NBER WORKING PAPER SERIES

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Working Paper 27811
http://www.nber.org/papers/w27811

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
September 2020

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NBER Working Paper No. 27811
September 2020
JEL No. H0,I31,I38

ABSTRACT

We investigate the gap in welfare use between immigrants and natives over a 24-year period using the Annual Social and Economic Supplement of the Current Population Survey from 1995-2018, spanning periods of economic recessions and recoveries, changes in welfare policy regimes, and policies towards immigrants. A novel contribution of our research is to adopt the Oaxaca-Blinder decomposition analysis to study the effects of demographic factors, macroeconomic trends and policy on welfare use gap between immigrants and natives. Our analysis leads to three main findings: one, if immigrants had the same demographic characteristics as natives their participation in means-tested programs would have been much less overall and much below those of natives. This finding holds true across broader measures of welfare receipt capturing cash and near cash programs and health insurance as well as participation in five specific safety net programs. It also holds true across periods of economic recessions and recovery. Second, we find evidence that the business cycle impacts immigrant and native welfare participation differently. Immigrant participations in Temporary Assistance to Needy Families, Supplemental Nutritional Assistance Program and State Children's Health Insurance Program are more sensitive to the business cycle than native participations. Three, we find that changes in program eligibility explain only a modest proportion of the immigrant-native gap in welfare use. A possible explanation for this finding is that changes in eligibility rules have affected only specific immigrant populations (e.g. new immigrants) whereas our analysis pertains to all immigrants.

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Introduction

We investigate the gap in welfare use between immigrants and natives over a 24-year period, using the Annual Social and Economic Supplement of the Current Population Survey from 1995-2018, spanning periods of economic recessions, including the Great Recession, and recoveries, changes in welfare policy regimes, and policies towards immigrants. A novel contribution of our research is to adopt the Oaxaca-Blinder decomposition analysis to extrapolate the sources of differences in welfare use gap between the two groups. We specifically examine the role of demographic factors, macroeconomic trends, and policy in "explaining" welfare use gap between immigrants and natives.

In 1996, the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) dramatically changed the rules of welfare participation by imposing restrictions on welfare use to a maximum of five years, instituting work requirements on participants and sanctions for noncompliance. As we describe in detail below, PRWORA imposed additional restrictions on immigrant eligibility for welfare programs. Partly as a result of these changes and partly on account of other demographic and macroeconomic factors, immigrant and native participation in cash and near-cash programs in the United States has seen dramatic swings since 1996. During 1994-1996, three years prior to reform, low-educated[1] immigrant-headed households with children were 5 percentage points more likely than similar households headed by natives to receive assistance under at least one of the three primary cash and near-cash transfer programs, namely, Temporary Assistance to Needy Families (TANF), Supplemental Nutritional Assistance Program (SNAP), and Supplemental Security Income (SSI). Both groups

[1] Low-educated are defined as individuals with a high-school or lower education.

experienced sizable reductions in participation in the following five years, with the decline being greater among immigrants, such that in the early years of the 2000s they were less likely than natives to receive these benefits. Participation inched upward for both groups during 2000-2006, followed by a sharp rise during the Great Recession, and a modest fall in the recent recovery (Figure 1, top panel). A broader definition of public assistance that includes public health insurance coverage shows similar swings but with a clear trend depicting increasing uptake for both groups over the years (Figure 1, bottom panel).

What explains these trends? To what extent is the gap in receipt of means-tested programs among immigrant and native low-educated households with children due to differences in demographic characteristics of the two groups; to what extent due to the business cycle and its diverse impact on the two groups; to what extent due to welfare policy changes specific to immigrants, to what extent on account of changes in local immigration enforcement and other policies specific to immigrants; and to what extent due to differences in the geographic locations of the two groups? While a number of studies have compared trends in immigrant and native use of means-tested programs (e.g. Bitler and Hoynes, 2013; Borjas, 2011), there is no research that systematically studied the effects of all the above-mentioned factors on welfare use gap between immigrant and natives over the past quarter century.

In this paper, we investigate the association between immigrant-native participation gap in welfare programs and a range of policies depicting immigrant eligibility for safety-net programs, and other policies aimed at immigrant inclusion (state Dream Act, eligibility for driver's license), and policies aimed at immigrant exclusion (E-verify, local immigration enforcement, and Secure Communities Program). Using the Oaxaca-Blinder "decomposition"

analysis, we examine to what extent the gap in welfare use between the two groups is on account of differences in demographic characteristics, geographic locations, macro-economic trends, welfare policy variations, local immigration policies and to what extent on account of differences in "sensitivity" of the two groups to these factors.

We start the analysis with two summary outcomes of welfare participation in low-educated households with children. The first outcome is a narrow measure of public assistance capturing take-up of at least one of the three main cash and near-cash transfer programs: TANF, SNAP, and SSI. The second outcome is a broader measure and captures receipt of cash/near-cash programs and public health insurance (Children's Health Insurance Program [CHIP] and Medicaid).[2] For brevity, throughout the paper we use the term 'cash and near-cash transfer' programs to describe the first outcome and 'safety net' programs to describe the second. We also present results for each of these five programs separately.

Briefly, our analysis leads to the following findings: one, if immigrants had the same characteristics as natives their participation in means-tested programs would have been much less overall and much below those of natives. This finding holds true across the two summary measures of welfare receipt as well as five specific safety net programs. It also holds true across periods of economic recession and recovery. Second, we find evidence that the business cycle impacts immigrant and native welfare participation differently. Immigrant participations in TANF, SNAP and SCHIP are more sensitive to the business cycle than native participations. Three, we find that changes in program eligibility explain only a modest proportion of the

[2] Specifically, the second outcome is whether the household received any of the five programs: TANF, SSI, SNAP, Medicaid, and SCHIP.

immigrant-native gap in welfare use. A possible explanation for this finding is that changes in eligibility rules have affected specific immigrant populations (e.g. new immigrants) whereas our analysis pertains to all immigrants.

Policies toward Immigrants' Eligibility for Means-tested Programs

An important factor associated with differences in welfare use among immigrants and natives is the welfare eligibility rules the two groups encounter. In 1996, the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) transformed immigrant eligibility for safety net programs. Prior to 1996, legal immigrants and naturalized citizens faced the same eligibility rules as the US-born. PRAWORA changed legal immigrant eligibility for means-tested programs by splitting them into groups based on citizenship and period of arrival. New immigrants living in the United States for less than five years (new immigrants hereafter) were banned from federally funded means-tested programs. But for immigrants who had lived in the country for five or more years (old immigrants hereafter), the federal government allowed state governments' discretion to use federal funds for TANF, Medicaid, and SNAP benefits.[3] Most, but not all, states granted eligibility to old immigrants. A number of states also used their own funds to create substitute programs for new immigrants. The welfare eligibility rules for naturalized citizens remained the same as those for US-born households. The undocumented and temporary residents were never eligible for means-tested programs and the 1996 reform did not change their eligibility.

[3] In the case of SSI, federal law made immigrant eligibility contingent on 40 quarters of work, irrespective of their duration of stay in the US, but five states used own funds to cover other immigrants (Kaushal, 2011). The Federal law also imposed work requirements on SNAP eligibility for able-bodied adults without dependents.

A number of legislations following PRWORA restored immigrants' eligibility for some of the programs. First, responding to the public outcry at the perceived injustice of denying certain benefits to immigrants, the Balanced Budget Act of 1997 restored Supplemental Security Income (SSI) benefits and Medicaid to all legal immigrants who were receiving SSI pre-enactment. The bill also restored eligibility to pre-enactment elderly and disabled immigrants (Dodson, 2001; Fix et al., 2009; Bitler & Hoynes, 2013; Haider et al., 2004; Kaushal 2011). Second, the Agricultural Research, Extension and Education Reform Act of 1998 granted food stamp eligibility to elderly and disabled immigrants who were receiving food stamp pre-enactment as well as pre-enactment child immigrants. Nearly one-third of immigrants who had lost food stamp benefits under PRWORA had their benefits restored via this act (Haider et al., 2004). Third, the Farm Security and Rural Investment Act of 2002 further restored food stamps to disabled immigrants, immigrant children, and adults with five years of legal residence.

In 1997, the Children's Health Insurance Program (CHIP) followed the same principle as PRWORA of granting legal immigrant children public health insurance if they were in the country for at least five years. Several states extended SCHIP (State CHIP) to immigrant children in the country for less than five years. By 2002, when most states had implemented the key provisions of the 1996 welfare law, immigrant eligibility for TANF, SNAP, SSI, and public health insurance differed depending on their state-of-residence and duration of stay. Post-2002 changes have been few with the exception of the 2009 SCHIP reauthorization that lifted the 5-year bar to cover all legal immigrant children and pregnant women (Fix et al., 2009; Bitler & Hoynes, 2013). The 2010 Patient Protection and Affordable Care Act (ACA) followed the PRWORA guiding principle and restricted Medicaid eligibility to citizens and permanent legal

residents who have been in the US for more than five years, but a few states issued exemptions to cover certain excluded populations (Pedraza, Nichols, & LeBrón, 2017).

Macro-Factors Affecting Welfare Use: Economic Cycles and Immigration Policies

Trends in receipt of means-tested programs among immigrants and natives could differ on account of differences in their demographic and labor market characteristics. The two groups are also differently affected by the business cycle. Orrenius & Zavodny (2010) for instance found that immigrants suffered a sharper increase in unemployment during the Great Recession than natives. They also experienced higher poverty than natives (Bitler & Hoynes, 2013).

In addition to the business cycle, immigration enforcement intensified in the past two decades through programs such as Section 287(g) of the Illegal Immigration and Immigrant Responsibility Act, Secure Communities Program, and Priority Enforcement Program could also have influenced immigrant receipt of means-tested programs. Prior studies have found that the escalated federal immigration enforcement (Watson, 2014) and Secure Communities Program (Pedraza & Zhu, 2015) reduced immigrant Medicaid participation. Further, increased risk of deportation was associated with lower WIC uptake (Vargas & Pirog, 2016) and Medicaid participation (Vargas, 2015). The rollout of the Secure Communities Program also reduced SNAP and SSI participation among Hispanic citizens (Alsan & Yang, 2019). There is mixed evidence of a chilling effect of restrictive immigration policies on welfare use among US-born Latino populations {Allen (2018) found spillover effects; Allen & McNeely ((2017) did not}[4].

Previous Research on Immigrant and Native Safety Net Programs Use

[4] Allen (2018) found that county level Latino population density moderated the effect of Omnibus bills on program enrollment with counties with higher densities of Latino population experiencing low enrollment. Allen and McNeely (2017) did not consider county level factors.

A number of studies have examined the gap in immigrant versus native use of safety net programs. Studies in the pre-1996 welfare reform period had three main findings: one, immigrants were more likely than natives to receive safety-net programs (Borjas, 1995; Borjas & Hilton, 1996; Borjas & Trejo, 1991). Two, immigrant households had more frequent and longer welfare spells than native households (Borjas & Hilton, 1996). Three, the gap in welfare use among the two groups largely disappeared after adjusting for their demographic characteristics and economic circumstances (Butcher & Hu, 2000).

The 1996 welfare reform and subsequent state and federal changes in immigrant welfare eligibility spawned a large body of research. These studies indicate that the welfare caseload fall, subsequent to the reform, was larger for immigrants than natives and many researchers concluded that this was on account of a chilling effect of the policy change that created confusion about eligibility and fear of welfare use among immigrants (Loftstrom and Bean, 2002; Fix et al., 2009; Fix & Passell, 1999; Kaestner &Kaushal, 2005). As expected, the decline was higher for recent arrivals who were more acutely affected by welfare reform (Borjas, 2003; Fix & Passell, 1999). Further, many studies examined if welfare reforms led to behavioral changes in immigrants and natives across various domains (e.g., employment: Loftstrom and Bean, 2002; Kaestner & Kaushal, 2005; fertility: Joyce et al., 2001; food insecurity: Borjas, 2004; poverty: Borjas, 2011; health insurance: Borjas, 2003; Kaushal and Kaestner, 2005; health: East, 2018).

More recent research has examined the role of local welfare policies – restrictive as well as expansionary - and local immigration enforcement measures on welfare use. Watson (2014) and Weber (2015) found that stricter immigration enforcement was associated with a fall in Medicaid and SCHIP enrollment among immigrants and their children. On the other hand,

inclusionary policies such as the US Department of Agriculture outreach initiative and the SNAP expansion under the American Recovery and Reinvestment Act increased SNAP participation among immigrant households (Skinner, 2012; Kaushal, Waldfogel, & Wight, 2013).

A couple of studies have examined trends in welfare use among natives and immigrants. The most comprehensive of these studies is by Bitler and Hoynes (2013), who investigated welfare use among foreign-born and US-born households with children using the CPS data for 1995-2010 and found that immigrant-headed households were 20 percentage points more likely to use any safety net program than their native counterparts. But in samples restricted to low-income households, the welfare use gap turned negative with the likelihood of immigrant households using food stamps, TANF, and SSI falling below those of native households.[5] Camarota (2015) used data from the Survey of Income and Program Participation (SIPP) in 2012 and also found that immigrants used welfare more than native households across various programs. He estimated that immigrants used welfare programs more than natives regardless of their childbearing status, work status, and education levels. However, the gap in welfare use was not examined in the multivariate models that can simultaneously control for all these factors.

We contribute to this literature in three ways. First, our study covers a longer period (24 years versus one to 15 years in aforementioned studies) including the period of post-Great Recession recovery. Second, we specifically estimate the association between immigrant participation in welfare programs and policies depicting immigrant eligibility for safety-net programs and the business cycle. Previous research has not systematically and simultaneously investigated the influence of demographic characteristics, macroeconomic factors, and welfare

[5] Borjas (2011) examined trends in poverty and welfare participation among native and immigrant children.

and immigration related policies on welfare use gap between immigrants and natives. Our study offers a more holistic view. Third, ours is the first study to conduct an Oaxaca-Blinder decomposition analysis to "explain" the gap in welfare use between immigrants and natives. Specifically, we examine to what extent the gap is associated with demographic characteristics, differences in immigrant and native settlement patterns, business cycle, welfare policies towards immigrants, local immigration enforcement policies and other policies specific to immigrants and to what extent it is on account of differences in "sensitivity" of the two groups to these factors.

Data

The empirical analysis is based on the Annual Social and Economic Supplement of the Current Population Survey (also known as the March CPS), a nationally representative data of US households. These data provide detailed information on participation in a range of means-tested programs and public health insurance, the key outcomes of interest in our analysis. The analytical samples are from 1995 to 2018 measuring welfare receipt during 1994-2017. In order to study immigrant and native welfare use among low income families, following previous research, we restrict our analysis to low-educated households (household heads with high-school or lower education) because they have a high likelihood of welfare participation (Schoeni and Blank, 2000; Blank, 2002; Kaestner and Kaushal, 2005; Ziliak, 2015).

We study two summary outcomes of welfare use. The first outcome is a narrow measure of public assistance capturing take-up of at least one of the three main cash and near-cash transfer programs: TANF, SNAP, and SSI. The second outcome is a broader measure and captures receipt of cash/near-cash programs and public health insurance (Children's Health

Insurance Program [SCHIP] and Medicaid). Further, we do all analyses on participation in each of the following five programs: TANF, SNAP, SSI, SCHIP, and Medicaid.[6] For the two summary outcomes, the samples are low-educated households with children. We use the same household level sample for the analyses for TANF, SNAP and SSI. For Medicaid, we use a sample of all adults with a high school or lower education, for SCHIP, all children in low-educated households.

We study cash/near-cash programs and public health insurance separately for two reasons. One, these programs have diverse impacts on the exchequer. Receipt of cash and near-cash benefits impose a direct cost. The overall cost of health insurance on the exchequer would differ across populations: those in poorer health would impose a greater burden than those in better health. Previous research documents that immigrants generally have better health than natives (Antecol & Bedard, 2006; Kennedy et al., 2015; Riosmena, Kuhn, & Jochem, 2017). Further, if lack of health insurance causes immigrants to avoid healthcare when needed, thus deteriorating their health and resulting in emergency care, which is more expensive, the overall impact of health insurance on the exchequer may actually be less cost (Ku & Matani, 2001; Mohanty et al., 2005; Sommers, 2013). Moreover, previous research suggests that increase in Medicaid lowered SSI participation among disabled adults (Burns and Dague, 2017; Soni, Burns, Dague, and Simon, 2017). Thus, immigrant health insurance may be cost effective. Two, policy changes over the past quarter century have been generally, though not always, to restrict immigrant access to cash and near cash programs (e.g. the 1996 welfare reform and public charge rule).

[6] In supplementary analysis, we included housing subsidy as one of the measures of welfare, and the results were not significantly different compared to the analyses without housing subsidy.

Changes in health insurance policies on the other hand, until very recently, have been to reduce restrictions on immigrants' access to health insurance (e.g. 1997 SCHIP law, 2013 ACA, and the associated Medicaid expansions.)

The March CPS is rich in respondents' demographics and household information that we use to construct control variables for the regression analysis. Age is included as a categorical variable with five-year intervals. Education is captured through a dummy variable indicating whether the household head (or individual) had completed high school. Marital status is a set of dummy variables indicating whether the household head (or individual) is currently married, divorced, widowed, or never married. Race/ethnicity is captured by a set of dummy variables indicating if the household head (or individual) is non-Hispanic white (reference category), non-Hispanic black, Hispanic, or other race/ethnicities. We also control for foreign-born respondents' country/region of origin: (US-born [reference category]) Mexico, rest of North America, Central America, Caribbean countries, South America, Europe, East Asia, South East Asia, other Asia, Africa, or Pacific countries), period of arrival (five years or less, 6 to 10 years, 11-15 years, 16-20 years, 21- 30 years, or over 30 years [reference category]), cohort of arrival (before 1970, 1970-80, 1981-90, 1991-1996, 1997-2000, 2001-2010, or after 2010 [reference category]) and citizenship status (whether all household members [reference category], some household members, or none are citizens). We also control for household characteristics including number of children in the household (whether the household has one child [reference category], two children, or three or more children) and household size (the household has two [reference category], three, four, or five or more people).

We construct immigrant eligibility for cash, near-cash, and public health insurance programs by state and year using various data sources. Bitler & Hoynes (2013) has detailed data on immigrant eligibility for TANF, SNAP, SSI, and public health insurance for some years between 1997 and 2009. We use various additional sources described below to supplement their data. Because federal policy did not distinguish between immigrants and natives before the Welfare Reform, we treat immigrants in all states before 1997 as eligible. Data on immigrant eligibility for state-funded TANF are from the Welfare Rules Databook (Heffernan et al., 2018). Data on immigrant eligibility for SNAP are from the United States Department of Agriculture's SNAP Policy Database (ERS, 2017) and Food and Nutrition Service annual reports on state options (USDA, 2019). Data on immigrant eligibility for SSI are from the National Immigration Law Center (NILC, 2002) and the Social Security Administration website (SSA, 2019). Data on immigrant eligibility to Medicaid and SCHIP are from the Medicaid.gov (2016), the National Immigration Law Center (NILC, 2017), a report from the Kaiser Family Foundation (KFF, 2019), and the Health Insurance and Health Reform Authority (Norris, 2019). Appendix Tables 1 and 2 document state-specific immigrant eligibility for TANF, SNAP, SSI, Medicaid, and SCHIP.

Overall, based on immigrants' state-of-residence and duration of stay, there are three variants of immigrant eligibility for Medicaid/SCHIP across states (Medicaid for new immigrants; Medicaid for old immigrants; SCHIP for new immigrant children[7]); two variants of immigrant eligibility for TANF (TANF for new immigrants and old immigrants), one variant each for SNAP (for new immigrants) and SSI (all immigrants). In our empirical analysis for the summary measures, we create a welfare policy score that gives each program equal weightage,

[7] Legal immigrant children, in the country for more than 5 years, are eligible for SCHIP in all states.

and this score ranges between 0 and 4, with a higher value indicating a higher level of generosity. Appendix Table 3 uses the immigrant eligibility in 2002 as an example to demonstrate how we calculate the policy score for each program in each year. Our analyses for specific programs are based on policy scores specific to those programs.

Data on state unemployment rates are from the Bureau of Labor Statistics (BLS, 2018). Local immigration enforcement policies under section 287(g) and the Secure Communities are taken from the Immigration and Customs Enforcement (ICE) website archives (ICE, 2009; ICE, 2013; ICE, 2018). These enforcement data are by county and year. Because the CPS does not provide data on county of residence for a majority of the sample,[8] we create enforcement policy data by state and year using population weights. The population data are from the US Census Bureau's annual resident population estimates (Census 2018). Information on state policies specific to undocumented immigrants such as state dream act, eligibility for driver's license, and E-Verify requirements are from Kaushal, Wang, & Huang (2018), Wang and Kaushal (2018) and the National Conference of State Legislatures (NCSL) websites (NCSL, 2015; NCSL, 2016). All state-level variables are lagged by one year and merged with the CPS data by state and year.[9]

A limitation of our study is that we are unable to adjust for underreporting of benefit receipt in government-administered surveys, including the CPS. The underreporting rate sharply increased during our study period (Klerman, Ringel, & Roth, 2005; Meyer, Mok & Sullivan, 2015). Underreporting may be due to stigma associated with program receipt or simply due to recall bias or confusion of program names (Meyer, Mok & Sullivan, 2015). In the case of

[8] 38.6% of our analytic sample has county identifiers.
[9] Because the March-CPS asked for the welfare participation in the previous year, unless specified otherwise the year used in the paper always refers to one year prior to the CPS survey year. Therefore, for the state-level variables, the one-year lag is relative to the year prior to the CPS survey year.

immigrants, there is an additional fear that program receipt may jeopardize the immigration status of family members. Bruckmeier and colleagues (2015) compared the underreporting rates of welfare receipt between immigrants and native-born populations in Germany and did not find a significant difference in their rates of reporting. Such evidence, to our knowledge, is not available in the US context. If immigrants' underreporting rates differed from those of natives, our results would be biased. If the underreporting rates are similar among immigrants and natives as in the German context, under-reporting would be a lesser issue in our analysis.

Empirical Strategy

We use logistic regression models to estimate the association between social assistance and a welfare policy score ($Policy_{jt-1}$) that captures state generosity towards immigrants in terms of their eligibility for various programs. Equation (1) describes the empirical specification.

(1) $ln\frac{\Pr(W_{ijt})}{1-\Pr(W_{ijt})} = Policy_{jt-1} * \beta_1 + Foreign_{ijt} * Policy_{jt-1} * \beta_2 + X_{ijt} * \beta_3 + I_{ijt} * \beta_4 + Z_{jt-1} * \beta_5 + Foreign_{ijt} * Z_{jt-1} * \beta_6 + \delta_j + \delta_t$

In equation (1), W_{ijt} is an indicator of whether respondent *i* in state *j* received social assistance in year *t*. We begin with the two summary measures of social assistance. The first measure "cash and near-cash assistance" is equal to 1 if a household received TANF, SNAP or SSI in year *t*, otherwise 0. The second measure, receipt of safety net programs (cash/near-cash programs and public health insurance), is equal to 1 if a household received TANF, SNAP, SSI, Medicaid or SCHIP, otherwise 0. $Foreign_{ijt}$ is a dummy variable indicating whether the respondent was born outside of the United States. X_{ijt} denotes a vector of household and individual characteristics namely age, gender, education, marital status, race/ethnicity, household

size, and number of children in the household. I_{ijt} denotes a vector of immigrant characteristics including country of origin[10], years since immigration, cohort of immigration, and number of citizens in the household. The specific construction of these variables is described in the data section. We also control for a set of time-varying state characteristics (Z_{jt-1}) namely state unemployment rate as an indicator of the business cycle and state/local policies that have specifically targeted immigrants, namely: state dream act, driver's license, E-Verify, and measures of local immigration enforcement under Section 287(g) of Immigration and Naturalization Act and the Secure Communities Program. All state-level variables are lagged by one year. δ_j and δ_t denote state fixed effects and year fixed effects. Further, we also estimate fully interacted models in which the foreign-born variable is interacted with all covariates except for immigrant characteristics and year fixed effects.

Next, we estimate an equation similar to equation (1) to estimate participation in each of the five programs separately. In these regressions, the variable $Policy_{jt-1}$is replaced by a policy variable(s) specific to the program. For the outcome on TANF participation, policy is a set of two dichotomous variables: (i) TANF for new immigrants, which is equal to 1 if a state allowed TANF for post-enactment new immigrants (arrived after 1996 and in the US for less than five years), otherwise 0; (ii) TANF for old immigrants, which is equal to 1 if a state allowed post-enactment older immigrants (arrived after 1996 and in the US for more than five years), and these variables respectively interact with post-enactment new immigrants and older immigrants. For the outcome on SNAP participation, the policy variables are: (i) SNAP for new immigrants (equal to 1 if a state allowed SNAP for post-enactment new immigrants, otherwise 0); (ii) SNAP

[10] The foreign-born variable is not included in the model due to the presence of the country of origin variable.

for old immigrants (equal to 1 if a state offered SNAP for post-enactment old immigrants), and these variables are respectively interacted with post-enactment new and old immigrants.

Similarly, for Medicaid participation, we construct two policy variables: (i) Medicaid for new immigrants (equal to 1 if a state allowed Medicaid for post-enactment new immigrants, otherwise 0); (ii) Medicaid for old immigrants variable (equal to 1 if a state-provided Medicaid for post-enactment old immigrants), and the two Medicaid variables are respectively interacted with post-enactment new and old immigrants. All states provide SCHIP to foreign-born legal immigrant children who have lived in the US for five years. For the SCHIP regressions, therefore, the policy variable is equal to 1 if a state allowed SCHIP for post-enactment new immigrant children, and it is interacted with post-enactment new immigrants. In the regression for SSI, the policy variable is equal to 1 if states offered SSI benefit to post-enactment immigrants, and the variable is interacted with post-enactment immigrants (arrived after 1996). Throughout, we estimate robust standard errors clustered on state of residence to adjust for heteroskedasticity (Huber, 1967).

Blinder-Oaxaca Decomposition

Our final objective is to investigate to what extent the gap in welfare use between immigrant and native households/individuals is on account of differences in household/individual characteristics, state-level welfare restrictions, immigration policies, and macroeconomic trends and to what extent on account of differences in "sensitivity" to these factors. We follow the Blinder-Oaxaca decomposition method for this analysis (Blinder, 1973; Oaxaca 1973). Specifically, we adopt the "twofold" decomposition mostly used in the discrimination literature (Jann, 2008).

The method slices ("decomposes") the gap of welfare use between the two groups, immigrant and native households, $(\overline{W}_F - \overline{W}_N)$, into two components: gap due to differences in endowments or characteristics (E) and gap on account of responses to these characteristics captured by the coefficients (C). Let *V* be a vector containing all predictors in our model (individual and household characteristics, state unemployment rate, state immigrant-related policies, state and year fixed effects) and a constant and B be the slope parameters and the intercept. The twofold decomposition hypothesizes that there is a vector B^* that can determine the contribution of the differences in the predictors.

Equations (2) – (4) describe the "decomposition" mathematically:

(2) $$\overline{W}_F - \overline{W}_N = \left(\overline{V}_F - \overline{V}_N\right)' B^* + \overline{V}_F'(B_F - B^*) + \overline{V}_N'(B^* - B_N), \text{ where}$$

(3) $$E = \left(\overline{V}_F - \overline{V}_N\right)' B^*, \text{ and}$$

(4) $$C = \overline{V}_F'(B_F - B^*) + \overline{V}_N'(B^* - B_N)$$

Equation (2) shows the part of the welfare use gap that is explained by the differences in the predictors (characteristics) of immigrant and native households. *E* reflects a counterfactual comparison of the welfare use gap if immigrant households had the same endowments (covariates) as native households. In the second part (Equation (4)), *C* denotes the gap attributable to differences in coefficients or the effect that remained unexplained on account of differences in endowments. The decomposition analysis is performed using Stata 15 with the "oaxaca" command, which provides linear predictions (Jann, 2008).

We also use the "pooled" option to pool covariates into groups and generate coefficients for each group to explore to what extent the gap of program participation is on account of differences in household/individual characteristics, state-level welfare restrictions, other policies

targeting immigrants, and macroeconomic trends. We conducted the decomposition analysis for the two summary outcomes of welfare participation and separately for participation in each of the five programs for the entire 24-year period. Further, to examine if the association changed over time or differed across periods of recessions or recovery, we also did the analysis slicing the 24-year period into five periods: pre-welfare reform period (1994-1996); welfare reform implementation period (1997-2002); post-reform period (2003-2007); Great Recession (2008-2012); and post-recession (2013-2017). One concern with the Blinder-Oaxaca decomposition is that the decomposition results depend on the reference category of categorical predictors. We use the normalization option to overcome this problem (Oaxaca and Ransom, 1999).

Results

Table 1 presents descriptive statistics of the immigrant and native samples: households with children headed by individuals with a high-school or less education. The immigrant households are less educated (42% of immigrant household heads, versus 76% of native household heads, have a high school degree); more likely to be of Hispanic ethnicity (73% versus 12%); more likely to be currently married; have larger household sizes and more children. Several of these characteristics put immigrants at a higher risk of receiving benefits. Three-fourths of the foreign-born sample has at least one non-citizen in the household. Because the 1996 welfare reform restricted welfare eligibility for several groups of non-citizens, many households in the immigrant sample are also likely to be ineligible for benefits.

Trends in Welfare Use Gap between Immigrants and Natives

Figure 2 presents trends in program participation in low-educated immigrant and native headed households with children over the 24-year period, and Figure 3 presents the same

adjusted for age, education, gender, marital status, and race. There are four main points to note: One, after the 1996 welfare reform TANF participation in immigrant and native households has fallen sharply. While both groups experienced a marginal increase in TANF use during the Great Recession, overall less than 5% of households in either group received TANF at the peak of the recession and the participation fell in the post-recovery period. Two, SSI participation registered a modest, yet steady increase among native households and a modest, yet steady decline among immigrant households. Three, unlike TANF and SSI participation, SNAP use in both groups has been largely anti-cyclical; since 1997, immigrant households have on average a lower probability of receiving SNAP than native households. Four, since 1997, health insurance coverage of immigrant and native households has generally been rising and immigrant receipt of public health insurance (Medicaid for adults and SCHIP for children) is greater than those of natives without adjusting for household characteristics. This finding is qualitatively similar to Borjas (2011) who studied program participation by children in immigrant and native households (Figure 3 in Borjas, 2011). Once the trends are adjusted for demographic characteristics, natives receipt of public health insurance is greater than those of immigrants, which is similar to Bitler and Hoynes (2013).

Camarota (2015) however used data from the Survey of Income and Program Participation, 2012 and found that immigrants used welfare programs more than natives regardless of their childbearing status, work status, and education levels. To investigate if our finding differs from his on account of the difference in our data (SIPP versus CPS), we computed welfare use by groups similar to those reported by Camarota in Appendix Table 4. We find that

while the CPS sample consistently shows lower welfare participation compared to SIPP,[11] the welfare use gaps between natives and immigrants are similar using both datasets. The primary difference between Camarota's models and the adjusted trends we present is that our adjusted estimate control for age, education, gender, marital status, and race simultaneously, whereas his models include these controls one at a time.

Association between Policies towards Immigrants and Welfare Receipt Gap

Table 2 presents the association between program participation and state welfare generosity towards immigrants, based on the welfare policy score[12] (higher score indicating greater generosity towards immigrants) and state unemployment rate as specified in equation (1). Model (1) restricts the effect of individual and household characteristics and state fixed effects to be the same for immigrants and natives; Model (2) drops this restriction.[13, 14]

Estimates suggest immigrants' higher probability of program receipt (for both outcomes) as policy score increased (increased program generosity). The results remain consistent across specifications. We also find that program participation for cash and near-cash assistance is anti-cyclical in that it increases with unemployment. The association between cash/near-cash transfers and unemployment is statistically different for immigrants and natives, with immigrants

[11] Other studies have also documented this difference (Meyer et al., 2015).
[12] For the cash and near-cash participation outcome, we used a policy score that was based on eligibility to cash and near-cash programs.
[13] For a sensitivity analysis, we conducted the same models with randomly selected 50% samples. The results remained similar to those reported.
[14] We also estimated these models using county unemployment rate and county level policies towards immigrants for the observations where county information is given in the CPS and state level variables (unemployment rate and state policies) for the rest of the state without county identifiers. These models controlled for county (state fixed effects for those that do not have county identifiers). Estimates, presented in Appendix Tables 6 and 7, were similar to those in Tables 2 and 4.

using cash and near-cash assistance more when facing economic downturns. The unemployment effect is statistically the same for both groups with safety-net programs as the outcome.

Table 3 presents the estimated effects for specific programs. For brevity, we only present estimates based on the fully interacted models. Estimates based on equation (1) are in Appendix Table 5 and are generally similar to those in Table 3. Estimates in column 1 suggest that state policies that allowed TANF benefits for new and old immigrants did not increase TANF use among the eligible populations in the post-enactment period. One possible explanation for this finding is that other restrictions on TANF eligibility (e.g. time-limited benefit, work requirements and sanctions) that are common across eligible immigrants and natives have rendered TANF to be a much smaller program and thus relegating TANF restrictions specific to immigrant families to be a lesser factor in restricting their TANF participation.

Estimates in column 2 suggest that state SNAP programs for new and old immigrants were associated with higher use of SNAP by these groups, but the effect is statistically insignificant for new immigrants. Estimates in column 3 suggest that state SSI programs for post-enactment immigrants had no statistically significant effect on their SSI use. One possible explanation for this finding is that the SSI provisions were restricted to aged, blind, and disabled immigrants whereas our analysis is based on all households with children.

Column 4 has results for Medicaid participation using a sample of low-educated adults aged above 18 and suggests that state Medicaid eligibility for new immigrants and old immigrants were associated with higher levels of Medicaid participation by both immigrant groups. Estimates in column 5 suggest that state CHIP policy for new immigrants is associated with a higher level of SCHIP participation among new immigrant children, yet the effect is

statistically insignificant. Finally, the associations between state unemployment rate and the take-up of TANF, SNAP and SCHIP are statistically different for immigrants and natives in that immigrants are more likely to use safety net programs when facing economic downturns.[15]

Blinder-Oaxaca decomposition

Tables 4 – 6 have results from the Blinder-Oaxaca decomposition analyses. In Table 4, columns 1 and 2 present estimates on the gap in immigrants' and natives' program participation in cash and near-cash assistance programs and columns 3 and 4 have estimates on the gap in safety net programs. The top panel shows the overall gap in welfare use and how much is attributed to the differences in the two groups' endowments and their responses to endowments (coefficients). Estimates suggest that immigrant households' use of cash and near-cash programs is 2.3 percentage points lower than that of native households. If immigrant households had the same endowments as natives, their receipt of cash and near-cash benefits would further decrease by 5 percentage points on account of differences in responses. On the other hand, immigrants' use of cash and near-cash benefits would increase by 7.3 percentage points, if their response to endowments (coefficients) were the same as those of natives and only endowments differed.

The second panel of Table 4 presents how differences in specific sets of endowments (characteristics) contribute to the gap in program participation if immigrants and natives had the same responses (coefficients). Overall, differences in educational attainment (% with a high-school degree) and race (% of non-Hispanic whites) have the largest effects. These estimates

[15] We also conducted sensitivity analysis adding "omnibus laws" which are sometimes referred as "show me your papers" laws as a control in the models in Tables 2, 3 and 4. The addition of this policy did not affect our estimates.

suggest that if immigrant households had the same proportion of high-school graduates as native households, immigrants' use of cash and near-cash benefits would fall by 4.5 percentage points.

Likewise, immigrants' use of cash and near-cash assistance would reduce by 2.3 percentage points if their racial/ethnic composition were identical to those of natives. Further, immigrant use of cash and near-cash benefits would reduce by 3.8 percentage points if they had the same proportion of non-Hispanic whites among them as natives. One possible explanation is that our race variables capture unobserved socioeconomic disparities that result in minority racial/ethnic groups being at a higher risk of receiving cash and near-cash programs. The estimate for state fixed effects suggests that immigrants' participation in cash and near-cash assistance would increase by 1.7 percentage points if immigrants had the same geographic dispersion across states as natives.

The third panel of Table 4 presents how differences in response to specific endowments (coefficients) contribute to the overall gap in program participation. Our objective is to examine to what extent the gap in welfare use among immigrants and natives is on account of differences in characteristics and to what extent on account of differences in response to characteristics. Therefore, for ease of interpretation, to distinguish policies towards immigrants and natives we reversed the coding for welfare policy variables (in Tables 4-5).[16] Overall, most of the gap not explained by differences in endowment can be attributed to differences in immigrants and natives responses to social welfare policy, educational attainment, household characteristics, race/ethnicity and state-fixed effects (settlement patterns). Because our reversed welfare policy

[16] This simply changed the sign of reported coefficients. We also did the analysis defining policies as in Tables 2 and 3 and the estimates were of the same magnitude with the coefficient being of the opposite sign.

score captures the level of restrictiveness of state welfare policy towards immigrants, as expected, immigrant response (coefficient) is associated with a lower benefit use.

Estimates suggest immigrants' use of cash and near-cash programs would decrease by 2.3 percentage points if immigrants responded to high-school degrees the same way as natives. This could mean that a high-school degree for immigrants does not fetch as good jobs as a high-school degree for natives. Among the least educated (those without a high-school degree), immigrants' use of cash and near-cash benefits would increase by 2.1 percentage points if immigrants responded to having less than high-school education the same way as natives. This could be because of larger number undocumented among immigrants without a high-school degree, who are ineligible for benefits (Passel and Cohn, 2011). Less-educated immigrants may also be less aware of welfare programs and how to obtain them.

Estimates in columns 3 and 4 suggest that immigrants were 9.6 percentage points more likely to use safety net programs than natives. Given that overall immigrants used less cash and near-cash benefits than natives, the positive gap in safety net use is primarily driven by immigrants' higher receipt of public health insurance. As found in Figures 2 and 3, this could be substantially on account of changes in immigrant eligibility for public health insurance under the 2009 SCHIP reauthorization and ACA Medicaid expansions. Here, almost the entire the gap is on account of differences in endowments, and the net contribution on account of differences in response (coefficients) to various factors is negligible.

In Panel 2, similar to cash and near-cash benefits, differences in educational attainment (% with a high-school degree) and race (% of non-Hispanic white) have the largest effects. Here too we find that the difference in receipt of safety net programs on account of exposures to

macroeconomic factors (e.g., unemployment) and immigrant inclusion and exclusion policies is modest. The estimate for state fixed effects suggests that immigrants' participation in safety net programs would increase by 2.6 percentage points if immigrants had the same geographic dispersion as natives. These results (along with those for cash/near cash programs) reject the welfare magnet hypothesis that immigrants make residential choices to maximize welfare use.

Estimates in Panel 3 suggest that immigrants' use of safety net programs would increase by 4.2 percentage points if immigrants responded to more restrictive state welfare policies towards immigrants the same way as natives. Estimates suggest that immigrants' participation in safety net programs would decrease by 2.1 percentage points if they responded to being Hispanics the same way as natives. One likely explanation is that foreign-born Hispanics may be working in jobs that do not offer health insurance, which would increase their dependence on public health insurance.

We also find some evidence that if immigrants' responded to immigrant exclusionary policies, namely local immigration enforcement under Section 287(g), the Secure Communities program, and E-Verity the same way as natives, immigrants' receipt of safety net programs would increase by 1 percentage point. Because these policies do not directly involve immigrant eligibility for these programs, the evidence here suggests that immigration exclusionary policies may be causing a "chilling effect" on immigrant use of welfare programs. We are cautious in reading too much into this evidence, as most exclusionary policies are specific to cities, whereas

the smallest geographic unit available for all observations in our data is state, which limits our ability to specify the exclusionary policies with precision.[17]

Table 5 presents decomposition estimates for specific programs. The overall differences of TANF, SSI and SCHIP participation between immigrants and natives are small and insignificant. Compared to natives, immigrants are much more likely to receive Medicaid and less likely to receive SNAP. The attribution of the differences is mostly consistent with those of the summary measures in Table 4: differences in educational attainment and ethnicity are the main drivers of the difference in welfare use. Notably, for specific programs, immigrants did not respond to eligibility policy for that specific program significantly differently than natives except for TANF. This finding is different from the previous estimate in Table 3 where we found that specific policies had significant effects, specifically in case of SNAP and Medicaid participation. One explanation could be that in Table 3 the eligibility rules were specified towards certain groups of immigrants (e.g., immigrants who have stayed less than or over five years). But in the decomposition analyses, we are comparing all foreign-born as a group and natives.

Table 6 presents decomposition results for cash and near-cash assistance (panel 1) and for the broader social safety net outcome (panel 2) separately for five periods. For brevity, we only present the overall differences.[18] We highlight one main finding here: across periods immigrant use of cash/near cash benefits would have been much lower, and certainly lower than natives if they had the same endowments as natives. Likewise, across periods, if immigrants had the same

[17] We also estimated these models using county unemployment rate and county policies towards immigrants for the observations where county information is available in the CPS and used state level variables for the rest of the state for which we do not have county identifiers (see Appendix Table 6 and 7). In this analysis, the coefficient on exclusionary policies is statistically insignificant.

[18] Detailed results for the difference on account of endowments and coefficients can be obtained from the authors.

responses to endowments as natives, immigrant cash/near cash benefits use would have been much higher than that of natives.

Conclusion and Discussion

We study the long-term trend in program participation among low-educated immigrant and native households with children, during 1994-2017, covering a 24-year period encompassing changes in welfare policy towards immigrants, local immigration measures, substantial economic swings including the Great Recession and the post-recession recovery. Two diverse trends emerge from our results. One, immigrant participation in cash and near-cash programs (TANF, SSI, and SNAP) falls substantially below those of natives after the 1996 welfare reform and remains so during economic upswings and downturns, a finding quite similar to previous studies by Borjas (2011) and Bitler and Hoynes (2013). Two, with regard to Medicaid and SCHIP, the rates of recipiency registered a steady increase for both immigrants and natives after the 1996 welfare reform, with immigrants showing higher participation rates. This could be due to ACA and SCHIP reauthorization that covered a larger proportion of uninsured foreign-born families.

An innovation of our research is the use of Oaxaca-Blinder decomposition analysis that allows us to take a holistic approach to explain the native-immigrant welfare participation gap. Our analysis leads to the following findings: first, if immigrants had the same characteristics as natives their participation in means-tested programs would have been much less overall and much below those of natives. This finding holds true across broader measures of welfare receipt capturing cash/near cash programs and health insurance as well as five specific safety net programs. It also holds true across specific periods of economic recessions and recovery. Our finding is similar to previous research (Butcher and Hu, 2003; Bitler and Hoynes, 2013) and our

contribution is that we document the same phenomenon across five different welfare programs and time periods spanning economic recessions and recoveries. Further, we advance knowledge by not only studying how different characteristic lead to the immigrant-native welfare use gap but also examining how responses to characteristics drive the welfare use gap. Overall, this finding suggests that given the same endowments, immigrants would be more conservative in participating in welfare programs compared to natives.

Second, we find that immigrant participations in TANF, SNAP and SCHIP are more sensitive to the business cycle than native participations, providing some evidence that immigrant "dependence" on safety net programs is temporary and closely linked to the economy.

Third, our analysis suggests that program eligibility explains only a modest proportion of the overall immigrant-native gap in welfare use (even though specific policies that allowed eligibility to immigrant groups generally succeeded in increasing participation of the targeted immigrant groups). One possible explanation of this finding from the decomposition analysis is that changes in eligibility rules have affected specific immigrant populations (e.g. certain new immigrant groups in case of TANF and SNAP; immigrants who arrived after 1996 in case of SSI) that comprised a small proportion of the overall foreign-born populations. This finding offers an alternate perspective to supplement previous research that has found substantial impacts of policy on welfare use. While welfare policy requirements can significantly influence welfare use, prior studies did not directly compare the relative influence between welfare policy requirements and other household and contextual characteristics. Our result indicates that welfare policy rules are not as consequential as household characteristics in "explaining" the difference in welfare participation of immigrant and native households.

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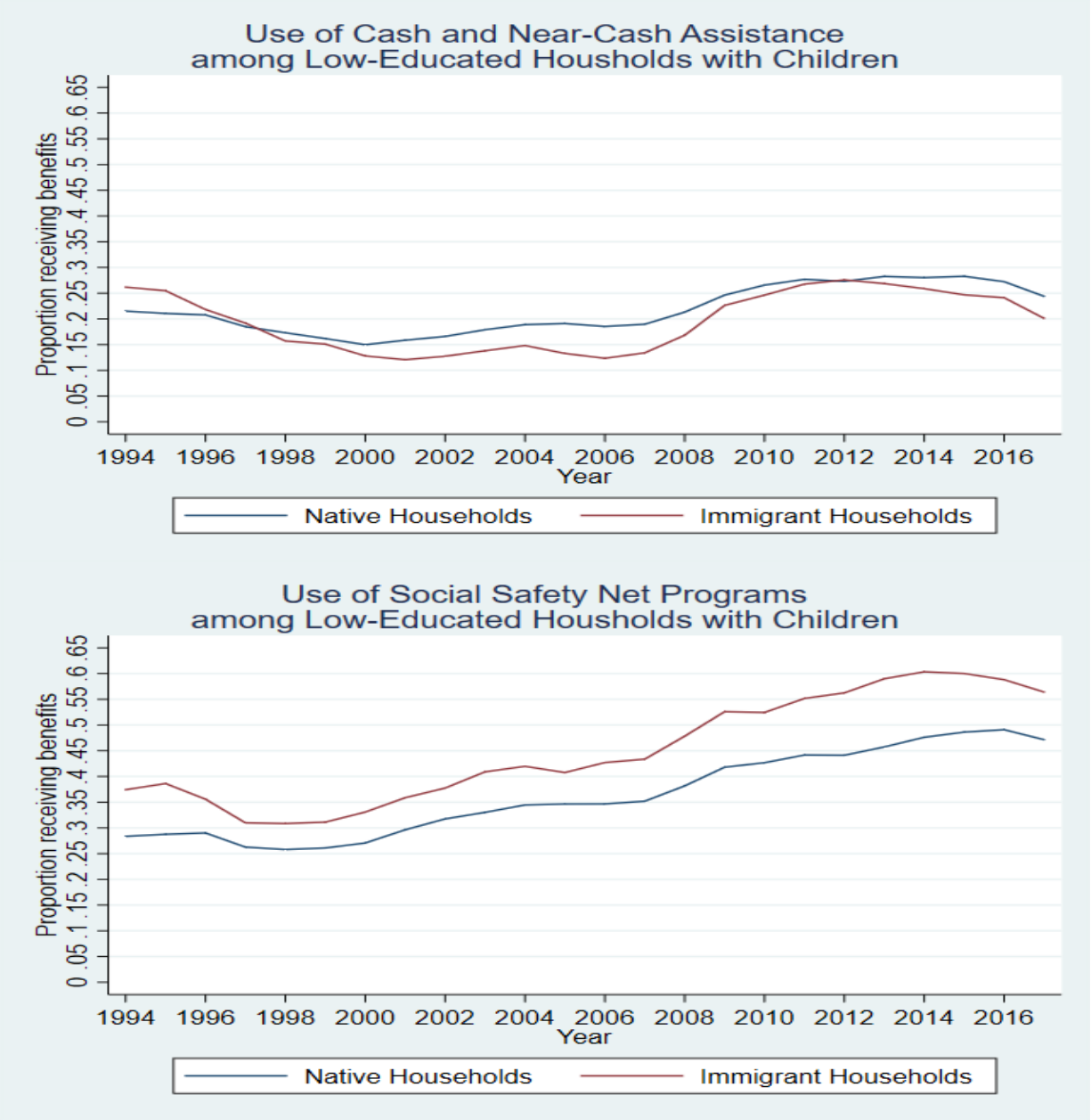

Figure 1. Trends of Program Participation from 1994 to 2017

Note: Data are from the March CPS 1995 to 2018 showing welfare use information from 1994 to 2017. The sample is restricted to household heads with a high school degree or less and at least one child <18. Cash and near-cash programs include TANF, SNAP and SSI. Safety net programs include cash and near-cash programs, Medicaid and SCHIP.

Table 1. Descriptive Statistics: Low-Educated Households with Children

	Native Households n = 254,413 Mean	Immigrant Households n = 79,024 Mean	
Age	43.31	42.57	*
Female	0.51	0.47	*
Completed High school	0.76	0.42	*
Race/Ethnicity			
Non-Hispanic White	0.68	0.11	*
Non-Hispanic Black	0.16	0.05	*
Hispanic	0.12	0.73	*
Other Races/Ethnicities	0.04	0.11	*
Marital Status			
Married	0.64	0.79	*
Divorced	0.14	0.07	*
Widowed	0.07	0.04	*
Never Married	0.15	0.10	*
Household Size			
2 People	0.14	0.07	*
3 People	0.33	0.23	*
4 People	0.30	0.30	
5 or More People	0.23	0.40	*
Number of Children in the Household			
1 Child	0.46	0.33	*
2 Children	0.33	0.34	*
3 or More Children	0.20	0.33	*
Number of Citizens in the Household			
All Members are Citizens	0.98	0.24	*
At least One Citizen in the Household	0.02	0.63	*
No Member is Citizen (all non-citizens)	0.00	0.12	*

Note: Data are from the March CPS, 1995 to 2018. The sample is restricted to household heads with a high school or less education and at least one child younger than 18.
* indicates that the means are statistically different between the two groups at 5% confidence interval.

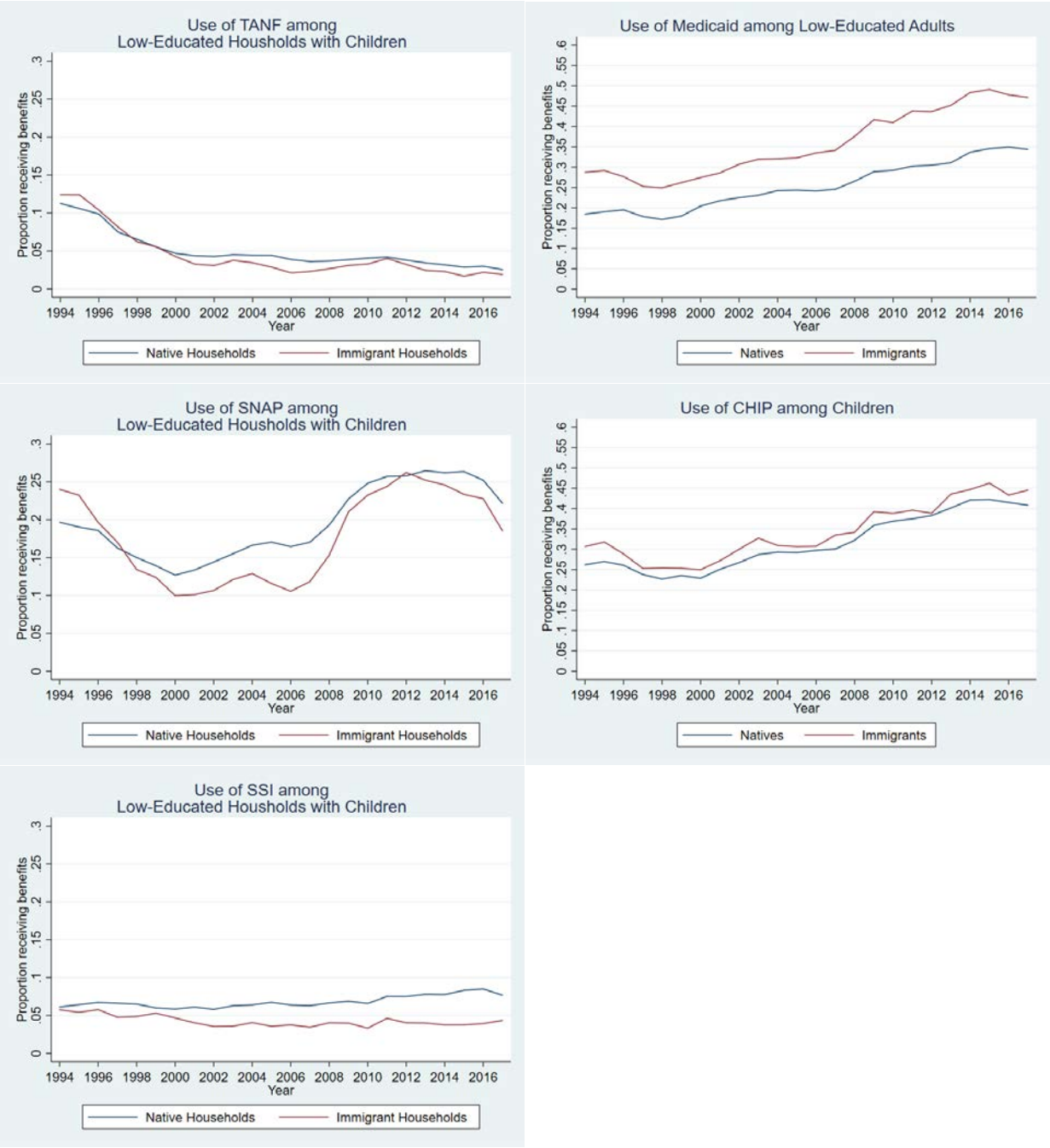

Figure 2. Trends of Participation in Safety-net Program from 1994 to 2017

Note: Data are from the March CPS 1995 to 2018 showing welfare use information from 1994 to 2017. For TANF, SNAP and SSI, the sample is restricted to household heads with a high school degree or less and at least one child <18. For Medicaid, the sample is restricted to adults with a high school or less education. For CHIP, the sample is restricted to children with high school or less education.

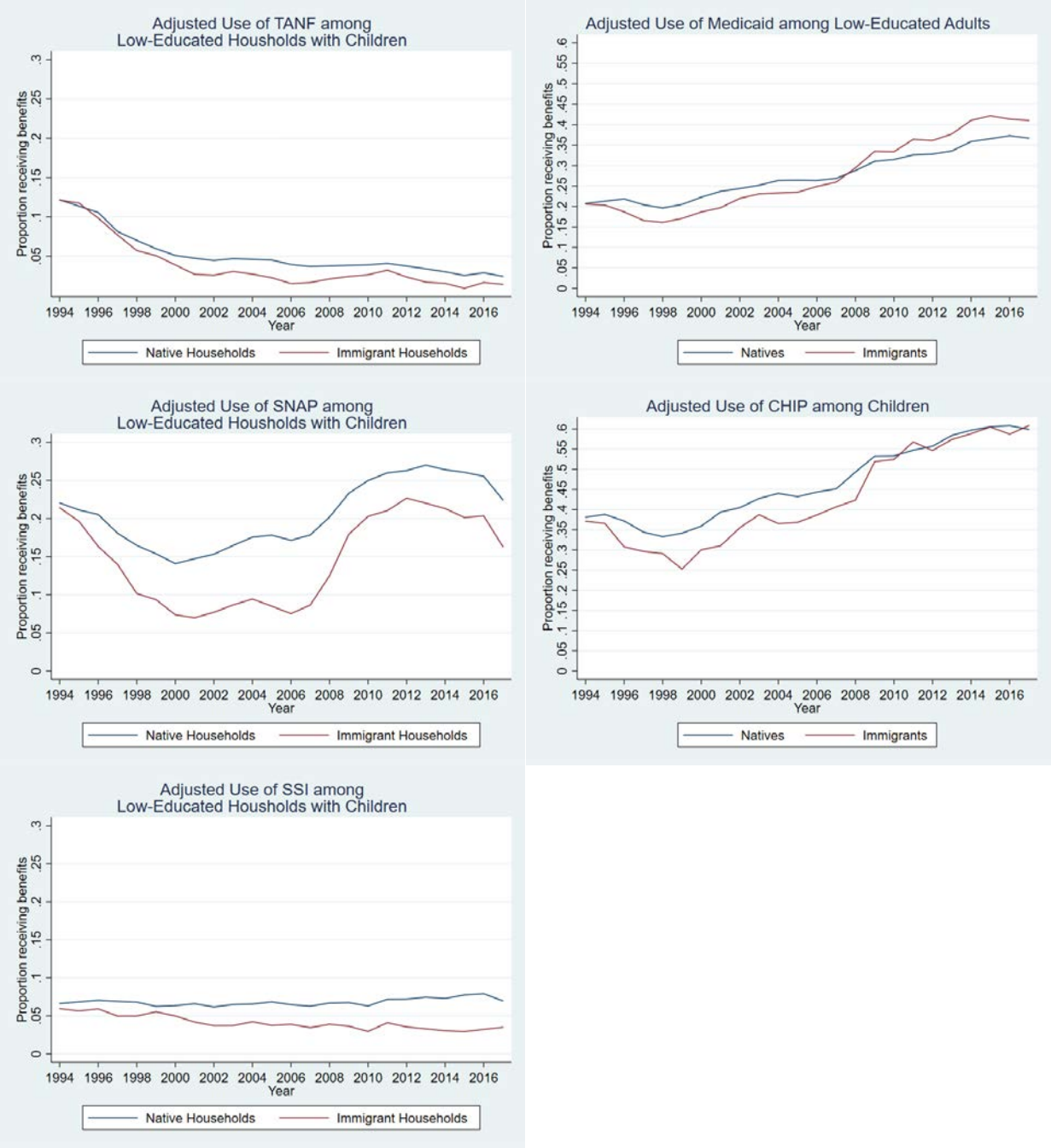

Figure 3. Adjusted Trends of Participation in Safety-net Program from 1994 to 2017

Note: The trends are adjusted for age, education, gender, marital status, and race. Data are from the March CPS 1995 to 2018 showing welfare use information from 1994 to 2017. For TANF, SNAP and SSI, the sample is restricted to household heads with a high school degree or less and at least one child <18. For Medicaid, the sample is restricted to adults with a high school or less education. For CHIP, the sample is restricted to children with high school or less education.

Table 2. Association between State Welfare Policy Score and the Business Cycle and Program Participation among Low-Educated Households with Children

	Cash and Near-Cash Assistance		Social Safety Net Programs	
	Model 1	Model 2	Model 1	Model 2
State Welfare Policy Score	0.913**	0.923**	1.016	1.027
	(0.034)	(0.032)	(0.030)	(0.030)
Foreign-Born x	1.128***	1.119***	1.123***	1.052*
State Welfare Policy Score	(0.036)	(0.044)	(0.023)	(0.028)
Unemployment rate	1.094***	1.093***	1.043***	1.048***
	(0.013)	(0.014)	(0.010)	(0.010)
Foreign-born x	1.033***	1.033***	1.012	1.000
Unemployment rate	(0.010)	(0.011)	(0.014)	(0.014)
Foreign-born x Individual Characteristics	No	Yes	No	Yes
Foreign-born x Household Characteristics	No	Yes	No	Yes
Foreign-born x State Fixed Effects	No	Yes	No	Yes
N	333422	333422	333422	333422

Note: Household data are from the March CPS 1995-2018 showing welfare use information from 1994 to 2017. The sample is restricted to household heads with a high school or less education and at least one child <18. Cash and near-cash programs include TANF, SNAP and SSI. Safety net programs include cash and near-cash programs, Medicaid and SCHIP. All models control for state and year fixed effects, individual characteristics (household heads' age, gender, education, race/ethnicity, and marital status), immigrant characteristics (household heads' country of origin, cohort of immigration, year since immigration and citizenship status), household characteristics (number of children in the household and household size), and state immigrant-related policies (state dream act, driver's license, E-Verify, Section 287(g) of Immigration and Naturalization Act, and the Secure Communities Program), and interaction terms between the foreign-born variable and state immigrant-related policy variables. Model 2 are the fully interacted models which include interactions between whether the respondent is foreign-born and all explanatory variables except for immigrant characteristics and year fixed effects. Coefficients in the table show exponentiated coefficients (odds ratio) of logistic regression and robust standard errors clustered by state in parenthesis.
* p<0.1, **p<0.05, *** p<0.01

Table 3. Association between Specific Safety Net Programs and Welfare Policies and the Business Cycle

	TANF		SNAP		SSI		Medicaid		SCHIP
State TANF policy for post-enactment (PE) new immigrants[1]	1.175* (0.107)	State SNAP policy for PE new immigrants	0.835*** (0.054)	State SSI policy for PE immigrants[3]	1.114*** (0.035)	State Medicaid policy for PE new immigrants	1.025 (0.041)	State CHIP policy for PE new immigrants[4]	0.983 (0.042)
State TANF policy for PE old immigrants[2]	0.895 (0.116)	State SNAP policy For PE old immigrants	1.116 (0.079)			State Medicaid policy for PE old immigrants	1.009 (0.038)		
PE new immigrants x State TANF policy for PE new immigrants	0.859 (0.107)	PE new immigrants x State SNAP policy for PE new immigrants	1.117 (0.106)	PE immigrants x State SSI policy for PE immigrants	1.009 (0.082)	PE new immigrants x State Medicaid policy for PE new immigrants	1.131** (0.059)	PE new immigrants x State CHIP policy for PE new immigrants	1.086 (0.083)
PE old immigrants x State TANF policy for PE old immigrants	1.025 (0.109)	PE old immigrants x State SNAP policy for PE old immigrants	1.338*** (0.141)			PE old immigrants x State Medicaid policy for PE old immigrants	1.416*** (0.074)		
Unemployment rate	1.045* (0.027)	Unemployment rate	1.122*** (0.014)	Unemployment rate	1.006 (0.012)	Unemployment rate	1.015* (0.009)	Unemployment rate	1.034*** (0.012)
Foreign-born x Unemployment rate	1.027* (0.016)	Foreign-born x Unemployment rate	1.037*** (0.014)	Foreign-born x Unemployment rate	1.011 (0.015)	Foreign-born x Unemployment rate	1.007 (0.011)	Foreign-born x Unemployment rate	1.043*** (0.013)
N	333422	N	333422	N	333422	N	1415132	N	591812

Note: 1. Post-enactment (PE) new immigrants refer to those who arrived after 1996 and have stayed in the US for less than five years. 2. PE old immigrants refer to those who arrived after 1996 and have stayed for over five years. 3. For SSI, the policy variable is defined as whether the state had SSI for immigrants who arrived after 1996 and is interacted with being an immigrant who arrived after 1996. 4. For CHIP, the policy variable is defined as whether the state had CHIP for immigrant children who arrived after 1996 and have lived in the US for less than five years and is interacted with being a PE new immigrant. For TANF, SNAP and SSI, the samples are restricted to low-educated households (household heads with a high school or less education) and at least one child <18. For Medicaid, the sample is restricted to adults. For SCHIP, the sample is restricted to children from low-educated households. All models control for state and year fixed effects, individual characteristics (age, gender, education, race/ethnicity, and marital status), immigrant characteristics country of origin, cohort of immigration, year since immigration and citizenship status), household characteristics (number of children in the household and household size), and state immigrant-related policies (state dream act, driver's license, E-Verify, Section 287(g) of Immigration and Naturalization Act, and the Secure Communities Program). All models are fully interacted which include interactions between whether the respondent is foreign-born and all explanatory variables except for immigrant characteristics and year fixed effects. Coefficients in the table show exponentiated coefficients (odds ratio) of logistic regression and robust standard errors clustered by state in parenthesis. * p<0.1, **p<0.05, *** p<0.01

Table 4. Decomposition Results for Program Participation Gap between Low-Educated Native and Immigrant Headed Households with Children (Estimates from Linear Regression)

	Cash and Near-Cash Assistance			Safety Net Programs		
Overall	**Coef.**		**SE**	**Coef.**		**SE**
Panel 1						
Immigrants	0.206	***	0.008	0.479	***	0.015
Natives	0.229	***	0.006	0.382	***	0.008
Difference	-0.023	***	0.008	0.096	***	0.014
Endowments (Explained)	0.050	***	0.011	0.094	***	0.012
Coefficients (Unexplained)	-0.073	***	0.010	0.002		0.011
Panel 2: Endowments (Explained)						
Reversed State Welfare Policy Score	-0.002		0.002	0.004		0.003
Education (Whether Completed High School)	0.045	***	0.004	0.049	***	0.005
∑Ethnicity/Race	0.023	**	0.011	0.049	***	0.011
Non-Hispanic White	0.038	***	0.004	0.045	***	0.004
Non-Hispanic Black	-0.006	***	0.002	-0.005	***	0.001
Hispanic	-0.011		0.008	0.009		0.006
Other Races/Ethnicities	0.002	**	0.001	0.001		0.001
Other Individual/Household Characteristics	-0.009	***	0.002	-0.003		0.003
State Unemployment Rate	0.009	**	0.003	0.006	**	0.002
Immigrant Inclusion Policies	-0.002		0.001	0.002		0.002
Immigrant Exclusion Policies	0.000		0.001	-0.002	**	0.001
State Fixed Effects	-0.017	**	0.007	-0.026	***	0.008
Year Fixed Effects	0.004	***	0.001	0.016	***	0.003
Panel 3: Coefficients (Unexplained)						
Reversed State Welfare Policy Score	-0.016	*	0.009	-0.042	***	0.013
∑Education	0.002		0.003	0.001		0.002
Did Not Complete High School	-0.021	***	0.002	-0.019	***	0.002
Completed High School	0.023	***	0.002	0.020	***	0.002
∑Ethnicity/Race	0.013	**	0.006	0.022	***	0.004
Non-Hispanic White	0.009	***	0.002	0.005	***	0.002
Non-Hispanic Black	-0.001		0.002	-0.001		0.001
Hispanic	0.008		0.006	0.021	***	0.004
Other Races/Ethnicities	-0.002		0.001	-0.003	*	0.001
Other Individual/Household Characteristics	-0.025	***	0.008	-0.033		0.022
State Unemployment Rate	-0.016		0.018	-0.010		0.029
Immigrant Inclusion Policies	-0.004		0.003	-0.003		0.004
Immigrant Exclusion Policies	-0.004		0.003	-0.010	*	0.006
State Fixed Effects	0.014	**	0.007	0.028	***	0.010
Year Fixed Effects	0.000		0.001	0.005	***	0.002
Constant	-0.037		0.024	0.044		0.037
Group 1: Immigrants. Number of Observations = 79,024						
Group 2: Natives. Number of Observations = 254,413						

Note: The sample is restricted to household heads with a high school or less education and at least one child <18. Cash and near-cash programs include TANF, SNAP and SSI. Safety net programs include cash and near-cash programs, Medicaid and SCHIP. “Other individual/household characteristics” include household heads' age, gender, marital status, number of children in the household and household size. * p<0.1, **p<0.05, *** p<0.01

Table 5. Decomposition Results for Participation Gap in Specific Programs

	TANF			SNAP			SSI			Medicaid			SCHIP		
Overall	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**
Panel 1															
Immigrants	0.040	***	0.008	0.176	***	0.009	0.147	***	0.013	0.367	***	0.023	0.441	***	0.026
Natives	0.050	***	0.004	0.191	***	0.006	0.136	***	0.005	0.252	***	0.007	0.454	***	0.012
Difference	-0.009		0.006	-0.014	*	0.008	0.011		0.011	0.114	***	0.019	-0.014		0.018
Endowments (Explained)	0.019	**	0.008	0.043	***	0.010	0.040	***	0.012	0.139	***	0.015	0.028	***	0.009
Coefficients (Unexplained)	-0.029	***	0.004	-0.058	***	0.008	-0.029	***	0.009	-0.024	**	0.011	-0.042	**	0.020
Panel 2: Endowments (Explained)															
Reversed State Welfare Policy Score	0.000		0.001	-0.002		0.002	0.001		0.002	0.002		0.001	0.000		0.001
Education (Whether Completed High School)	0.012	***	0.002	0.039	***	0.004	0.015	***	0.003	0.038	***	0.004	-0.001	***	0.000
∑Ethnicity/Race	0.006		0.005	0.022	**	0.010	0.026	**	0.010	0.039	***	0.009	0.067	***	0.009
Non-Hispanic White	0.013	***	0.002	0.032	***	0.003	0.021	***	0.004	0.038	***	0.004	0.059	***	0.006
Non-Hispanic Black	-0.002	***	0.001	-0.005	***	0.001	-0.002		0.001	-0.005	***	0.001	-0.007	***	0.002
Hispanic	-0.005		0.004	-0.007		0.007	0.004		0.008	0.005		0.005	0.015	***	0.004
Other Races/Ethnicities	0.001	**	0.000	0.001	**	0.001	0.004	*	0.002	0.001		0.001	0.000		0.001
Other Individual/Household Characteristics	-0.003	***	0.001	-0.007	***	0.003	-0.003	*	0.002	0.055	***	0.005	-0.017	***	0.002
State Unemployment Rate	0.002	*	0.001	0.009	**	0.004	0.002		0.002	0.002		0.001	0.001		0.001
Immigrant Inclusion Policies	-0.002	**	0.001	-0.001		0.001	-0.005	**	0.003	0.002		0.002	0.001		0.001
Immigrant Exclusion Policies	0.000		0.000	-0.001		0.001	-0.002		0.002	0.000		0.001	0.001		0.001
State Fixed Effects	0.008		0.007	-0.019	**	0.009	0.003		0.008	-0.006		0.007	-0.014	**	0.006
Year Fixed Effects	-0.004	***	0.001	0.004	***	0.001	0.003	**	0.001	0.009	***	0.002	-0.009	**	0.004
Panel 3: Coefficients (Unexplained)															
Reversed State Welfare Policy Score	0.012	**	0.005	-0.005		0.005	-0.012		0.016	-0.004		0.004	-0.001		0.006
∑Education	0.001		0.001	0.001		0.002	-0.002		0.002	0.001		0.002	-0.002		0.006
Did Not Complete High School	-0.006	***	0.001	-0.016	***	0.002	-0.004		0.004	-0.016	***	0.002	-0.002		0.007
Completed High School	0.006	***	0.001	0.018	***	0.002	0.003		0.003	0.017	***	0.002	0.000		0.000
∑Ethnicity/Race	0.003		0.002	0.013	**	0.005	0.006		0.005	0.017	***	0.003	-0.008		0.008
Non-Hispanic White	0.002	**	0.001	0.007	***	0.002	0.009	**	0.004	0.007	***	0.002	0.014	***	0.003
Non-Hispanic Black	-0.001		0.001	-0.001		0.001	-0.002		0.003	-0.001		0.001	-0.007	***	0.002
Hispanic	0.001		0.002	0.009	*	0.005	-0.003		0.006	0.014	***	0.004	-0.016	*	0.009
Other Races/Ethnicities	-0.001		0.001	-0.002		0.001	0.002		0.003	-0.002		0.002	0.000		0.002
Other Individual/Household Characteristics	-0.006	*	0.003	-0.017	**	0.008	0.057	***	0.016	-0.032	***	0.004	0.220	***	0.056
State Unemployment Rate	0.000		0.011	-0.032	*	0.019	-0.005		0.028	0.004		0.020	0.053	*	0.030
Immigrant Inclusion Policies	0.001		0.002	-0.001		0.003	-0.019	*	0.011	0.003		0.003	0.004		0.007
Immigrant Exclusion Policies	0.003	*	0.002	-0.003		0.003	-0.015		0.010	-0.008	*	0.004	-0.004		0.006
State Fixed Effects	0.001		0.003	0.012	**	0.006	0.032	***	0.011	0.030	***	0.010	0.047	**	0.020
Year Fixed Effects	-0.001		0.000	0.000		0.001	0.002		0.003	0.004	***	0.001	-0.005	*	0.003
Constant	-0.043	***	0.013	-0.025		0.022	-0.071	**	0.030	-0.040	*	0.021	-0.345	***	0.064
Group 1: Immigrants Number of Observations	79,024			79,024			79,024			287,413			33,416		
Group 2: Natives. Number of Observations	254,413			254,413			254,413			1,127,719			558,396		

Note: For TANF, SNAP and SSI, the samples are restricted to low-educated households (household heads with a high school or less education) and at least one child <18. For Medicaid, the sample is restricted to adults. For SCHIP, the sample is restricted to children from low-educated households. "Other individual/household characteristics" include household heads' age, gender, marital status, number of children in the household and household size. * p<0.1, **p<0.05, *** p<0.01

Table 6. Decomposition Results for Participation Gap across Time Periods (Overall and Explained Differences)

	1994 - 1996			1997 - 2002			2003 - 2007			2008 - 2012			2013 - 2017		
Cash and Near-Cash Assistance	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**
Panel 1															
Immigrants	0.263	***	0.015	0.154	***	0.012	0.145	***	0.009	0.249	***	0.011	0.264	***	0.007
Natives	0.230	***	0.008	0.182	***	0.007	0.204	***	0.007	0.271	***	0.007	0.296	***	0.007
Difference	0.034	***	0.012	-0.028	***	0.010	-0.059	***	0.009	-0.022	**	0.010	-0.032	***	0.008
Endowments (Explained)	0.100	***	0.013	0.051	***	0.012	0.025	**	0.011	0.037	***	0.012	0.032	***	0.012
Coefficients (Unexplained)	-0.067	***	0.014	-0.079	***	0.011	-0.084	***	0.010	-0.059	***	0.010	-0.064	***	0.012
Social Safety Net Programs	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**
Panel 2															
Immigrants	0.387	***	0.021	0.352	***	0.022	0.433	***	0.023	0.546	***	0.014	0.624	***	0.013
Natives	0.306	***	0.009	0.302	***	0.009	0.366	***	0.009	0.446	***	0.009	0.511	***	0.009
Difference	0.081	***	0.018	0.050	***	0.019	0.067	***	0.022	0.100	***	0.013	0.112	***	0.012
Endowments (Explained)	0.129	***	0.018	0.081	***	0.016	0.073	***	0.015	0.073	***	0.011	0.065	***	0.010
Coefficients (Unexplained)	-0.047	***	0.013	-0.030	**	0.014	-0.006		0.015	0.027	**	0.012	0.048	***	0.011

Group 1: Immigrants. Number of Observations = 79,024
Group 2: Natives. Number of Observations = 254,413

Note: The sample is restricted to household heads with a high school or less education and at least one child <18. Cash and near-cash programs include TANF, SNAP and SSI. Safety net programs include cash and near-cash programs, Medicaid and SCHIP. “Other individual/household characteristics” include household heads' age, gender, marital status, number of children in the household and household size. * p<0.1, **p<0.05, *** p<0.01

Appendix Table 1. State Funded Safety Net Program Eligibility for Post-Enactment Immigrants

States	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
Alabama																					
Alaska																					
Arizona																					
Arkansas																					
California	S	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Colorado																					
Connecticut	TS	TS	TS	TS	TS	TS	S	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Delaware																					
District of Columbia																					
Florida	S																				
Georgia		T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Hawaii		T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Idaho																					
Illinois	S	S	S	S	S	S	S														
Indiana																					
Iowa																					
Kansas																					
Kentucky																					
Louisiana																					
Maine	TS	TS	TS	TS	TS	TS	TS	T	TS	TS	TS	TS	TS	TS	TS	S	S	S	S	S	S
Maryland	T	T	T	T	T	T	TS	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Massachusetts	TS	TS	TS	TS	TS	TS															
Michigan																					
Minnesota	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			T	T	T	T
Mississippi																					
Missouri	S	T	T	T	T	T	T														
Montana																					
Nebraska	S	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	T		T			
Nevada																					
New Hampshire										S											
New Jersey	S	S	S	S	S	S	S														
New Mexico		T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
New York	S	TS	TS	TS	TS	TS	TS	TS	TS	T	T	T	T	T	T	T	T	T	T	T	T
North Carolina																					
North Dakota																					
Ohio	S																				
Oklahoma																					
Oregon	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Pennsylvania	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Rhode Island	TS	TS	TS	TS	TS	TS	TS	T	T	T	T	T	T	T	T	T					
South Carolina																					
South Dakota																					
Tennessee	T	T	T	T	T	T	T	T	T										T		
Texas	S	S	S	S	S	S	S														
Utah	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Vermont	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T				
Virginia																					
Washington	S	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
West Virginia																					
Wisconsin	S	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	T	T	T	T	T	T
Wyoming		T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

Note: “T” denotes states offered TANF benefit for post-enactment immigrants who stayed in the US for less than five years. “S” denotes states offered SNAP benefit for post-enactment immigrants who stayed in the US for less than five years. Data on immigrant eligibility to state-funded TANF from 1997 to 2017 are from the Welfare Rules Databook (Heffernan et al., 2018). Data on immigrant eligibility to SNAP from 1997 to 2017 are from the United States Department of Agriculture’s SNAP Policy Database (ERS, 2017) and Food and Nutrition Service annual reports on state options (USDA, 2019).

Most of the states offered TANF to post-enactment immigrants who have been in the US over five years with the following exceptions: Indiana, Mississippi, and Texas did not offer state-funded TANF to these immigrants during the time covered in our study. Arkansas did not offer before 2008 and in 2013. Idaho did not offer before 2010. Montana only offered the program in 2000, 2001 and after 2008. North Dakota did not offer the program from 2004 to 2009. And Rhode Island did not offer the program before 2001.

Federal SNAP benefits to legal immigrants who have been in the US for five years were restored under the Farm Security and Rural Investment Act of 2002. Before 2003, California, Connecticut, Illinois, Maine, Massachusetts, Minnesota, Nebraska, New Jersey, New York, Rhode Island, Texas, Washington, and Wisconsin offered state-funded SNAP program to post-enactment immigrants who have lived in the US for more than five years.

Only five states offered SSI benefit to post-enactment immigrants: California and Georgia offered SSI after 2001. Illinois offered after 2002. And Maine and New Hampshire offered SSI in all years.

Appendix Table 2. State-Funded Public Health Care Eligibility for Post-Enactment Immigrants

States	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
Alabama																					
Alaska																					
Arizona																					
Arkansas																					
California	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Colorado														C	C	C	C	MC	MC	MC	MC
Connecticut	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Delaware	M	M	M	M	M	M	M	M	M	M	M	M	MC	MC	MC	MC	MC	MC	MC	MC	MC
District of Columbia	C	C	C	C	C	C	C	C	C	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Florida	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	MC	MC
Georgia																					
Hawaii	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Idaho																					
Illinois	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Indiana						C	C														
Iowa														C	C	C	C	MC	MC	MC	MC
Kansas																					
Kentucky																		M	M	MC	MC
Louisiana																					
Maine	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Maryland	MC	MC	MC	MC	MC	MC	MC	MC	M	M	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Massachusetts	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Michigan						M															
Minnesota	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Mississippi																					
Missouri																					
Montana											M	M	M	MC	MC	MC	MC	MC	MC	MC	MC
Nebraska	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Nevada																					
New Hampshire																					
New Jersey	C	C	C	C	C	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
New Mexico														C	C	C	C	MC	MC	MC	MC
New York	C	C	C	C	C	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
North Carolina														C	C	C	C	C	C	C	MC
North Dakota																					
Ohio																		M	M	M	MC
Oklahoma																					
Oregon														C	C	C	C	MC	MC	MC	MC
Pennsylvania	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Rhode Island	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
South Carolina																					
South Dakota																					
Tennessee																					
Texas	C	C	C	C	C	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Utah																				MC	MC
Vermont																		M	M	M	MC
Virginia													C	C	C	C	C	C	C	C	
Washington	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
West Virginia																		M	M	MC	MC
Wisconsin													M	MC	MC	MC	MC	MC	MC	MC	MC
Wyoming																					

Note: "M" denotes states offered Medicaid benefit to post-enactment immigrants who stayed in the US for less than five years. "C" denotes states offered CHIP benefit to post-enactment immigrant children who have been in the US for less than five years. Data of immigrant eligibility to Medicaid and SCHIP are from the Medicaid.gov (2016), the National Immigration Law Center (NILC, 2017), the report from the Kaiser Family Foundation (KFF, 2018), and the Health Insurance and Health Reform Authority (Norris, 2019). After 2002, Alabama, Arizona, Washington DC, Indiana, Mississippi, New Mexico, Ohio, Oklahoma, Oregon, South Carolina, South Dakota, Texas, Virginia, Washington, West Virginia, and Wyoming offered Medicaid to post-enactment immigrants have lived in the US over five years. Idaho did not offer Medicaid to these immigrants until 2005. All the other states offered Medicaid to these immigrants in all years.

Appendix Table 3. State Welfare Policy Score based on Program Eligibility for Post-Enactment Immigrants in 2002

	State had the following programs for immigrants during Five-Year Bar				State had the following programs for immigrants after Five-Year Bar				Total Welfare Policy Score
	TANF	SNAP	Medicaid	SCHIP	TANF	SNAP	Medicaid	SSI	
Idaho									0
Arkansas							0.33		0.33
Mississippi							0.33		0.33
Montana							0.33		0.33
Indiana				0.33			0.33		0.66
Alabama					0.5		0.33		0.83
Alaska					0.5		0.33		0.83
Arizona					0.5		0.33		0.83
Colorado					0.5		0.33		0.83
Iowa					0.5		0.33		0.83
Kansas					0.5		0.33		0.83
Kentucky					0.5		0.33		0.83
Louisiana					0.5		0.33		0.83
Nevada					0.5		0.33		0.83
North Carolina					0.5		0.33		0.83
North Dakota					0.5		0.33		0.83
Ohio					0.5		0.33		0.83
Oklahoma					0.5		0.33		0.83
South Carolina					0.5		0.33		0.83
South Dakota					0.5		0.33		0.83
Virginia					0.5		0.33		0.83
West Virginia					0.5		0.33		0.83
Delaware			0.33		0.5		0.33		1.16
District of Columbia				0.33	0.5		0.33		1.16
Florida				0.33	0.5		0.33		1.16
Michigan			0.33		0.5		0.33		1.16
Georgia	0.5				0.5		0.33		1.33
Missouri	0.5				0.5		0.33		1.33
New Mexico	0.5				0.5		0.33		1.33
Oregon	0.5				0.5		0.33		1.33
Tennessee	0.5				0.5		0.33		1.33
Utah	0.5				0.5		0.33		1.33
Vermont	0.5				0.5		0.33		1.33
Wyoming	0.5				0.5		0.33		1.33
Texas		0.5	0.33	0.33		0.33	0.33		1.82
New Hampshire					0.5		0.33	1	1.83
Maryland	0.5		0.33	0.33	0.5		0.33		1.99
Pennsylvania	0.5		0.33	0.33	0.5		0.33		1.99
Wisconsin	0.5	0.5			0.5	0.33	0.33		2.16
Illinois		0.5	0.33	0.33	0.5	0.33	0.33		2.32
Minnesota		0.5	0.33	0.33	0.5	0.33	0.33		2.32
New Jersey		0.5	0.33	0.33	0.5	0.33	0.33		2.32
Connecticut	0.5	0.5	0.33	0.33	0.5	0.33	0.33		2.82
Massachusetts	0.5	0.5	0.33	0.33	0.5	0.33	0.33		2.82
Nebraska	0.5	0.5	0.33	0.33	0.5	0.33	0.33		2.82
New York	0.5	0.5	0.33	0.33	0.5	0.33	0.33		2.82
Rhode Island	0.5	0.5	0.33	0.33	0.5	0.33	0.33		2.82
Washington	0.5	0.5	0.33	0.33	0.5	0.33	0.33		2.82
Hawaii	0.5		0.33	0.33	0.5		0.33	1	2.99
California	0.5	0.5	0.33	0.33	0.5	0.33	0.33	1	3.82
Maine	0.5	0.5	0.33	0.33	0.5	0.33	0.33	1	3.82

Appendix Table 4. Welfare Participation among Households with Children in 2012: Comparison with Camarota 2012

	Households with Children (CPS 2012)				Households with Children (Camarota 2012 using SIPP)			
	Natives		Immigrants		Natives		Immigrants	
Program	**Using Welfare**	**95% CI (±)**	**Using Welfare**	**95% CI (±)**	**Using Welfare**	**95% CI (±)**	**Using Welfare**	**95% CI (±)**
Any Welfare	36.7%	0.57%	51.3%	1.20%	52.4%	1.2%	75.9%	2.1%
Any Welfare Excl. School Lunch	33.2%	0.56%	44.3%	1.19%	45.4%	1.1%	64.7%	2.3%
Cash	6.3%	0.29%	5.9%	0.56%	12.8%	0.7%	10.9%	1.6%
SSI	4.5%	0.25%	3.7%	0.45%	7.7%	0.6%	5.9%	1.0%
TANF	2.1%	0.17%	2.3%	0.36%	4.3%	0.4%	3.6%	0.9%
Food	24.5%	0.51%	36.7%	1.16%	44.8%	1.2%	68.5%	2.3%
School Lunch	68.5%	1.02%	66.5%	1.85%	37.8%	1.3%	61.8%	2.2%
WIC	24.7%	0.61%	29.9%	1.34%	12.6%	0.8%	22.0%	1.9%
SNAP	15.9%	0.44%	17.7%	0.92%	25.9%	1.0%	28.7%	2.4%
SNAP or WIC	17.1%	0.45%	19.9%	0.96%				
Medicaid	29.5%	0.54%	41.0%	1.18%	42.1%	1.2%	61.6%	2.4%
Housing	4.4%	0.25%	4.3%	0.49%	7.7%	0.7%	5.0%	1.2%
Public	34.0%	0.64%	49.1%	1.34%	6.3%	0.6%	4.2%	1.1%
Subsidized	29.4%	0.58%	44.5%	1.26%	2.4%	0.4%	1.1%	0.5%
Sample Size	28,122		6,938		6,239		1,308	
Weighted n (millions)	38.4		10.0		32.01		7.53	

Note: The four columns on the left-side panel use data from the March CPS 2012. The sample is restricted to household heads with a high school or less education and at least one child <18. The four columns on the right-side panel are copied from Camarota 2012's Table 3 for direct comparison.

Appendix Table 5. Association between Specific Safety Net Programs and Welfare Policies and the Business Cycle

	TANF		SNAP		SSI		Medicaid		CHIP
State TANF policy for post-enactment (PE) new immigrants[1]	1.166* (0.106)	State SNAP policy for PE new immigrants	0.825*** (0.057)	State SSI policy for PE immigrants[3]	1.057 (0.037)	State Medicaid policy for PE new immigrants	1.024 (0.040)	State CHIP policy for PE new immigrants[4]	0.980 (0.042)
State TANF policy for PE old immigrants[2]	0.897 (0.114)	State SNAP policy For PE old immigrants	1.118 (0.088)			State Medicaid policy for PE old immigrants	1.011 (0.037)		
PE new immigrants x State TANF policy for PE new immigrants	0.886 (0.121)	PE new immigrants x State SNAP policy for PE new immigrants	1.235** (0.131)	PE immigrants x State SSI policy for PE immigrants	1.104 (0.087)	PE new immigrants x State Medicaid policy for PE new immigrants	1.280*** (0.077)	PE new immigrants x State CHIP policy for PE new immigrants	1.388*** (0.117)
PE old immigrants x State TANF policy for PE old immigrants	1.007 (0.116)	PE old immigrants x State SNAP policy for PE old immigrants	1.459*** (0.180)			PE old immigrants x State Medicaid policy for PE old immigrants	1.556*** (0.086)		
Unemployment rate	1.039 (0.026)	Unemployment rate	1.122*** (0.014)	Unemployment rate	1.003 (0.013)	Unemployment rate	1.012 (0.009)	Unemployment rate	1.032*** (0.013)
Foreign-born x Unemployment rate	1.050*** (0.016)	Foreign-born x Unemployment rate	1.041*** (0.010)	Foreign-born x Unemployment rate	1.029* (0.016)	Foreign-born x Unemployment rate	1.023*** (0.006)	Foreign-born x Unemployment rate	1.078*** (0.024)
N	333422	N	333422	N	333422	N	1415132	N	591812

Note: 1. Post-enactment (PE) new immigrants refer to those who arrived after 1996 and have lived in the US for less than five years. 2. PE old immigrants refer to those who arrived after 1996 and have lived for over five years. 3. For SSI, the policy variable is defined as whether the state had SSI for immigrants who arrived after 1996 and is interacted with being an immigrant who arrived after 1996. 4. For CHIP, the policy variable is defined as whether the state had CHIP for immigrant children who arrived after 1996 and have lived in the US for less than five years and is interacted with being a PE new immigrant. For TANF, SNAP and SSI, the samples are restricted to low-educated households (household heads with a high school or less education) and at least one child <18. For Medicaid, the sample is restricted to low-educated adults. For CHIP, the sample is restricted to children from low-educated households. All models control for state and year fixed effects, individual characteristics (age, gender, education, race/ethnicity, and marital status), immigrant characteristics country of origin, cohort of immigration, year since immigration and citizenship status), household characteristics (number of children in the household and household size), state immigrant-related policies (state dream act, driver's license, E-Verify, Section 287(g) of Immigration and Naturalization Act, and the Secure Communities Program), and interaction terms between the foreign-born variable and state immigrant-related policy variables. Coefficients in the table are exponentiated coefficients (odds ratio) of logistic regression and robust standard errors clustered by state in parenthesis. * p<0.1, **p<0.05, *** p<0.01

Appendix Table 6. Robustness Check: Association between State Welfare Policy Score and the Business Cycle and Program Participation among Low-Educated Households with Children (with County Variables)

	Cash and Near-Cash Assistance		Social Safety Net Programs	
	Model 1	Model 2	Model 1	Model 2
State Welfare Policy Score	0.899***	0.903***	1.011	1.019
	(0.031)	(0.029)	(0.024)	(0.024)
Foreign-Born x	1.129***	1.129***	1.123***	1.058**
State Welfare Policy Score	(0.043)	(0.048)	(0.027)	(0.025)
County/State unemployment rate	1.074***	1.074***	1.034***	1.038***
	(0.011)	(0.010)	(0.008)	(0.008)
Foreign-born x	1.034***	1.030***	1.017*	1.008
County/State Unemployment rate	(0.010)	(0.009)	(0.009)	(0.011)
Foreign-born x Individual Characteristics	No	Yes	No	Yes
Foreign-born x Household Characteristics	No	Yes	No	Yes
Foreign-born x County/State Fixed Effects	No	Yes	No	Yes
N	333351	333000	333422	333330

Note: Household data are from the March CPS 1995-2018 showing welfare use information from 1994 to 2017. The sample is restricted to household heads with a high school or less education and at least one child <18. Cash and near-cash programs include TANF, SNAP and SSI. Safety net programs include cash and near-cash programs, Medicaid and SCHIP. All models control for county (state fixed effects for those do not have county identifier) and year fixed effects, individual characteristics (household heads' age, gender, education, race/ethnicity, and marital status), immigrant characteristics (household heads' country of origin, cohort of immigration, year since immigration and citizenship status), household characteristics (number of children in the household and household size), county unemployment rate county (state unemployment rate for those do not have county identifier), and county immigrant-related policies (state dream act, driver's license, E-Verify, Section 287(g) of Immigration and Naturalization Act, and the Secure Communities Program) (state level policies for those do not have county identifier), and interaction terms between the foreign-born variable and state immigrant-related policy variables. Model 2 are the fully interacted models which include interactions between whether the respondent is foreign-born and all explanatory variables except for immigrant characteristics and year fixed effects. Coefficients in the table show exponentiated coefficients (odds ratio) of logistic regression and robust standard errors clustered by state in parenthesis.
* p<0.1, **p<0.05, *** p<0.01

Appendix Table 7. Robustness Check: Decomposition Results for Program Participation Gap between Low-Educated Native and Immigrant Headed Households with Children (with County Variables)

	Cash and Near-Cash Assistance			Safety Net Programs		
Overall	**Coef.**		**SE**	**Coef.**		**SE**
Panel 1						
Immigrants	0.206	***	0.007	0.479	***	0.010
Natives	0.229	***	0.005	0.382	***	0.007
Difference	-0.023	***	0.008	0.096	***	0.010
Endowments (Explained)	0.051	***	0.008	0.098	***	0.009
Coefficients (Unexplained)	-0.074	***	0.006	-0.002		0.007
Panel 2: Endowments (Explained)						
Reversed State Welfare Policy Score	-0.003		0.002	0.004	*	0.002
Education (Whether Completed High School)	0.046	***	0.003	0.052	***	0.003
∑Ethnicity/Race	0.018	***	0.007	0.045	***	0.007
Non-Hispanic White	0.037	***	0.003	0.044	***	0.003
Non-Hispanic Black	-0.007	***	0.001	-0.006	***	0.001
Hispanic	-0.015	***	0.005	0.005		0.004
Other Races/Ethnicities	0.002	***	0.001	0.001	*	0.001
Other Individual/Household Characteristics	-0.008	***	0.002	-0.001		0.002
County/State Unemployment Rate	0.010	***	0.002	0.006	***	0.002
Immigrant Inclusion Policies	-0.002		0.001	0.002		0.002
Immigrant Exclusion Policies	-0.001		0.001	-0.002	**	0.001
County/State Fixed Effects	-0.015	***	0.006	-0.023	***	0.007
Year Fixed Effects	0.004	***	0.001	0.016	***	0.003
Panel 3: Coefficients (Unexplained)						
Reversed State Welfare Policy Score	-0.012		0.008	-0.043	***	0.010
∑Education	0.002		0.002	0.001		0.002
Did Not Complete High School	-0.022	***	0.001	-0.022	***	0.002
Completed High School	0.024	***	0.001	0.023	***	0.002
∑Ethnicity/Race	0.014	***	0.004	0.023	***	0.004
Non-Hispanic White	0.010	***	0.002	0.007	***	0.002
Non-Hispanic Black	-0.002		0.001	-0.002		0.001
Hispanic	0.008	*	0.004	0.020	***	0.004
Other Races/Ethnicities	-0.002	*	0.001	-0.003	**	0.001
Other Individual/Household Characteristics	0.007		0.011	-0.077	***	0.012
County/State Unemployment Rate	-0.012		0.014	0.009		0.023
Immigrant Inclusion Policies	-0.003		0.003	-0.002		0.004
Immigrant Exclusion Policies	-0.003		0.003	-0.009		0.006
County/State Fixed Effects	-0.008		0.005	-0.008		0.007
Year Fixed Effects	0.000		0.001	0.006	***	0.002
Constant	-0.058	**	0.024	0.099	***	0.025
Group 1: Immigrants. Number of Observations = 79,024						
Group 2: Natives. Number of Observations = 254,413						

Note: The sample is restricted to household heads with a high school or less education and at least one child <18. Cash and near-cash programs include TANF, SNAP and SSI. Safety net programs include cash and near-cash programs, Medicaid and SCHIP. “Other individual/household characteristics” include household heads' age, gender, marital status, number of children in the household and household size. * p<0.1, **p<0.05, *** p<0.01