Research

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Public Health Insurance Expansion for Immigrant Children and Interstate Migration of Low-Income Immigrants

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IMPORTANCE Federal policy changes in 2002 and 2009 led some states to expand public health insurance coverage to non-US-born children and pregnant women who are lawful permanent residents during their first 5 years of residency in the United States. In other states, there were concerns that insurance expansion could attract immigrants to relocate to gain free health insurance coverage.

OBJECTIVE To examine whether expansion of public health insurance to non-US-born, lawful permanent resident children and pregnant women during their first 5 years of residency is associated with increased interstate migration among these groups.

DESIGN, SETTING, AND PARTICIPANTS This difference-in-differences analysis included data on 208 060 immigrants from the American Community Survey from 2000 through 2016, with analysis including all 50 states and the District of Columbia. The study sample included 2 treatment groups that became eligible under the expanded coverage: lawful permanent resident adults with at least 1 non-US-born child younger than 18 years (n = 36 438) and lawful permanent resident women of reproductive age (n = 87 418). Control groups that remained ineligible under the expanded coverage included lawful permanent resident adults without non-US-born children (n = 171 622), lawful permanent resident single men (n = 56 142), and lawful permanent resident postreproductive women (n = 15 129). A difference-in-differences design compared migration rates between eligible and ineligible immigrant groups before and after insurance coverage expansions. Data analysis was performed from November 3, 2018, to May 31, 2019.

EXPOSURES Public health insurance coverage for immigrant women and children who were lawful permanent residents within 5 years of residency.

MAIN OUTCOMES AND MEASURES Migration to a health expansion state from any other state and from a neighboring state.

RESULTS Of 208 060 immigrants (47% women in the weighted sample; mean [SD] age, 32.97 [12.94] years; 63% Hispanic), the mean (SD) annual move rate across the entire sample was 3% (17%). Expansion of public health insurance to non-US-born children or pregnant women within their first 5 years of residency was not associated with interstate movement for health care benefits. Coverage expansion for non-US-born children of lawful permanent residents was not associated with a change in the rate of in-migration higher than 1.78 percentage points or lower than -1.28 percentage points. The corresponding estimate for coverage expansion of lawful permanent resident pregnant women was a change higher than 1.38 percentage points and lower than -1.20 percentage points.

CONCLUSIONS AND RELEVANCE The results suggest that states considering expanding health care benefits coverage to recently arrived immigrant children and pregnant women may be unlikely to experience in-migration of these persons from other states, which has important implications for understanding short- and long-term program costs.

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Supplemental content

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ne in 4 children younger than 18 years who live in the United States are either non-US born or US born to parents who are immigrants.¹ Access to public benefits for immigrant children and mothers in the United States has transformed over the past 2 decades. Welfare reform in 1996^{2,3} largely barred immigrants who were lawful permanent residents with less than 5 years of residency in the United States from accessing Medicaid (5-year ban). To address this access issue, a number of states responded by providing, through state funding, various forms of publicly supported health insurance for lawful permanent resident immigrant children and mothers. In 2002 and 2009, reforms^{4,5} at the federal level allowed states to expand insurance coverage with federal funds to 2 specific lawful permanent resident immigrant groups within the 5-year ban: children (aged <18 years) and pregnant women. How immigrants responded to this variability in state health policy is important for health care policies directed at immigrants. Was the state variability in health care coverage for immigrants associated with interstate migration of immigrant families within the United States in pursuit of health care benefits?

Although studies⁶⁻⁸ have found no evidence of an association between Medicaid expansion through the Patient Protection and Affordable Care Act and residential movement between states among the general population, we were interested specifically in the association between public health insurance expansions that targeted low-income immigrants who were lawful permanent residents and migration between states. There are at least 3 reasons why we might expect such an association among these immigrants in particular. First, studies^{9,10} have reported that immigrants in the United States have higher rates of internal mobility compared with US-born citizens. In particular, several studies^{9,10} have highlighted an association between regional differences in labor market conditions and immigrant mobility. Second, research assessing the degree to which immigrants select initial settlement locations based on public benefits has described an association between benefits and migration.¹¹⁻¹⁵ Third, demand exists for health care coverage among the immigrant population because immigrants have considerably higher uninsured rates than do US-born citizens, and expansion of public health insurance, including programs targeted at pregnant immigrant women and immigrant children, has been associated with reduced uninsured rates and increased uptake of health services.16-23

Given these factors (high mobility and strong demand), we expect that expansion of public health care benefits in some states may be associated with relocation of lawful permanent resident immigrant adults to states offering insurance coverage to protect them from financial burden and to help ensure their children's access to care.^{24,25} However, to our knowledge, no research exists on whether, once settled in a particular state, immigrants will internally migrate to another state in pursuit of public health insurance coverage in the United States. As policy makers continue to debate access to public benefits for immigrants, it is important to generate evidence as to whether public health insurance shapes the internal migration decisions of the more than 4 million Medicaideligible immigrants residing in the United States.²⁶

Key Points

Question Is state-level expansion of public health insurance coverage to non–US-born children and pregnant women associated with increased in-migration of eligible immigrant families from other states?

Findings In this difference-in-differences analysis of data on 208 060 immigrants from the American Community Survey from 2000 through 2016, no association was found between in-migration rates among this population and expansion of public health insurance coverage.

Meaning These findings suggest that states expanding health care benefits for immigrant children and pregnant women may be unlikely to experience changes in in-migration among eligible non–US-born adults from other states.

To examine whether expanding public health insurance to recently arrived immigrants who are lawful permanent residents affects interstate migration, we focused specifically on 2 forms of public health insurance: prenatal coverage for pregnant women and full-scope coverage for children. The 1996 welfare reform affected millions of people, citizens and noncitizens, residing in the United States, but the new 5-year restrictions on health care coverage for lawful permanent residents created particularly challenging barriers to insurance for children and pregnant women. These new restrictions had an immediate effect on immigrant families because their health insurance rates declined significantly.³ Following these changes, only a few states provided state-funded insurance for those who were no longer eligible for insurance via federally funded programs. By 2000, only 18 states had public health insurance programs to cover immigrant children within the 5-year ban, and only 16 states offered prenatal care to female immigrants, with coverage and eligibility varying significantly.²⁷

Federal policy changes in 2002 and 2009^{4,5} brought a substantial shift in the financial resources available to states to provide coverage to lawful permanent residents with less than 5 years of residency. In 2002, the unborn child option was included in the Children's Health Insurance Program,⁴ allowing states to extend limited prenatal coverage with federal funding to immigrant mothers. A more substantial policy reform affecting immigrants occurred in 2009 with the Child Health Insurance Program Reauthorization Act,⁵ giving states the opportunity to extend coverage to immigrant children and pregnant immigrant women who were lawful permanent residents regardless of their length of residency. Multiple states that had been operating solely state-funded insurance programs switched to this federal option. Many other states without existing programs also opted to extend coverage. By 2016, 31 states had extended coverage to lawful permanent resident immigrant children and 32 states to pregnant immigrant women who were lawful permanent residents during their first 5 years of residency.²⁷ Table 1 presents a state-level timeline of public health insurance expansions for immigrant children and pregnant women who were lawful permanent residents.

In this study, we used this variation in states extending public health insurance to immigrant women and children who

Table 1. States Expanding Public Health Insurance for Lawful Permanent Residents Within 5 Years of Residency

Year of	State Initiating Public Health Insurance Expansion			
Expansion	Immigrant Children	Pregnant Women		
2000 or earlier ^a	California, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Massachusetts, Minnesota, Nebraska, New Jersey, New York, Pennsylvania, Rhode Island, Texas, Virginia, and Washington	California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Massachusetts, Minnesota, Nebraska, New Jersey, New York, Pennsylvania, Rhode Island, and Washington		
2001	District of Columbia	District of Columbia, Michigan		
2005	NA	Arkansas		
2006	NA	Hawaii, Wisconsin		
2007	NA	Louisiana, Maryland, and Texas		
2009	Iowa, New Mexico, Oregon, Rhode Island, and Wisconsin	New Mexico, Oklahoma, and Tennessee		
2010	Montana, North Carolina	North Carolina		
2011	Vermont	Vermont		
2012	NA	Virginia		
2013	Kentucky	NA		
2014	Ohio	Ohio, Oregon, and Wyoming		
2015	Colorado, West Virginia	West Virginia		
2016	Florida, Utah	NA		

Abbreviation: NA, not applicable.

^a Database and analysis began in 2000. eFigure 1 in the Supplement shows the cumulative number of states with expanded public health insurance for immigrants over time.²⁷

were lawful permanent residents with less than 5 years of residency to estimate the association of providing this coverage with the probability that an immigrant moved to another state. Our goal was to empirically understand whether a significant change in public health benefits for immigrants incentivized eligible immigrants to move to states offering expanded coverage. In addition, we examined the probability of moving to a benefit-providing state only from neighboring states to focus on those who had the greatest likelihood of moving because of proximity to another state.

Methods

Data Source

This difference-in-differences analysis used American Community Survey data compiled by IPUMS-USA²⁸ that were downloaded from a publicly available data portal. Specifically, we used the 1% national, individual-level random samples from 2000 through 2016 to measure interstate moves and control for individual and state-level characteristics. Data analysis was performed from November 3, 2018, to May 31, 2019. To code whether a state offered health insurance to immigrants during their first 5 years of residency, we used a state-level policy database developed by the Urban Institute²⁷ that draws on information collected by the National Immigration Law Center for all 50 states and the District of Columbia. This study used publicly available deidentified survey data collected by the US Census Bureau²⁹ and, therefore, according to the Stanford University institutional review board, does not meet the definition of human subjects research.

Study Sample

The study population consisted of noncitizen, non-US-born individuals (aged ≥16 years) who resided in the United States between 1 and 6 years. Persons excluded were (1) respondents residing in group quarters, (2) those born in Cuba or Haiti, (3) those likely with a student visa, (4) veterans, (5) military personnel, and (6) those married to a US-born citizen, all of whom may qualify for other health care benefits. To focus on low-income eligible and ineligible immigrants, we also restricted the sample to those below 200% of the federal poverty thresholds as determined by the US Census Bureau.²⁹ In various sensitivity analyses, we used different income cutoffs, focusing on individuals with high school or lower educational levels and a sample of earlier immigrants, excluding low-skilled, non-US-born individuals from Mexico, who were most likely to be undocumented.³⁰ Our goal was to accurately identify individuals who would likely be eligible for public health insurance if it were extended to cover children and pregnant women who were immigrants and lawful permanent residents during their first 5 years of residency. Within this sample, a treatment group of those likely to be eligible for expanded health insurance coverage was created for each of the 2 public health insurance policies of interest. For the analysis related to health coverage extended to lawful permanent resident children, the treatment group was restricted to lawful permanent residents with at least 1 immigrant child younger than 18 years. For coverage extended to pregnant women who were lawful permanent residents, the treatment group was restricted to lawful permanent resident women of reproductive age (15-49 years).³¹ The control groups consisted of individuals who were lawful permanent residents and likely ineligible for expanded health insurance, including adult women of nonreproductive age (>49 years), single men, and adults with no immigrant children.

Statistical Analysis

A difference-in-differences study design in a linear regression framework³² was used to evaluate the association of expanding health insurance coverage to immigrant women who were pregnant and immigrant children with the probability of an eligible individual making an interstate move to a state providing this coverage. The primary dependent variable was an indicator that the respondent moved into the current state of residence from another state in the past year. The policy change variable was also binary (1 if the state offered public health insurance to either immigrant children or pregnant women who were lawful permanent residents within the 5-year ban during that year and 0 if not). Next, we used a treatment group indicator that was coded as 1 for individuals who were likely eligible for the health insurance benefit and 0 if otherwise. The main variable of interest was the interaction of the policy change variable with the treatment group indicator, which measured the potential association of the health insurance expansion with change in state residence. Positive and statistically significant values for the coefficient on the interaction term were consistent with expanding benefits being associated with a larger increase in in-migration among eligible non-US-born individuals compared with ineligible non-US-born individuals. Because a linear probability model was used, estimates were interpreted as the change in the probability of inmigrating. We tested for parallel trends in migration behavior between treatment and control groups before public health insurance expansion.

We controlled for personal characteristics, such as age, age squared, sex, race/ethnicity, years of education, marital status, and employment and labor force participation. We also controlled for state-level, time-varying attributes, such as public benefits generosity to lawful permanent residents (eg, cash assistance) and economic conditions as proxied by lagged unemployment rates and average wages. We included dummies for each state accounting for permanent differences across states attracting migrating immigrants and correlating with welfare generosity. Moreover, year dummies controlled for aggregate shocks affecting all localities simultaneously (eg, the Great Recession). We also included linear state-specific time trends to account for time-varying unobserved confounders that varied at the state level.

We estimated our models separately for both types of public health insurance expansions: lawful permanent resident pregnant women and immigrant children of lawful permanent residents. For each reform, we estimated 2 separate models, with each model using 1 of 2 control groups described above. We weighted all regressions using the American Community Survey weights and performed a sensitivity check with an unweighted sample. A cluster-robust estimator was used to accommodate within-state correlation in migration behavior. We cleaned the data and performed all analyses using Stata, version 15.1 (StataCorp LLC).

To test the association of expanding public health insurance coverage with in-migration among immigrants who lived in close proximity to those states, the same model was estimated with an additional restriction to moves between neighboring states. We then performed an analysis of a model using US-born individuals as an additional control group. In this context, the coefficient of interest was on the interaction of indicators for treatment group (an adult with a child or a woman of reproductive age), immigrant status, and the state offering public health insurance to lawful permanent residents. Of note, this specification accounted for time-varying unobserved confounders between treatment and control groups that were common to immigrants and US-born individuals who lived in a given state. All other aspects of these additional estimations remained the same.

Results

A total of 208 060 immigrants who met our sample criteria participated in the American Community Survey from 2000 to 2016. The study sample included 2 treatment groups: lawful permanent resident adults with at least 1 non-US-born child younger than 18 years (n = 36 438) and lawful permanent resident women of reproductive age (n = 87 418). Control groups Table 2. Descriptive Statistics of Unweighted and Weighted Samples of Lawful Permanent Residents

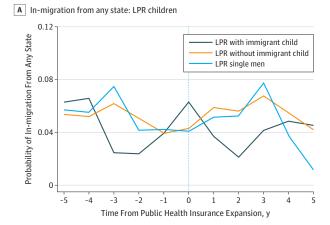
Characteristic	Unweighted, Mean (SD) (n = 208 060)	Weighted, Mean (SD) (n = 208 060)	
Female	0.49 (0.50)	0.47 (0.50)	
Age, y	33.51 (13.54)	32.97 (12.94)	
Year of arrival	2004.47 (4.95)	2003.68 (4.94)	
Married	0.48 (0.50)	0.47 (0.50)	
Race/ethnicity			
Black	0.07 (0.25)	0.07 (0.26)	
Hispanic	0.59 (0.49)	0.63 (0.48)	
Asian	0.21 (0.41)	0.18 (0.38)	
White, non-Hispanic	0.12 (0.32)	0.11 (0.31)	
Educational level			
Attends school	0.17 (0.37)	0.14 (0.35)	
Years of education	10.54 (4.75)	10.29 (4.62)	
Labor market			
Unemployed	0.07 (0.25)	0.07 (0.25)	
Not in labor force	0.35 (0.48)	0.33 (0.47)	
Health insurance			
Through employer	0.18 (0.38)	0.16 (0.37)	
Purchased directly	0.09 (0.29)	0.08 (0.27)	
Medicaid	0.20 (0.40)	0.18 (0.39)	
1-y Move rate	0.03 (0.17)	0.03 (0.18)	

included lawful permanent resident adults without non-USborn children (n = 171 622), lawful permanent resident single men (n = 56 142), and lawful permanent resident postreproductive women (n = 15 129). **Table 2** presents weighted and unweighted descriptive statistics for the full sample. The proportion of women in the weighted sample was 47% (16.98 million of 35.82 million), and the mean (SD) age was 32.97 (12.94) years. The percentage of Hispanic participants was 63% (22.60 million of 35.28 million), and the mean (SD) annual move rate across the entire sample was 3% (17%).

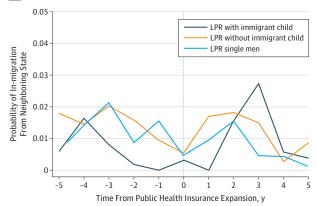
The Figure shows the estimated mean probabilities of inmigration before and after the expansion of health insurance coverage for the treatment and control groups. If an expansion of health insurance coverage was associated with inmigration to another state, the probability of in-migration would have increased in the treatment group compared with the control group. There was no discernable association between the in-migration from any state among the treatment group relative to the control group and public health insurance expansion. This result was consistent for both the lawful permanent resident women of reproductive age and lawful permanent resident immigrant children. Similarly, there was no discernable pattern for the likelihood of in-migration from a neighboring state to a public health insurance expansion state. For public health insurance expansion for children of immigrant lawful permanent residents, the mean (SE) inmigration rate for the treatment group 1 year before expansion was 3.9% (1.1%), whereas 1 year after expansion it was 3.7% (1.4%). The mean (SE) in-migration rates for the control group (lawful permanent residents without an immigrant child) was 4.0 (0.5%) in the year before expansion and 5.9 (0.7%) in the

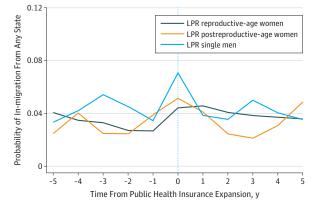
B In-migration from any state: LPR pregnant women

Figure. Association of Immigrant Group In-migration Across States With Public Health Insurance Expansion

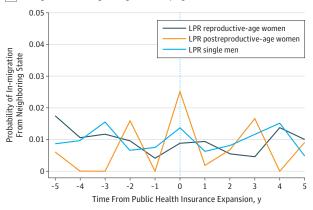


C In-migration from neighboring state: LPR children





D In-migration from neighboring state: LPR pregnant women



The treatment groups consist of immigrants who are likely eligible for expanded coverage: lawful permanent residents (LPRs) with immigrant children and LPR women of reproductive age. The control groups consisted of LPR adults without

immigrant children, LPR single men, and LPR postreproductive women who were likely ineligible for expanded public health insurance coverage. More details on the sample are given in the Methods section.

Table 3. Difference-in-Differences Estimates of Treatment vs Control Groups Moving From Any State and From a Neighboring State^a

	Change in In-migration Rate After Public Health Insurance Expansion, Change in Probability (95% CI)				
	LPR Children vs Control Group		LPR Pregnant Women vs Control Group		
Moving Outcome	LPR Without Immigrant Children (n = 185 478)	LPR Single Men (n = 82 167)	LPR Postreproductive Women (n = 92 175)	LPR Single Men (n = 127 983)	
From any state	0.0046 (-0.0078 to 0.0169)	0.0028 (-0.0121 to 0.0178)	0.0009 (-0.0120 to 0.0138)	-0.0015 (-0.0093 to 0.0063)	
From a neighboring state	-0.0003 (-0.0050 to 0.0044)	-0.0018 (-0.0064 to 0.0029)	-0.0022 (-0.0084 to 0.0041)	-0.0019 (-0.0048 to 0.0009)	

Abbreviation: LPR, lawful permanent resident.

^a A linear model was used. Each coefficient is interpreted as the change on the probability of in-migration in the eligible (treatment) compared with the ineligible (control) LPR groups.

year after expansion. For public health insurance expansions for lawful permanent resident pregnant women, the mean (SE) in-migration rate for the treatment group 1 year before expansion was 2.7% (0.4%) whereas 1 year after expansion it was 4.6% (0.5%). The mean (SE) in-migration rates for the control group (lawful permanent residents without an immigrant child) was 3.5 (0.6) in the year before expansion and 3.9 (0.6) in the year after expansion.

Table 3 provides results from the main difference-indifferences models. For lawful permanent residents with an immigrant child, the association between a state providing health insurance and the probability of in-migration was indistinguishable from zero regardless of the control group. These estimates were precise and centered around zero (mean, 0.46 percentage points; 95% CI, -0.78 to 1.69 percentage points) in the model using lawful permanent residents without an immigrant child as the control. Similarly, for lawful permanent resident women of reproductive age, the association between state public health insurance and the likelihood of in-migration was indistinguishable from zero and also precisely estimated (mean, -0.15 percentage points [95% CI, -0.93 to 0.63 percentage points] in the model using lawful permanent resident single men as the control). Coverage expansion for non-US-born children of lawful permanent residents was not associated with a change in the rate of in-migration higher than 1.78 percentage points or lower than -1.21 percentage points. The corresponding estimate for coverage expansion of lawful permanent resident pregnant women was a change higher than 1.38 percentage points and lower than -1.20 percentage points.

We also showed the estimates with an alternative outcome variable of in-migrating from a neighboring state. We similarly found no statistically significant association between offering expanded public health insurance and interstate migration. For public health insurance expansion for children, the estimated mean effect is -0.03 percentage points (95% CI, -0.5 to 0.44 percentage points). For public health insurance expansion for pregnant women, the estimated mean effect is -0.02 percentage points (95% CI, -0.48 to 0.09 percentage points).

Sensitivity Analyses

Results from extensions of the main model are shown in eTable 1 in the Supplement. To evaluate the sensitivity of the results, we estimated a range of different models and tests. In particular, we varied sample restrictions (poverty and educational level, likely uninsured immigrants, and immigrants with longer residency in the United States) to ensure that the null effects were not swayed by sample criteria or possibly undocumented immigrants (eTables 2-6 in the Supplement). We also used US-born citizens as an additional placebo comparison group (eTable 7 in the Supplement). We varied our statistical model including an unweighted specification, limiting the sample to eligible non-US-born persons only, controlling for differences between eligible and noneligible immigrants by state and year, focusing on variation among neighboring state pairs with differential public health insurance adoption, and interacting the initial share of immigrants with our difference-in-differences estimate (eTables 8-12 in the Supplement). We also estimated our main model with alternative dependent variables: in-migration from a neighboring state and in-migration from a state not offering expanded public health insurance to immigrants to a state offering this form of expanded insurance (eTables 13 and 14 in the Supplement).

We also tested for a violation of the parallel trends assumption underlying our statistical model by including public health insurance expansion lags and leads and found no statistically significant values (eFigure 2 in the Supplement). The results showed that migration behavior among the treatment and control groups was similar before health care coverage expansion. Furthermore, the coefficients of the interactions on the leads revealed that there was no discernible evidence of a cumulative (long-term) association of expanded public health insurance with in-migration for up to 5 years after coverage expansion. The eAppendix in the Supplement gives more detailed explanations and results of these tests.

Discussion

The proportion of children in the United States born to at least 1 immigrant parent is predicted to increase to 1 in 3 by 2050.¹ Consequently, the challenge of providing health care to uninsured children and pregnant women in immigrant families is one that the nation needs to address, both at the national and state levels. The development of the Children's Health Insurance Program and Child Health Insurance Program Reauthorization Act^{4,5} as national policies added to states' resources to provide health insurance to low-income children and pregnant women, including immigrants. However, increasing concerns about immigrant public benefit utilization may limit further public health insurance expansions.

We analyzed interstate migration behavior among recently arrived immigrants after public health insurance expansions for immigrant children and lawful permanent resident pregnant women. We found no evidence that the introduction of these welfare benefits in a specific state was associated with in-migration of eligible non-US-born individuals from other states. Previous research¹¹⁻¹⁵ has focused on how the initial location choice of immigrants may be associated with welfare generosity and has generally found mixed results. This study built on this earlier literature ¹¹⁻¹⁵ to show that after non-US-born individuals have settled in a location, they were unlikely to migrate internally (between states) in pursuit of health care benefits. Our findings are therefore consistent with studies^{14,15} showing little association between the generosity of public benefits and location choices.

Limitations

This study has limitations. First, state-level public health insurance expansions are not random, and there were potential concerns about time-varying factors undermining the analysis. Nevertheless, our results held across various regression specifications, control groups, and sensitivity checks, and we found no evidence of a violation of the parallel trends assumption. Second, we estimated state-level associations, and we were unable to analyze fixed migration patterns only among local communities in close proximity to a state border. Third, because our study considered only statewide policy expansions, we were unable to analyze associations of local public benefits programs (eg, citylevel or county-level programs) with in-migration.

Conclusions

Our study showed that recent public health insurance expansion was not associated with a discernable increase in inmigration between states among eligible immigrants. Despite immigrant families being more responsive to economic conditions and these health care programs having significant uptake, results suggest that states considering expansion of health care benefits to certain immigrant groups are unlikely to experience large increases in immigrants from other states.^{9,10,19,20} This finding is of particular importance to policy makers when estimating short- and long-term program costs.

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Drafting of the manuscript: Yasenov, Lawrence, Hainmueller.

Critical revision of the manuscript for important intellectual content: All authors.

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