Settlement Duration Matters: Deportation Threat and Safety Net Participation Among Mixed-Status Families

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Studies link intensified immigration enforcement to reduced safety net participation among mixed-status families, but less is known about how this varies by settlement duration. Bridging research on immigrant settlement and system avoidance, we theorize that the impacts are strongest among immigrants with shorter US residency. To test this, we analyze whether exposure to deportation threat, measured as removals under Secure Communities per one thousand noncitizens, is associated with safety net use among citizen children of likely undocumented Latinas in California, using a two-way fixed effects regression. We find that increased removal rates are negatively related to the child's participation in the Special Supplemental Nutrition Program for Women, Infants, and Children; Medicaid; and Temporary Assistance for Needy Families among mothers with less than five years of residency, but not among those with longer durations, relative to US-born mothers. These findings suggest that deportation threat may be especially burdensome for recent arrivals.

Keywords: deportation threat, secure communities, safety net, mixed-status families, settlement, recent arrivals

Unauthorized legal status severely constrains undocumented immigrants' access to critical resources and long-term well-being. Lacking legal status limits employment opportunities, suppresses wages, reduces access to the social safety net, and increases vulnerability to labor exploitation (Gonzales 2011; Gleeson 2010). These material disadvantages extend to chil-

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dren, including US citizens, by reducing household income and discouraging public benefit use due to fear of detection or deportation (Yoshikawa 2011). Moreover, children's well-being can also be impacted, including academic achievement and educational and workforce outcomes (see Bennett et al. 2025 and Kirksey and Sattin-Bajaj 2025, both this issue).

Despite undocumented immigrants' exclusion from most federal safety net programs, their US-born children are eligible. However, intensified immigration enforcement in the post–Welfare Reform era has been linked to reduced safety net participation among eligible children. For example, after the 2008 implementation of Secure Communities (SC), an interior immigration enforcement program that automated data-sharing between local law enforcement and federal immigration authorities, scholars documented a surge in noncitizen removals as well as reduced safety net enrollment among immigrant families, including children (Kohli et al. 2011; Fortuny and Chaudry 2011; Bernstein et al. 2019). As such, legal vulnerability contributes not only to marginalization of undocumented immigrants but also to intergenerational disadvantage.

Low enrollment in safety net programs among children in mixed-immigration status households is especially concerning given these families' comparatively higher poverty rates and exposure to additional risks, such as workplace raids and anti-immigrant subnational laws, that negatively affect immigrant maternal and infant health (Torche and Sirois 2019; Novak et al. 2017). Moreover, participation in food assistance, public health insurance, and public early childhood education programs is associated with improved children's health and development and academic outcomes (East 2020; Hong and Henly 2020; Lee et al. 2021). Hence, reduced safety net enrollment among US citizen children with undocumented parents—an estimated six million under age eighteen (American Immigration Council 2021), about three-quarters of whom live below the income threshold for program eligibility—could generate greater individual, family, and social costs in the near and long term (Capps et al. 2016).

The weight of illegality and the constraints it brings to safety net participation, however, may be experienced unevenly depending on how long immigrants have lived in the United States. Drawing on research on immigrant settlement and system avoidance, we hypothesize that reductions in program participation under intensified immigration enforcement are most pronounced among recently arrived immigrants (Piore 1979; García 2019; Patler and Gonzalez 2021, 2023; Asad 2023). Compared to those with longer US residency, recent arrivals are likely less familiar with both safety net programs and immigration enforcement policies, and may face greater language, information, and access barriers to program participation, and thus avoid state systems (García et al. 2024; Park et al. 2024). As the US has increased interior enforcement and implemented more restrictive border policies since the 1990s, undocumented immigrants have become increasingly locked-in to the US, lengthening their settlement duration (Massey et al. 2016). Of the estimated ten to eleven million undocumented people in the US, 43 percent have lived under the conditions of illegality and deportation threat for fifteen years or more, while others have shorter durations of stay (Migration Policy Institute, n.d.). We leverage these variations in undocumented immigrants' settlement duration to understand if and how deportation threat intersects with settlement duration in its association with safety net enrollment for US citizen children, moving beyond treating settlement duration merely as a control variable.

To do so, this study examines the association between the SC program and the take-up of a broad range of safety net programs by citizen children of likely undocumented Latina mothers in California, and whether these associations vary by mothers' duration in the US. We examine five different programs, including the Supplemental Nutrition Assistance Program (SNAP); Medicaid; Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); Temporary Assistance for Needy Families (TANF); and Head Start and state preschool programs. We draw on repeated cross-sectional data from the California Health Interview Survey (CHIS). CHIS is particularly suitable for the present study because it offers a detailed measure of citizenship and immigra-

tion status and has been used to assess a range of outcomes for children with likely undocumented parents (Patler et al. 2019).

With CHIS data, we examine these dynamics in California, the focus of this study, and one of the top two states of residence for undocumented immigrants, both recently arrived and long settled. Since the start of the twenty-first century, California has embraced a progressive shift toward a broad range of legal accommodations for immigrants, including one of the most generous state-level safety nets in the US for immigrants (García 2019). Indeed, it was the first state to provide subsidized healthcare to low-income undocumented people, including children, the elderly, and all adults, although the funding for undocumented adults has been recently cut (Associated Press 2025). The state has also enacted laws around language justice to promote access to government-run programs and services for immigrants with limited English proficiency (Institute for Local Government 2011). We therefore consider California a best-case scenario for safety net take-up among citizen children of undocumented parents. Nonetheless, immigrants in California, like those in all other states, remain vulnerable to federal immigration enforcement, which may dampen program participation despite the state's policies designed to support immigrants and its comparatively generous safety net.

By interacting removal rates under the SC program with mothers' immigration status in a two-way county and year fixed effects regression, this study finds suggestive evidence that SC removal rates are negatively associated with Head Start and state preschool participation of children among likely undocumented Latinas (proxied as noncitizen Latinas without lawful permanent residency [LPR] status), relative to US-born Latinas. Critically, accounting for the durations of US residency, we observe that SC removal rates are negatively related to the child's participation in WIC, TANF, and Medicaid among mothers with less than five years in the US, but not among those with longer durations, relative to US-born mothers. Among undocumented Latinas, we also find greater reductions in children's TANF and Medicaid participation rates among recently arrived mothers than longer-settled mothers. Our findings are based on an immigrant sample residing in California, a state with an accommodating approach to undocumented residents. Hence, there may be larger reductions in program participation in more restrictive destinations (García 2019). Taken together, our findings offer a nuanced understanding of how deportation threat intersects with legal precarity and immigrant settlement to shape citizen children's access to the safety net. By highlighting the heightened vulnerability of recently arrived undocumented mothers, this study underscores the need for policies that address the uneven burdens of enforcement on immigrant families, particularly those with eligible citizen children of recently arrived parents.

BACKGROUND

In this section, we provide information on the safety net programs covered in this study, the literature review of the effect of immigration enforcement on safety net participation, how we conceptualize deportation threat, and how immigrants' settlement duration may factor into the relationship between deportation threat and program participation.

Safety Net Access and Immigrant Eligibility

The US safety net is comprised of a range of means-tested programs designed to reduce material hardship and promote the health, well-being, and stability of low-income families. These include food assistance (for example, SNAP and WIC); public health insurance (Medicaid); income support (TANF); and early care and education (ECE) services (Head Start and state preschool), in addition to others. Eligibility for these programs depends on factors including household income and immigration status. Although undocumented immigrants are categorically excluded from most federal benefits, their US citizen children are generally eligible (Fix and Passel 2002). However, access depends on parents' ability and willingness to complete applications, provide documentation, and interact with government agencies, making public program enrollment of citizen children in mixed-status families particularly sensitive to the broader immigration policy environment.

Immigration Enforcement and Program Participation

A growing body of research demonstrates how immigration enforcement shapes safety net participation among immigrant families. For instance, children with undocumented parents are less likely to enroll in SNAP, partly due to fear, misinformation, and structural barriers (Bovell-Ammon et al. 2019; Pelto et al. 2020). Nationally, SNAP participation declined between 2015 and 2019, with the sharpest drop among children of noncitizen parents in states that did not expand Medicaid, highlighting how policy environments can exacerbate disparities (Nguyen et al. 2023). State-level restrictiveness and Trump-era policies such as the Public Charge Rule have also contributed to chilling effects on SNAP participation (Bitler et al. 2021; Chaudry et al. 2021; Miller et al. 2022).

These trends are echoed in research on Medicaid. Children in mixed-status families are less likely to enroll in public health insurance when a parent is a noncitizen, especially following restrictive immigration policy shifts (Vargas 2015; Barofsky et al. 2020; Dias and Chance 2024; Guerrero et al. 2021). Although the Affordable Care Act (ACA) helped reduce some of these gaps, disparities remain (Stimpson and Wilson 2018). Similarly, studies find that the implementation of restrictive state immigration laws, federal enforcement practices, and broader immigrant climate shifts, such as those following Donald J. Trump's election, have led to reductions in Medicaid participation and health-care utilization (Twersky 2022; Watson 2014; Ettinger de Cuba et al. 2023).

Federal enforcement practices and the Public Charge Rule have also been shown to reduce WIC participation in mixed-status families (Vargas and Pirog 2016; Choi et al. 2023; Barofsky et al. 2021). ECE enrollment is also lower among immigrant families, particularly when a parent is undocumented (Mapp and Hornung 2016; Yoshikawa 2011; Vesely et al. 2021). Studies also demonstrate that immigration raids were associated with reduced Head Start enrollment among Latine children, while SC implementation reduced participation in center-based childcare (Santillano et al. 2020; Ali et al. 2024).

The case of TANF is more complex. Although undocumented immigrants are ineligible, their US citizen children may receive child-only TANF benefits—that is, a smaller benefit that excludes the parent or parents (Golden and Hawkins 2011). Nationally, in 2016, child-only cases comprised 51 percent of TANF caseloads, and 25 percent of those cases involved ineligible immigrant parents (Joyce 2018). In California, 55 percent of child-only TANF cases involved ineligible immigrant parents, the highest percentage in the nation (Joyce 2018; Mauldon et al. 2012). This suggests that TANF may be more accessible to mixed-status families in California; however, participation remains vulnerable to intensified interior immigration enforcement, as Francisco Pedraza and Vanessa Zhu (2015) found heightened SC enforcement reduced TANF use even among eligible Latine citizens.

Everyday Deportation Threat

We conceptualize deportation threat as the everyday salience of immigration enforcement in the lives of immigrants and their families. More specifically, following Amy L. Johnson and colleagues (2024), we define everyday deportation threat as the federal government's routine efforts to detain and deport noncitizens, and the public's awareness of these actions. These efforts could shape the daily life of immigrants and their families, even for immigrants who have reentered the US following deportation (see Valdivia 2025, this issue), generating psychological distress and eroding trust in public institutions. For example, Pedraza and colleagues (2017) found that the greater salience of immigration issues led Latine US citizens to avoid daily-life activities, including health-care services, because of their personal proximity to undocumented immigrants. We operationalize such everyday threats through removal rates under SC, a program that infused immigration enforcement into local policing by automating immigration checks using the fingerprints of arrestees.

Settlement Duration, System Avoidance, and Safety Net Participation

Research on system avoidance and immigrant settlement offers insight into how duration in

the US shapes responses to intensified immigration enforcement. System avoidance scholars argue that individuals who have experienced state surveillance or marginalization tend to avoid record-keeping institutions such as schools, hospitals, and benefit programs (Brayne 2014; Fong 2020; Patler and Gonzalez 2021, 2023). Yet, avoidance is not a given as undocumented parents often engage selectively with the state on behalf of their citizen children (Asad 2023; García 2019).

In particular, settlement duration may moderate these dynamics, as immigrants develop more familiarity with the safety net and the risks of immigration enforcement over time. While recently arrived immigrants often lack knowledge of program rules, face language barriers, and report lower self-efficacy in navigating services (Duh-Leong et al. 2022), the cumulative knowledge may lead long-settled parents to build trusted networks, learn how to minimize exposure while accessing resources, and reframe deportation threat as part of the risks of daily life (García 2019; Piore 1979). Thus, we expect that recent arrivals may be more vulnerable to reduced safety net participation among their eligible US citizen children as they are likely less able or willing to access safety net programs.

This study contributes to the literature by addressing two research questions. First, we examine whether removal rates under the SC program are associated with safety net participation among citizen children of likely undocumented Latina mothers in absolute terms and relative to US-born Latina mothers (RQ1). Second, we assess whether these relationships vary by mothers' duration of US residence (RQ2). We employ two analytical approaches to address each question.

DATA

We use the 2009–2019 CHIS data, which is a repeated cross-sectional population-based telephone survey of California's noninstitutionalized population, as well as the largest state survey and one of the largest health surveys in the country. Within each selected household, CHIS randomly selects one adult respondent for the adult survey. In households with adolescents (aged twelve to seventeen) or children (under age twelve), one adolescent or one child is randomly selected, or both, if the sampled adult is their parent or legal guardian. Thus, at most, two children under the age of eighteen are sampled in one household. The adolescent takes the teen survey directly, while the adult most knowledgeable about the sampled child completes the child survey (UCLA Center for Health Policy Research 2016). By linking across adult, teen, and child surveys, we created a child-level dataset linked to the parent. We hereafter refer to the parent survey respondent as the "parent" for simplicity (73.4 percent of parents who responded to the adult survey are mothers). CHIS is well suited for this study because its child and teen surveys directly ask whether the child's mother is a noncitizen without LPR status. We use this status as a proxy to more accurately capture Latina mothers who are likely undocumented, compared to most other surveys that cannot disentangle LPRs from other noncitizens (Patler et al. 2019). Prior studies using CHIS have similarly classified undocumented immigrants based on respondents' immigration status (Bustamante et al. 2014; Ortega et al. 2007, 2018),[1] and prior research supports the reliability of CHIS immigration status measures (Viana et al. 2017).

Our sample consists of citizen children whose mothers are likely undocumented Latinas or US born citizen Latinas (N = 8,184). To capture children who are likely eligible for safety net programs, we focus on children whose parent has no college education and whose family income is under 300 percent of the Federal Poverty Level (FPL) (N = 5,278)—as this income range captures most variation in safety net eligibility (Schmidt et al. 2016) and a majority of program participation questions in CHIS. (WIC, SNAP, TANF were surveyed only among families with income at or under 300 percent of the FPL in most years.) We then ex-

1. Latinas make up 98 percent of noncitizen mothers without LPR status in our sample. This likely minimizes error in our measurement of undocumented status, given the evidence that the vast majority of undocumented immigrants in the US are Latine immigrants (77.1 percent in 2017; Lopez et al. 2021).

clude cases with missing values in study variables, such as program participation and mother's years lived in the US. Most of the missing data in program participation stemmed from question changes by CHIS. In 2019, CHIS began asking WIC, SNAP, and TANF questions only to families with incomes at or below 200 percent of the FPL. Consequently, families with incomes between 200 and 300 percent of the FPL in 2019 are coded as missing in those variables. As a robustness check, we examine whether findings are substantively similar when a study sample is defined by the income threshold of 200 percent of FPL and when we drop the 2019 survey year. Missingness on the US duration variable is attributable to data processing errors[2] in the 2015 and 2017 CHIS child data (under age twelve). To address this issue, we conduct sensitivity analyses by dropping the 2015 and 2017 data from primary models in both the first and the second research questions. We find substantively similar results in those robustness tests.[3] After removing missing cases, sample sizes vary across selected programs: 2186 (WIC), 534 (Head Start), 4,924 (TANF), 4,995 (SNAP), and 5,051 (Medicaid). We have smaller sample sizes for WIC and Head Start and state preschool because only children under age six are eligible for them, while all children under age eighteen are eligible for SNAP, Medicaid, and TANF. In addition, only children who received childcare for ten or more hours a week were asked about Head Start or state preschool enrollment. Appendix table B.1 shows a breakdown of missingness in our samples.

MEASURES

We use the following measures in this study.

Program Participation

For each program, participation is coded as equal to 1 when a child is reported to have participated at the time of the interview (else = 0). Figure 1 illustrates 2009–2019 program participation trends in our sample of low-income, US-born citizens and likely undocumented Latinas' children. TANF and SNAP had relatively stable participation rates until 2016 when rates began to decline, although there was a slight dip in SNAP and TANF participation rates in 2013. Medicaid participation consistently increased from 2009 to 2016, followed by a decline in 2017, although it became stable afterward. WIC participation gradually declined over the years, including the periods after 2016. There was more variation in Head Start and state preschool program participation rates, which may be partly related to their smaller sample size. Taken together, although some variation exists across programs, the overall trend points to declines in program participation post-2016.

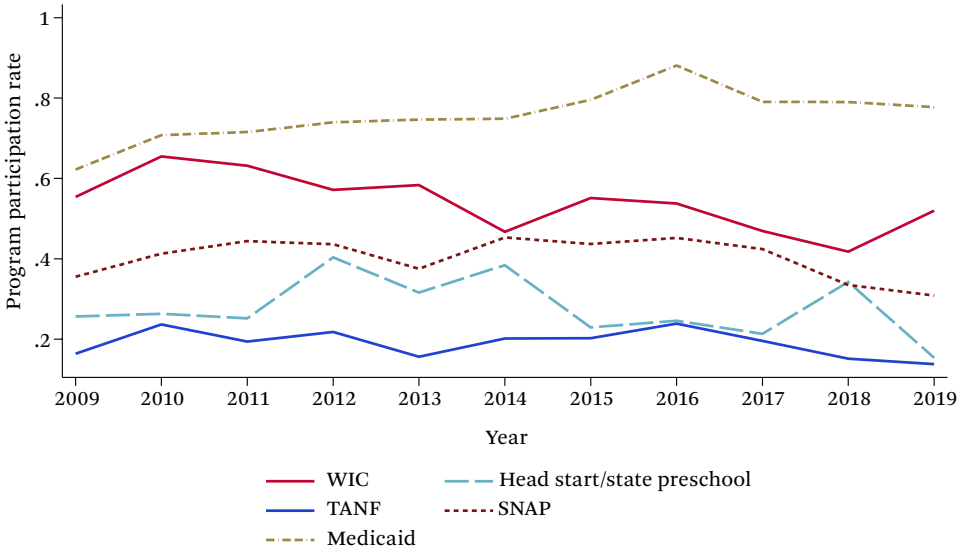
Secure Communities Removal Rates

Our treatment variable is constructed as the total number of removals under the SC program per one thousand noncitizen residents in a given county and year, an approach used in related research (Vargas and Pirog 2016). Given how it is measured, the removal rate reflects deportability and, in turn, families' exposure to deportation threat. Removal data come from TRAC (n.d.), and noncitizen population estimates are from the US Census Bureau. Removal rates are merged with the CHIS sample by survey year and county of residence. Figure 2 illustrates removal rate trends from 2009 to 2019 across California counties, with counties showing distinct patterns indicated by lines with different symbols or patterns. Changes in removal rates over time may reflect several county-level factors, such as demographic changes, proximity to the border, number of ICE officers, local attitudes toward immigration, and the size of the undocumented population. Ian Peacock

2. In 2015, some noncitizen mothers were misclassified as US-born citizens in the US duration variable, primarily in the child data (N = 155). In 2017, some children surveyed in the child data were not assigned valid US duration values (N = 63).

3. Appendix table A.1 shows that families with missing values in WIC, SNAP, TANF outcomes, or duration in the US are more likely to have income at or above 200 percent of FPL and are less likely to have children aged twelve to seventeen, compared to those who do not have missing values in those variables. This is expected, given the nature of missingness in those variables.

Figure 1. Program Participation Rates over Time in the Study Sample



Source: Authors' calculations of program participation rates from CHIS data (UCLA Center for Health Policy Research 2016).
Note: CHIS weights are applied. Average participation rates are plotted for each program in the full study sample (which vary across programs).

(2025, this issue) also suggests that social influence contributes to counties' decisions to participate in immigration enforcement. In our model specification, we leverage temporal variations in removal rates within counties, coming from both the activation of SC and changes in enforcement intensity.

Mother's Immigration Status

The treated group (those impacted by removal rates) is citizen children living in Latina mixed-status families, defined as a family in which the child's mother is a likely undocumented immigrant (proxied as a noncitizen without LPR status) and identifies as Latina or Hispanic. The comparison group is citizen children whose mothers are Latina or Hispanic US-born citizens.[4] We use the mother's immigration status because mothers are disproportionally responsible for caregiving and children's well-being, including safety net participation (Bianchi et al. 2006; Bianchi 2011), and prior research has also used this approach (Watson 2014; Vargas and Pirog 2016; Ybarra et al. 2017). Moreover, the father's immigration status has additional missing values ($N = 817$ in the full data), which would further limit statistical power.

Moderator

For our second research question, mother's duration in the US is our moderator. It is categorized as less than five years, five to fourteen years, and fifteen or more years.

EMPIRICAL STRATEGY

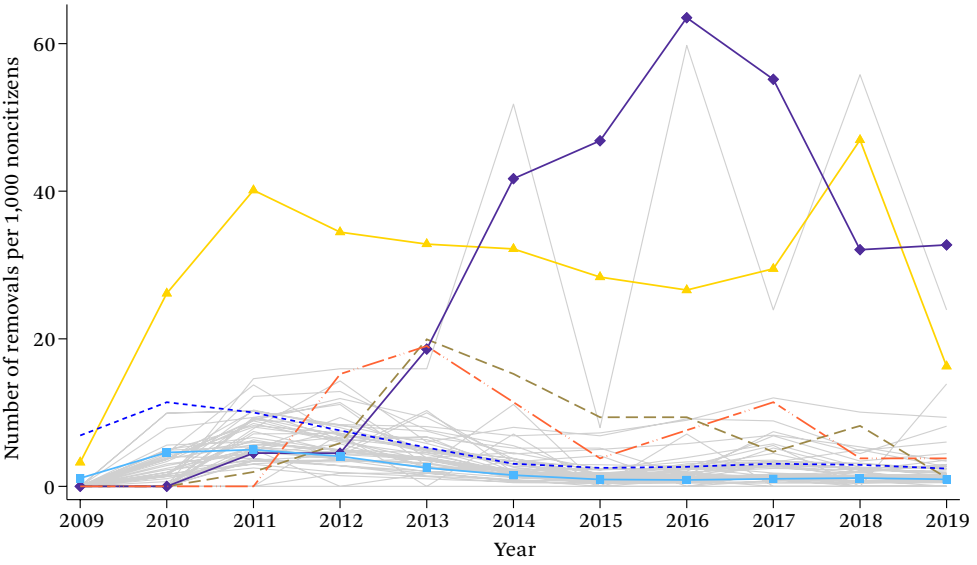
To address each research question, we consider the following two analytical approaches within a two-way (county and year) fixed effects framework.

Full Analysis (Preferred Specification)

First, as our preferred specification, we conduct a full analysis that compares likely undocumented Latinas to US-born Latinas.

4. Due to relatively smaller sample sizes of naturalized citizens and lawful permanent residents in our data, this study focused on US-born citizens and likely undocumented populations. For example, there were about one hundred noncitizens with LPR status in the Head Start sample.

Figure 2. California County-Level Removal Rates over Time Under the Secure Communities Program



Source: Authors' calculations of removal rates from TRAC (n.d.) data.
Note: All California counties' removal rates are plotted in this figure. Several counties are distinguished using patterned and symbol-marked lines: Calaveras County (dash), Imperial County (triangle symbol), Lassen County (diamond symbol), LA County (squared symbol), Mariposa County (dash-dot line), and San Diego (short dash).

First Research Question

In our analysis of RQ1, we interact SC removal rates with the mother's immigration status in a county and year fixed effects regression to estimate the relationship between SC removal rates and safety net participation among eligible US citizen children with a likely undocumented Latina mother compared to those with US-born Latina mothers.[5] This approach follows that of Tara Watson (2014), who used a similar design to examine the chilling effects of deportation threat on Medicaid participation. To implement, we use a linear probability model, which is preferable to nonlinear models when using interaction terms (Ai and Norton 2003; Mood 2010; Angrist and Pischke 2009). We analyze a model of the following form (equation 1):

$$Y_{ict} = \beta_0 + \beta_1 removals_{ct} + \delta\, removals_{ct} \times mixed_i + \beta_2 mixed_i + \lambda_t + \alpha_c + \lambda_t \times mixed_i + \alpha_c \times mixed_i + \theta_{ct}'\rho + X_{it}'\gamma + \varepsilon_{ict},$$

where Y_{ict} indicates the program participation status of child i in year t who lives in county c, $removals_{ct}$ refers to removal rates in county c during year t, and $mixed_i$ indicates that the child i's mother is likely an undocumented Latina (= 0 if the mother of child i is a US-born Latina). The main coefficient of interest δ represents the association between a one-unit increase in removal rates (or one additional person being removed per one thousand noncitizens) and program participation among children of likely undocumented Latinas over and above the association among children of US-born Latinas. To contextualize, this one-

5. Our model is similar to a triple-difference model with a continuous treatment variable. However, it is not fully specified as a traditional triple-difference model, which would require the inclusion of county by year fixed effects. We intentionally omit these fixed effects because they would fully absorb the coefficient on $removals_{ct}$, the association between removal rates and program participation among US-born mothers, which is one of the primary relationships of interest in our analysis.

unit change represents approximately 20 percent of the increase in annual removal rates from the lowest to the highest levels during the study period.[6] β_1 captures the association between removal rates and safety net participation of children of US-born Latinas. Previous studies suggest that while the effects of deportation threat may spill over onto US citizen Latinas, these effects are generally smaller than those on undocumented Latinas (Alsan and Yang 2022; Novak et al. 2017). Therefore, we expect to find these effects, if any, to be modest. Standard errors are clustered at the county level to account for common shocks within a county and serially correlated shocks over time (findings are robust when standard errors are clustered at the family level).

The model includes a set of fixed effects including year fixed effects λ_t and year by mixed-status family fixed effects $\lambda_t \times mixed_i$, which accounts for statewide annual changes in program participation among children from Latina mixed-status families. Additionally, we include county fixed effects α_c and county by mixed-status family fixed effects $\alpha_c \times mixed_i$ to control for permanent county-level differences that affect program participation among children in Latina mixed-status families. We also adjust for county unemployment rates and the implementation status of Section 287(g), captured in θ_{ct}, to account for changes in county-level economic conditions and other immigration enforcement policies over time. This set of fixed effects and county-year covariates controls for potential heterogeneity across counties and over time that could influence children's safety net participation and may covary with changes in removal rates.

We also adjust for family-level or child-level characteristics X_{it}, including the responding parent's education (less than high school, high school diploma, some college); marital status (unmarried,[7] married, living with partner); age (eighteen to twenty-nine, thirty to thirty-nine, forty to forty-nine, fifty or older); family poverty status (0–50% FPL, 50–100% of FPL, 100–150% of FPL, 150–200% of FPL, 200%+ of FPL); number of children in the household (one, two, three or more); and children's age (zero to two years, three to five years, six to eleven years, twelve to seventeen years). Adjusting for these individual-level covariates improves the precision of our key estimate and helps balance any compositional differences between the treated and comparison groups (Olden and Møen 2022). The assumption of our model is that, after adjusting for a set of fixed effects and county and individual characteristics, there are no county-specific shocks that coincide with the SC removal rate changes and that differentially influence safety net participation for children of likely undocumented Latinas relative to US-born Latinas. We conduct tests later to examine the validity of this assumption.

Second Research Question

In our analysis of RQ2, we use equation 1 but run three separate regressions based on likely undocumented Latinas' different durations of US residency (zero to four, five to fourteen, or fifteen or more years). As before, we consider children of US-born Latinas as the comparison group. In RQ2, we focus on WIC, SNAP, TANF, and Medicaid due to the small sample size for the Head Start and state preschool outcome ($N = 534$), limiting statistical power to conduct a subgroup analysis.

Analysis for Likely Undocumented Latinas

After conducting a full analysis comparing likely undocumented Latinas to US-born Latinas, we also conduct within-group analyses for likely undocumented Latinas in both the RQ1 and RQ2.

First Research Question

For RQ1, we analyze the following specification (equation 2):

$$Y_{ict} = \beta_0 + \delta\, removals_{ct} + \lambda_t + \alpha_c + \theta_{ct}'\rho + X_{it}'\gamma + \varepsilon_{ict},$$

where all subscripts and variables are defined similarly as above. In this specification, we additionally account for mother's duration in the

6. Across all counties, the lowest removal rate is 0.85 in 2009, and the highest removal rate is 6.21 in 2011.

7. This includes never married, separated, widowed, and divorced.

US, captured in X_{it}. The main coefficient of interest is δ, which indicates the association between removal rates and program participation of citizen children in mixed-status families. This model serves as a robustness check for the full model (equation 1) that examines relative changes by mother's immigration status, testing whether similar changes in program participation are observed among the children of undocumented Latinas themselves.

Second Research Question

In RQ2, we investigate whether undocumented Latina mothers differ from each other in their children's program participation based on duration in the US. To do so, we use equation 1, limiting the sample to undocumented Latinas and replacing $mixed_i$ with mother's duration in the US, resulting in the following model specification (equation 3):

$$Y_{ict} = \beta_0 + \beta_1 removals_{ct} + \delta\, removals_{ct} \times USduration_i + \beta_2 USduration_i + \lambda_t + \alpha_c + \lambda_t \times USduration_i + \alpha_c \times USduration_i + \theta_{ct}'\rho + X_{it}'\gamma + \varepsilon_{ict}.$$

The coefficient of interest is δ, the interaction effect, which indicates whether the association between removal rates and children's program participation differs for undocumented Latinas with five to fourteen years and fifteen or more years, compared to those with less than five years in the US.

SAMPLE CHARACTERISTICS BY MOTHER'S IMMIGRATION STATUS

In table 1, we describe summary statistics for our study sample by mother's immigration status.[8] Children of undocumented Latina mothers are more likely to live in poverty (below 100 percent of the FPL), compared to children of US-born citizen mothers (64 percent vs. 44 percent, respectively). Likely due to their lower income status, the program participation rate is higher for children of undocumented mothers than those of US citizen mothers across all programs except TANF (although Head Start participation rates are statistically indistinguishable). In addition, undocumented mothers are more likely to have less than a high school education, to be married and living with a partner, to have a greater number of children, and to be in their thirties and forties. The age of the focal child also varies by mother's immigration status. Furthermore, most undocumented mothers have lived in the US for fifteen or more years (51 percent) or five to fourteen years (45 percent). Such compositional differences in demographic and economic characteristics between children of undocumented mothers and their counterparts suggest the importance of adjusting for these covariates in the model. In appendix table A.2, we also present sample characteristics by both mother's duration in the US and immigration status.

ASSOCIATION BETWEEN REMOVAL RATES AND SAFETY NET PARTICIPATION (RQ1)

Table 2 presents the association between removal rates and citizen children's safety net participation among mixed-status families, based on our preferred specification. Full results, including controls, are available in appendix table A.3. The coefficient on *Removal rate × Undocumented Latina* indicates that a marginal increase in removal rates is associated with a 7-percentage-point greater reduction in Head Start or state preschool participation among children of undocumented mothers, relative to children of US citizen mothers. This difference is equivalent to a 22 percent reduction in participation rate based on the mean of 0.32. However, while the direction of this estimate aligns with our expectation, we interpret this result with caution, given that our estimate does not meet the conventional threshold for statistical significance ($p < 0.05$). Also, in line with our expectation, we find no evidence of an association between removal rates and Head Start or state preschool program participation among US-born Latinas' children (see *Removal rate* row in table 2), providing evidence that the reduction among

8. To generate table 1, we used the sample limited to families without missing values in SNAP participation status. Appendix table A.5 presents sample characteristics of families without missing values in the Head Start and state preschool program outcome (as noted earlier, sample sizes differ by program type).

Table 1. Sample Characteristics by Mother's Immigration Status

	US-Born Citizen (55.22%) Percent / Mean (SD)	Undocumented (44.78%) Percent / Mean (SD)	Full Sample Percent / Mean (SD)	Significance
County removal rate	3.52 (3.33)	3.30 (2.63)	3.42 (3.11)	
Received WIC	55.54	69.29	61.1	***
Attended Head Start or state preschool program	30.64	31.55	30.92	
Received TANF	22.22	15.80	19.27	**
Received SNAP	36.32	45.48	40.42	**
Received Medicaid	69.13	84.99	76.23	***
Number of children in household				**
1	21.85	14.41	18.52	
2	32.1	32.35	32.21	
3+	46.05	53.24	49.27	
Focal child's age				***
0–2	24.79	15.98	20.84	
3–5	20.84	22.15	21.43	
6–11	32.22	30.68	31.53	
12–17	22.15	31.19	26.2	
Parent's marital status				***
Not married	40.79	30.16	36.03	
Married	40.15	45.88	42.72	
Living with partner	19.07	23.96	21.26	
Parent's age				***
18–29	37.71	14.6	27.36	
30–39	36.46	48.22	41.73	
40–49	17.29	30.66	23.27	
50+	8.54	6.52	7.63	
Parent's education attainment				***
Below high school	22.13	68.04	42.68	
High school degree	41.6	25.22	34.27	
Some college	36.27	6.74	23.05	
Poverty status (percent of FPL)				***
0–50	19.34	22.83	20.90	
50–100	24.46	41.18	31.95	
100–150	20.84	21.29	21.04	
150–200	16.44	10.18	13.64	
200+	18.92	4.53	12.47	
Mother's duration in the US				***
<5 years	—	4.66	2.08	
5–14 years	—	44.68	20.00	
15+ years	—	50.67	22.69	
Born in the US	100	—	55.23	
County implemented 287(g)	31.61	35.04	33.15	
County unemployment rate	8.65 (3.21)	8.60 (3.27)	8.63 (3.26)	
N	2,409	2,586	4,995	

Source: Authors' calculations of CHIS data (UCLA Center for Health Policy Research 2016).
Note: This table is generated among respondents who have non-missing values in SNAP outcome (*N* = 4,995). Thus, in this table, the sample size is 4,995 for all variables except for WIC (*N* = 2,190), Head Start/state preschool (*N* = 526), and TANF (*N* = 4,925) receipt status, as there are additional missing cases in other outcomes. Significance column shows the statistical significance of differences between US-born citizens and undocumented mothers.
$^{+}$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 2. Full Analysis: Association Between Removal Rates and Safety Net Participation (RQ1)

	WIC	Head Start	TANF	SNAP	Medicaid
Removal rate	0.02+	0.02	−0.01	0.01	−0.00
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Removal rate × Undocumented Latina	−0.02	−0.07+	0.00	−0.01	0.01
	(0.02)	(0.04)	(0.01)	(0.01)	(0.01)
Mean of outcome in treated group	0.69	0.32	0.16	0.45	0.85
N	2,186	534	4,924	4,995	5,051

Source: Authors' calculations of CHIS data (UCLA Center for Health Policy Research 2016).
Note: CHIS weights are applied. Only the key coefficients are presented, but all models control for parent's education attainment, marital status, age, household poverty status, number of children in the household, child age, county unemployment rate, 287(g) implementation status, year fixed effects, year by mixed-status family fixed effects, county fixed effects, and county by mixed-status family fixed effects.
+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

mixed-status families was not likely influenced by broader factors that discourage involvement in Head Start or state preschool. Regarding other programs, we did not observe significant reductions in participation among children of likely undocumented Latinas relative to those of US-born Latinas (see *Removal rate × Undocumented Latina)*, nor among the children of US-born Latinas (see *Removal rate*), except in the case of WIC, where we unexpectedly find a small but marginally significant positive association.

Subsequently, we conducted the within-group analysis for likely undocumented Latinas, controlling for mothers' durations in the US (equation 2); table 3 illustrates the findings. Results are similar to what we find in table 2—a one-unit increase in SC removal rates is marginally significantly ($p < 0.1$) associated with a reduction in Head Start or state preschool program participation among children of likely undocumented Latinas by 7 percentage points. In addition, we continue to find null relationships between SC removal rates and participation in other programs among undocumented Latinas' children.

THE ROLE OF MOTHER'S DURATION IN THE US (RQ2)

Next, based on our preferred specification, we ran separate regressions for each subgroup of undocumented Latinas based on their duration

Table 3. Association Between Removal Rates and Safety Net Participation Among Likely Undocumented Latinas (RQ1)

	WIC	Head Start	TANF	SNAP	Medicaid
Removal rate	0.00	−0.07+	−0.01	0.00	0.01
	(0.01)	(0.04)	(0.01)	(0.01)	(0.01)
N	1,106	181	2,585	2,585	2,590

Source: Authors' calculations of CHIS data (UCLA Center for Health Policy Research 2016).
Note: CHIS weights are applied. Only the key coefficients are presented, but all models control for mother's duration in the US, parent's education attainment, marital status, age, household poverty status, number of children in the household, child age, county unemployment rate, 287(g) implementation status, year fixed effects, and county fixed effects.
+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

in the US (less than five years, five to fourteen years, and fifteen or more years), comparing each group to children of US-born Latinas. As reflected in table 4, we found evidence that there are greater reductions in citizen children's program participation when likely undocumented mothers lived in the US for less than five years. In panel 1, the coefficient on *Removal rate × Undocumented Latina* shows that a one-unit increase in removal rates led to an 8-percentage-point decrease (a 12 percent reduction based on the mean) in WIC participation among children of undocumented mothers with less than five years relative to US-born Latinas. On the other hand, for those with longer durations, there were no reductions in children's WIC enrollment compared to US-born mothers. Similarly, as indicated in panel 2 and panel 4, a marginal increase in removal rates differentially reduced children's TANF and Medicaid participation among mothers with less than five years in the US relative to US-born mothers by 4 percentage points (a 40 percent reduction based on the mean) and 6 percentage points (a 7 percent reduction based on the mean), respectively. In contrast, such decreases were not observed among mothers with longer durations in the US.[9] Also, though the patterns are somewhat similar, we do not observe statistically significant greater reductions in SNAP participation among mothers with less than five years in the US compared to US-born mothers.

To better illustrate our findings, we plotted predicted participation rates at different removal rates by the mother's immigration status and durations in the US, using the regression coefficients for each program presented in table 4 (see figure 3). For brevity, we only present graphs for the subgroup model of mothers with less than five years, which corresponds to regression coefficients shown in column 1. Figure 3 shows that predicted participation rates decrease—as removal rates increase—for children of recently arrived likely undocumented Latinas, relative to children of US-born Latinas. It is notable that, at heightened removal rates, children's WIC and Medicaid participation rates among recently arrived Latinas drop below the participation rates among children of US-born Latinas, though the confidence intervals for those estimates overlap. Taken together, these subgroup analyses provide evidence that longer settlement durations may serve as a protective factor in children's safety net participation.

Next, we present within-group analysis (equation 3) to investigate whether undocumented Latina mothers differ from each other in children's program participation based on US settlement durations. Table 5 indicates that a marginal increase in SC removal rates is negatively associated with children's TANF and Medicaid participation among likely undocumented Latina mothers with less than five years in the US by 6 percentage points and 5 percentage points, respectively. See the coefficient on the *Removal rate* row in table 5. On the other hand, the coefficients on *Removal rate × 5–14 years* and *Removal rate × 15+ years* show that longer-settled Latina mothers are not subject to such reductions in children's TANF and Medicaid participation, as these coefficients nearly or completely offset the negative coefficient on *Removal rate*. Similarly, figure 4, which displays predicted participation rates at varying removal rates by mothers' duration in the US based on the estimates shown in table 5, illustrates that children of mothers with zero to four years in the US seem to be most vulnerable to increases in removal rates in TANF and Medicaid participation. In contrast, for WIC and SNAP participation, we do not observe significant differences in partici-

9. We unexpectedly observe a marginally significant positive coefficient of 0.03 on *Removal rate × Undocumented Latina* in column 3, panel 4 of table 4, indicating that removal rates increase Medicaid participation of children among likely undocumented mothers with fifteen or more years in the US compared to US-born mothers. Although the underlying reason is unclear, one possible explanation is that higher removal rates may prompt long-settled undocumented women to apply for Medicaid to offset income losses. This may occur because fathers, who are more likely to be employed, could be disproportionately affected by higher removal rates. However, the magnitude is small, representing only 3.6 percent of the mean of the fifteen or more years group.

Table 4. Full Analysis: The Role of Mother's Duration in the US in the Association Between Removal Rates and Safety Net Participation (RQ2)

	<5 Years (Versus US-Born)	5–14 Years (Versus US-Born)	15+ Years (Versus US-Born)
Panel 1. WIC participation			
Removal rate	0.02	0.02+	0.02
	(0.01)	(0.01)	(0.01)
Removal rate × Undocumented Latina	−0.08*	−0.02	−0.05
	(0.04)	(0.02)	(0.03)
Mean of outcome among the treated	0.66	0.73	0.62
N	1,144	1,788	1,403
Panel 2. TANF participation			
Removal rate	−0.01	−0.01	−0.01
	(0.01)	(0.01)	(0.01)
Removal rate × Undocumented Latina	−0.04*	0.01	−0.00
	(0.02)	(0.01)	(0.02)
Mean of outcome among the treated	0.10	0.16	0.16
N	2,439	3,554	3,603
Panel 3. SNAP participation			
Removal rate	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
Removal rate × Undocumented Latina	−0.03	−0.01	−0.01
	(0.02)	(0.01)	(0.02)
Mean of outcome among the treated	0.27	0.49	0.44
N	2,511	3,625	3,675
Panel 4. Medicaid participation			
Removal rate	−0.00	−0.00	−0.00
	(0.01)	(0.01)	(0.01)
Removal rate × Undocumented Latina	−0.06***	0.01	0.03+
	(0.01)	(0.02)	(0.02)
Mean of outcome among the treated	0.81	0.87	0.84
N	2,562	3,677	3,730

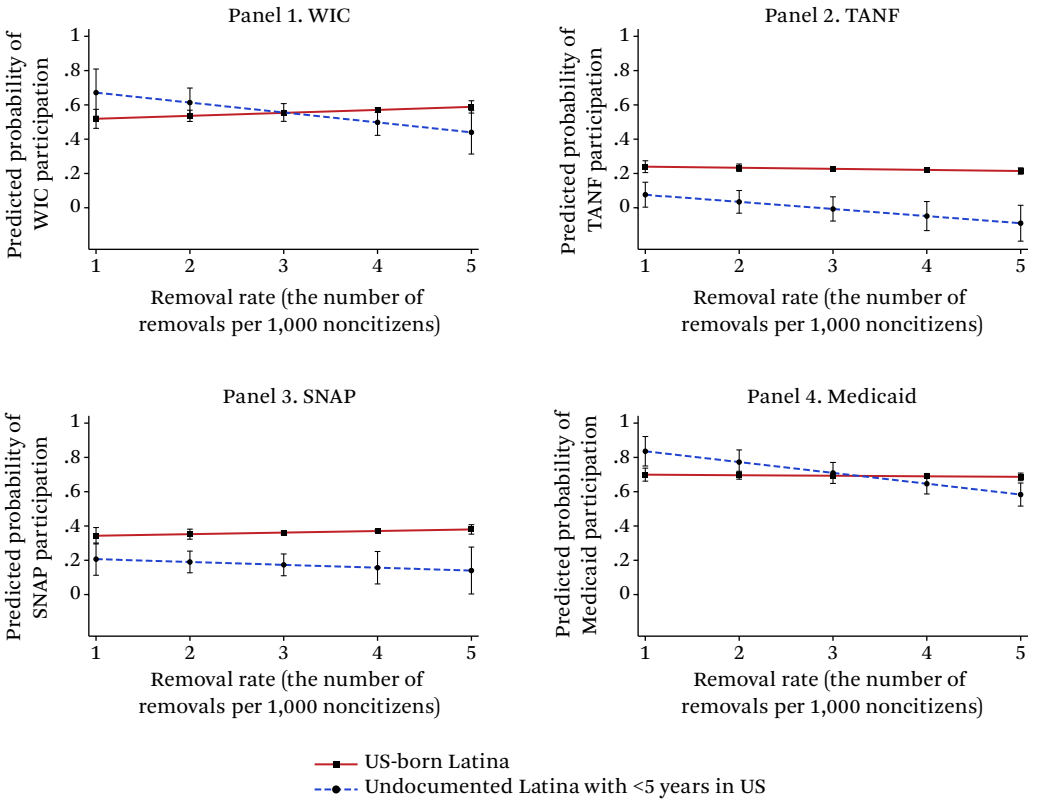
Source: Authors' calculations of CHIS data (UCLA Center for Health Policy Research 2016).
Notes: CHIS weights are applied. Each column in each panel indicates a different subgroup model. Only key coefficients of interests are displayed, but all models control for parent's education attainment, marital status, age, household poverty status, number of children in the household, child age, county unemployment rate, 287(g) implementation status, year fixed effects, year by mixed-status family fixed effects, county fixed effects, and county by mixed-status family fixed effects.
+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

pation rates based on mothers' duration in the US.

FALSIFICATION AND ROBUSTNESS TESTS

Using our preferred specification (that is, full analysis comparing likely undocumented mothers to US-born mothers), we conducted several falsification tests to examine whether there is any evidence of county-year confounding factors driving our findings on the association between SC removal rates and children's safety net participation. As we observed preliminary evidence ($p < .1$) of a reduction in Head Start and state preschool participation in the full sample, we conducted our tests using this

Figure 3. Predicted Program Participation Rates by SC Removal Rates for Likely Undocumented Latinas with Less than Five Years in the United States and US-Born Latinas



Source: Authors' calculation of CHIS data (UCLA Center for Health Policy Research 2016).
Note: We used the margins command in STATA to calculate the predicted program participation rates. The vertical line indicates 95 percent confidence intervals. The predicted TANF participation rates at the removal rate of three to five should be interpreted with caution since they are below zero, although their confidence intervals overlap with zero. Overall, the decreasing trends of participation rates for all programs provide evidence of reductions in children's program participation among likely undocumented mothers with less than five years in the US.

outcome. First, we considered whether lead-in removal rates (measured one year after the program participation year) are differentially related to the program participation among children of undocumented Latinas, relative to their counterparts with US-born Latina mothers. The lead removal rate can be spuriously correlated with program participation of children of undocumented mothers if the results are generated by unobserved county-year confounding factors that covary with changes in removal rates and program participation. Illustrated in column 1 in table 6, we found that the interaction effect between the lead removal rate and mother's immigration status lacks statistical significance and is opposite in direction (coefficient = 0.02). Second, we examined a placebo sample (children of White US-born citizen mothers) who are unlikely to be affected by SC removal rates. As indicated in column 2 of table 6, we found no evidence of an association between removal rates and Head Start or state preschool participation in the placebo group (coefficient = 0.02), adding confidence to our results. Moreover, we tested if the removal rate is differentially related to demographic charac-

Table 5. The Role of Mother's Duration in the US in the Association Between Removal Rates and Safety Net Participation Among Likely Undocumented Latinas (RQ2)

	WIC	TANF	SNAP	Medicaid
Removal rate	0.00	−0.06***	0.01	−0.05***
	(0.04)	(0.01)	(0.03)	(0.01)
Removal rate × 5–14 years (reference: <5 years)	0.00	0.06**	−0.00	0.06***
	(0.04)	(0.02)	(0.03)	(0.02)
Removal rate × 15+ years (reference: <5 years)	−0.02	0.05**	−0.01	0.08***
	(0.04)	(0.02)	(0.04)	(0.02)
N	1,106	2,585	2,585	2,590

Source: Authors' calculations of CHIS data (UCLA Center for Health Policy Research 2016).
Note: CHIS weights are applied. Only the key coefficients are presented, but all models control for mother's duration in the US, parent's education attainment, marital status, age, household poverty status, number of children in the household, child age, county unemployment rate, 287(g) implementation status, year fixed effects, year by duration in the US fixed effects, county fixed effects, and county by duration in the US fixed effects.
$^{+}$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

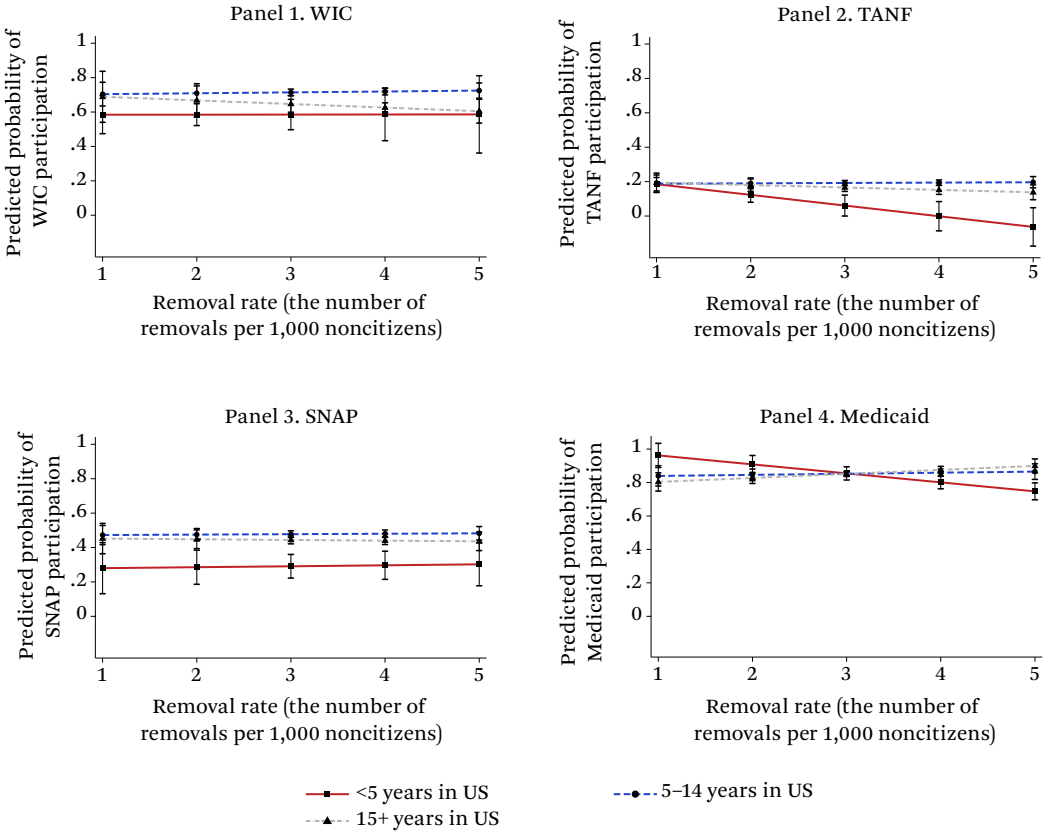
teristics among undocumented Latina mothers compared to US-born mothers. The absence of correlation between removal rates and observable characteristics that are relevant to program participation would alleviate our concerns about the potential endogenous correlation between removal rates and the child's program participation (Watson 2014). As indicated in table 7, there are no significant associations for most variables. Taken together, these analyses suggest that our model specification may reduce bias in the association between SC removal rates and Head Start and state preschool enrollment for children of likely undocumented Latinas.

As discussed earlier, we also conducted several robustness tests (see table 6). The magnitude of reduction in the Head Start and state preschool program participation is similar (with some reduced precision) when the 2015 and 2017 survey years are removed (column 3), when the 2019 survey year is removed (column 4), and when the sample is limited to families with income below 200 percent of the FPL (column 5). These results allay concern about missing data in outcome and US duration variables. In addition, we analyzed whether our primary findings are driven by small counties by removing the twenty counties with the smallest populations in California.[10] The findings are unchanged with this adjustment (column 6). Moreover, we used an alternative removal rate measure based on monthly SC removal rates in the two months prior to the survey month and year. Monthly removals capture more recent shocks, while our primary measure—total removals across all months—reflects overall exposure to deportation threats. Because of this, the effect size may be larger when using the monthly removal rate. On the contrary, precision could decrease as there is more variability in monthly removal rates and it is difficult to generalize or predict which month's removal rates influence a mother's decision to enroll her child in a program. Expectedly, according to column 7, we found a much larger, but imprecise, coefficient (coefficient = −0.36) with the monthly removal rate.[11] Lastly, we checked

10. They include Alpine, Sierra, Modoc, Trinity, Mono, Mariposa, Inyo, Plumas, Colusa, Del Norte, Glenn, Lassen, Amador, Siskiyou, Calaveras, Tuolumne, San Benito, Tehama, Lake, and Yuba.

11. We also used the total removals over the three-month and six-month periods leading up to and including the survey month and year. Using these measures, we find substantively similar results in both RQ1 and RQ2, except

Figure 4. Predicted Program Participation Rates by SC Removal Rates for Likely Undocumented Latinas with Different Durations in the United States



Source: Authors' calculation of CHIS data (UCLA Center for Health Policy Research 2016).
Note: We used the margins command in STATA to calculate the predicted program participation rates. The vertical line indicates 95 percent confidence intervals. The predicted TANF participation rates at the removal rate of three to five should be interpreted with caution since they are below zero, although those estimates lack statistical significance. The predicted means of children's program participation rates among undocumented mothers with less than five years in the US differ between figure 3 and figure 4. This discrepancy arises from using different samples: US-born mothers and undocumented mothers with less than five years in the US versus only undocumented mothers comprising different groups of US durations. These differences result in different coefficients for all variables and, therefore, differences in predicted means. However, the confidence intervals of predicted means for the less than five years group at a given removal rate overlap between the two figures, indicating that they are not statistically distinguishable.

whether our findings are robust to excluding July and August. To the extent that the local Head Start and state preschool programs do not operate during the summer months, there could be a seasonality effect on participation in these programs, while such an effect is unlikely for the other programs we examine. We find qualitatively similar results (see appendix

in our RQ2 analysis of WIC participation, for which the findings are somewhat sensitive to the specific measures used. This sensitivity may partly stem from the relatively smaller sample sizes of undocumented Latinas with fewer than five years in the US in WIC analyses, compared to their sample sizes in analyses of other programs.

Table 6. Falsification and Robustness Tests for the Head Start and State Preschool Program Participation (RQ1)

	Lead Removal	White US-Born	No 2015/2017	No 2019	<200% FPL	No Small	Monthly Removal
Removal rate × Undocumented Latina	0.02	0.02	−0.07	−0.06	−0.07+	−0.07+	−0.36
	(0.05)	(0.01)	(0.04)	(0.04)	(0.04)	(0.04)	(0.29)
N	534	416	481	487	457	507	534

Source: Authors' calculations of CHIS data (UCLA Center for Health Policy Research 2016).
Note: Each column is a separate regression. The monthly removal rate is merged with the CHIS sample by two months prior to the survey month/year. CHIS weights are applied. Only the key coefficient on the interaction term between removal rate measure and mother's immigration status is displayed. All models control for parent's education attainment, marital status, age, household poverty status, number of children in the household, child age, county unemployment rate, 287(g) implementation status, year fixed effects, year by mixed-status family fixed effects, county fixed effects, and county by mixed-status family fixed effects.
+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 7. Test of Correlation Between Removal Rates and Family Characteristics

	Removal Rate × Undocumented Latina
High school degree or below (reference: some college)	0.00
	(0.02)
Married (reference: not married or living with partner)	0.04
	(0.05)
3 or more children in household (reference: 1 or 2)	−0.08+
	(0.04)
Focal child 3–5 years old (reference: 0–2 years old)	0.06
	(0.05)
Adult age	0.04
	(0.71)
Employed (reference: not employed)	−0.01
	(0.05)
<100% of FPL	−0.03
	(0.04)

Source: Authors' calculation of CHIS data (UCLA Center for Health Policy Research 2016).
Note: Each row indicates a different model. We used the same equation indicated in the empirical strategy section and replaced the program participation outcome with the covariates listed in the first column. All regression models control for year fixed effects, year by mixed-status family fixed effects, county fixed effects, and county by mixed-status family fixed effects, but do not control for child and family characteristics. Only the main coefficient on the interaction between *Removal rate* × *Undocumented Latina mothers* is shown in the table. $N = 534$.
+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

table A.6), with increased precision and larger effect sizes (from −0.07 to −0.11), suggesting that seasonality is not spuriously driving the reduction in the Head Start and state preschool participation.

Similarly, we conducted the above robustness tests for our findings in RQ2. Overall, the results point toward the same conclusions—despite small differences in coefficient magnitudes and precision. Children of likely undocumented Latinas with less than five years in the US experience greater reductions in participation rates across various programs compared to children of US-born Latinas, while children of undocumented Latinas with longer durations show no differences in program participation relative to their US-born counterparts. Results are presented in table 8.

DISCUSSION

In this study, we found evidence that higher SC removal rates are associated with modest to large reductions in children's TANF, Medicaid, and WIC participation among likely undocumented mothers with less than five years of US residency relative to US-born Latinas. Such reductions were not observed among likely undocumented mothers with longer US durations. When undocumented mothers were compared to each other based on their duration in the US, we continued to find larger reductions in rates of TANF and Medicaid receipt among children of recently arrived mothers. These results could reflect that undocumented parents who have spent more time in the US are more familiar with the US safety net and immigration enforcement policies, leading to selective engagement with the state rather than completely eschewing enrollment (Asad 2023).

These findings are of concern given that children from mixed-status families are more likely to live in poverty, as shown in table 1, and thus may have greater need for safety net benefits, which aim to mitigate economic hardships and promote the health and well-being of socioeconomically disadvantaged families and children. Indeed, research suggests that participating in these programs has such effects. Research from the Head Start Impact Study, the nationwide randomized controlled trial of the Head Start program, demonstrates that Spanish-speaking dual language learners were one of the subgroups that consistently experienced larger gains from Head Start participation (Lee et al. 2021). Early exposure to Medicaid positively affects health in later childhood, as well as education and adult earnings (Currie et al. 2008; Brown et al. 2015). Studies also find that WIC participation is associated with improved birth outcomes and better developmental outcomes in the first two years of life (Venkataramani et al. 2022; Guan et al. 2021). SNAP is positively associated with child health, cognitive development and attention skills, and better health and economic outcomes in adulthood (East 2020; Hong and Henly 2020; Hoynes et al. 2016). While the TANF program is small compared to the caseload sizes of our other selected programs, participants are often connected to other important resources during TANF participation, such as SNAP, childcare, and Supplemental Security Income (Zedlewski 2012; Wamhoff and Wiseman 2006). Based on these studies, our findings suggest that future work should examine whether elevated deportation threat negatively affects the health and well-being of citizen children in mixed-status families, especially those with more recently arrived parents.

We find preliminary but not definitive evidence that SC removal rates may influence Head Start or state preschool program enrollment, consistent with research by Robert Santillano and colleagues (2020). On the other hand, we did not find reductions in WIC, SNAP, Medicaid, or TANF participation among overall Latine mixed-status families. This may be because parents view the Head Start or state preschool services as supplementary to their child's and family's well-being, while programs like SNAP, WIC, Medicaid, and TANF are perceived as essential for basic needs. Hence, under heightened deportation threat, parents may be less willing to risk exposure by enrolling their child in ECE programs, as it requires ongoing parental involvement. In addition, California's supportive policy climate for immigrants may act as a protective factor, reducing the potential for reduced participation among mixed-status families. This may explain why we did not find an association between SC removal rates and participation in SNAP, WIC,

Table 8. Robustness Checks for RQ2

	<5 Years (Versus US-Born)	5–14 Years (Versus US-Born)	15+ Years (Versus US-Born)
	Removal Rate × Undocumented Latina		
Panel 1. WIC participation			
No 2015/2017	−0.08+	−0.02	−0.05
	(0.04)	(0.02)	(0.03)
No 2019	−0.07*	−0.02	−0.05
	(0.04)	(0.02)	(0.03)
<200% of FPL	−0.08*	−0.02	−0.05
	(0.04)	(0.02)	(0.03)
No small counties	−0.08*	−0.02	−0.05
	(0.04)	(0.02)	(0.03)
Monthly removal	−0.49	0.03	−0.20
	(0.44)	(0.20)	(0.24)
Panel 2. TANF participation			
No 2015/2017	−0.04*	0.01	−0.01
	(0.02)	(0.01)	(0.02)
No 2019	−0.04+	0.01	0.00
	(0.02)	(0.01)	(0.02)
<200% of FPL	−0.02	0.01	0.00
	(0.02)	(0.01)	(0.02)
No small counties	−0.04+	0.01	−0.01
	(0.02)	(0.01)	(0.02)
Monthly removal	−0.34*	−0.08	−0.02
	(0.15)	(0.08)	(0.11)
Panel 3. SNAP participation			
No 2015/2017	−0.02	0.00	−0.01
	(0.02)	(0.01)	(0.02)
No 2019	−0.02	−0.01	−0.01
	(0.02)	(0.01)	(0.02)
<200% of FPL	−0.03	−0.01	−0.01
	(0.03)	(0.01)	(0.02)
No small counties	−0.03	−0.01	−0.02
	(0.02)	(0.01)	(0.02)
Monthly removal	−0.13	−0.22*	−0.06
	(0.22)	(0.09)	(0.13)
Panel 4. Medicaid participation			
No 2015/2017	−0.05***	0.01	0.04+
	(0.01)	(0.02)	(0.02)
No 2019	−0.06***	0.00	0.03
	(0.01)	(0.02)	(0.02)
<200% of FPL	−0.05***	0.01	0.03+
	(0.01)	(0.02)	(0.02)
No small counties	−0.06***	0.01	0.03
	(0.01)	(0.02)	(0.02)
Monthly removal	−0.33*	0.03	0.19
	(0.14)	(0.11)	(0.17)

Source: Authors' calculation of CHIS data (UCLA Center for Health Policy Research 2016).
Note: CHIS weights are applied. Each column in each panel indicates a different subgroup model, and each row is a different robustness check for a given outcome. Only the key coefficient—*Removal rate × Undocumented Latina*—is displayed in this table, but all models control for parent's education attainment, marital status, age, household poverty status, number of children in the household, child age, county unemployment rate, 287(g) implementation status, year fixed effects, year by mixed-status family fixed effects, county fixed effects, and county by mixed-status family fixed effects.
+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Medicaid, and TANF among children of undocumented or US-born Latinas in the full sample, while other studies at the national level have documented chilling effects on these programs among mixed-status families and Latine citizens (Alsan and Yang 2022; Vargas and Pirog 2016; Pedraza and Zhu 2015).

Our analyses by mothers' duration in the US add nuance to these findings. Here, we found that SC removal rates are negatively associated with the child's participation in WIC, Medicaid, and TANF programs among recently arrived undocumented Latinas relative to US-born Latinas, while children whose mothers have longer durations of US residency did not differ meaningfully from children of US-born mothers. When undocumented Latinas were compared to each other, unlike longer-settled undocumented Latinas, children of undocumented Latinas with less than five years of residency experienced reductions in TANF and Medicaid participation—again suggesting that recently arrived mothers may experience particular vulnerabilities to changes in removal rates. These findings may reflect that the breadth and scope of social networks change over time, a key factor in knowledge growth and information access. Interfacing with government through schools, policing, and medical systems over time, parents may also experience increased familiarity and develop improved skills in navigating threat within the bureaucratic face of the state (Marrow 2009). Such accumulated experience and learning may explain seemingly small or no associations between SC removal rates and safety net receipt among children of undocumented mothers with longer residency in the US.

However, the results vary by program. For WIC, we found no decline among children of recently arrived mothers themselves or among longer-settled mothers. Combining this finding with results from the full analysis comparing recently arrived mothers to US-born mothers, we conclude that, although recently arrived mothers may be more negatively affected by removal rates compared to US-born mothers, the difference is not large enough to suggest a reduction in WIC enrollment among their children in absolute terms. That might be because WIC is one of the few safety net programs accessible to all undocumented immigrants with children; in fact, the children of noncitizen parents participate in WIC at higher rates and for longer durations than the children of citizen parents. It is also common for WIC to be administered through nonprofit clinics and public health programs, which may be perceived as less threatening to mixed-status families (Bitler et al. 2021). For SNAP, the reason is less clear. One possible explanation is that California's CalFresh portal, the state's SNAP application system, allows a fully remote application and phone interview process, potentially reducing exposure to government agencies and mitigating fears.[12] However, since similar remote access options are available in other programs, such as Medicaid, further research is necessary on this topic. Future research would also benefit from investigating which factors—such as identity verification models, documentation requirements, or recertification intervals—help alleviate or increase fears and the chilling effects of deportation threats.

There are several limitations to this study. While our findings provide evidence of reduced program participation as removal rates increase, there may be alternative explanations. For instance, if high SC removal rates prompted undocumented Latinas to relocate to a different local area within California, they may have experienced difficulty finding new Head Start or state preschool programs with available space or services appropriate for their family situations and needs. If so, this disruption could lead to children dropping out of the Head Start and state preschool program, while such a possibility is unlikely for other programs. Second, although SC removal rates directly measure deportability under the SC program, they may not fully capture the broader effect of fear from apprehensions, which occur before the actual deportation or removal takes place. Future research could consider using county-level apprehension data to examine whether results change or remain similar to

12. See https://www.ca.gov/departments/178/services/60/.

our study. In addition, although we captured likely undocumented mothers more accurately than other research by leveraging the LPR status of noncitizens, there could still be measurement error. For example, noncitizens can still be documented if they are visa holders. Moreover, although we provide suggestive evidence that our analytical strategy may reduce bias in the association between SC removal rates and children's safety net receipt, future research should employ a strategy that allows for estimating a plausibly causal effect of deportation threat—such as the staggered adoption of SC across regions—to assess whether the effect on program participation varies by mothers' duration in the US. Finally, due to data limitations,[13] it was beyond this study's scope to comprehensively analyze whether reductions in program participation vary across time periods with different political, economic, and public health characteristics (for example, by presidential administrations). However, preliminary analyses of the associations between removal rates and SNAP, Medicaid, and TANF receipt status by the Obama and Trump administrations suggest similar relationships between those periods, as shown in appendix table A.4.

Overall, this study extends our understanding of how immigration enforcement relates to safety net participation by suggesting that routine, localized deportation threat, measured through the intensity of removal rates under the SC program, is associated with reductions in enrollment in some public benefit programs, even in a state with inclusive immigrant policies. Bridging the literatures on immigrant settlement duration with system avoidance, this study also highlights that citizen children of recently arrived undocumented mothers may be disproportionately influenced by increases in deportation threat. Our findings suggest that policymakers aiming to improve take-up among children in mixed-status households consider proactive and targeted outreach, multilingual program navigation assistance, and culturally competent public service infrastructure that explicitly address the needs of recently arrived mixed-status families.

13. For WIC and Head Start or state preschool outcomes, we lacked statistical power to examine differential chilling effects across different time periods, which prevented us from conducting an analysis that incorporates all of our outcomes.

APPENDIX A

Table A.1. Demographic Characteristics of Survey Respondents with and Without Missing Values in WIC, SNAP, TANF Receipt Status and Durations in the United States

	Not missing (91.39%) Percent / Mean (SD)	Missing (8.61%) Percent / Mean (SD)	Significance
Number of children in household			
1	18.19	16.44	
2	32.43	29.29	
3+	49.37	54.27	
Focal child's age			***
0–2	20.67	20.54	
3–5	21.23	27.4	
6–11	31.27	44.43	
12–17	26.84	7.63	
Parent's marital status			
Not married	35.87	33.2	
Married	42.91	46.39	
Living with partner	21.22	20.41	
Parent's age			+
18–29	27.1	22.75	
30–39	41.41	52.33	
40–49	23.74	19.33	
50+	7.74	5.59	
Parent's education attainment			+
Below high school	43.11	46.8	
High school degree	33.92	37.74	
Some college	22.97	15.46	
Poverty status			+
0–50% of FPL	20.7	26.41	
50–100% of FPL	32.23	31.88	
100–150% of FPL	21.26	14.42	
150–200% of FPL	13.54	10.93	
200%+ of FPL	12.27	16.35	
N	4,928	350	

Source: Authors' calculation of CHIS data.

Note: This table is generated among children of US-born and likely undocumented Latinas who do not have a college degree and have family income below 300 percent of FPL (*N* = 5,278). The "missing" group includes cases that have missing values in any of the following variables: WIC receipt, TANF receipt, SNAP receipt, and years lived in the US. Missing values in the Head Start/state preschool program outcome are not included in the missing group, because of the different nature of its missingness. Most of the missing values in the Head Start/state preschool program variable consist of families who use childcare fewer than ten hours per week as this question is only asked to those with regular childcare. Significance column shows the statistical significance of the difference between the two groups, using chi-square tests.

$^{+}$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table A.2. Sample Characteristics by Mother's Immigration Status and Duration in the United States

	Undocumented Latina, <5 Years Percent / Mean (SD)	Undocumented Latina, 5–14 Years Percent / Mean (SD)	Undocumented Latina, 15+ Years Percent / Mean (SD)	US-born Latina Percent / Mean (SD)	Significance
County removal rate	3.95 (2.55)	3.59 (2.79)	2.98 (2.45)	3.52 (3.33)	**
Received WIC	65.73	73.19	61.87	55.54	**
Received TANF	9.86	15.91	16.25	22.22	*
Received SNAP	27.18	48.53	44.47	36.32	**
Received Medicaid	80.84	86.49	84.05	69.13	***
Number of children in household					**
1	26.26	10.68	16.62	21.85	
2	28.73	34.27	30.99	32.1	
3+	45.01	55.06	52.39	46.05	
Focal child's age					***
0–2	33.98	21.82	9.17	24.79	
3–5	22.26	32.19	13.29	20.84	
6–11	12.59	32.5	30.74	32.22	
12–17	31.17	13.49	46.8	22.15	
Parent's marital status					***
Not married	48.54	28.47	29.96	40.79	
Married	45.51	45.18	46.54	40.15	
Living with partner	5.95	26.35	23.51	19.07	
Parent's age					***
18–29	28.46	24.85	4.3	37.71	
30–39	48.39	52.38	44.53	36.46	
40–49	12.79	17.87	43.58	17.29	
50+	10.36	4.9	7.59	8.54	
Parent's education attainment					***
Below high school	53.49	68.24	69.19	22.13	
High school degree	34.24	24.98	24.61	41.6	
Some college	12.27	6.77	6.2	36.27	
Poverty status					***
0–50% of FPL	20.09	22.43	23.43	19.34	
50–100% of FPL	51.97	40.64	40.66	24.47	
100–150% of FPL	13.63	21.14	22.12	20.84	
150–200% of FPL	13.00	11.54	8.72	16.44	
200%+ of FPL	1.30	4.24	5.07	18.92	
County implemented 287(g)	28.08	37.27	33.71	31.61	
County unemployment rate	8.18 (3.46)	9.24 (3.25)	8.07 (3.16)	8.65 (3.21)	***
N	103	1,217	1,266	2,409	

Source: Authors' calculation of CHIS data.

Note: This table is generated among respondents who have non-missing values in SNAP outcome (*N* = 4,995). Thus, in this table, the sample size is 4,995 for all variables except for WIC (*N* = 2,190), Head Start/state preschool (*N* = 526), and TANF (*N* = 4,925) receipt status, as there are additional missing cases in other outcomes. Significance column shows the statistical significance of the difference between the four groups. We used chi-square tests for categorical variables and one-way ANOVA for continuous variables.

$^{+}$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table A.3. Regression Results from the Full Analysis of the Association Between Removal Rates and Safety Net Participation (RQ1)

	WIC	Head Start	TANF	SNAP	Medicaid
Removal rate	0.02+	0.02	−0.01	0.01	−0.00
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Removal rate × Undocumented Latina	−0.02	−0.07+	0.00	−0.01	0.01
	(0.02)	(0.04)	(0.01)	(0.01)	(0.01)
Undocumented Latina (reference: citizen mothers)	0.29***	-0.15	0.13*	−0.13*	-0.05
	(0.04)	(0.27)	(0.05)	(0.05)	(0.06)
County's implementation status of 287(g)	0.17***	-0.15	-0.04	0.01	0.10**
	(0.04)	(0.10)	(0.03)	(0.04)	(0.03)
County's unemployment rate	0.05	0.06	0.04*	0.01	0.00
	(0.03)	(0.06)	(0.02)	(0.02)	(0.02)
High school degree (reference: below high school)	−0.05	0.03	−0.05+	−0.05+	−0.07***
	(0.04)	(0.07)	(0.03)	(0.03)	(0.02)
Some college (reference: below high school)	−0.05	−0.01	−0.02	−0.04+	−0.09***
	(0.06)	(0.09)	(0.04)	(0.02)	(0.02)
Married (reference: unmarried)	0.05	0.03	−0.14***	−0.13***	−0.08***
	(0.06)	(0.06)	(0.03)	(0.03)	(0.02)
Living with partner (reference: unmarried)	0.04	0.00	−0.07+	−0.03	0.03
	(0.05)	(0.09)	(0.04)	(0.02)	(0.03)
50–100% of FPL (reference: <50% of FPL)	−0.05	−0.16*	−0.14***	−0.08***	−0.01
	(0.04)	(0.08)	(0.03)	(0.02)	(0.02)
100–150% of FPL (reference: <50% of FPL)	−0.10**	−0.10	−0.18***	−0.27***	−0.14***
	(0.03)	(0.07)	(0.02)	(0.03)	(0.03)
150–200% of FPL (reference: <50% of FPL)	−0.05	−0.13+	−0.24***	−0.45***	−0.27***
	(0.05)	(0.08)	(0.03)	(0.04)	(0.04)
200%+ of FPL (reference: <50% of FPL)	−0.24***	−0.17*	−0.32***	−0.52***	−0.45***
	(0.06)	(0.08)	(0.03)	(0.02)	(0.03)
Two children (reference: one child)	−0.04	0.01	−0.02	0.03	−0.01
	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)
Three or more children (reference: one child)	−0.03	−0.03	0.00	0.03	0.01
	(0.03)	(0.09)	(0.02)	(0.03)	(0.02)
Parent's age: 30–39 (reference: 18–29)	−0.04	−0.08	−0.07**	−0.05+	-0.11***
	(0.04)	(0.06)	(0.02)	(0.03)	(0.03)
Parent's age: 40-49 (reference: 18–29)	−0.18***	0.20*	−0.10**	−0.10*	−0.14***
	(0.04)	(0.09)	(0.03)	(0.04)	(0.04)
Parent's age: 50+ (reference: 18–29)	0.05	0.07	−0.03	-0.05	−0.04
	(0.11)	(0.13)	(0.04)	(0.05)	(0.05)
Child age: 3–5 (reference: 0–2)	−0.35***	0.37***	0.01	0.05*	−0.02
	(0.02)	(0.09)	(0.02)	(0.03)	(0.02)
Child age: 6–11 (reference: 0–2)			0.02	0.05	−0.04**
			(0.03)	(0.04)	(0.02)
Child age: 12–7 (reference: 0–2)			0.01	0.00	−0.07***
			(0.03)	(0.03)	(0.02)
Mean of outcome in treated group	0.69	0.32	0.16	0.45	0.85
N	2,186	534	4,924	4,995	5,051

Source: Authors' calculation of CHIS data.
Note: CHIS weights are applied. In addition to the control variables shown in the table, we also adjusted for the set of fixed effect described in the empirical strategy section.
+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table A.4. Association Between Removal Rates and Safety Net Participation by Obama and Trump Administrations

	Obama (2009–2016)	Trump (2017–2019)
Panel 1. TANF		
Removal rate	−0.01	0.01
	(0.01)	(0.01)
Removal rate × Undocumented Latina	0.01	0.05
	(0.01)	(0.14)
N	4314	610
Panel 2. SNAP		
Removal rate	0.00	0.01
	(0.01)	(0.01)
Removal rate × Undocumented Latina	−0.00	−0.02
	(0.01)	(0.14)
	4314	680
Panel 3. Medicaid		
Removal rate	0.00	0.01
	(0.01)	(0.01)
Removal rate × Undocumented Latina	0.01	−0.02
	(0.02)	(0.10)
	4,325	725

Source: Authors' calculation of CHIS data.
Note: CHIS weights are applied. Only the coefficient on the interaction term between removal rate measure and mother's immigration status is displayed. Each panel indicates separate regressions on a given outcome and columns also indicate different subgroups. Models control for all control variables.
$^{+}$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table A.5. Sample Characteristics by Mother's Immigration Status in the Head Start/State Preschool Program Sample

	US-Born Citizen (70.26%) Percent / Mean (SD)	Undocumented (29.74%) Percent / Mean (SD)	Full Sample Percent / Mean (SD)	Significance
County removal rate	3.03 (2.17)	3.49 (2.52)	3.16 (2.29)	
Received WIC	48.64	68.82	54.76	*
Attended Head Start or state preschool program	30.24	31.69	30.67	
Received TANF	22.65	7.17	17.82	***
Received SNAP	32.01	34.81	32.86	
Received Medicaid	66.74	82.86	71.53	*
Number of children in household				
1	28.41	15.31	24.51	
2	32	31.64	31.89	
3+	39.6	53.05	43.6	
Focal child's age				
0–2	44.62	35.2	41.82	
3–5	55.38	64.8	58.18	
Parent's marital status				
Not married	40.58	34.79	38.86	
Married	35.73	40.96	37.28	
Living with partner	23.7	24.25	23.86	
				*
Parent's age				
18–29	54.87	30.68	47.67	
30–39	35.52	48.74	39.45	
40–49	6.52	13.29	8.54	
50+	3.08	7.29	4.33	
Parent's educational attainment				***
Below high school	10.24	60.82	25.28	
High school degree	40.25	36.38	39.1	
Some college	49.52	2.8	35.62	
Poverty status				***
0–50% of FPL	16.63	13.78	15.78	
50–100% of FPL	18.15	51.31	28.01	
100–150% of FPL	21.03	20.05	20.74	
150–200% of FPL	18.78	11.79	16.7	
200%+ of FPL	25.41	3.06	18.76	
Mother's duration in the US				***
<5 years	0	6.4	1.9	
5–14 years	0	70.97	21.11	
15+ years	0	22.63	6.73	
Born in the US	100	0	70.26	
County implemented 287(g)	33.75	34.89	34.09	
County unemployment rate	8.64 (3.04)	8.99 (3.27)	8.74 (3.12)	
N	345	189	534	

Source: Authors' calculation of CHIS data.
Note: This table is generated among respondents who have non-missing values in Head Start outcome (*N* = 534). Thus, in this table, the sample size is 534 for all variables except for WIC (N=521), SNAP (*N* = 521), and TANF (*N* = 511) receipt status, as there are additional missing cases in other outcomes. Significance column shows the statistical significance of the difference between US-born citizen and undocumented mothers. We used chi-square tests for categorical variables and one-way ANOVA for continuous variables.
$^{+}$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table A.6. Association Between Removal Rates and Head Start or State Preschool Program Participation Without July and August

	Head Start or State Preschool Program
Removal rate	0.02
	(0.02)
Removal rate × Undocumented Latina	−0.11***
	(0.03)

Source: Authors' calculation of CHIS data.
Note: CHIS weights are applied. Only the key coefficients are presented, but the model controls for parent's education attainment, marital status, and age, household poverty status, number of children in the household, child age, county unemployment rate and 287(g) implementation status, year fixed effects, year by mixed-status family fixed effects, county fixed effects, and county by mixed-status family fixed effects.
$^{+}$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

APPENDIX B

Table B.1 shows a breakdown of missingness in our sample sizes for each outcome.

Table B.1. Breakdown of Missing Cases in Sample Sizes

	Low-Income Latinas with Some College or Less with a Child Under Age Six or Age Eighteen	Removing Missing Cases in the Outcome	Removing Missing Cases in the US Duration	Removing Counties with Few Individuals (No Variation over Time)
WIC	2,319	2,296	2,190	2,186
Head Start/state preschool	2,319	565	539	534
TANF	5,278	5,123	4,928	4,924
SNAP	5,278	5,222	4,998	4,995
Medicaid	5,278	5,278	5,054	5,051

Source: Authors' calculation of CHIS data.
Note: This table shows a breakdown of missing cases by each category. There are $N = 1{,}754$ missing cases in the Head Start/state preschool variable because this question is only asked to those who have regular childcare for at least ten hours per week.

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