maximum price of $0.30) to children from 130 to 185% of poverty

Figure 2.5: Children's Public Insurance Participation by Family Nativity and Income



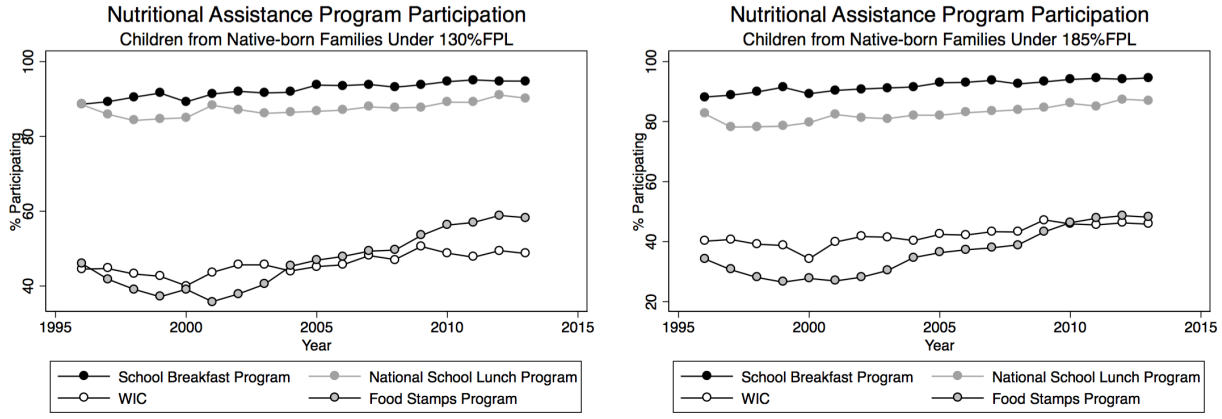
Source: SIPP 1996, 2001, 2004, 2008. Notes: Children aged 0-18 included. Income eligibility requirements differ by child age, state, and time. Public insurance for children is primarily Medicaid and CHIP.

Figure 2.6: Children's Nutritional Assistance Program Participation by Family Nativity and Income



Source: SIPP 1996, 2001, 2004, 2008. Notes: Underlying samples differ by series in order to present data on the income target group of each program. For food stamps, children 0-18 under 130% poverty are included; for WIC children 0-4 under 185%; for the National School Lunch Program and the School Breakfast Program, children aged 5-18 under 185% of federal poverty.

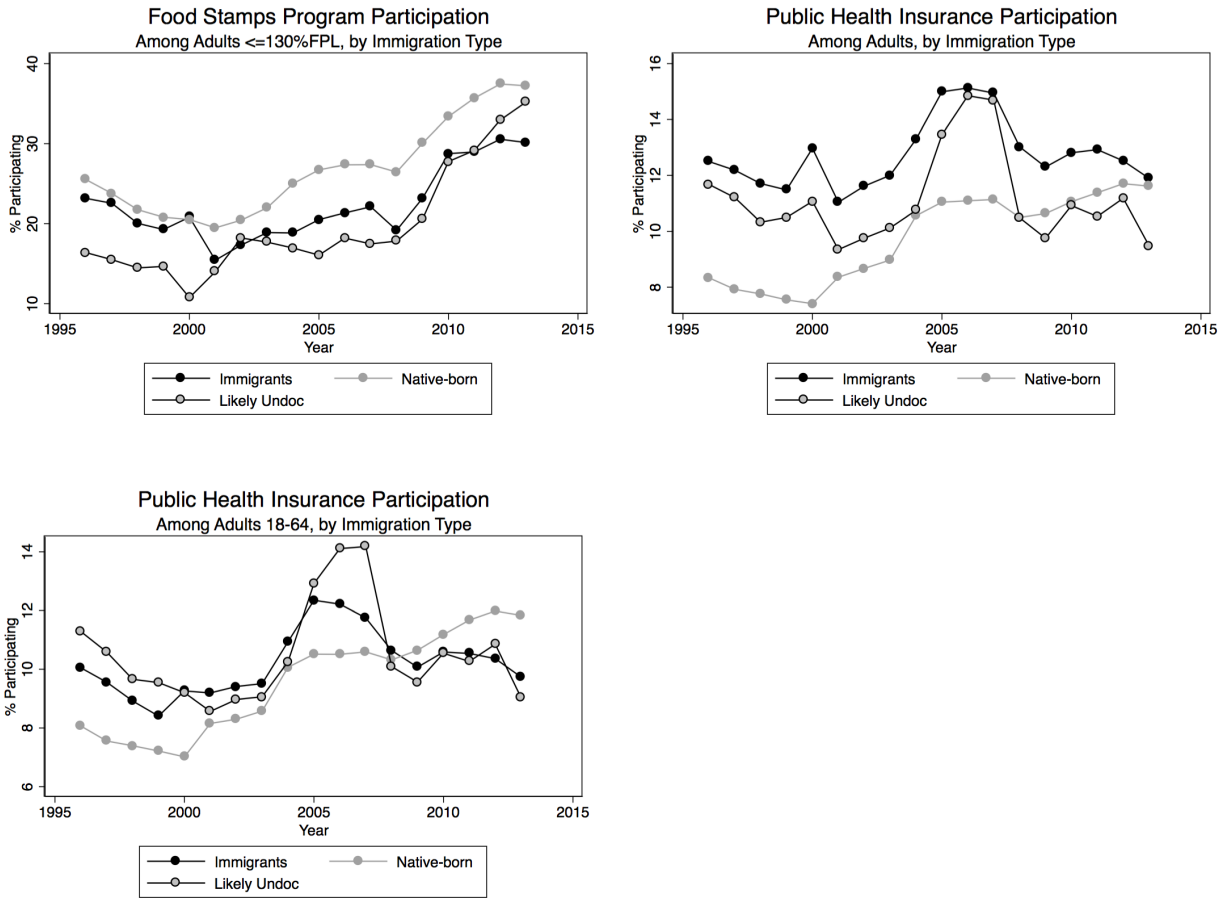
Children's Nutritional Assistance Program Participation by Family Nativity and Income (con't)



Source: SIPP 1996, 2001, 2004, 2008. Notes: Underlying samples differ by series in order to present data on the income target group of each program. For food stamps, children 0-18 under 130% poverty are included; for WIC children 0-4 under 185%; for the National School Lunch Program and the School Breakfast Program, children aged 5-18 under 185% of federal poverty.

Adults

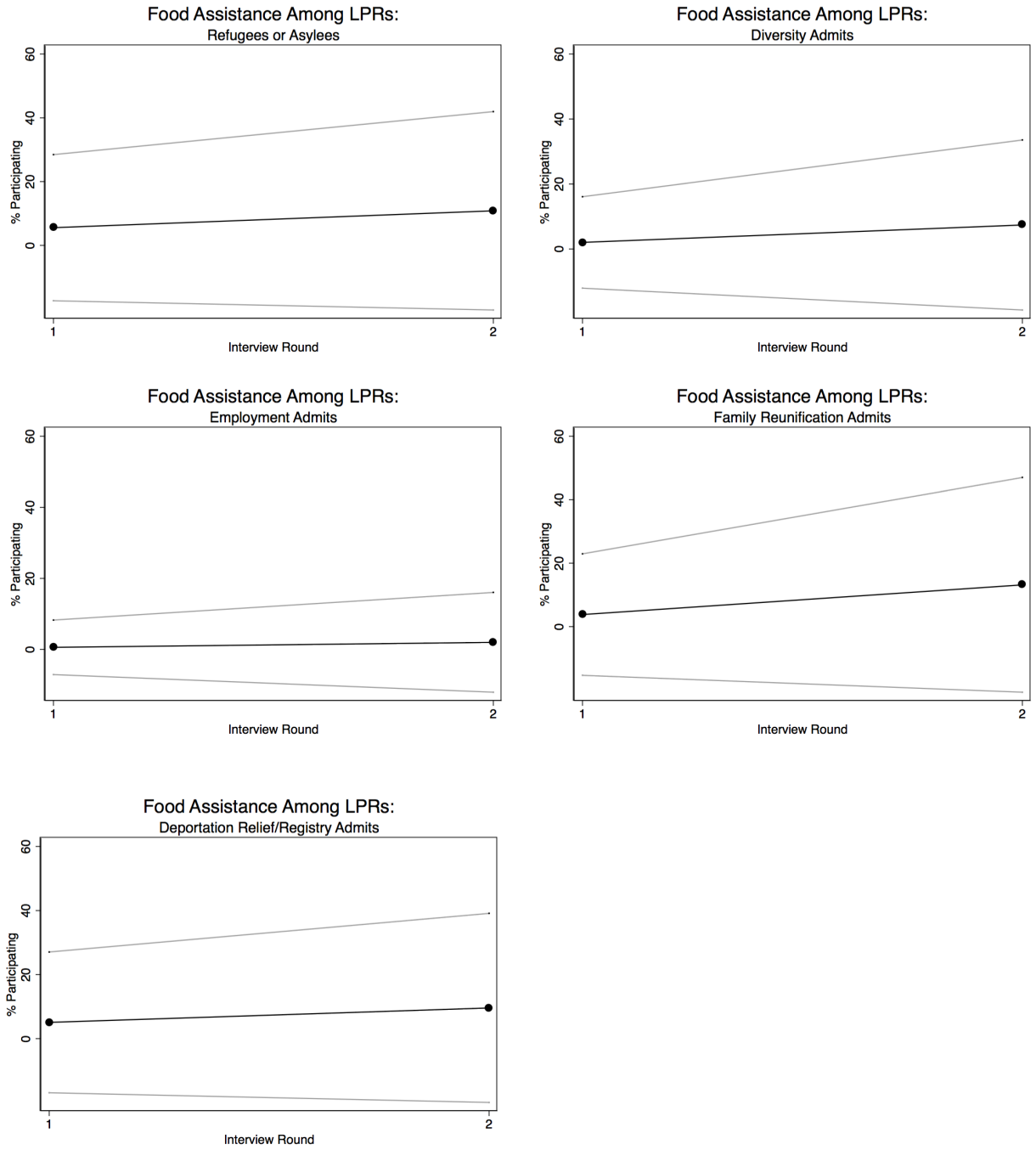
Figure 2.7: Immigrant Adults' Food Stamps Participation by Demographic



Source: SIPP 1996, 2001, 2004, 2008. Notes: Underlying samples differ by series in order to present data on the income target group of each program. For food stamps, adults under 130% poverty are included. No income threshold is set for public health insurance, since public insurance for low income adults (Medicaid and various state and local programs) use varied thresholds across state and time, and public insurance for the elderly (Medicare) has no income limit.

New Permanent Residents

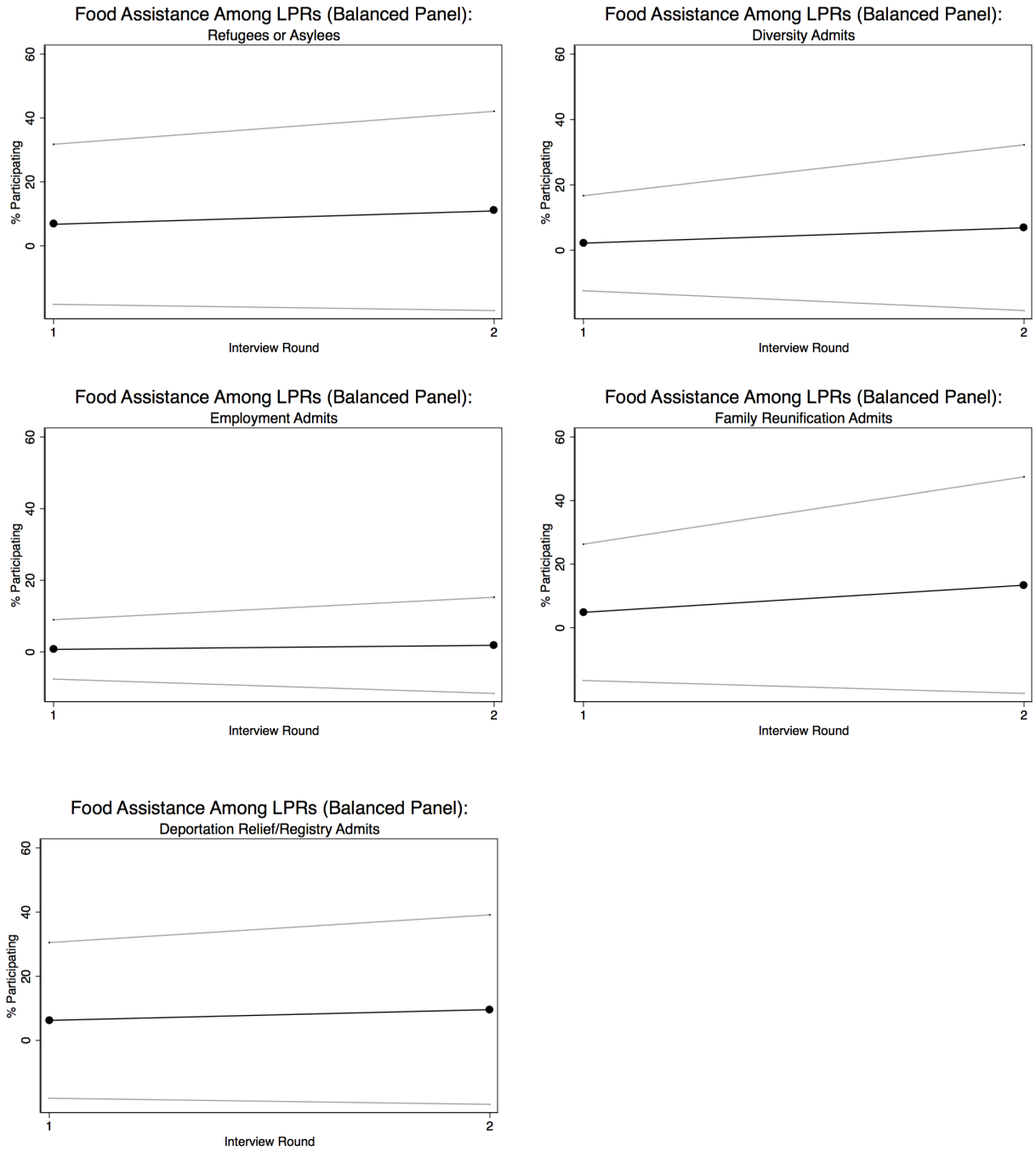
Figure 2.8: Food Assistance Received by Families of Legal Permanent Residents



Source: NIS Rounds 1, 2. Notes: Mean participation rates in two survey rounds presented with standard deviation bars. Permanent residency categories based on Department of Homeland Security admission codes, and collapsed into broader categories by author. Food assistance refers to food stamps, WIC, or both. All respondents to food assistance question included.

New Permanent Residents

Figure 2.9: Food Assistance Received by Families of LPRs: Balanced Panel



Source: NIS Rounds 1, 2. Notes: Mean participation rates in two survey rounds presented with standard deviation bars. Permanent residency categories based on Department of Homeland Security admission codes, and collapsed into broader categories by author. Food assistance refers to food stamps, WIC, or both. Balanced panel respondents to the food assistance question in both survey rounds included.

2.6 Tables

Table 2.1: Children's Participation in Safety Net Programs by Family Nativity

	(1) Food Stamps	(2) School Lunch	(3) School Breakfast	(4) WIC	(5) Public Insurance
Immigrant family	-0.138***	0.00858***	0.0113***	0.00358	-0.0265***
	(0.00263)	(0.00205)	(0.00191)	(0.00432)	(0.00129)
w/Undoc Members	-0.0301***	0.0307***	-0.00182	0.0753***	0.0837***
	(0.00392)	(0.00314)	(0.00278)	(0.00619)	(0.00243)
Observations	293856	243009	159674	110298	1014172

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: SIPP 1996, 2001, 2004, 2008 Panels. Study members are children under specific income thresholds: 130% FPL for food stamps, and 185% FPL for school breakfast, school lunch, and WIC. No income limit imposed for public insurance. Models for school breakfast and school lunch only include children of school age (5 - 18), and model for WIC only include children under 5 years old. All children up to age 18 included for food stamps and public insurance. All outcomes are binary. Linear probability model regressions adjusted by individual age and its square, sex, Latino/a ethnicity, and race. State-by-month unemployment rates and cash welfare caseloads proxy for macroeconomic conditions and policy environment, and fixed effects for state, calendar year, and survey panel are included.

Table 2.2: Children's Participation in the Safety Net During the Great Recession by Family Nativity

	(1) Food Stamps	(2) School Lunch	(3) School Breakfast	(4) WIC	(5) Public Insurance
Immigrant family	-0.140***	0.00815**	0.00822**	0.0156*	-0.0186***
	(0.00431)	(0.00305)	(0.00257)	(0.00722)	(0.00230)
w/Undoc Members	0.00534	0.0286***	-0.000323	0.101***	0.106***
	(0.00621)	(0.00452)	(0.00365)	(0.0101)	(0.00416)
Observations	102363	86887	64396	36571	324076

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: SIPP 2008 Panel. This study includes months from December 2007 to November 2013. Study members are children under specific income thresholds: 130% FPL for food stamps, and 185% FPL for school breakfast, school lunch, and WIC. No income limit imposed for public insurance. Models for school breakfast and school lunch only include children of school age (5 - 18), and model for WIC only include children under 5 years old. All children up to age 18 included for food stamps and public insurance. All outcomes are binary. Linear probability model regressions adjusted by individual age and its square, sex, Latino/a ethnicity, and race. State-by-month unemployment rates and cash welfare caseloads proxy for macroeconomic conditions and policy environment, and fixed effects for state, and calendar year are included.

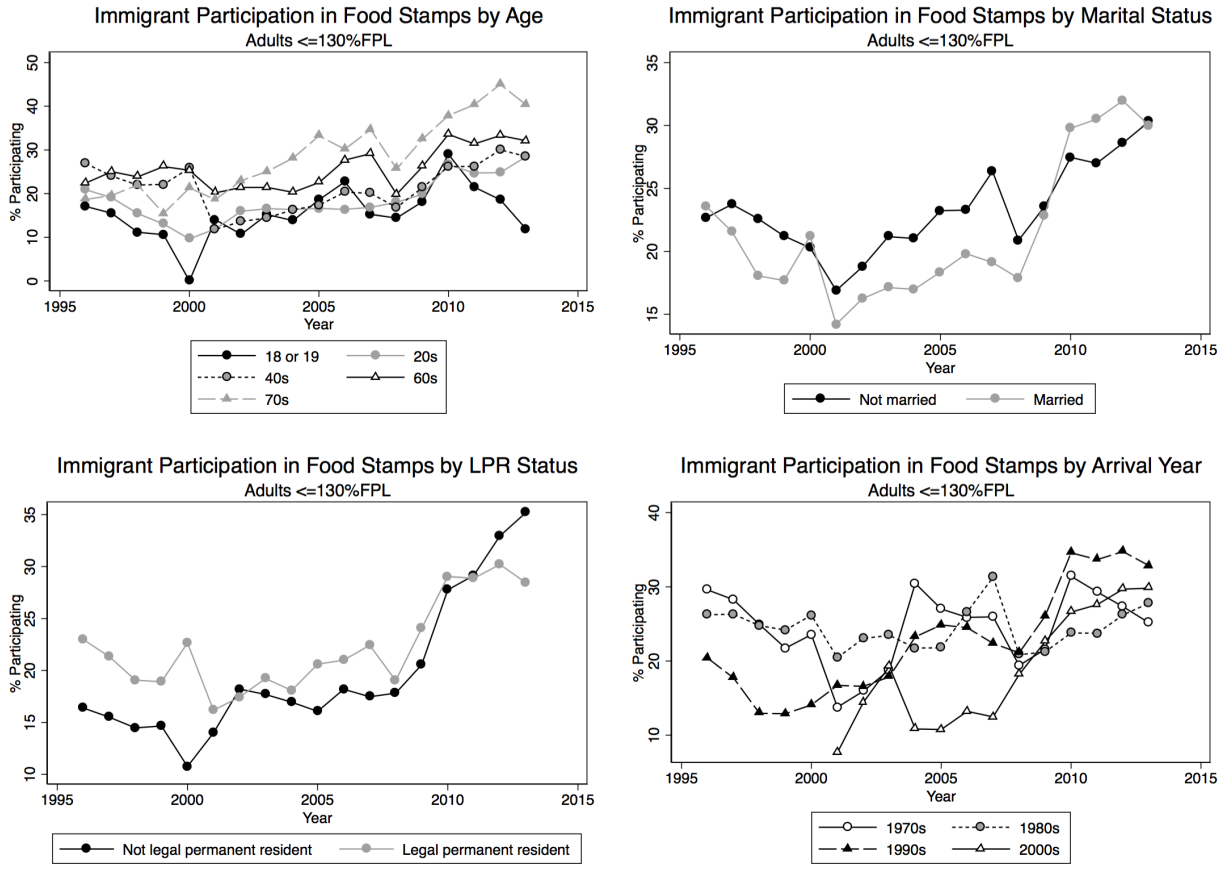
Table 2.3: Class of Legal Permanent Residency Admission

Class of Admission	**Full Sample**	**Round 1 Respondents**	**Round 2 Respondents**
Refugee or asylee	6,530	2,358	848
Diversity	2,970	1,287	501
Employment	3,076	1,183	497
Family reunification	3,038	1,236	509
Deportation relief or registry	1,262	512	229
Religious worker	234	91	32
Former US gov or intl org worker	36	15	5
Total	8,573	6,682	2,621

Source: New Immigrant Survey Rounds 1, 2. Tabulations of all survey participants, and of respondents to the question on food assistance (food stamps or WIC) receipt.

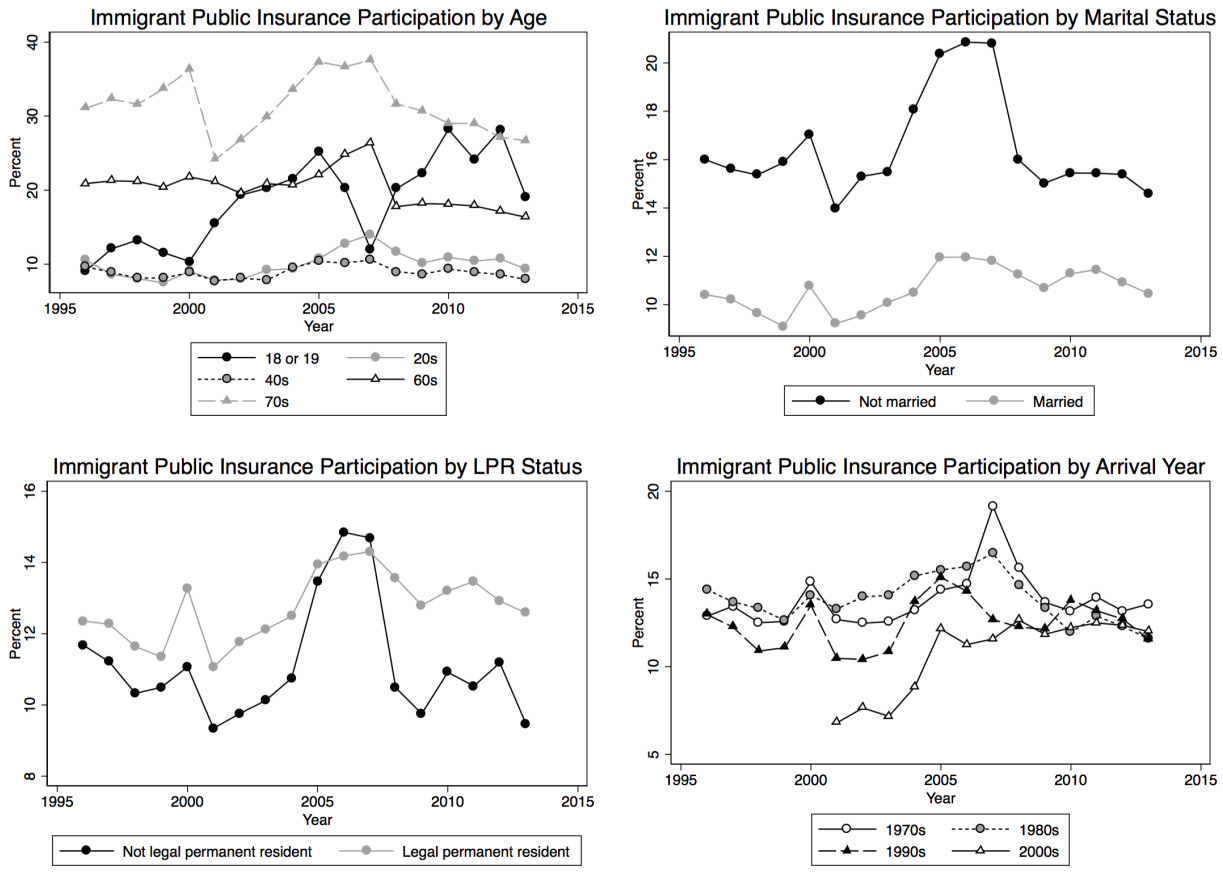
2.7 Appendix Figures

Figure A1: Immigrant Adults' Food Stamps Participation by Demographic



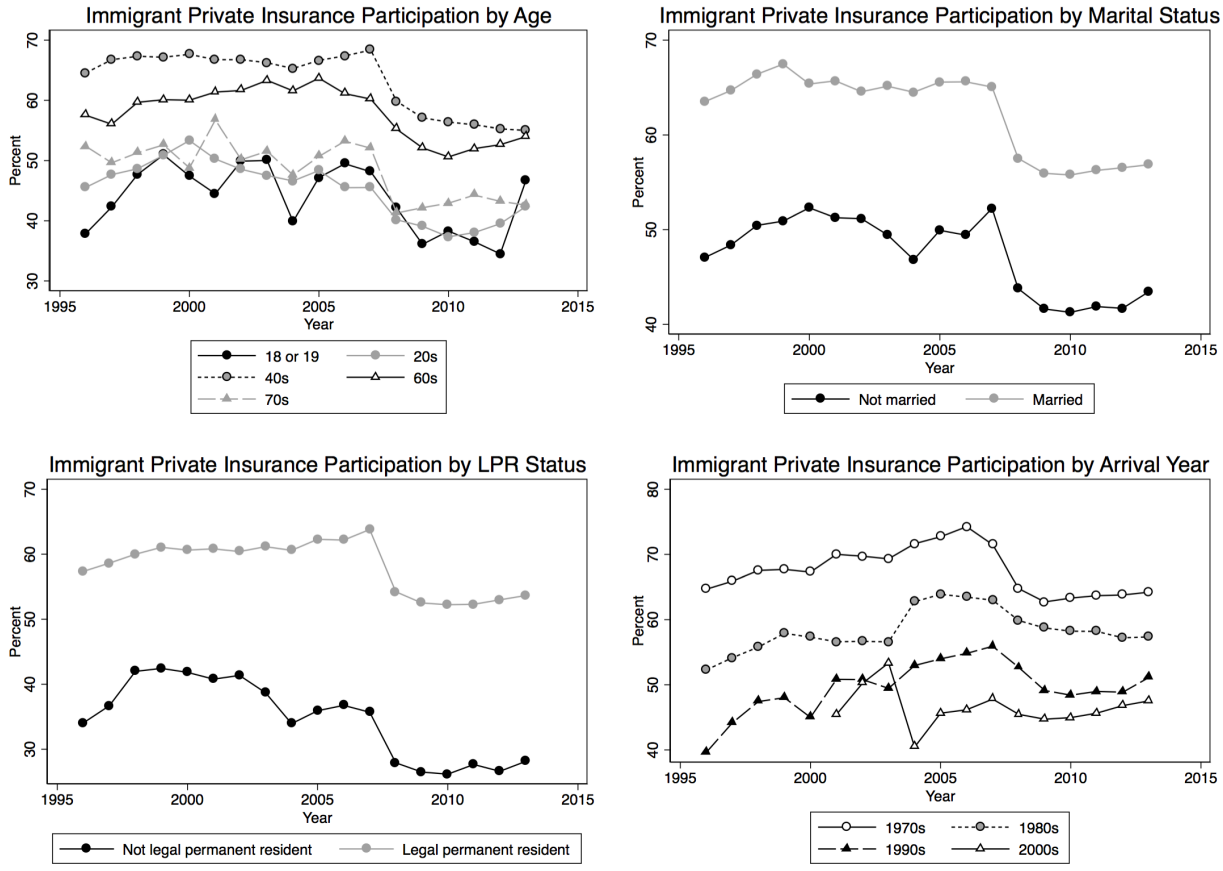
Source: SIPP 1996, 2001, 2004, 2008. Note: Adults under 130% of poverty included.

Figure A2: Immigrant Adults' Public Insurance Participation by Demographic



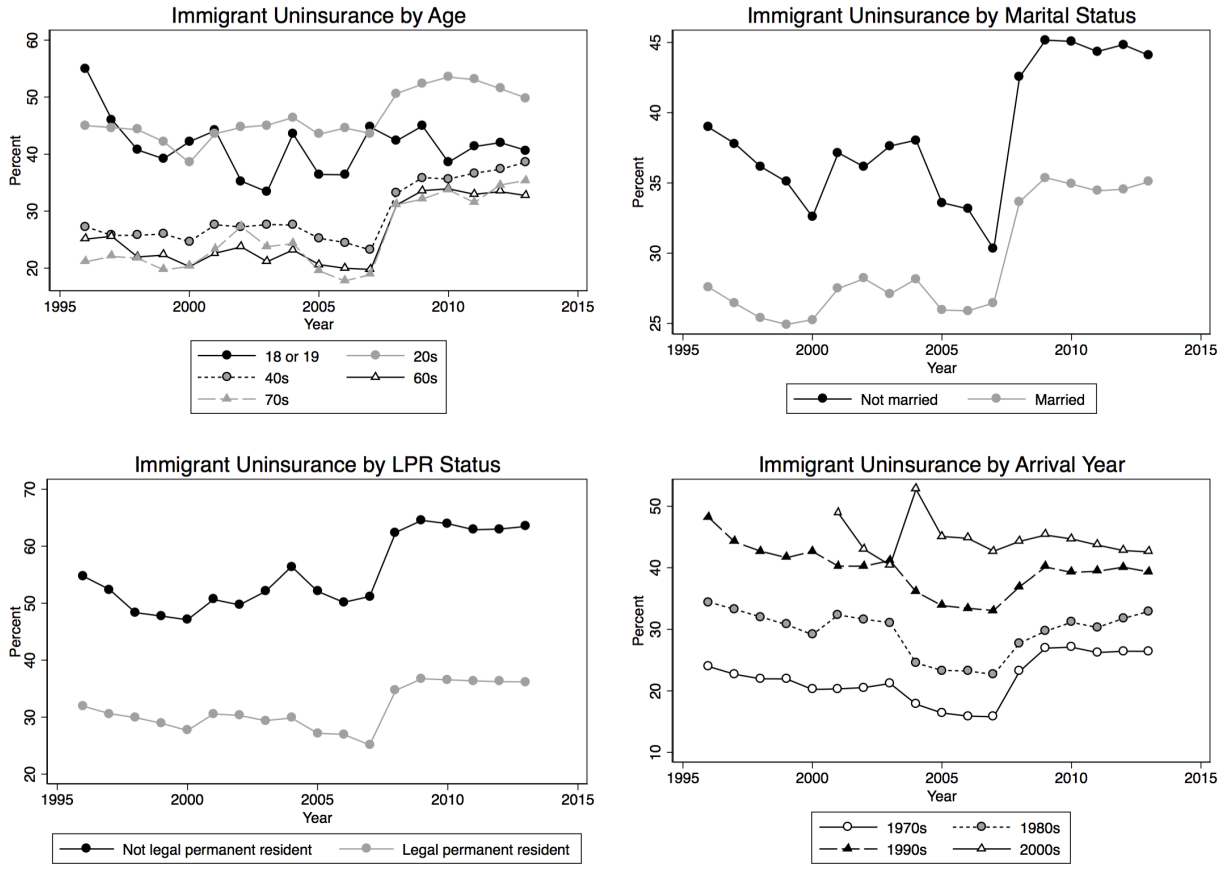
Source: SIPP 1996, 2001, 2004, 2008. Note: Adults of all income levels included.

Figure A3: Immigrant Adults' Private Insurance Participation by Demographic



Source: SIPP 1996, 2001, 2004, 2008. Note: Adults of all income levels included.

Figure A4: Immigrant Adults' Uninsurance by Demographic



Source: SIPP 1996, 2001, 2004, 2008. Note: Adults of all income levels included.

2.8 Appendix Tables

Table A1: Immigrant Adults' Food Stamps and Insurance by Demographic Characteristics

	(1) Food Stamps	(2) Public Insurance	(3) Private Insurance	(4) Uninsurance
Age	0.00119***	0.00329***	0.00111***	-0.00380***
	(0.0000840)	(0.0000362)	(0.0000523)	(0.0000490)
Observations	88573	335130	335130	335130
Married	-0.0213***	-0.0663***	0.162***	-0.0969***
	(0.00289)	(0.00122)	(0.00173)	(0.00165)
Observations	88573	335130	335130	335130
Legal Perm Resid	0.0102**	0.0176***	0.220***	-0.222***
	(0.00367)	(0.00177)	(0.00252)	(0.00242)
Observations	73400	263827	263827	263827

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: SIPP 1996, 2001, 2004, 2008 Panels. Study members are adult immigrants under 130% FPL for the food stamps model, and all adult immigrants for the health insurance models. All outcomes are binary. Linear probability model regressions adjusted by individual age and its square, sex, Latino/a ethnicity, and race. State-by-month unemployment rates and cash welfare caseloads proxy for macroeconomic conditions and policy environment, and fixed effects for state, and calendar year are included.

Chapter 3

Early ACA Medicaid Programs: Effects for Low Income Adults, Young Adults, and Those from Immigrant Families

3.1 Introduction

The Affordable Care Act (ACA) of 2010 included an expansion of Medicaid public health insurance to more low income Americans beginning in 2014. The provision authorized eligibility for a segment of the population historically not served by Medicaid: nonelderly, nondisabled, childless adults. Six states–California, Connecticut, the District of Columbia, Minnesota, New Jersey, and Washington–implemented Medicaid expansions in 2010 and 2011, well in advance of the 2014 deadline. Only Washington and the District of Columbia (briefly, before a further change) implemented an expansion to 133 percent of federal poverty, the level of income eligibility set in the ACA. New Jersey's expansion sets the most stringent eligibility bar at 26 percent of poverty, and the second of Minnesota's expansions sets the most inclusive at 250 percent of poverty.

This study analyzes the effects of the early Medicaid programs, focusing on changes to uninsurance, and public and private insurance coverage. It features subgroup analyses on young adults aged 18-26, some of whom were also affected by the ACA's expansion of private health insurance to adult dependent children, potentially reducing their likelihood of enrolling in Medicaid. It also presents the results of a model comparing how citizen adults from immigrant and native families. Immigrants often have lower levels of access to private insurance, and even citizen adults from immigrant family backgrounds may be much less likely to have the option of private insurance, leading them to be be more responsive to a new public program. Finally, it summarizes how different income groups responded to Medicaid expansion policies. I hypothesize that the Medicaid expansions increased public health insurance coverage overall, with the lowest income individuals being most likely to enroll, but that young adults are less likely to enroll due to their relative health and increased access to private insurance. Also, I hypothesize that adult citizens from immigrant family backgrounds will be more likely to enroll in expanded Medicaid as a result of their lower access to private insurance.

This study contributes to what we know about the early Medicaid expansions by quasi-experimentally analyzing all of the participating states, including outcomes over all of the early expansion years, and providing evidence on effects for young adults and for those of immigrant family background. The ACA's future is politically insecure, and state responses to federal changes may become key for health insurance access among low income adults. This study provides an opportunity to draw from states' past idiosyncratic policy lessons.

3.2 Background

Early ACA Medicaid Expansions

Medicaid has not been widely available to nonelderly, nondisabled adults without dependent children. Some state and local public insurance programs have covered this

population in the years preceding the passage of the ACA, but many of these programs lack important characteristics of Medicaid. Enrollment caps, limited benefits packages, and significant cost sharing are some features of state and local public insurance programs that tend to make these programs less effective than Medicaid in enrolling and serving low-income adults.[1] Some programs operate at the county level, meaning that moving out of the county can effectively mean losing health insurance. Medicaid, on the other hand, is an entitlement with a relatively comprehensive benefit package and zero cost sharing for enrollees. It is a state-federal partnership program, so coverage can be lost by moving to a different state, but not by moving within a state.

California, Connecticut, the District of Columbia, Minnesota, New Jersey, and Washington implemented early expansions of Medicaid programs in 2010 and 2011. These six states (I refer to District of Columbia as a state throughout for simplicity) built their expansions on existing state or local health insurance programs for low income nonelderly adults. The fact that the Medicaid expansions were implemented in states with existing public insurance programs for adults should lead us to expect relatively low program effects, with Medicaid largely crowding out the existing programs. They applied expertise developed from running the existing programs to implement bridge programs on the way to full ACA Medicaid expansion. In an early analysis of the expansions, Somers et al. reported a gradual, linear enrollment increase in three of the states, California, Connecticut, and District of Columbia; and conducted difference-in-differences estimates in Connecticut and DC, finding that Medicaid expansions produced 4 to 5 percentage point increases in enrollment [Sommers et al., 2014].

There were large differences in the historical development of the preexisting programs that naturally translated into high variation in the design of the early Medicaid expansions. Table 3.1 summarizes the timing and income eligibility of the various state policies. Connecticut, Minnesota, and New Jersey had health insurance programs associated with state general assistance programs targeted at nondisabled, very low income adults. Connecticut covered individuals up to 56 percent of federal poverty, Minnesota up to 75 percent, and New Jersey up to 24 percent. For reference, the federal poverty level in 2010 was defined as having an income of $10,830 for a household of one, or $14,570 for a household of two.

In addition to its general assistance population, Minnesota also had been providing public insurance to a moderate income population, up to 250 percent of poverty, with a second public insurance program. Minnesota first expanded Medicaid to cover those up to 75 percent of poverty, and then implemented a second expansion up to 250 percent, bringing both of these groups into the early ACA Medicaid program. Washington's pre-expansion landscape of public insurance also featured distinct programs for low and moderate income adults. It served those up to 133 percent of poverty with one program, and those up to 200 percent with another. Unlike Minnesota, Washington expanded Medicaid only to those under 133 percent of poverty, and limited enrollment to the prior state enrollees.

[1] I refer to adults without dependent children in the household as "childless" throughout.

California's Medicaid expansion was an elective program for counties that was built on an existing county health care program that covered set county-specific income eligibility limits up to 250 percent of federal poverty. The Medicaid expansion covered individuals up to 133 percent of poverty, and those from 134 to 200 percent in a version of the previous county program. Finally, the District of Columbia, like Minnesota, implemented two early Medicaid expansions–first to 133 percent of poverty, and then to 200 percent–that were based on an existing state health insurance program covering those up to 200 percent of poverty. A policy brief by Somers et al. describes the characteristics of state and local programs serving childless adults in the pre-ACA period [Somers et al., 2010].
Ordinarily, targeting the lowest income groups for a public program would lead us to expect higher need and, therefore, higher takeup rates. However, the Medicaid expansions were not the first adult public health insurance programs in the early expansion states, and it is not obvious that we should expect the same results in these circumstances. Instead, they targeted many of the same people already served by state and local programs. The differences in income eligibility thresholds across the six states will be useful in determining how much additional insurance coverage Medicaid can offer when it is replacing another program, and whether the resulting changes to uninsurance and private insurance coverage differ by target income group.

Young Adults

Young adults are a population of interest in the health reform debate–see, among others, a 2013 description of this group's insurance status in the midst of implementing the ACA [Dubay et al., 2013]. Because they are relatively healthy and may be tempted to forgo health insurance coverage, they are sometimes referred to as "young invincibles." Securing their enrollment in health insurance is important for managing insurance risk pools, and reducing the population uninsurance rate. An additional challege is that young adults may also lack sufficient information or understanding about how to access insurance. A recent study of highly educated 19 to 30 year olds, in which subjects were observed while shopping for health insurance online, found that this group had low health insurance literacy [Wong et al., 2015]. One of the ACA's first enacted provisions specifically targeted this population. For plan years beginning in October 2010 and after, dependent adult children up to age 26 are eligible for coverage by their parents' private insurance. This applies even if the child is living away from home or is married, and does not have an income eligibility threshold.

Immigrant Families

The immigration statuses, employment prospects, and access to health insurance of family members can have consequences for adult children of immigrants. If immigrants have lower access to private health insurance, this could mean that they are less likely to be extend their private insurance coverage to their adult children under the ACA expansion of private insurance.

Lack of insurance and access to health care are well-documented disparities affecting immigrants in the US. Health insurance coverage and reporting a usual source of care is lower among immigrant and minority populations [Stimpson et al., 2010] [Guendelman et al., 2001]. Similar to young adults, immigrants and their families are healthier than the population average in the US, and this is reflected in work on the "healthy immigrant" effect and the "Latino paradox." The latter concept refers to the fact that Latinos simultaneously embody low socioeconomic status and good health [Palloni and Morenoff, 2001] In a study conducted around the time that the Children's Health Insurance Program was being implemented, immigrants were found to use disproportionately fewer medical services and contribute less to health care costs than their population share [Goldman et al., 2006]. Reducing uninsurance among immigrants and their families helps them access health services while also improving the overall risk pool in programs such as Medicaid. There are two potential pathways for immigrant family status to affect participation in public health insurance. The first is through a lack of access to private coverage. For young citizen adults, this could also mean having less access to private insurance if their parents are immigrants and are less likely to have private insurance through work. For example, a study of immigrants in LA county found that this group is more likely to work in industries such as services or textiles that do not offer employer-supplied insurance [Goldman et al., 2005]. Reduced access to private health insurance could lead to a greater likelihood of participating in Medicaid expansions.

The second pathway could be through a "chilling" effect, in which those in immigrant families are less likely to participate in public programs due to a fear of exposing family members' immigration status, jeopardizing the potential for gaining US citizenship in the future, or exposing their immigration sponsors to financial risk. Following welfare reform, uncertainty about immigrants' eligibility for public health insurance and other consequences produced lower public insurance enrollment among low socioeconomic status immigrant single mothers and their children [Kaushal and Kaestner, 2005]. While nationalized citizens and refugees are generally allowed to participate in public insurance on the same terms as citizens, eligibility for legal permanent residents is more complicated. In addition to federal eligibility rules that correspond to date of arrival, states can determine the rules of income and resource deeming and decide how strictly to define and pursue public charge concerns [Fix and Passel, 1999]. However, this study focuses on citizen adults, making it less likely that chilling will play a significant role in insurance coverage decisions.

3.3 Data

Definitions

This study uses publicly available data from the American Community Survey (ACS), which is produced by the US Census Bureau and accessed through the Integrated Public

Use Microdata Series [Ruggles et al., 2015]. The ACS is an annual household survey that collects information on topics including income, family structure, demographics, and health insurance. Large sample sizes allow for subnational analysis, making this survey a good choice for evaluating state policy effects on specific demographic groups. This study uses the 2008-2013 years of the ACS, which cover the period immediately preceding the larger 2014 ACA Medicaid expansion in all participating states. One limitation of the data, however, include the fact that month of survey is not released by the Census, meaning that it is impossible to know exactly at what point during the calendar year respondents participated. This makes it difficult to evaluate programs that begin mid-year, as the calendar year is the most reasonable unit of time analysis. Also, information on immigration status is relatively undetailed, but the benefit is the large sample, which is useful for detecting potentially small effect sizes.

The study population includes a nonelderly, nondisabled, childless adult population that we generally do not expect to have access to Medicaid outside of the early expansions in the study states, although they did have access to other forms of public insurance. In practice, this population comprises US citizens aged 18 to 64 who are not receiving supplemental security income (SSI, which would qualify them as disabled and Medicaid eligible). Study members either have no children, or do not live in the same household as their children. The analyses of young adults are restricted to those aged 18 to 26.

Definitions

I use the methodology developed by the University of Minnesota to define health insurance units (HIUs) [SHADAC, 2013]. Throughout the study I use HIU-level income to determine income eligibility for public insurance since this better captures the way that eligibility for public insurance is determined. Individual-level total income for the past twelve months is combined in each HIU, and the resulting sum is used to determine each HIU's income as a percentage of federal poverty. Since I hypothesize that family nativity can affect likelihood of access to health insurance even for citizen adults, I define subgroups of immigrant and native families using data at the HIU level. If at least one person in an HIU was born abroad, I define all members as being from an immigrant family. Members of HIUs with no foreign born members are from a native family.

Total income for all the members of a health insurance unit are summed in each month and then annualized. Health insurance units with negative earnings are set to a floor of zero dollars. This could occur, for example, if business losses exceed earned income. In practice it affects less than one percent of the study population. The income is converted to a percent of FPL using the poverty guidelines set by the US Department of Health and Human Services. This percent FPL is used to determine income eligibility for public insurance in states that expanded Medicaid to nonelderly, nondisabled, childless adults. Since the ACS data are not detailed about immigration status, I avoid the intricacies of determining eligibility for Medicaid by focusing on citizens.

The survey is fielded continuously, and respondents provide income information about the twelve months preceding the survey month, making the period reported on different for individuals depending on the month of survey. Health insurance, however, is reported as current coverage status, resulting in some degree of mismatch for the recall periods of variables in this study. Unfortunately, month of survey is not made available for privacy reasons, so I treat each survey year as a representative calendar year.

3.4 Methodology

The early expansions did not need to reflect the ACA design requirements, and as a result, their timing and income thresholds reflected some experimentation. Among the states in the present study, the implementation dates ranged from March 2010 to August 2011, and income eligibility thresholds ranged from 23 to 250 percent of federal poverty in the various states. In contrast, the ACA Medicaid expansion was designed to cover adults up to 138 percent of poverty–133 percent plus a 5 percent income disregard. Since the states designed idiosyncratic public insurance programs, I treat each expansion as a case study. It can be difficult or impossible to find a suitable comparison state among a limited set of highly differentiated states. Geographical proximity, state demographic characteristics, or other data can be used to find a best match for each treatment state, but there may be no reasonably similar comparator. In the case of treatment states in the early Medicaid expansions, this is difficult because the states that built bridge programs to the ACA were fundamentally different from others. Most of the treatment states had Democratic governors, none were from the Southeast region of the US, and all of them were likely to have political climates and cultures that favored providing public health insurance for vulnerable populations. Importantly, the parallel trends assumption necessary to causally estimate a difference-in-differences effect may not hold for any possible control state, making it impossible to implement this kind of study.

Abadie and coauthors developed the synthetic control case study method to address this situation [Abadie et al., 2010]. Their method produces a control state that is "synthetic" in the sense that it is a weighted combination of several states. The synthetic differences method generates weights for the candidate control contributor states, most of which are zero. The nonzero weights sum to one, and define the composition of a synthetic control state that minimizes the differences in pre-treatment uninsurance trends between the treatment and synthetic control states. Specifically, the weights minimize the mean squared prediction error, which is the sum of the squared deviations between uninsurance for the treated state and the synthetic control state, across all pre-treatment years. Variables that are highly predictive of uninsurance are given correspondingly high importance, and the resulting synthetic control state will be strongly matched with the treatment state on these measures. Early synthetic control case studies presented mostly graphical analysis, but the weights produced in constructing the synthetic control may also be used to estimate difference-in-differences in a regression framework, such as in work by Powell [Powell, 2016].

Candidate Comparison State Selection

The treatment states are California, Connecticut, DC, Minnesota, New Jersey, and Washington. Control states are constructed as a weighted combination of states that did not experience a policy expansion during the 2008-2013 study period, and also did not have availability of public health insurance for the target population. In addition to the treatment states, I exclude Arizona, Maryland, Indiana, Maine, New York, Oregon, Pennsylvania, and Wisconsin because they have Medicaid or comparable programs for nonelderly childless adults. I also exclude Massachusetts because the state implemented comprehensive health care reform in 2006 that vastly expanded health insurance coverage options [Holahan and Blumberg, 2006]. The remaining thirty-six states can potentially contribute to the composition of a synthetic control state.

Both the synthetic state construction and model estimation are conducted only using the case-study-specific Medicaid expansion populations. For example, New Jersey's adult Medicaid expansion covered individuals up to 23 percent of federal poverty. Only the stud population members under 23 percent of federal poverty in New Jersey, and their counterparts in candidate control states, contribute characteristics to the determination of Synthetic New Jersey. As a consequence, New Jersey and Synthetic New Jersey could be well matched on this subpopulation while still differing considerably on their full populations.

Uninsurance is the outcome matched in the pre-treatment period, and the synthetic control determination uses state characteristics–Census region; population size, consumer price index, unemployment rates, racial and ethnic makeup, sex composition, and state education levels–to predict state uninsurance rates. In addition to uninsurance, this study also analyzes public and private insurance coverage as outcomes. It would be reasonable to construct different synthetic control states for each of these outcomes, matching the pre-treatment trends to the extent possible. However, the three insurance coverage statuses affect one other. Changing the composition of comparator states would lead to differences in sample sizes across outcome even when analyzing the same policy expansion, and would make it difficult to compare the estimates for uninsurance with those for public and private coverage. In particular, it would make it difficult to determine the extent of crowd-out of private insurance due to the Medicaid expansions. As a consequence, I conduct comparable analyses using the same synthetic control state for each expansion case study.

Models

Each Medicaid expansion analysis compares the treated state to its synthetic control state. Equation 3.1 presents the model. The outcome *Insurance* is one of three binary health insurance outcomes: uninsurance, public insurance coverage, and private insurance coverage. The treatment variable D is the availability of Medicaid in the treated state, in the post-treatment period. X is a vector of individual characteristics: age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels. Fixed

effects for state and year are included, as well as state- and individual-level disturbances are included. Since the ACS data are repeated cross-sections, the distribution of these demographics can vary over time in each state. The analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. As with traditional difference-in-differences, this method differences out unobserved time-invariant state characteristics that could affect the outcomes of interest. I estimate this model for all nonelderly, nondisabled, childless adults to analyze overall enrollment effects due to the early Medicaid expansions. I also estimate this restricted to the subgroup of young adults aged 18 to 26 in order to analyze changes to health insurance among this population.

$$\text{Insurance}_{ist} = \alpha + \tau D_{st} + \gamma_1 X_{it} + \gamma_2 \mathbb{1}(s=1) + \gamma_3 \mathbb{1}(t=1) + \epsilon_{st} + \upsilon_{ist} \tag{3.1}$$

To determine whether the policy changes differentially affected individuals by their family nativity, I calculate the model described in Equation 3.2. Here, the treatment T is the availability of Medicaid in the treated state, in the post-treatment period, interacted with membership in the group of individuals with immigrant families. X is the same vector of individual characteristics as in the previous model. Fixed effects for state, year, and group (immigrant or native family), as well as two-way interactions of these, are included. The outcome variables are uninsurance, public insurance, and private insurance, as in the difference-in-difference models. I estimate this model for all nonelderly, nondisabled, childless adults, and also restricted to the subgroup of young adults aged 18 to 26.

$$\begin{aligned}\text{Insurance}_{istg} = a + \beta T_{stg} + \xi_1 X_{it} + \xi_2 \mathbb{1}(s=1) + \xi_3 \mathbb{1}(t=1) + \xi_4 \mathbb{1}(g=1) \\ + \xi_5 \mathbb{1}(s=1)\mathbb{1}(t=1) + \xi_6 \mathbb{1}(s=1)\mathbb{1}(g=1) \\ + \xi_7 \mathbb{1}(t=1)\mathbb{1}(g=1) + e_{stg} + u_{istg}\end{aligned} \tag{3.2}$$

3.5 Results

Descriptives

Appendix Table A1 presents the compositions of the synthetic control states for each case study. Since the controls are constructed to match the pre-treatment uninsurance trends among the affected income group of a new Medicaid expansion, states that implemented two expansions have a different synthetic control state for each policy change. Figure 3.7 graphically presents the uninsurance trends for treated and control states in each policy expansion. For each state policy scenario, the blue vertical line indicates the year excluded from the analysis, which is the year containing all or most of the first six months of program implementation. The pre-treatment period includes every preceding year, and should reflect parallel trends in uninsurance. The pre-treatment trends are relatively good for all of the case studies, with the exception of the District of Columbia policy expansions.

The two figures for DC exhibit a poor match of pre-treatment trends, but as we shall see, this may make little difference based on the known enrollments for this state.
Appendix Tables A2 - A7 describe the health insurance outcome summary statistics for the pre-treatment periods in each state for some key income thresholds. Since the District of Columbia and Minnesota expanded eligibility twice, I use the higher of their income thresholds to produce these statistics. Each column is labeled to denote family immigration type ("I" for immigrant and "N" for native) and income threshold as a percentage of federal poverty. I omit standard deviations to improve legibility. There is high variability in how insurance coverage and type are distributed by family nativity and income. In Washington, for example, there are few differences by income threshold up to 133 percent of poverty, and individuals from both immigrant and native backgrounds reflected about the same rates of coverage: about a third uninsured, a bit more than a half covered by private insurance, and the remainder covered by public insurance. New Jersey, on the other hand, shows that low income individuals from immigrant families are more likely to have public coverage or no insurance, and much less likely to have private insurance.

Overall Difference-in-Differences

The number of eligibles in each state are presented by study year in Appendix Table A8, and the difference-in-differences results for all expansions are summarized in Table 3.2. Model titles include the state of the policy change along with the income group, defined by percent of FPL, targeted by the policy. Since states implemented idiosyncratic income eligibility thresholds, each model includes only the income group targeted by the state policy expansion. Panel A presents point estimates for the public insurance coverage outcome. Each of these represents the percentage point difference in likelihood of public insurance coverage as the result of the Medicaid expansion, compared with a synthetically constructed control state that did not expand Medicaid. The effects of the policy change are mostly positive and significantly distinguishable from zero, which suggests that the policies produced their desired effect of covering the targeted adult population. The Sommers et al. difference-in-difference findings are smaller in magnitude for Connecticut at around 4.9 percentage points, but that study uses a mix of Northeastern states as a comparison group, whereas the present analysis constructs a synthetic control state that is likely to be more similar to Connecticut. The District of Columbia results are similar between this study and the Sommers et al., but neither is likely to have created an ideal comparison state, as the District is different from all other states in the US in terms of urbanicity and demographics [Sommers et al., 2014].
Since the state Medicaid expansions targeted income groups that had previously been served by state and local programs, we can interpret this to mean that those who signed up for Medicaid were not all previous enrollees in public insurance. Comparing the point estimates in Panel A with the eligibility estimates in Table A8 gives some sense of the magnitude of program takeup in terms of numbers rather than percentages. California, for example, with its 2 percentage point increase increase in public insurance, produces an

estimated enrollment of about 120,000 Medicaid enrollees in 2011. The estimates of enrollments, of course, are net of the churn out of the old local program and into the new Medicaid expansion. Two exceptions are New Jersey and Washington, which, contrary to expectation, produce negative point estimates. These findings, however comport with qualitative work that found that the New Jersey Medicaid program did not produce new enrollees, and that Washington simultaneously cut its budget for the existing state public insurance programs, leading to a net loss of those covered by public health insurance [Sommers et al., 2013].

Panel B of Table 3.2 presents point estimates for private insurance coverage, and Panel C presents those for uninsured status. These results, taken together with the public insurance coverage estimates in Panel A, help us understand the effects of the early Medicaid expansions on crowd-out and uninsurance. Among the states in which expanded access to public insurance produced positive public coverage results, with the possible exception of the District of Columbia, crowd-out was incomplete. That is, percentage point changes in private coverage tend to be significantly smaller in magnitude than those of public insurance coverage. Neither New Jersey nor Washington, the two states with the unexpectedly signed public insurance estimates, produce any measurable changes to private insurance coverage attributable to the policy changes. Corroborating this general narrative that Medicaid expansions do not come at the expense of complete crowd-out, Panel C shows mostly percentage point declines in likelihood of being uninsured as a result of the policy changes. No change in uninsurance is detectable in New Jersey, and Washington reflects an increase in uninsurance, which fits with what we know about disenrollment from the state's other public insurance programs. In the analyses that follow, I continue to present the results for New Jersey and Washington, but we can safely discount any real policy effect of their early Medicaid expansions because of the known lack of enrollment, or disenrollment, in public insurance in these two states.

Difference-in-Differences for Young Adults

Table 3.3 mirrors the results of Table 3.2, but restricted to the population of young adults aged 18 to 26. As an early provision of the ACA, eligibility for private insurance coverage was expanded to dependent adult children under the age of 26 in 2010. This occurred, however, in all states, so the difference-in-difference method should remove the effects of the private expansion if we believe that this policy affected each state's young adult population in comparable ways. Let us assume this holds in this set of analyses, and come back to this consideration when we discuss family nativity. Panel A presents the public health insurance coverage estimates. The young adult responses tended to be smaller in magnitude than those for the overall population of adults, possibly reflecting lower self-perceived need for health insurance in this younger, healthier subgroup.

Panel B presents estimates for young adults' private insurance coverage, and Panel C presents estimates for uninsured status. The effects of the Medicaid expansions on private insurance coverage does not differ significantly among this group from those among the

larger sample. The effects of the policy on uninsurance, however, do differ for this younger group in ways that are not consistent across state. Uninsurance estimates that are significantly distinguishable from zero are signed the same as those for the larger analysis sample, but their magnitudes differ in inconsistent ways–some are smaller, and other larger, than the uninsurance estimates in Table 3.2. In general, the young adults did show increases in public coverage as a result of the Medicaid expansions, and the "young invincibles" story of their not enrolling in health insurance does not appear to be a big concern.

Results for Adults from Immigrant Families

Table 3.4 presents the results comparing synthetic difference-in-differences estimates between the adult populations from immigrant families with those from native families. The point estimates in Panel A can be interpreted as the percentage point difference in likelihood of public insurance coverage among those in immigrant families versus those in native families as a result of the new Medicaid policy. The previous set of results for the pooled state populations found effect sizes in the single digit size range, with most of the estimates under four percentage points in magnitude. The heterogeneous response models comparing the results for individuals with immigrant and native families generally have confidence intervals too large to allow us to conclude that there are differences between the two groups' changes in public insurance status.

Panel B similarly shows that there are no detectable differences in changes to private coverage among those from immigrant families. Panel C, which presents changes to uninsurance, shows a greater likelihood of being uninsured among individuals from immigrant families in Minnesota as a result of the state's Medicaid expansion to 75 percent of federal poverty, but no detectable differences in other state expansions.

There could be differential access to the private insurance expansion to age 26 by family nativity, reducing one channel to gaining private insurance for adults from immigrant families. Appendix Table A9 presents a difference-in-differences for private insurance coverage of the 18 to 26 age group compared to adults too old to benefit from the ACA expansion, up to age 35. The estimates are fully interacted by family nativity, and show significantly smaller magnitude gains in private coverage for young adults from immigrant families. Table 3.5 presents estimates for the heterogeneous response model for young adults aged 18 to 26. The difference-in-differences estimates for the larger population found effect sizes of at most four percentage points in magnitude. As in the case of the heterogeneous response model in Table 3.4, the results for this younger group are imprecise. Neither public nor private insurance status, shown in Panels A and B, are likely to be different between individuals from immigrant and native families. Panel C shows a greater likelihood of being uninsured among individuals from immigrant families due to DC's Medicaid expansion to 133 percent of federal poverty, but we should interpret this finding with caution, since DC was the state with a poorly matched synthetic control.

The model estimated was designed to test whether responses differed by family nativity, but does not produce point estimates for each subgroup. Appendix Tables A10 and A11 present subgroup-specific models for all individuals from immigrant and native families, and for the young adults among them. These models corroborate the findings described here, and they present the point estimates by nativity and age group.

Cutoffs

Although it is most useful to investigate the effect of each state's expansion on its intended target population, there is also the question of which newly eligible adults are most likely to sign up for Medicaid. This is also helpful because, with only six early expansion states, it is difficult to determine whether higher income eligibility thresholds are predictive of greater or lesser takeup, or whether state-specific characteristics dominate in determining takeup response. Table 3.6 presents difference-in-differences results using synthetic control states for the Medicaid expansions described above, but for lower income cutoff levels than each state's threshold. I test the results of Medicaid expansions on populations under 25, 50, 100, and 150 percent of federal poverty whenever these cutoffs are at least ten percentage points below the eligibility thresholds. The general trend is for the lowest income groups to be the most responsive to new Medicaid eligibility, although the 95 percent confidence intervals for the income cutoff estimates often overlap with those for the main estimates. Connecticut, for example, expanded its Medicaid program to those under 56 percent of poverty, producing an 8 percentage point increase in public coverage in that income group. However, the estimate for the under 25 percent of poverty group represents a 12 percentage point increase. An exception to this trend is the low response in California among those under 25 percent of poverty, although the group under 50 percent of poverty does produce a 4 percentage point increase in public coverage. The lower income levels in DC are also less responsive than the overall eligible populations, confirming findings by Somers et al. that the moderate income population in DC was more likely to sign up under the new Medicaid than the low income population [Sommers et al., 2014].
Figure 3.7 plots the difference-in-differences point estimates from all of the main results and the lower income cutoff models and a best-fit line through them. I include the New Jersey estimates since they accurately reflect what we know about the effects of the expansion there. The Washington estimates are anomalous in that they are negatively signed, but we know that this is due to a concurrent policy that led to disenrollment in other public insurance. I plot these in a light grey, but do not include them in the set of point estimates that produce the best-fit line. The overall finding is that the Medicaid expansions are more effective in improving the public insurance coverage levels for lower income groups. An extension of this argument is the fact that even less generous programs that target only very low income adults can produce positive insurance coverage results.

3.6 Conclusions

The early ACA Medicaid expansions analyzed in this study represented a wide range of income eligibility. Using synthetic control states allowed us in most cases to create well-matched comparator states for each policy expansion using state and demographic characteristics of each policy's target population. These results extend the early work of Sommers and coauthors by constructing strong comparison states for the program evaluation, and including later implemented early Medicaid programs. Overall, these new policies produced gains in public insurance enrollment for nonelderly nondisabled childless adults, producing single digit percentage point increases in coverage. This is relatively large, given that some of the new Medicaid enrollees in each state were previously participating in a state or local public insurance program.

The policies produced some crowd-out in Connecticut, the District of Columbia, and Minnesota, but there were also real reductions in uninsurance for most states. Responses to the new policies tended to be lower among young adults (aged 18 to 26) than for the full adult population, but they did show increases in public insurance coverage, arguing against the idea of "young invincibles." Some of young adults' lower responses to public expansions could be due to new gains in private insurance coverage due to extended adult dependent coverage. If this effect is the same in all states, we should expect it to not be detected in the DD framework. If, however, distinct demographic groups responded more or less strongly than others, the uneven distribution of these groups across states could lead to a measurable effect. Here, there were no measurable differences between individuals from immigrant families versus those from native families. Also, lower income groups generally were generally more responsive to Medicaid expansions than moderate income groups.

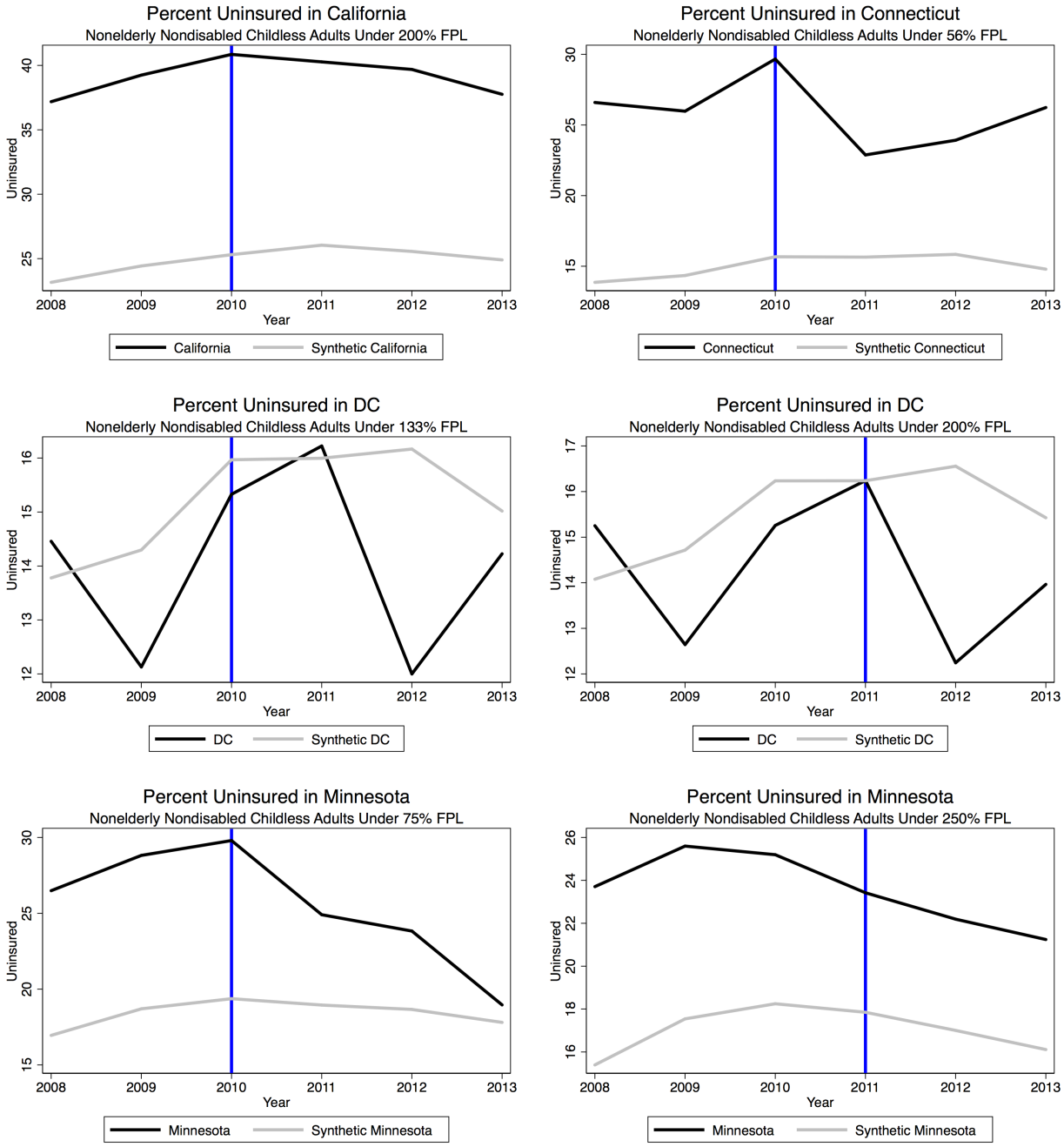
The case studies produced some unusual results. New Jersey and Washington's estimates are signed in a direction that defies initial expectations of expanded eligibility, reflecting the lack of enrollment or even disenrollment from other forms of public health insurance that occurred at the same time as the Medicaid expansions. There is also surprisingly low responsiveness among the lowest income group in California under 25 percent of poverty. The District of Columbia synthetic control state matches are poor, potentially reflecting difficulty in finding a true comparator for an entirely urban, largely minority state.

This study contributes quasi-experimental evidence about the early Medicaid expansions, and provides analyses of effects for young adults and for those of immigrant family background. The future of health care reform is uncertain, and the role of state policy is likely to grow in importance, especially where it concerns health insurance access for low income populations. A natural next stage of this work will be to study the transitions to full ACA Medicaid expansion in the states that built bridges through early expansion programs, and to monitor state responses to a possible repeal or revision of the ACA.

3.7 Figures

Figure A1:

Uninsurance Trends for Treatment and Synthetic Control States



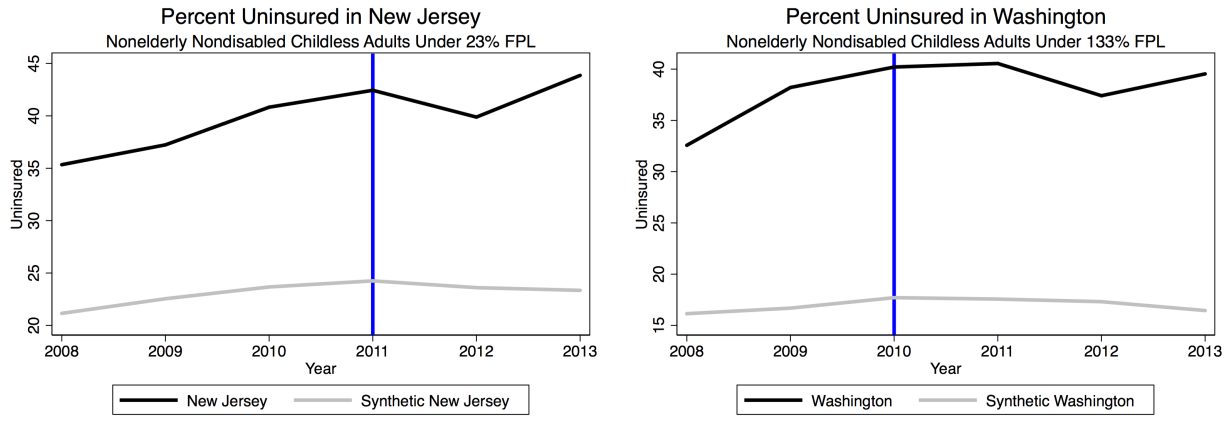
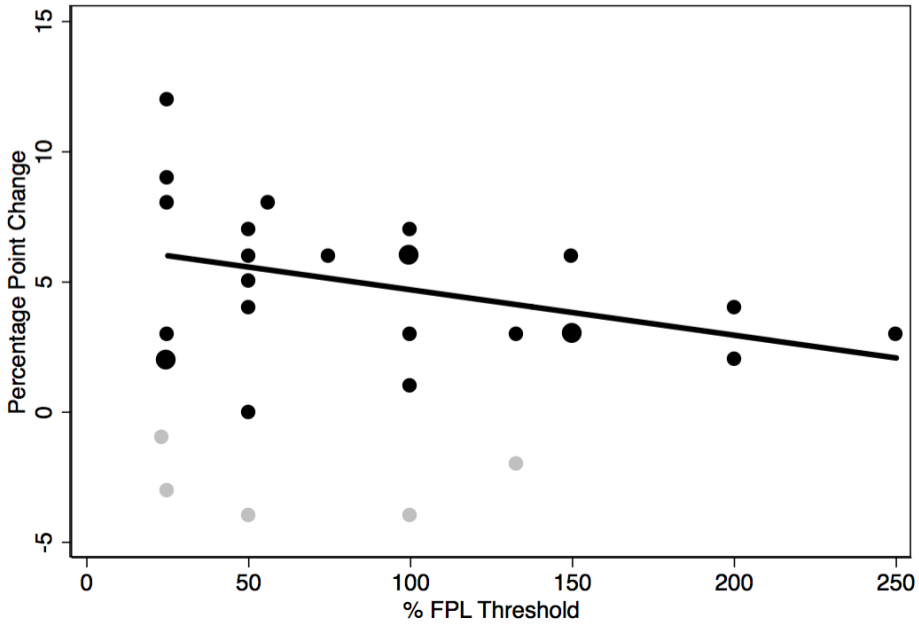


Figure A2:

Point Estimates for Public Insurance by FPL, with Best-Fit Line



Notes: Large black dots represent two estimates. Negatively signed estimates in grey.

3.8 Tables

Table 3.1: Early Medicaid Expansion Policies for Nonelderly, Nondisabled, Childless Adults

State	Implementation Date	Excluded ACS Year	Income Threshold (as %FPL)
California	November 2010	2010	200
Connecticut	April 2010	2010	56
DC	July 2010	2010	133
DC	December 2010	2011	200
Minnesota	March 2010	2010	75
Minnesota	August 2011	2011	250
New Jersey	April 2011	2011	23
Washington	January 2011	2010	133

Notes: The excluded year is dropped from the analyses presented later in this paper, and is typically the same as the implementation year. I make exceptions for policy changes at the very beginning or end of a calendar year. For those cases, I exclude the year containing most of the first six months of early policy implementation and enrollment.

Table 3.2: DD Analyses of Early Medicaid Expansions

	CA 200%	CT 56%	DC 133%	DC 200%	MN 75%	MN 250%	NJ 23%	WA 133%
Panel A								
Public Insurance	0.018***	0.078***	0.028*	0.044***	0.059***	0.032***	-0.009	-0.021***
	(0.002)	(0.008)	(0.013)	(0.011)	(0.006)	(0.004)	(0.006)	(0.005)
Panel B								
Private Insurance	-0.004	-0.021*	-0.020	-0.028*	-0.017*	-0.016***	0.009	-0.004
	(0.003)	(0.009)	(0.013)	(0.012)	(0.007)	(0.005)	(0.007)	(0.006)
Panel C								
Uninsured	-0.015***	-0.066***	-0.006	-0.019*	-0.042***	-0.018***	-0.002	0.024***
	(0.003)	(0.009)	(0.011)	(0.010)	(0.006)	(0.004)	(0.007)	(0.006)
N	496,123	66,402	71,144	81,678	309,642	178,867	143,228	143,440

p<0.05,p<0.01,***p<0.001*

Data source is the American Community Survey 2008-2013. Model names indicate state and income eligibility threshold as a percent of federal poverty (%FPL). Each model is a synthetic control case study difference-in-differences estimate that compares the expansion state to a control state constructed to have similar pre-expansion trends in uninsurance among each policy's targeted population (as defined by income). Outcomes are binary measures of insurance status, and point estimates can be interpreted as percentage point changes. Nonelderly, nondisabled, childless citizen adults with income under the treated state's Medicaid income eligibility threshold are included. Each analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. Standard errors in parentheses are robust to heteroskedasticy.

Table 3.3: DD Analyses of Early Medicaid Expansions: Young Adults 18-26 Years Old

	CA 200%	CT 56%	DC 133%	DC 200%	MN 75%	MN 250%	NJ 23%	WA 133%
Panel A								
Public Insurance	0.015***	0.040***	0.006	0.028*	0.015*	0.017**	-0.016*	-0.016**
	(0.003)	(0.009)	(0.014)	(0.013)	(0.007)	(0.006)	(0.006)	(0.005)
Panel B								
Private Insurance	0.002	-0.032**	-0.015	-0.040**	-0.017*	-0.016*	0.032***	-0.008
	(0.004)	(0.011)	(0.016)	(0.014)	(0.009)	(0.008)	(0.009)	(0.008)
Panel C								
Uninsured	-0.017***	-0.012	0.020	0.022	0.002	-0.004	-0.019*	0.027***
	(0.004)	(0.010)	(0.013)	(0.012)	(0.008)	(0.007)	(0.008)	(0.008)
N	217,735	36,225	35,407	38,137	155,295	65,854	67,669	67,539

p<0.05,p<0.01,***p<0.001*

Data source is the American Community Survey 2008-2013. Model names indicate state and income eligibility threshold as a percent of federal poverty (%FPL). Each model is a synthetic control case study difference-in-differences estimate that compares the expansion state to a control state constructed to have similar pre-expansion trends in uninsurance among each policy's targeted population (as defined by income). Outcomes are binary measures of insurance status, and point estimates can be interpreted as percentage point changes. Nonelderly, nondisabled, childless citizen young adults aged 18-26 with income under the treated state's Medicaid income eligibility threshold are included. Each analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. Standard errors in parentheses are robust to heteroskedasticy.

Table 3.4: Differential Effects for Immigrant and Native Families

	CA 200%	CT 56%	DC 133%	DC 200%	MN 75%	MN 250%	NJ 23%	WA 133%
Panel A								
Public Insurance	-0.020	0.047	-0.123	-0.068	-0.096	-0.033	-0.000	0.026
	(0.013)	(0.044)	(0.086)	(0.064)	(0.054)	(0.038)	(0.034)	(0.028)
Panel B								
Private Insurance	-0.023	0.001	0.010	0.076	-0.001	0.039	-0.006	-0.016
	(0.016)	(0.045)	(0.090)	(0.076)	(0.070)	(0.050)	(0.036)	(0.037)
Panel C								
Uninsured	0.030	-0.043	0.118	0.000	0.114*	0.015	-0.006	-0.022
	(0.016)	(0.046)	(0.072)	(0.067)	(0.056)	(0.043)	(0.038)	(0.035)
N	496,123	66,402	71,144	81,678	309,642	178,867	143,228	143,440

*$p<0.05$,**$p<0.01$,***$p<0.001$

Data source is the American Community Survey 2008-2013. Model names indicate state and income eligibility threshold as a percent of federal poverty (%FPL). Each subgroup model is a synthetic control case study heterogeneous response estimate that compares the expansion state to a control state constructed to have similar pre-expansion trends in uninsurance among each policy's targeted population (as defined by income). Outcomes are binary measures of insurance status, and point estimates can be interpreted as percentage point changes. The reported estimates are the diff-in-diff effects for individuals from immigrant families relative to those from native families. Each analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. Standard errors in parentheses are robust to heteroskedasticy.

Table 3.5: Differential Effects for Immigrant and Native Families: Young Adults 18-26 Years Old

	CA 200%	CT 56%	DC 133%	DC 200%	MN 75%	MN 250%	NJ 23%	WA 133%
Panel A								
Public Insurance	0.007	0.002	-0.076	-0.052	0.035	-0.001	0.010	0.034
	(0.019)	(0.064)	(0.102)	(0.077)	(0.064)	(0.055)	(0.050)	(0.038)
Panel B								
Private Insurance	0.005	-0.030	-0.032	0.091	-0.108	-0.003	-0.040	-0.043
	(0.023)	(0.069)	(0.104)	(0.091)	(0.074)	(0.076)	(0.054)	(0.051)
Panel C								
Uninsured	-0.015	-0.004	0.120*	-0.020	0.075	0.012	0.003	0.022
	(0.023)	(0.064)	(0.060)	(0.072)	(0.061)	(0.065)	(0.049)	(0.045)
N	217,735	36,225	35,407	38,137	155,295	65,854	67,669	67,539

*$p<0.05$,**$p<0.01$,***$p<0.001$

Data source is the American Community Survey 2008-2013. Model names indicate state and income eligibility threshold as a percent of federal poverty (%FPL). Each subgroup model is a synthetic control case study heterogeneous response estimate that compares the expansion state to a control state constructed to have similar pre-expansion trends in uninsurance among each policy's targeted population (as defined by income). Outcomes are binary measures of insurance status, and point estimates can be interpreted as percentage point changes. The reported estimates are the diff-in-diff effects for individuals from immigrant families relative to those from native families. Each analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. Standard errors in parentheses are robust to heteroskedasticy.

Table 3.6: DD Analyses of Early Medicaid Expansions: Various Income Cutoffs

	CA 200%	CT 56%	DC 133%	DC 200%	MN 75%	MN 250%	NJ 23%	WA 133%
Panel A: $\leq 25\% FPL$								
Public Insurance	0.027	0.122**	0.019	0.022	0.079*	0.087*	N/A	-0.031
	(0.016)	(0.047)	(0.069)	(0.071)	(0.039)	(0.043)		(0.033)
N	9,718	2,348	1,655	1,458	9,566	2,282		3,143
Panel B: $\leq 50\% FPL$								
Public Insurance	0.040**	N/A	0.047	-0.003	0.063*	0.070*	N/A	-0.035
	(0.014)		(0.060)	(0.061)	(0.031)	(0.034)		(0.027)
N	12,221		2,144	1,944	12,626	3,207		4,202
Panel C: $\leq 100\% FPL$								
Public Insurance	0.032**	N/A	0.062	0.011	N/A	0.063*	N/A	-0.038
	(0.008)		(0.055)	(0.054)		(0.027)		(0.022)
N	16,907		3,019	2,719		4,818		6,014
Panel D: $\leq 150\% FPL$								
Public Insurance	0.033**	N/A	N/A	0.031	N/A	0.063**	N/A	N/A
	(0.011)			(0.052)		(0.023)		
N	21,233			3,430		6,274		

*$p<0.05$, **$p<0.01$, ***$p<0.001$*

Data source is the American Community Survey 2008-2013. Model names indicate state and income eligibility threshold as a percent of federal poverty (%FPL). Each model is a synthetic control case study difference-in-differences estimate that compares the expansion state to a control state constructed to have similar pre-expansion trends in uninsurance among each policy's targeted population (as defined by income). Outcomes are binary measures of insurance status, and point estimates can be interpreted as percentage point changes. These analyses test policy outcomes for nonelderly, nondisabled, childless citizen adults at 25, 50, 100, and 150% FPL when these income cutoffs are at least 10 percentage points below the treated state's eligibility threshold. Each analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. Standard errors in parentheses are robust to heteroskedasticy.

3.9 Appendix Tables

Table A1: Synthetic Control State Compositions by State Medicaid Expansion

State	Percentage	State	Percentage
California 200% FPL		**Minnesota 250% FPL**	
Texas	.627	North Dakota	.466
Hawaii	.211	Michigan	.235
Colorado	.131	Iowa	.158
New Mexico	.031	Vermont	.141
Connecticut 56% FPL		**New Jersey 23% FPL**	
Vermont	.459	New Hampshire	.555
Virginia	.414	Hawaii	.151
Colorado	.083	Texas	.135
Hawaii	.044	Rhode Island	.108
		Florida	.051
DC 133% FPL		**Washington 133% FPL**	
Rhode Island	.684	Montana	.302
Virginia	.286	Colorado	.227
Alaska	.028	Utah	.189
Hawaii	.001	Hawaii	.106
DC 200% FPL		Virginia	.101
Virginia	.627	Wyoming	.073
Utah	.373		
Minnesota 75% FPL			
North Dakota	.499		
Vermont	.169		
Ohio	.158		
Illinois	.073		
Michigan	.056		
Colorado	.025		
Texas	.018		
Iowa	.002		

Notes: Synthetic control states are constructed as weighted combinations of candidate contributor states for each state Medicaid expansion and its affected population, defined using income as a percentage of federal poverty level (FPL). The candidate control states are AL, AK, AR, CO, DE, FL, GA, HI, ID, IL, IO, KS, KY, LA, MI, MS, MO, MT, NE, NV, NH, NM, NC, ND, OH, OK, RI, SC, SD, TN, TX, WV, WO, UT, VT, VA. Synthetic control states are constructed with the objective of creating parallel pre-expansion uninsurance trends while controlling for Census region; state-level population size, consumer price index, unemployment rates; and individual-level race, sex, ethnicity, and education.

Table A2: California Health Insurance Variable Means by %FPL Cutoff and Family Nativity in Pre-Treatment Period

	I-25	N-25	I-50	N-50	I-100	N-100	I-150	N-150	I-200	N-200
Public insurance	0.23	0.15	0.23	0.15	0.24	0.17	0.22	0.17	0.20	0.16
Private insurance	0.44	0.45	0.46	0.48	0.45	0.48	0.47	0.49	0.50	0.51
Uninsured	0.34	0.40	0.33	0.39	0.34	0.37	0.34	0.36	0.33	0.35
N	1,320	31,563	1,647	40,515	2,301	56,468	2,960	71,656	3,616	84,632

Notes: Means of health insurance variables in the pre-Medicaid expansion period presented. Each column is labeled to denote family immigration type ("I" for immigrant and "N" for native) and income threshold as a percentage of federal poverty. "I-25," for example, refers to individuals from immigrant families under 25%FPL. I omit standard deviations to improve legibility.

Table A3: Connecticut Health Insurance Variable Means by %FPL Cutoff and Family Nativity in Pre-Treatment Period

	I-25	N-25	I-56	N-56
Public insurance	0.45	0.20	0.43	0.18
Private insurance	0.26	0.58	0.29	0.62
Uninsured	0.33	0.25	0.31	0.23
N	155	2,490	217	3,686

Notes: Means of health insurance variables in the pre-Medicaid expansion period presented. Each column is labeled to denote family immigration type ("I" for immigrant and "N" for native) and income threshold as a percentage of federal poverty. "I-25," for example, refers to individuals from immigrant families under 25%FPL. I omit standard deviations to improve legibility.

Table A4: DC Health Insurance Variable Means by %FPL Cutoff and Family Nativity in Pre-Treatment Period

	I-25	N-25	I-50	N-50	I-100	N-100	I-150	N-150	I-200	N-200
Public insurance	0.22	0.31	0.22	0.30	0.26	0.31	0.25	0.32	0.21	0.31
Private insurance	0.67	0.58	0.68	0.60	0.60	0.59	0.62	0.58	0.66	0.59
Uninsured	0.15	0.13	0.14	0.13	0.17	0.14	0.16	0.14	0.16	0.14
N	27	1,376	37	1,710	47	2,150	56	2,540	68	2,818

Notes: Means of health insurance variables in the pre-Medicaid expansion period presented. Each column is labeled to denote family immigration type ("I" for immigrant and "N" for native) and income threshold as a percentage of federal poverty. "I-25," for example, refers to individuals from immigrant families under 25%FPL. I omit standard deviations to improve legibility.

Table A5: Minnesota Health Insurance Variable Means by %FPL Cutoff and Family Nativity in Pre-Treatment Period

	I-25	N-25	I-50	N-50	I-100	N-100	I-150	N-150	I-250	N-250
Public insurance	0.21	0.23	0.21	0.20	0.20	0.22	0.18	0.22	0.15	0.19
Private insurance	0.63	0.55	0.65	0.60	0.62	0.59	0.64	0.59	0.67	0.65
Uninsured	0.15	0.24	0.15	0.22	0.19	0.22	0.20	0.22	0.21	0.20
N	52	5,154	75	7,885	124	12,433	163	16,698	263	25,230

Notes: Means of health insurance variables in the pre-Medicaid expansion period presented. Each column is labeled to denote family immigration type ("I" for immigrant and "N" for native) and income threshold as a percentage of federal poverty. "I-25," for example, refers to individuals from immigrant families under 25%FPL. I omit standard deviations to improve legibility.

Table A6: New Jersey Health Insurance Variable Means by %FPL Cutoff and Family Nativity in Pre-Treatment Period

	I-23	N-23
Public insurance	0.27	0.18
Private insurance	0.34	0.54
Uninsured	0.41	0.30
N	467	10,174

Notes: Means of health insurance variables in the pre-Medicaid expansion period presented. Each column is labeled to denote family immigration type ("I" for immigrant and "N" for native) and income threshold as a percentage of federal poverty. "I-23," for example, refers to individuals from immigrant families under 23%FPL. I omit standard deviations to improve legibility.

Table A7: Washington Health Insurance Variable Means by %FPL Cutoff and Family Nativity in Pre-Treatment Period

	I-25	N-25	I-50	N-50	I-100	N-100	I-133	N-133
Public insurance	0.15	0.18	0.17	0.18	0.19	0.20	0.18	0.20
Private insurance	0.54	0.52	0.52	0.53	0.54	0.53	0.55	0.53
Uninsured	0.32	0.31	0.33	0.30	0.31	0.29	0.30	0.29
N	146	4,964	189	7,023	294	10,449	369	12,593

Notes: Means of health insurance variables in the pre-Medicaid expansion period presented. Each column is labeled to denote family immigration type ("I" for immigrant and "N" for native) and income threshold as a percentage of federal poverty. "I-25," for example, refers to individuals from immigrant families under 25%FPL. I omit standard deviations to improve legibility.

Table A8: Numbers of Nonelderly Nondisabled Childless Adults Eligible for Medicaid

Year	**CA** **200% FPL**	**CT** **56% FPL**	**DC** **133%, 200% FPL**	**MN** **75%, 250% FPL**	**NJ** **23% FPL**	**WA** **133% FPL**
2008	0	0	0	0	0	0
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	5,665,434	258,695	98,955	405,763	0	804,924
2012	5,888,009	259,802	113,664	906,149	472,446	811,725
2013	6,068,344	276,067	119,543	935,359	466,827	820,154

Notes: Author's calculations using American Community Survey 2008-2013. FPLs are calculated using health insurance unit (HIU) income and size. Survey frequency weights are used to produce state population sizes. Eligibility is counted starting the calendar year after implementation of each Medicaid expansion policy.

Table A9: DD Analyses of Dependent Private Coverage to Young Adults Aged 18-26

	Private Coverage
Immigrant Families	0.0172***
	(0.000678)
Native Families	0.0656***
	(0.000180)
Observations	238367126

F-stat of Wald test of linear equivalence of coefficients = 4,767.70

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Data source is the American Community Survey 2008-2013. The model compares 18-25 year olds to 26-35 year olds on private insurance coverage, and is fully interacted by family nativity subgroup. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. The coefficients for the subgroups are subjected to a Wald test of linear equivalence. Standard errors in parentheses are robust to heteroskedasticy.

Table A10: DD Analyses of Early Medicaid Expansions by Family Nativity Subgroup

	CA 200%	CT 56%	DC 133%	DC 200%	MN 75%	MN 250%	NJ 23%	WA 133%
Panel A								
Public Ins (Immigr)	-0.005	0.129**	-0.077	-0.014	-0.025	0.003	-0.008	-0.002
	(0.012)	(0.043)	(0.083)	(0.063)	(0.053)	(0.037)	(0.033)	(0.028)
Panel B								
Public Ins (Native)	0.019***	0.075***	0.031*	0.046***	0.060***	0.033***	-0.010	-0.022***
	(0.002)	(0.008)	(0.013)	(0.012)	(0.006)	(0.004)	(0.006)	(0.005)
Panel C								
Private Ins (Immigr)	-0.022	-0.018	-0.019	0.025	-0.047	0.017	0.011	-0.021
	(0.016)	(0.043)	(0.087)	(0.075)	(0.063)	(0.048)	(0.034)	(0.036)
Panel D								
Private Ins (Native)	-0.003	-0.020*	-0.020	-0.030*	-0.017*	-0.017***	0.009	-0.004
	(0.003)	(0.009)	(0.013)	(0.012)	(0.007)	(0.005)	(0.007)	(0.006)
Panel E								
Uninsured (Immigr)	0.014	-0.118**	0.094	-0.006	0.089	0.000	-0.015	0.009
	(0.016)	(0.045)	(0.071)	(0.067)	(0.052)	(0.043)	(0.037)	(0.034)
N	18,023	2,180	2,019	2,085	6,269	2,071	5,498	4,017
Panel F								
Uninsured (Native)	-0.016***	-0.064***	-0.009	-0.020*	-0.043***	-0.018***	-0.001	0.025***
	(0.003)	(0.009)	(0.011)	(0.010)	(0.006)	(0.004)	(0.007)	(0.006)
N	478,100	64,222	69,125	79,593	303,373	176,796	137,730	139,423

*$p<0.05$,**$p<0.01$,***$p<0.001$

Data source is the American Community Survey 2008-2013. Model names indicate state and income eligibility threshold as a percent of federal poverty (%FPL). Each subgroup model is a synthetic control case study difference-in-differences estimate that compares the expansion state to a control state constructed to have similar pre-expansion trends in uninsurance among each policy's targeted population (as defined by income). Outcomes are binary measures of insurance status, and point estimates can be interpreted as percentage point changes. The subgroups are individuals from immigrant families and individuals from native families. Each analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. Standard errors in parentheses are robust to heteroskedasticity.

Table A11: DD Analyses of Early Medicaid Expansions by Family Nativity Subgroup: Young Adults 18-26 Years Old

	CA 200%	CT 56%	DC 133%	DC 200%	MN 75%	MN 250%	NJ 23%	WA 133%
Panel A								
Public Ins (Immigr)	0.020	0.068	-0.048	-0.007	0.051	0.011	-0.011	0.014
	(0.019)	(0.062)	(0.092)	(0.074)	(0.059)	(0.054)	(0.049)	(0.037)
Panel B								
Public Ins (Native)	0.015***	0.041***	0.008	0.029*	0.015*	0.018**	-0.016*	-0.018**
	(0.003)	(0.009)	(0.014)	(0.014)	(0.007)	(0.006)	(0.006)	(0.006)
Panel C								
Private Ins (Immigr)	0.009	-0.090	-0.053	0.040	-0.132	0.003	0.003	-0.052
	(0.022)	(0.067)	(0.101)	(0.091)	(0.073)	(0.075)	(0.053)	(0.050)
Panel D								
Private Ins (Native)	0.002	-0.032**	-0.015	-0.043**	-0.016	-0.016*	0.033***	-0.007
	(0.004)	(0.011)	(0.016)	(0.015)	(0.009)	(0.008)	(0.009)	(0.008)
Panel E								
Uninsured (Immigr)	-0.032	-0.013	0.123*	-0.004	0.086	-0.004	-0.021	0.051
	(0.022)	(0.063)	(0.061)	(0.074)	(0.061)	(0.064)	(0.047)	(0.045)
N	8,366	1,083	1,003	1,056	3,394	796	2,767	1,997
Panel F								
Uninsured (Native)	-0.017***	-0.011	0.017	0.023	0.002	-0.004	-0.019*	0.027***
	(0.004)	(0.010)	(0.013)	(0.012)	(0.008)	(0.007)	(0.008)	(0.008)
N	209,369	35,142	34,404	37,081	151,901	65,058	64,902	65,542

*$p<0.05$,**$p<0.01$,***$p<0.001$

Note to be added later Data source is the American Community Survey 2008-2013. Model names indicate state and income eligibility threshold as a percent of federal poverty (%FPL). Each model is a synthetic control case study difference-in-differences estimate that compares the expansion state to a control state constructed to have similar pre-expansion trends in uninsurance among each policy's targeted population (as defined by income). Outcomes are binary measures of insurance status, and point estimates can be interpreted as percentage point changes. Nonelderly, nondisabled, childless citizen young adults aged 18-26 with income under the treated state's Medicaid income eligibility threshold are included. Each analysis drops the calendar year containing most or all of the first six months of policy implementation and enrollment. Age, sex, income, marital status, dummies for race, ethnicity, employment status, and education levels are controlled for in the models. Standard errors in parentheses are robust to heteroskedasticy.

Chapter 4

New Eligibility for Children's Public Health Insurance: The Effects of Family Nativity

I thank Laura Wherry for sharing eligibility policy data used in this chapter.

4.1 Study Introduction & Contributions

Immigrant families' eligibility for public programs and their patterns of participation are ongoing topics of debate in policy design, financing, and implementation. Significant expansions of Medicaid and the introduction of the Children's Health Insurance Program (CHIP) in the past two decades had the potential to help many children in need of coverage. The *level* of public health insurance coverage has been higher for immigrant families than for natives in recent years, possibly reflecting targeted outreach to minorities [Aizer, 2007] [Bitler and Hoynes, 2013]. Analyzing immigrant families' responses to past policy changes helps us plan for how future public insurance expansions–or contractions–can impact insurance coverage and health outcomes for a large number of vulnerable children. Unfortunately, we have conflicting evidence about whether there are differential *changes* in public insurance across the two groups due to eligibility expansions. Earlier research finds that children of immigrants are more likely to be eligible for public insurance, but that they are no more responsive to new eligibility than their counterparts in native families [Currie, 2000] [Buchmueller et al., 2008]. A more recent project disagrees, finding significantly higher takeup among children in immigrant families [Bronchetti, 2014].

This project investigates whether new eligibility for Medicaid or other public health insurance produces disproportionately large responses among children of immigrants. The answer matters because there are more than 17 million children of immigrants in the US, and the vast majority are US citizens. The study estimates take-up of Medicaid and the Children's Health Insurance Program among newly eligible children. It makes three contributions to the discussion on public insurance take-up by immigrant families. First, it incorporates additional years of analysis and covers a period, 1996 to 2013, that reflects major fluctuations in policy on public health insurance, and in public sentiment about immigration and immigrants.

Second, this project contributes new causal estimates of children's public insurance take-up that help us understand the range of responses to new eligibility, and how responses differ by family nativity. It complements past work by Currie and by Bronchetti, both of which use the Current Population Survey (CPS). This study uses the Survey of Income and Program Participation (SIPP), which is designed to closely track changes in income, family structure, and participation in safety net programs such as public health insurance. Its main advantages are detailed documentation of income amounts and sources, and short recall periods, as compared with the CPS's year-long recall period. We know from past studies that the SIPP has tended to produce more conservative magnitude estimates of public insurance take-up than comparable analyses using the Current Population Survey. Similar to much of the research that defines the literature on differential public insurance take-up by immigrant families, this study employs instrumental variables to produce causal estimates of how policy changes affect takeup.

Third and finally, this study describes and analyzes children of likely undocumented immigrants. Undocumented immigrants and their families are understudied, but their access to public health insurance is an ongoing point of debate and controversy. Mixed immigration status families, including those with citizen children, may be wary of interfacing with government agencies or opening themselves up to greater scrutiny. The importance of understanding this potential "chilling" effect will increase during the current presidential administration, which has vocally advocated for the removal of undocumented immigrants, and for large reductions in public health insurance and other social safety net programs. This project's results can serve as baseline comparators for how future changes to public health insurance policy affect some of the most vulnerable children in the US.

4.2 Background

This study takes place against a backdrop of increasing eligibility for children's public health insurance, considerable policy variation across state and time, and some specific challenges to enrollment for children in immigrant families.

Children's Eligibility Increased Over Time

Medicaid, the public insurance program introduced in 1965 to cover the cash welfare population of low income single mothers and their children, has tended to increase its pool of eligibles. Federal mandates ensured that, over time, children of all ages under the federal poverty line gained Medicaid eligibility, with children under five years old eligible up to 133 percent of poverty. Prior to this, states had typically set income thresholds below 50 percent of poverty. Additional expansions occurred as laws created new categories of eligible children such as the "medically needy," who qualified due to their high medical costs. In the 1990s, welfare reform decoupled Medicaid and cash welfare, opening the door to further expansions beyond the traditional cash welfare population. Also in that period, the Children's Health Insurance Program (CHIP) was introduced in order to offer public insurance to moderate income uninsured children. Gruber presents a detailed timeline of Medicaid's changes from its inception through the implementation of CHIP; in sum, public insurance expanded eligibility to many more children over time [Gruber, 2003].

State-Time Policy Variation

States have always had some flexibility to define eligibility for public health insurance. Prior to welfare reform, they were able to set income eligibility limits for Medicaid, as well as operate parallel state-funded public insurance programs to cover other categories of children. Federal mandates to expand Medicaid eligibility allowed states some leeway on the timing of policy change, and allowed states the option to include those with higher incomes.

States were also given considerable flexibility in designing their version of CHIP–in fact, the program had originally been called SCHIP, with the S standing for "state." CHIP could be a further Medicaid expansion, a separate state program, or a combination. Some states used CHIP as an opportunity to extend public insurance eligibility to many more children. By the early 2000s, eligibility had expanded in some states to cover children up to 300 or 400 percent of federal poverty. This variation in income eligibility limits across state and time is frequently used for quasi-experimental program evaluations of policy changes.

Challenges for Children in Immigrant Families

Welfare reform also greatly reduced eligibility for social programs among many immigrants.[1] Undocumented immigrants are those who live in the US without a valid visa or permanent residency ("green card") status, and they have always been ineligible for Medicaid and CHIP. However, welfare reform changed the eligibility determination from one concerning documented versus undocumented status to a new concept of "qualified" versus "not qualified." In this new language, qualified immigrants are documented immigrants who meet certain conditions–most notably, at least 5 years as legal permanent residents.[2] Not qualified immigrants included all undocumented, and many documented, immigrants.

The reform also changed how many public programs calculate immigrants' income. Immigrant applicants now have their sponsors' income deemed to be part of their financial resources, reducing potential eligibility. They also risk being designated a public charge and having to pay back, or have their sponsors pay back, funds to cover use of social safety net programs. In reality, programs do not tend to demand repayment from sponsors, but the possibility may have been enough to discourage some immigrant families from applying for programs such as Medicaid and CHIP [Broder et al., 2015]. Welfare reform broadly redefined the notion of immigrant eligibility for public safety net programs, but it devolved responsibility for defining the details of eligibility to states, resulting in "immigration policy federalism" [Bitler and Hoynes, 2013]. The result was high variability in the policy environments for immigrants across states and programs, and confusion about eligibility [Zimmermann and Tumlin, 1999]. Around the same time, a separate 1996 law newly required that benefits-administering agencies report people known to be undocumented to federal immigration authorities [Broder et al., 2015]. The requirement is quite narrow and applies to only a few programs, none of them health related. Still, cross-program chilling effects are plausible when taking into account the confusion generated by the period of welfare reform [Fix and Passel, 1999]. Theory may help predict how these challenges to enrollment counterbalance the potential for eligibility expansions to impact children in immigrant families.

[1] Some of the strictest provisions were later rolled back, but there were significant permanent changes to immigrant eligibility [Bitler and Hoynes, 2013].

[2] The 5-year bar applies specifically to "post-enactment" immigrants who arrive after the law.

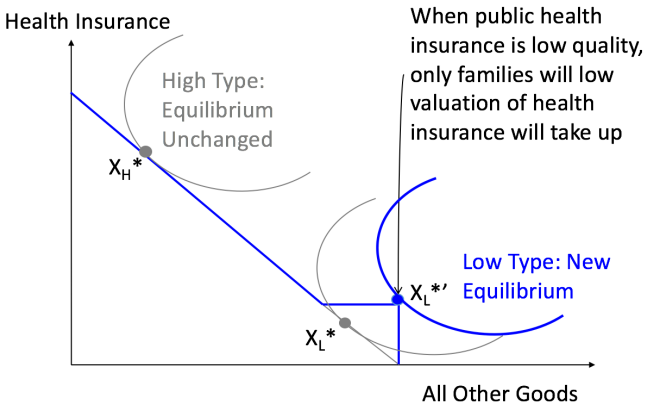
Theory

This study focuses on children's public insurance coverage, but let us assume that a given child's family acts as a unit to make purchasing decisions on her health insurance. In this model, families have set preferences for health insurance relative to all other goods. In Figure A1, those that value health insurance relatively highly are the High Type, and those that value it relatively less than other goods are the Low Type. The availability of public health insurance is shown as a point outside the budget set, and its vertical distance from the x-axis is increasing in quality. Quality of public health insurance can be low, for example, in cases where few providers accept the plan, or only limited medical conditions are covered.

In Figure A1, when a child becomes newly eligible for low quality public health insurance, her family's budget set expands. Her family only takes up the insurance if they are the Low Type. If she was previously covered by private insurance, the takeup reflects crowd-out. If she was previously uninsured, the takeup reduces uninsurance. High Type families do not respond to new eligibility when the public insurance quality is low. Figure A2 shows that High Type families do take up public health insurance if the quality is sufficiently high. We should be more concerned about the possibility of crowd-out when quality is higher.

Figure A1:

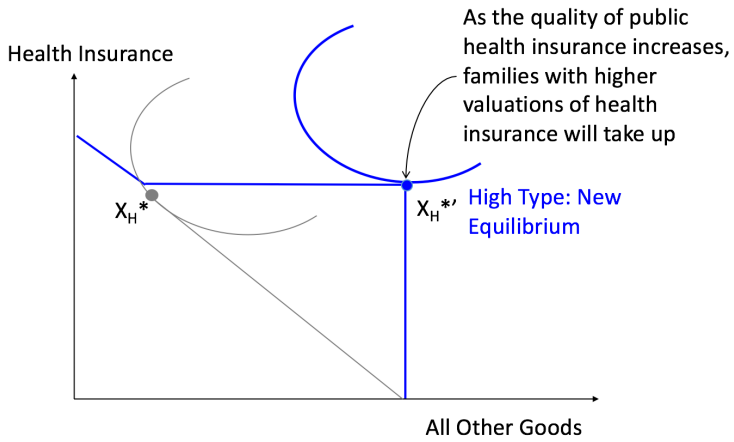
New Eligibility for Low Quality Public Health Insurance



High Type families value health insurance relatively highly compared with all other goods, and Low Type families value health insurance relatively little. New eligibility for public insurance leads to the expanded budget constraint and new optimal bundle for Low Type families, both in blue. High Type families do not take up public insurance.

Figure A2:

New Eligibility for High Quality Public Health Insurance

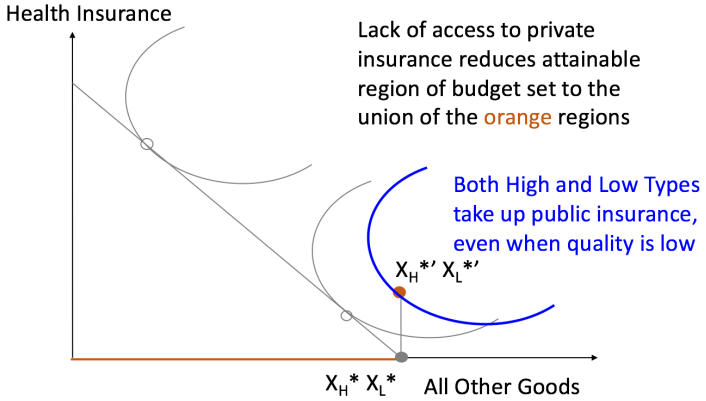


High Type families value health insurance relatively highly compared with all other goods. As the quality of public health insurance increases, new eligibility for public insurance leads to the expanded budget constraint and new optimal bundle for High Type families, both in blue. Low Type families, not shown, take up even when quality is low.

The foregoing framework presents a very general picture of how preferences interact with quality to affect families' decision making when children become newly eligible for public health insurance. However, the relative prices that each individual family faces can differ due to the fact that much private health insurance in the US is provided by employers. If family members work in firms or industries that do not provide health insurance, as is the case for many immigrant families, the relative price of private health insurance can be prohibitively high. Without public health insurance, the family may not be able to access any coverage. Figure A3 presents an extreme case in which families have a limited attainable region of their budget set, and both High and Low Type families optimize at a point with no health insurance. In this scenario, when a child becomes newly eligible for public insurance, her family will take up whether they are High or Low Type because they do not have an outside option. Based on this model, low initial rates of private coverage lead to less crowd-out and greater declines in uninsurance among children of immigrants. It also implies immigrant families behave like Low Types even when they are High Types, and we should expect immigrant families to be more responsive to public insurance eligibility expansions than their native counterparts.

Figure A3:

New Eligibility for Public Insurance when Access to Private Insurance is Low

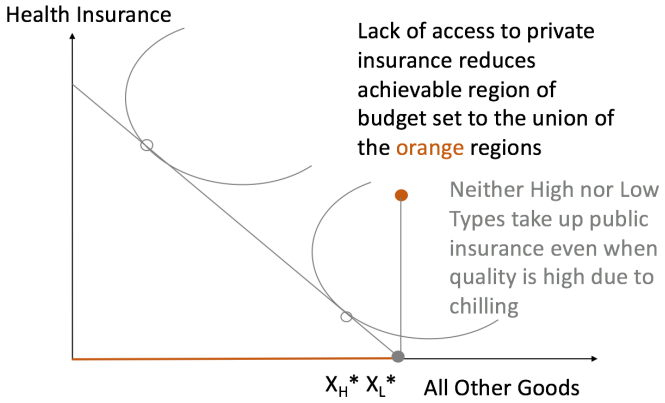


Families that do not have access to private health insurance cannot attain most of the points in the budget set. New eligibility for public health insurance produces a budget set that is the union of the orange line and point. High Type and Low Type families, with high and low relative preferences for health insurance, initially optimize at a point with no health insurance. Both types of families take up public health insurance when it becomes available.

Let us consider an alternate scenario in which immigrant families with low access to private health insurance are *not* responsive to new eligibility for public insurance because of a chilling effect. Chilling refers to a reluctance to participate in a public program, and it can be the manifestation of several distinct fears. Families may have a misunderstanding that immigrants and their children are ineligible for all safety net programs. They may have a fear of being considered a public charge, or – in the case of families with undocumented members – a fear that engaging with government agencies brings a risk of discovery, detention, or deportation. Chilling acts to dampen families' responses to new eligibility for public health insurance. Figure A4 illustrates an extreme version of this, in which immigrant families with low access to private insurance optimize at a point with no health insurance, regardless of whether they are High or Low Type, and they do not move to take up public insurance when it becomes available. Crowd-out is not a concern, but uninsurance rates are not improved for children of immigrants. Here, immigrant families behave like High Types even if they are Low Types, and immigrant families are less likely than native ones to respond to new eligibility for public health insurance. This prediction is the opposite of the one generated by the model without chilling, so we must turn to empirics to determine which of these best describes the behavior of immigrant families.

Figure A4:

New Eligibility for Public Insurance when
Access to Private Insurance is Low and a Chilling Effect Exists



Families that do not have access to private health insurance cannot attain most of the points in the budget set. New eligibility for public health insurance produces a budget set that is the union of the orange line and point. High Type and Low Type families, with high and low relative preferences for health insurance, initially optimize at a point with no health insurance. When there is a chilling effect, neither type of family takes up public health insurance when it becomes available.

4.3 Data and Methods

Sources

This study uses publicly available data from the Survey of Income and Program Participation (SIPP). The SIPP is produced by the US Census Bureau, and is a resource for high quality data on income and health insurance coverage. Public health insurance is known to be underreported in survey data, but the SIPP does better than other surveys [Card et al., 2004]. In particular, the SIPP collects more frequent and detailed data on income sources, and has short recall periods, making it more likely to capture changes in public insurance participation over time. In contrast, the Current Population Survey, which is also frequently used in studies of health insurance coverage, captures health insurance data over a one-year recall period. The SIPP is less well known for its data on immigration, but it is the only nationally representative survey that includes variables on migration history and documentation status. Appendix Table A1 compares the SIPP to other survey data sets used for studying the health of immigrants.

The SIPP is a longitudinal study comprising tri-annual surveys over several years, and it is organized in panels and waves. For each panel, the Census Bureau identifies approximately 40,000 households to participate.[3,4] Each tri-annual wave collects data about the preceding four months, allowing for high frequency measurement of income, family composition, and participation in public safety net programs. The SIPP uses statistical imputation to fill in

[3]The 40,000-household floor is specific to the panels beginning in 1996, which are used in this study.
[4]See Appendix A for details on SIPP sampling methodology.

data for missing observations. This study follows others in using only the fourth month of data to maximize accuracy and reduce seam bias, which results from the tendency of survey responses to be the same within waves, and different across waves. Most waves include a module on a specific social topic. The topical modules relevant for this study are those with questions on immigration history and health care utilization. This study uses the 1996, 2001, 2004, and 2008 SIPP panels. Together, these panels cover most months between March 1996 and November 2013, a period rich in changes to federal and state policy governing public health insurance and immigration.

Variables and Definitions

Children's public health insurance coverage is modeled as the result of eligibility for public insurance. Eligibility is binary, equalling 1 if a child is income eligible for public insurance in a given state and month. However, income eligibility for public insurance is essentially a proxy for poverty, so I employ a 2SLS approach using simulated eligibility, an instrument for raw eligibility commonly used in the Medicaid literature [Currie and Gruber, 1996] [Cutler and Gruber, 1996]. This allows for a causal interpretation of the regression coefficient on eligibility. The models control for sex, race, Latino/a ethnicity, single mother and single father families, and state-by-month unemployment rates. Fixed effects for state, year, and single ages are included, along with all of their two-way interactions. Separate instruments are calculated for each study subgroup. The other outcomes I investigate are private insurance, uninsured status, self-rated health, physician visits, and hospital stays.

The key dependent variable is public insurance of any kind, primarily Medicaid or CHIP. Combining these into a single measure is reasonable, as many state CHIP programs are implemented fully or partially as Medicaid expansions. Moreover, disaggregation is impossible for the 1996 survey panel, which was designed before the creation of CHIP. The dependent variable therefore encodes a child's having public health insurance on at least one of several variables: a Medicaid flag, a categorical measure of other public insurance programs,[5] a CHIP flag, or a categorical measure documenting source of health insurance. As with all of the outcome measures in this study, this variable is binary.

The private insurance dependent variable is encoded as having private coverage reported on either a private insurance flag, or in the categorical measure of health insurance source. The SIPP includes an uninsurance flag, but in the 1996 and 2001 panels, this variable only captures a lack of *private* insurance. This paper instead defines uninsurance as the residual of public coverage, private coverage, and coverage attributed to "other" sources. Eligibility for public insurance, the independent variable that captures policy expansions, is calculated using several inputs. Family size, income, and state are used to determine family

[5]In email communications with the US Census Bureau, I confirmed that CHIP coverage in the 1996 panel is most likely reflected in the Medicaid flag (if CHIP is implemented as a Medicaid expansion) or in the categorical public insurance variable (if CHIP is a separate or combination program).

income as a percentage of the federal poverty line. Child age, state policy, and month are combined with state eligibility policies to determine whether a child is under her state's eligibility threshold for public insurance.

Immigration status is collected in the second wave of each survey panel. Undocumented status is defined using answers to questions about when a respondent came to the United States to live. The survey language defines a goal separate from coming to the US to gain education or training, or to work. Further questions on whether and when the respondent converted to legal permanent residency are used to determine likely undocumented status. The preponderance of immigrants who came to the US to live and never gained permanent residency are undocumented, so I refer to them as undocumenteds, but this proxy measurement will have some error. A recent methodological piece by Bachmeier and coauthors explore the SIPP's imputation against other statistical techniques for missing responses to the questions used to determine immigration status [Bachmeier et al., 2014]. The authors find that the resulting estimates of the undocumented population using the SIPP imputation are comparable to estimates produced by other statistical imputation or demographic accounting methods, though the SIPP tends to produce smaller estimates of the undocumented population. Appendix Table A2 summarizes the types of methods used to determine or estimate legal status.

Since the SIPP collects longitudinal data, some children may not be consistently under a given percentage of federal poverty due to fluctuations in family income or size, or changes to the federal poverty guidelines. The income thresholds used to subset the analysis sample use an ever-under criterion–if a child is ever observed in the data to be under a given poverty threshold, she is included in the analysis.

In addition to the SIPP, data on public health insurance policy and macroeconomic conditions are compiled from a variety of sources, including the US Department of Health and Human Services, the US Bureau of Labor Statistics, the Kaiser Family Foundation, the National Governors Association, and the Urban Institute [US Department of Health and Human Services, 1996] [US Department of Labor, Bureau of Labor Statistics, 1996] [Kaiser Family Foundation, 2015] [National Governors Association, 2015] [Urban Institute, 2015].

Models

Income eligibility is the key predictor of public insurance coverage, and this study focuses on policy changes to income eligibility thresholds. However, income eligibility is essentially a proxy for poverty. Poverty is not randomly assigned, and is correlated with many unobserved characteristics that may also affect our outcomes of interest. These facts undermine the independence between our key independent variable and the error term that we require to causally interpret the model. I use a 2SLS approach to instrument for eligibility and recover causality.

Equation 4.1 is the first stage that produces the fitted values for eligibility. The dependent variable *Elig* is binary, equalling 1 if a child is income eligible for public insurance in a given state and month. This variable is created using family size, family income, state of residence, and child age variables from the survey in combination with federal and state health insurance eligibility policies. Finally, a child is coded as eligible if her family's income is less than the eligibility threshold for her state-month-age cell. Eligibility is predicted by simulated eligibility. This variable is generated using 300 randomly selected, nationally representative children of each age in the first month of the study, for a total of 5,700 children. The inflation-adjusted income and family size of these children are considered in each state-month, and eligibility is calculated for each scenario. Finally, simulated eligibility is defined as the proportion of children eligible in each state-month. The resulting variable is a parametrization of state policy that is not determined by study participants' unobserved characteristics or by state demographic changes over time.

A vector of covariates X controls for sex, race, Latino/a ethnicity, single mother and single father families, and state-by-month unemployment rates. Finally, γ, δ, and ϕ are fixed effects for state, year, and single age, respectively. Two-way interactions between the fixed effects are also included. Following Bronchetti's recent work on immigrant families, but contrasting with earlier work by Currie and others, separate instruments are calculated for each study subgroup in order to make use of more of the available data [Bronchetti, 2014] [Currie, 2000].

$$\begin{aligned} \text{Elig}_{ist} = \zeta_0 + \zeta_1 \text{SimElig}_{st} + \zeta_2 X_{it} \\ +\gamma_s + \delta_t + \phi_p \\ +\gamma_s \cdot \delta_t + \gamma_s \cdot \phi_p + \delta_t \cdot \phi_p + \upsilon_{ist} \end{aligned} \tag{4.1}$$

Equation 4.2 describes the second stage, in which children's public insurance coverage is modeled as the result of eligibility policy expansions. The main dependent variable, $PublicIns$, equals 1 if a study child has Medicaid, CHIP, or other public health insurance coverage for the reported month; and 0 otherwise. The first-stage fitted values for eligibility constitute the independent variable, and the other covariates are the same as in the first stage.

$$\begin{aligned} \text{PublicIns}_{ist} = \beta_0 + \beta_1 \widehat{\text{Elig}_{ist}} + \beta_2 X_{it} \\ +\gamma_s + \delta_t + \phi_p \\ +\gamma_s \cdot \delta_t + \gamma_s \cdot \phi_p + \delta_t \cdot \phi_p + \epsilon_{ist} \end{aligned} \tag{4.2}$$

Estimation

The 2SLS model is applied to the full study sample of all children, children of immigrants, and children of undocumented immigrants. I use Stata 13 statistical software to estimate the 2SLS models of public insurance coverage on these samples. The preferred specification includes fixed effects for state, survey wave, single age groups, and two-way interactions of all fixed effects. Standard errors are clustered at the state level, and are corrected for the heteroskedasticity inherent to non-trivial linear probability models. F-statistics measure the strength of the instrument in the first stage regressions. The models are run for all children, children of all subgroups of interest under 400 percent of federal poverty. Since the 400 percent of poverty threshold includes many moderate income families, I also present analyses restricted to low-income subgroups of children who are under 200 percent of poverty.

4.4 Results

Descriptive Analysis

Table A1 shows summary statistics for all children under 400 percent of federal poverty, alongside the same for children of immigrants, and children of likely undocumented immigrants. There are about 950,000 observations representing all children, 190,000 for children of immigrants, and 37,000 for children of undocumenteds. Each observation is a child-month. In the sample of all children, three-quarters are white, about 17 percent are black, and the remainder are Asian or other races. One-fifth reflect children of immigrants, and one-fifth of those (4 percent) reflect children of undocumenteds. Less than one-fifth are Latino. About 30 percent of the observations are from single parent families. Family income is about $59,000 per year in 2013 dollars, and the average family size is 4.5. The average percentage of the federal poverty level is 234, but over 70 percent of the observations reflect children under 200 percent of poverty at least once in the survey.

Observations for children of immigrants reflect a population that is over half Latino. Compared to all children, these observations reflect a lower percentage black and a higher percentage Asian or other races. The families are somewhat less likely to have a single parent. They are lower income, and have slightly larger family size. Income as a percentage of federal poverty is 206, a bit lower than for all children. For children of undocumented immigrants, the observations are three-quarters Latino, and more likely to be white than the overall analysis sample. The children are less likely to live in a single parent family, family income is around $43,000, and average family size is 5.3 members. Income is quite low at 149 percent of federal poverty, and about 92 percent of observations reflect children ever under 200 percent of poverty.

Eighty-five percent of all children have some form of health insurance, dropping to 76 percent for children of immigrants, and again dropping to 68 percent for children of

undocumenteds. For the first two groups, a majority of insured children have private insurance, but less than half of the insured children of undocumented immigrants have private insurance. This is consistent with past findings that children of undocumented immigrants have less access to private insurance [Zuckerman et al., 2011]. The results for public insurance are just the opposite. Less than half of all insured children report public coverage, and the same is true for insured children of all immigrants. However, the majority of insured children of undocumenteds report public insurance.[6]

[6]Some children in the survey have both public and private insurance, so these two types of coverage are not mutually exclusive.

Table A1: Summary Statistics for Children ≤400% FPL

	All Children			Children of Immigr			Children of Undoc		
Variable	**Mean**	**Std. Dev.**	**N**	**Mean**	**Std. Dev.**	**N**	**Mean**	**Std. Dev.**	**N**
Insurance Vars:									
Any insurance*	0.845	0.362	948,448	0.76	0.427	189,031	0.678	0.467	37,153
Private insurance	0.587	0.492	948,448	0.45	0.498	189,031	0.252	0.434	37,153
Public insurance	0.312	0.463	948,448	0.358	0.479	189,031	0.462	0.499	37,153
Uninsured	0.155	0.362	948,448	0.24	0.427	189,031	0.322	0.467	37,153
Elig	0.517	0.5	948,448	0.638	0.481	189,031	0.806	0.395	37,153
$\widehat{\text{Elig}}$	0.514	0.156	948,448	0.659	0.148	189,031	0.821	0.131	37,153
Demographics:									
Age	9.115	5.334	948,448	8.979	5.344	189,031	8.021	5.322	37,153
Male	0.511	0.5	948,448	0.506	0.5	189,031	0.498	0.5	37,153
Latino/a	0.188	0.391	948,448	0.535	0.499	189,031	0.746	0.435	37,153
White race	0.751	0.432	948,448	0.736	0.441	189,031	0.834	0.372	37,153
Black race	0.17	0.376	948,448	0.091	0.287	189,031	0.06	0.238	37,153
Other race	0.079	0.269	948,448	0.173	0.378	189,031	0.106	0.308	37,153
Family Characteristics:									
Immigr family	0.209	0.407	903,130	1	0	189,031	1	0	37,153
Undoc family	0.041	0.199	903,130	0.197	0.397	189,031	1	0	37,153
Single mom	0.261	0.439	948,448	0.179	0.383	189,031	0.158	0.364	37,153
Single dad	0.035	0.184	948,448	0.022	0.147	189,031	0.016	0.127	37,153
Family size	4.507	1.584	948,448	4.954	1.713	189,031	5.3	1.909	37,153
Family income	$58,982	$49,076	948,448	$55,151	$46,681	189,031	$42,606	$36,857	37,153
%FPL	234	191	948,448	206	175	189,031	149	124	37,153
≤ 200% FPL	0.723	0.448	948,448	0.805	0.396	189,031	0.917	0.275	37,153

Source: SIPP 1996, 2001, 2004, 2008 panels

Legend: $\star$ Some children report having both public and private insurance, so any insurance is less than the sum of these two

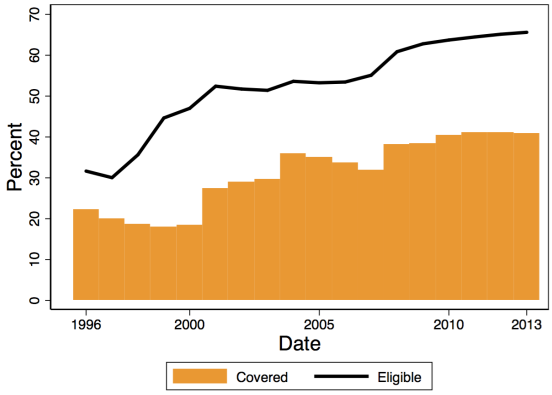
Notes: Each observation is a child-month. Only the most recent reference month in each survey wave is included in the analysis to maximize accuracy and reduce seam bias. In addition to "All Children" who fit the preceding description, "Immigr family" indicates that at least one family member was born abroad. "Undoc family" indicates that at least one family member is likely an undocumented immigrant. Each child is coded as one race only. "FPL" is the federal poverty level.

While public insurance coverage is only reported by 31 percent of all children, 52 percent are income eligible for Medicaid or CHIP. The incomplete takeup of public insurance is well documented, and may reflect low valuation of public coverage by parents, lack of knowledge of the program, stigma, or aversion to the process for signing up for coverage [Blank and Card, 1991]. Figures A5, A6, and A7 illustrate the differences between public insurance eligibility and coverage for the study samples. The proportion covered by public insurance as a percent of the proportion eligible is 56 - 60 percent, a rough measure of the takeup rate. All three groups have uninsured children, so there is opportunity for higher takeup. About one-fifth of the observations for all children are uninsured, rising to about 27 percent for children of all immigrants, and rising again to about 33 percent for children of undocumented immigrants. The simulated eligibility instrument is similar in mean to raw eligibility for all three populations.

Table A2 presents summary statistics for the low-income subsets of all children, children of immigrants, and children of undocumented immigrants. These children are under 200 percent of federal poverty. In addition to being poorer and more heavily Latino than the overall low income sample, children of immigrants reflect very high rates of income eligibility for public health insurance (80 percent), especially when focusing on the children of undocumenteds (87 percent). Uninsurance rates are similar among low-income children as for comparable children under 400 percent of poverty.

Figure A5:

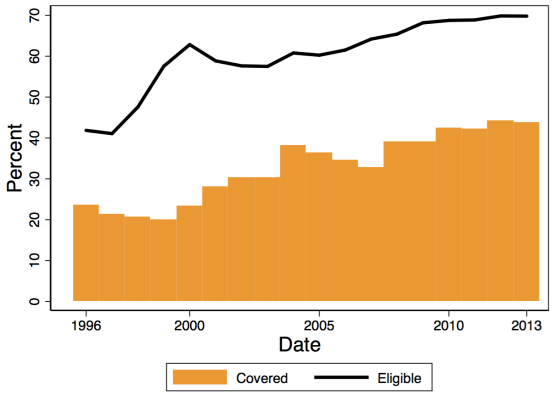
Public Insurance Eligibility and Coverage:
All Children Under 400% of Poverty



Source: SIPP 1996, 2001, 2004, 2008 Panels

Figure A6:

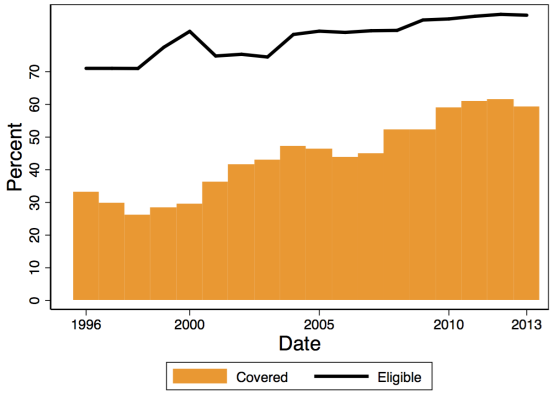
Public Insurance Eligibility and Coverage:
Children of Documented Immigrants Under 400% of Poverty



Source: SIPP 1996, 2001, 2004, 2008 Panels

Figure A7:

Public Insurance Eligibility and Coverage:
Children of Undocumented Immigrants Under 400% of Poverty



Source: SIPP 1996, 2001, 2004, 2008 Panels

Table A2: Summary Statistics for Children ≤200% FPL

	All Children			Children of Immigr			Children of Undoc		
Variable	**Mean**	**Std. Dev.**	**N**	**Mean**	**Std. Dev.**	**N**	**Mean**	**Std. Dev.**	**N**
Insurance Vars:									
Any insurance*	0.809	0.393	685,317	0.726	0.446	152,117	0.665	0.472	34,087
Private insurance	0.469	0.499	685,317	0.355	0.478	152,117	0.211	0.408	34,087
Public insurance	0.403	0.49	685,317	0.421	0.494	152,117	0.492	0.5	34,087
Uninsured	0.191	0.393	685,317	0.274	0.446	152,117	0.335	0.472	34,087
Elig	0.685	0.464	685,317	0.765	0.424	152,117	0.867	0.339	34,087
$\widehat{\text{Elig}}$	0.700	0.173	685,317	0.795	0.154	152,117	0.882	0.128	34,087
Demographics:									
Age	8.92	5.306	685,317	8.887	5.323	152,117	7.994	5.285	34,087
Male	0.511	0.5	685,317	0.505	0.5	152,117	0.496	0.5	34,087
Latino/a	0.227	0.419	685,317	0.601	0.49	152,117	0.774	0.418	34,087
White race	0.717	0.451	685,317	0.759	0.428	152,117	0.844	0.363	34,087
Black race	0.202	0.401	685,317	0.092	0.288	152,117	0.061	0.239	34,087
Other race	0.082	0.274	685,317	0.15	0.357	152,117	0.095	0.293	34,087
Family Characteristics:									
Immigr family	0.235	0.424	648,549	1	0	152,117	1	0	34,087
Undoc family	0.053	0.223	648,549	0.224	0.417	152,117	1	0	34,087
Single mom	0.317	0.465	685,317	0.202	0.401	152,117	0.165	0.371	34,087
Single dad	0.036	0.186	685,317	0.021	0.145	152,117	0.015	0.122	34,087
Family size	4.581	1.692	685,317	5.045	1.758	152,117	5.32	1.901	34,087
Family income	$43,918	$40,268	685,317	$43,523	$37,277	152,117	$36,997	$29,799	34,087
%FPL	171	155	685,317	159	136	152,117	128	98	34,087

Source: SIPP 1996, 2001, 2004, 2008 panels
Legend: $\star$ Some children report having both public and private insurance, so any insurance is less than the sum of these two
Notes: Each observation is a child-month. Only the most recent reference month in each survey wave is included in the analysis to maximize accuracy and reduce seam bias. In addition to "All Children" who fit the preceding description, "Immigr family" indicates that at least one family member was born abroad. "Undoc family" indicates that at least one family member is likely an undocumented immigrant. Each child is coded as one race only. "FPL" is the federal poverty level.

The summary statistics across income thresholds and parent nativity subgroups confirm that there is significant uninsurance among low-to-moderate income children, and that takeup of public health insurance lags behind eligibility. The descriptive statistics also confirm that children of immigrants, especially those with an undocumented family member, are more financially disadvantaged and have higher rates of uninsurance than children overall, making them potentially more responsive to new eligibility for public health insurance.

2SLS Insurance Outcomes

Table A3 presents the 2SLS models for insurance outcomes using simulated eligibility for public health insurance. The topmost panel shows results for the public health insurance outcome. When I combine all children under 400 percent of poverty, the coefficient on eligibility is 0.11, which can be interpreted as an 11 percentage point increase in likelihood of public insurance coverage as a result of new eligibility. This is indistinguishable from the noisier 10 percentage point increase for children of immigrants. In all of the insurance outcome models, results for children of undocumented immigrants are too imprecise to draw firm conclusions from. Finding that children of immigrants are similar to children overall in their responsiveness to public insurance expansions is in line with what most past studies have estimated for comparable populations [Currie, 2000] [Buchmueller et al., 2008] [Gruber and Simon, 2008]. Despite using the same methodology and calculating separate instruments by parent nativity as she does, I cannot replicate Bronchetti's much stronger response among immigrant families using the SIPP [Bronchetti, 2014].

A major concern about public provision of children's health insurance is whether public insurance crowds out private insurance. This could occur by encouraging switching away from private insurance among the already insured, or by attracting uninsured individuals who might otherwise have joined a private plan. Past research confirms presence of crowd-out generated by Medicaid and CHIP, but there is considerable disagreement about the amount. Studies find as little as under 10 percent and as much as 50 percent of the gains in public health insurance coverage are due to switching away from private coverage [Cutler, 2002]. Cutler and Gruber find high rates of crowd-out due to Medicaid expansions [Cutler and Gruber, 1996]. Blumberg and coauthors find that Medicaid expansions mainly prevent children from becoming or remaining uninsured rather than crowding out private coverage [Blumberg et al., 2000]. Ham and Shore-Sheppard attempt to replicate and extend the earlier Cutler-Gruber results, but find little evidence of crowd-out [Ham and Shore-Sheppard, 2005].

The center and bottom panels of Table A3 present findings for private insurance and uninsurance outcomes using the same instrumental variables model, again by subgroup. While I cannot distinguish the estimates from null effects, the coefficients for all children and those of immigrants are signed as expected. The zero estimates for children of

undocumenteds are imprecise enough that we should not be troubled by the fact they are signed incorrectly. For children overall, I cannot rule out an 11 percentage point decline in private coverage, nor a 10 percentage point decline in uninsurance, at the 95 percent level of confidence. Among children of immigrants, eligibility expansions may have produced up to a 15 percentage point decline in private coverage, or up to a 20 percentage point decrease in uninsurance.

Table A4 shows coefficient estimates for the 2SLS estimates among the low-income populations of children. For all children, I find a 12 percentage point increase in public coverage as a result of new eligibility, essentially the same effect size as for the low-to-moderate income children. Children of immigrants reflect an imprecise 9 percentage point increase in public coverage. Since the sample sizes shrink as we focus on the low income children, it should be no surprise that the standard errors for children of undocumenteds grow yet larger. The insurance analyses for children of undocumented immigrants produce noisy estimates that do not yield strong conclusions.

Private coverage declines by 6 percentage points among all children, suggesting a 50 percent crowd-out rate for all low income children. This is on the higher end of the range of crowd-out estimates, and is similar to the findings by Cutler and Gruber [Cutler and Gruber, 1996]. It also suggests that public insurance eligibility expansion policies decrease child uninsurance. The point estimate for uninsurance in the bottom panel of Table A4 is not distinguishable from zero, but I cannot rule out a decrease of up to 10 percentage points. For children of immigrants, both the private insurance and uninsurance models produce correctly signed estimates, but neither coefficient is precisely estimated. For this group, I cannot rule out a 16 percentage point decrease in private insurance, nor a 20 percentage point decrease in uninsurance.

Tables A5 and A6 present some alternate specifications and subgroup analyses, focusing on the public insurance outcome. There are many similarities between the two sets of results, so I focus my comments on Table A5, which considers children under 400 percent of poverty. All of the models include age, state, and wave fixed effects. Indicated versions also include all two-way interactions of those effects, as in the main study analyses. The top table panel considers alternate specifications. The version of the main analyses that only includes age, state, and wave dummies produces more precise estimates for the two groups of children of immigrants, although the interpretation of the coefficients does not change dramatically. For children overall, however, the point estimate is much smaller in magnitude in the limited fixed effects model, with the same standard error size as in the preferred model that includes all two-way interactions of fixed effects. Following those are two models that define family income by incorporating state-level differences in how income is calculated for safety net programs. Following Brown and coauthors, I use state cash welfare rules to proxy for public insurance income calculation [Brown et al., 2014] [Brown et al., 2015]. The results are not much different from the main specification. Since earlier work on immigrant families' participation in public insurance used the same simulated instrument for all samples, I also show results using this method; again, there is not much difference in interpretation.

Table A3: The Effects of New Public Insurance Eligibility on Public Insurance, Private Insurance, and Uninsurance: 2SLS Models with Fixed Effects

Children Under 400% FPL, March 1996 - November 2013

	All Children		**Children of Immigr**		**Children of Undoc**	
	b	se	b	se	b	se
Public Insurance						
PP Change in Coverage	0.11***	(0.03)	0.10+	(0.06)	-0.25	(0.19)
R^2	0.27		0.24		0.29	
N	948,448		188,978		36,982	
Depvar mean:	0.31		0.36		0.46	
Private Insurance						
PP Change in Coverage	-0.03	(0.04)	-0.05	(0.05)	0.06	(0.12)
R^2	0.32		0.33		0.34	
N	948,448		188,978		36,982	
Depvar mean:	0.59		0.45		0.25	
Uninsured						
PP Change in Status	-0.04	(0.03)	-0.08	(0.06)	0.15	(0.19)
R^2	0.06		0.11		0.23	
N	948,448		188,978		36,982	
Depvar mean:	0.16		0.24		0.32	
1^{st} stage F-stats	881		468		634	

Source: SIPP 1996, 2001, 2004, and 2008
Legend: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001
Notes: "FPL" is the federal poverty level. Individual children under 400% FPL at any point in the survey included. Children residing in states that are masked in the survey are excluded, as state policy cannot be modeled for them. ME, ND, SD, VT, WO are masked between 3/1996 - 12/2003; no states are masked beginning 1/2004. Only the most recent reference month in each survey wave is included in the analysis to maximize accuracy and reduce seam bias. In addition to "All Children" who fit the preceding description, "Children of Immigr" is the subgroup of children with at least one immigrant family member, and "Children of Undoc" is the subgroup with at least one immigrant family member who has not adjusted to permanent residency status. Analyses are 2SLS subgroup models using subgroup-specific simulated eligibility instrument; covariates include sex, race dummies, Latino/a indicator, family size, single mother indicator, single father indicator, state-by-year unemployment rates, and %FPL and its square. Fixed effects for age, state, survey wave, and all two-way interactions of these included. Dependent variables are dummies for any public insurance (primarily Medicaid or CHIP), any private insurance including employer-supplied coverage, and uninsurance defined as the residual of public or private coverage; some children have both public and private coverage. Coefficients can be interpreted as percentage point changes in the dependent variable. Standard errors are presented in parentheses; they are robust to heteroskedasticity and clustered by state.

Table A4: The Effects of New Public Insurance Eligibility on Public Insurance, Private Insurance, and Uninsurance: 2SLS Models with Fixed Effects

Children Under 200% FPL, March 1996 - November 2013

	All Children		**Children of Immigr**		**Children of Undoc**	
	b	se	b	se	b	se
Public Insurance						
PP Change in Coverage	0.12***	(0.02)	0.09	(0.06)	-0.31	(0.24)
R^2	0.22		0.21		0.28	
N	685,317		152,038		33,922	
Depvar mean:	0.40		0.42		0.49	
Private Insurance						
PP Change in Coverage	-0.06+	(0.03)	-0.06	(0.05)	0.10	(0.11)
R^2	0.25		0.25		0.29	
N	685,317		152,038		33,922	
Depvar mean:	0.47		0.36		0.21	
Uninsured						
PP Change in Status	-0.04	(0.03)	-0.06	(0.07)	0.15	(0.24)
R^2	0.06		0.11		0.25	
N	685,317		152,038		33,922	
Depvar mean:	0.19		0.27		0.36	
1^{st} stage F-stats	566		291		168	

Source: SIPP 1996, 2001, 2004, and 2008
Legend: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001
Notes: "FPL" is the federal poverty level. Individual children under 200% FPL at any point in the survey included. Children residing in states that are masked in the survey are excluded, as state policy cannot be modeled for them. ME, ND, SD, VT, WO are masked between 3/1996 - 12/2003; no states are masked beginning 1/2004. Only the most recent reference month in each survey wave is included in the analysis to maximize accuracy and reduce seam bias. In addition to "All Children" who fit the preceding description, "Children of Immigr" is the subgroup of children with at least one immigrant family member, and "Children of Undoc" is the subgroup with at least one immigrant family member who has not adjusted to permanent residency status. Analyses are 2SLS subgroup models using subgroup-specific simulated eligibility instrument; covariates include sex, race dummies, Latino/a indicator, family size, single mother indicator, single father indicator, state-by-year unemployment rates, and %FPL and its square. Fixed effects for age, state, survey wave, and all two-way interactions of these included. Dependent variables are dummies for any public insurance (primarily Medicaid or CHIP), any private insurance including employer-supplied coverage, and uninsurance defined as the residual of public or private coverage; some children have both public and private coverage. Coefficients can be interpreted as percentage point changes in the dependent variable. Standard errors are presented in parentheses; they are robust to heteroskedasticity and clustered by state.

Table A5: Additional Results for Public Insurance Coverage Outcome

Children Under 400% FPL

	All Children		**Children of Immigr**		**Children of Undoc**	
	b	se	b	se	b	se
Alternate Specifications						
Limited FEs (age, state, wave only)	0.02	(0.03)	0.08*	(0.04)	0.16	(0.11)
Preferred (all 2-way interactions included)	0.11***	(0.03)	0.10+	(0.06)	-0.25	(0.19)
Income Disregards Limited FEs	0.02	(0.03)	0.08*	(0.04)	0.18	(0.12)
Income Disregards All FEs	0.11***	(0.03)	0.12*	(0.06)	-0.13	(0.18)
Same Instrument Limited FEs	0.02	(0.03)	0.09*	(0.04)	0.20	(0.12)
Same Instrument All FEs	0.11***	(0.03)	0.12+	(0.06)	-0.09	(0.17)
Subgroup Analyses						
Balanced Panel Limited FEs	0.02	(0.04)	0.14**	(0.04)	0.32*	(0.15)
Balanced Panel All FEs	0.05	(0.04)	0.09	(0.08)	-0.19	(0.27)
Citizen Children Limited FEs	0.03	(0.05)	0.11	(0.07)	0.19	(0.27)
Citizen Children All FEs	-0.04	(0.08)	-0.18	(0.26)	-0.12	(0.48)

Source: SIPP 1996, 2001, 2004, and 2008

Legend: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Notes: "FPL" is the federal poverty level. Individual children under 400% FPL at any point in the survey included. Children residing in states that are masked in the survey are excluded, as state policy cannot be modeled for them. ME, ND, SD, VT, WO are masked between 3/1996 - 12/2003; no states are masked beginning 1/2004. Only the most recent reference month in each survey wave is included in the analysis to maximize accuracy and reduce seam bias. In addition to "All Children" who fit the preceding description, "Children of Immigr" is the subgroup of children with at least one immigrant family member, and "Children of Undoc" is the subgroup with at least one immigrant family member who has not adjusted to permanent residency status. Analyses are 2SLS subgroup models using subgroup-specific simulated eligibility instrument unless indicated; covariates include sex, race dummies, Latino/a indicator, family size, single mother indicator, single father indicator, state-by-year unemployment rates, and %FPL and its square. "Limited FEs" indicate that only state, age, and wave fixed effects are included, whereas "Preferred FEs" also include all two-way interactions of state, age, wave. Dependent variable is a dummy for any public insurance (primarily Medicaid or CHIP). Coefficients can be interpreted as percentage point changes in the dependent variable. "Income Disregards" refers to a model using state-specific definitions of how income is calculated for public insurance. "Same Instrument" is a model in which all subgroups have the same simulated eligibility instrument constructed from all children under 400% FPL. "Balanced Panel" is a model restricted to children who are observed in all waves of their survey panels. "Citizen Children" is a model restricted to known citizen children–this model only covers the years 2004 - 2013 due to data limitations. Standard errors are presented in parentheses; they are robust to heteroskedasticity and clustered by state.

Table A6: Additional Results for Public Insurance Coverage Outcome

Children Under 200% FPL

	All Children		**Children of Immigr**		**Children of Undoc**	
	b	se	b	se	b	se
Alternate Specifications						
Limited FEs (age, state, wave only)	0.05+	(0.02)	0.08+	(0.04)	0.17	(0.13)
Preferred FEs (all 2-way interactions included)	0.12***	(0.02)	0.09	(0.06)	-0.31	(0.24)
Income Disregards Limited FEs	0.05+	(0.03)	0.10*	(0.04)	0.20	(0.14)
Income Disregards All FEs	0.12***	(0.02)	0.08	(0.07)	-0.23	(0.21)
Same Instrument Limited FEs	0.04	(0.03)	0.13*	(0.06)	0.24	(0.15)
Same Instrument All FEs	0.12***	(0.02)	0.13*	(0.06)	-0.14	(0.22)
Subgroup Analyses						
Balanced Panel Limited FEs	0.08**	(0.03)	0.18***	(0.04)	0.36*	(0.18)
Balanced Panel All FEs	0.10*	(0.04)	0.12	(0.08)	0.24*	(0.10)
Citizen Children Limited FEs	-0.01	(0.05)	0.10	(0.10)	0.33	(0.27)
Citizen Children All FEs	0.06	(0.10)	-0.07	(0.32)	1.36	(0.90)

Source: SIPP 1996, 2001, 2004, and 2008

Legend: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Notes: "FPL" is the federal poverty level. Individual children under 200% FPL at any point in the survey included. Children residing in states that are masked in the survey are excluded, as state policy cannot be modeled for them. ME, ND, SD, VT, WO are masked between 3/1996 - 12/2003; no states are masked beginning 1/2004. Only the most recent reference month in each survey wave is included in the analysis to maximize accuracy and reduce seam bias. In addition to "All Children" who fit the preceding description, "Children of Immigr" is the subgroup of children with at least one immigrant family member, and "Children of Undoc" is the subgroup with at least one immigrant family member who has not adjusted to permanent residency status. Analyses are 2SLS subgroup models using subgroup-specific simulated eligibility instrument unless indicated; covariates include sex, race dummies, Latino/a indicator, family size, single mother indicator, single father indicator, state-by-year unemployment rates, and %FPL and its square. "Limited FEs" indicate that only state, age, and wave fixed effects are included, whereas "Preferred FEs" also include all two-way interactions of state, age, wave. Dependent variable is a dummy for any public insurance (primarily Medicaid or CHIP). Coefficients can be interpreted as percentage point changes in the dependent variable. "Income Disregards" refers to a model using state-specific definitions of how income is calculated for public insurance. "Same Instrument" is a model in which all subgroups have the same simulated eligibility instrument constructed from all children under 400% FPL. "Balanced Panel" is a model restricted to children who are observed in all waves of their survey panels. "Citizen Children" is a model restricted to known citizen children–this model only covers the years 2004 - 2013 due to data limitations. Standard errors are presented in parentheses; they are robust to heteroskedasticity and clustered by state.

The bottom panel of Table A5 presents subgroup analyses. The longitudinal survey data feature some attrition, which can lead to bias if attriting respondents differ from remaining ones in ways correlated with both eligibility and public insurance takeup. The balanced panel analyses focus on the approximately 40 percent of the study children who are present in every wave. In addition to removing attritors, this approach excludes children who enter the survey panel in later waves, such as those who are born later. The balanced panel results for all children are much smaller in magnitude, but results for children of immigrants and children of undocumenteds are large in the version with limited fixed effects. This suggests that non-attriting immigrant families may be more responsive to public insurance expansions, although the results do not persist when all interactions of fixed effects are included. The final models focus on known citizen children during 2004 - 2013, a period that unfortunately excludes CHIP implementation. Citizenship data are not available for children under 15 years old in earlier panels of the survey. About 97 percent of the children under 400 percent of poverty are citizens, including 88 percent of children of immigrants, and 76 percent of children with an undocumented parent. The results from the citizen children analyses are noisy and do not contribute much additional information.

4.5 Conclusion

Children of immigrants have higher levels of public insurance coverage than those of natives, and higher levels of uninsurance as well, confirming that immigrant families have less access to private insurance. Becoming newly eligible for public insurance produces a 11 to 12 percentage point increase in public coverage among children of immigrants, which is statistically indistinguishable from the 9 to 13 percentage point increase among children of the native-born. The results still argue against a strong chilling effect. Bronchetti uses the Current Population Survey and finds that children in immigrant families were more responsive than children in native families to public health insurance policy expansions [Bronchetti, 2014]. These differences may partially be attributable to using different survey datasets, a phenomenon that has been documented [Gruber and Simon, 2008] [Ham and Shore-Sheppard, 2005]. This study contributes analyses of a more recent time period up to 2013, and offers new causal estimates that are in line with findings from studies of earlier policy expansions that found that children of immigrants are not more responsive to new eligibility [Currie, 2000] [Buchmueller et al., 2008]. All of these studies contribute to our understanding of immigrant families and their children's health insurance coverage, and their divergences and agreements are important for understanding the full range of estimated responses.

This study also produces descriptive statistics and quasi-experimental analyses of children of likely undocumented immigrants. The regressions are too imprecise to yield firm conclusions, but we were still able to learn about the characteristics of this group. The SIPP data provided a picture of the children of undocumenteds as financially

disadvantaged and less likely the the other two groups to have health insurance. Undocumented families have especially low access to private health insurance for their children. Children in undocumented families will constitute an increasingly large share of the shrinking pool of uninsured children due to the exclusion of undocumented immigrants from all provisions of healthcare reform, making this subgroup important to understand and research further. The chilling hypothesis, which we are able to reject in the overall analyses of children of immigrants, may be significantly more important for children with undocumented family members. Continued research on this population is highly important, with coincident federal changes to healthcare, immigration policy, and the social safety net predicted for the near future.

4.6 Appendix Tables

Table A1: Survey Datasets to Analyze the Health of Undocumented Immigrants†

Survey	**Years**	**Freq**	**Natl Repr**	**Direct Questions◇**
Current Population Survey (CPS)	1940 -	annual	X	
National Health Interview Survey (NHIS)	1957 -	annual	X	
American Community Survey (ACS)	2005 -	annual	X	
Survey of Income and Program Participation (SIPP)	**1984 -**	**every 4 mo***	**X**	**X**
New Immigrant Survey (NIS)	2003, 2007	twice		X
Immigrant Integration and Mobility in Metropolitan Los Angeles (IIMMLA)	2004	once		X
California Health Interview Survey (CHIS)	2001 -	every 2 yrs		X

† Not an exhaustive list; however, SIPP is the only nationally representative survey with questions about legal residency

◇ Survey asks explicit questions about legal residency status

* Core data collected every 4 months, but immigration data collected once per panel; panels last 2.5 - 4.5 years

Table A2: Methods to Determine Undocumented Status from Survey Data

Method	**Description**	**Comments**	**Examples**
Direct questions	Uses data on arrival visa and later adjustment to permanent residency to create proxy for legal residence	Proxies are imperfect and there may be missing observations; can be combined with indirect methods	[Hall et al., 2010] [Greenman and Hall, 2013] *Both use SIPP*
Logical deduction	Uses information from other variables such as occupation to make judgments about which immigrants are likely to be legal residents	Typically used in conjunction with other methods	*Possibly all studies on undocumented immigrants combine this method with another*
Demographic accounting	Uses outside estimates of all legally present immigrants from estimates of all immigrants	Requires very careful accounting; usually combined with other indirect methods	[Passel, Jeffrey S. et al., 2014] *Subtracts Dept Homeland Security estimates of legally present immigrants from estimates of all foreign born in ACS and CPS, then imputes individual legal status using a donor dataset*
Statistical imputation	Uses donor data set with direct questions about legal residency status to statistically estimate legal status of respondents in target data set	The exact imputation methods are many and varied; can be used in conjunction with other methods	[Capps, Randy et al., 2013] *Uses SIPP to impute immigration status in the ACS*

Appendix A: SIPP Sampling

The Census Bureau selects the SIPP sample in two stages. Primary sampling units (PSUs) are selected, and then address units are selected within sampled PSUs. The frame for the selection of sample PSUs consists of a listing of counties and independent cities. Counties can constitute a PSU by themselves, or be grouped with adjacent counties to form PSUs. Next, demographically and economically similar small PSUs are grouped within states. Address units are selected from five non-overlapping Census sampling frames known as the unit, area, group quarters, housing unit coverage, and new construction frames. For each sample PSU, the associated addresses are grouped into clusters. Finally, the clusters are sampled, and households in the selected clusters compose the SIPP panel. The panels in this study oversample low-income households,[7] but replicate weights can be used to produce nationally representative samples.

The SIPP is a longitudinal survey that tracks people over time. Original sample members are interviewed tri-annually over the duration of the panel. If original sample members move to new addresses, interviewers attempt to locate and interview them. In addition, any new adults living with original sample members in subsequent waves are interviewed. All individuals are recorded in the SIPP roster, but only those aged fifteen years or older respond to the detailed questions in the core and topical modules. Children who turn fifteen during the course of the longitudinal study join the surveyed group once they are of age.

Panel households are randomly divided into four roughly equal rotation groups, and the SIPP field staff survey these groups in succession. As mentioned, each survey collects data on the previous four months; the survey month is essentially "month five." Thus, participants are visited every four months, but the specific month of survey and the specific months referenced for data collection will differ by rotation group. As a result, each SIPP panel must be translated from a structure of waves, survey months, and reference months to one of calendar months. To illustrate, the 1996 panel's Wave 1 occurs between April and July 1996, and its Wave 2 occurs between August and November 1996. The following is a partial accounting of the data collection for those two waves.

- The first rotation group completes the Wave 1 survey in April 1996, and its members report data on December 1995 to March 1996 (the past four months relative to the survey month)
- The second rotation group completes Wave 1 in May 1996, and its members report on January to April 1996.
- The third rotation group completes Wave 1 in June 1996, and its members on February to May 1996.

[7] Early SIPP panels were nationally representative, but this study does not use those panels.

• The fourth and final rotation group completes Wave 1 in July 1996, and its members report on March to June 1996.
• The first rotation group completes Wave 2 in August 1996, and its members report on April to July 1996.

For the purposes of analyzing a change in policy in April 1996, for example, the above schedule shows that the relevant data for that month come from the following four sources.

• Wave 1: the fourth reference month of the second rotation group
• Wave 1: the third reference month of the third rotation group
• Wave 1: the second reference month of the fourth rotation group
• Wave 2: the first reference month of the first rotation

Chapter 5

Conclusion

The preceding three studies provide new evidence about how immigrants and their children interact with government safety net programs. A key finding is that children of immigrants are just as likely to respond to new eligibility for public health insurance as their counterparts in native families. This holds for minor children, whose participation may be more susceptible to chilling effects based on family members' documentation status, as well as for adult citizen children of immigrant background, for whom we would not expect chilling to be a driving concern. However, children of immigrants are more likely to receive WIC and less so to receive food stamps, even though the latter program is more generous and offers benefits for the entire family, including older children and men. Immigrant families' levels of participation in programs is determined by many factors, and the studies presented in this dissertation pose many new questions even as they provide answers to others.

The studies here all take place before 2014, and there have been many changes since that time. The American healthcare landscape was being transformed as the ACA continued its rollout, but this may be reversed if healthcare reform is repealed. The political climate has also changed a great deal, and there is, at time of writing, much uncertainty about the future of healthcare reform as well as the role of immigrants in civil society. A refugee crisis in the Middle East, talk of building a wall between the US and Mexico, and increased deportations of immigrants currently in the US all contribute to a sense that the coming years might transform the availability and appeal of government programs for immigrants and their children. Future projects should analyze changes in program participation associated with any new federal immigration policy or a potential healthcare repeal, as well as state responses to federal contractions. The results presented here can serve as baselines for this work in the coming years.

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