

## Article

# Immigrant policies as health policies: State immigrant policy climates and health provider visits among U.S. immigrants

Molly Dondero<sup>a,\*</sup>, Claire E. Altman<sup>b</sup>

<sup>a</sup> Department of Sociology, American University, 4400 Massachusetts Avenue NW, Washington D.C., 20016, USA

<sup>b</sup> Department of Health Sciences and Truman School of Public Affairs, University of Missouri, 501 Clark Hall, Columbia, MO 65211, USA



## A B S T R A C T

The geographic dispersion of the U.S. immigrant population has occurred alongside a dramatic increase in state-level immigration laws that has unfolded unevenly across states, creating markedly different state immigrant policy climates. Although not all such laws are health-related, they have potential implications for immigrants' health care utilization. Using data from the 2014 Survey of Income and Program Participation, we leverage the geographic variation in the restrictiveness of state immigrant policy climates to examine the association between state-level immigrant policies and health provider visits—a fundamental indicator of health care utilization—among immigrant adults. Results indicate that restrictive immigrant policy climates exacerbate nativity gaps in health provider visits among working-age adults and, to a lesser extent, among older adults. Our findings suggest that even immigrant policies not directly related to health have consequences for immigrants' health care utilization.

## 1. Introduction

The geographic dispersion of immigrants in the United States has occurred alongside a dramatic increase in state-level immigrant laws. Yet, the proliferation of immigrant policies has unfolded unevenly, with some states enacting more inclusive policies that promote immigrant integration, others enacting more restrictive policies that impede integration, and still others taking little or no legislative action (De Trinidad Young and Wallace 2019; National Conference of State Legislatures, 2019). Although many of these policies are not health policies per se, they may operate as structural determinants of health for immigrants and their families. Indeed, the World Health Organization's ecological framework identifies state policies as a key structural determinant of health because they shape other broad social determinants such as social and economic conditions (Solar & Irwin, 2010; Wallace, Young, Rodríguez, & Brindis, 2019).

State-level immigrant policies may be a particularly salient determinant of immigrants' health care utilization (Perreira & Pedroza, 2019; Philbin, Morgan, Hatzenbuehler, & Hirsch, 2018), and therefore might mitigate or exacerbate well-documented nativity disparities in utilization. Compared to U.S.-born counterparts, immigrants have markedly lower rates of health care utilization and less access to quality care (Ku & Matani, 2001), which are associated with poorer health (Hadley, 2003; Kuile, Rousseau, Munoz, Nadeau, & Ouimet, 2007), higher mortality (Nolte & McKee, 2012), and higher health care system costs (Glasziou

et al., 2017). State policy climates can influence immigrants' health care utilization through both direct mechanisms—by providing or restricting access to care—and indirect pathways—by creating a welcoming or hostile climate that shapes immigrants' perceptions of and decisions about seeking health care (Perreira & Pedroza, 2019; Philbin et al., 2018; Wallace et al., 2019). Thus, restrictive state-level immigrant policy climates might be associated with a lower likelihood of utilizing care, potentially intensifying unmet need among immigrants and exacerbating nativity disparities in health care utilization. In contrast, inclusive policy climates might be associated with a higher likelihood of accessing care, and thus might reduce health care utilization disparities.

Yet, scant national-level research has documented whether and how state immigrant policies affect immigrant adults' health care utilization, and specifically whether similar patterns exist for working-aged and older adults—two groups with different age-related health needs. This study leverages geographic variation in state-level immigrant policies to examine the association between state-level immigrant policy climates and health provider visits, a fundamental indicator of health care utilization. To our knowledge, this is the first nationally representative study assessing whether residence in states with more restrictive immigrant policies is associated with lower odds of health provider visits among immigrants adults. By using a comprehensive measure of immigrant policy climate, our study documents how state-level policies can collectively influence immigrants' health care utilization. As such, this timely study advances knowledge about policy climates as an important

\* Corresponding author.

E-mail addresses: [dondero@american.edu](mailto:dondero@american.edu) (M. Dondero), [altman@health.missouri.edu](mailto:altman@health.missouri.edu) (C.E. Altman).

modifiable structural determinant of immigrants' health care utilization.

## 2. Background

### 2.1. Health care utilization among immigrants

Compared to U.S.-born individuals, immigrants are an underserved population in the U.S. health care system. Immigrants' health insurance coverage is substantially lower compared to U.S.-born individuals. Although implementation of the Patient Protection and Affordable Care Act in 2014 reduced health insurance coverage disparities between U.S.-born citizens and naturalized and legal permanent resident immigrants and improved utilization among immigrants, disparities remain (Bustamante, Chen, McKenna, & Ortega, 2019). Nearly 20% of immigrants are uninsured, compared to 7% of U.S.-born individuals (Berchick, Barnett, & Upton, 2019). After controlling for health insurance, race/ethnicity, and socioeconomic status, immigrants are still less likely than their U.S.-born counterparts to access health care and have a regular place for care and are more likely to receive lower quality care (Ku & Matani, 2001; Pitkin Derose, Bahney, Lurie, & Escarce, 2009; Thamer, Richard, Casebeer, & Ray, 1997; Xu & Borders, 2008).

Despite the greater need for health care services that comes with age, nativity disparities in health care utilization persist into older age. Compared to both U.S.-born whites and non-whites, non-white immigrant adults ages 65 and older report higher rates of unmet need and lacking a regular source of health care (Choi, 2006; Prus, Tfamily, & Lin, 2010). Older immigrants are also less likely to have Medicare or other insurance (Carrasquillo, Carrasquillo, & Shea, 2000) and report lower health care spending than their U.S.-born counterparts (Zallman, Woolhandler, Himmelstein, Bor, & McCormick, 2013).

### 2.2. State-level policies and health care utilization among immigrants

Existing research on immigrants' health care utilization, often informed by the Andersen behavioral model (1968, 1995), has primarily examined micro-level predictors, paying relatively less attention to macro-structural factors such as state-level policies (Yang & Hwang, 2016). Yet, the World Health Organization's ecological framework views state policies as critical macro-structural determinants of health because they shape the broad social and economic contexts that create social hierarchies and inequities (Solar & Irwin, 2010; Wallace et al., 2019). Thus, even policies not directly health-related, such as many immigrant policies, often have health implications. Indeed, a growing literature documents how non-health state policies in the U.S. contribute both to adverse health outcomes, especially among marginalized populations, and to social disparities in health and health-related behaviors, including health care utilization (Montez, Hayward, and Wolf 2017). For these reasons, the WHO encourages the adoption of a Health in All Policies approach, which considers the health implications of non-health policies and recognizes policies as modifiable determinants that can be used to improve population health (Andersen, 1995; Hatzenbuehler et al., 2017; Philbin et al., 2018).

From a Health in All Policies perspective, state immigrant policies can have implications for immigrants' health care utilization. Although some components of immigrant policies are determined at the federal level, states have broad authority to enact policies regarding access to resources on the basis of citizenship or immigration status and have some discretion over the implementation of federal immigrant policies (Motomura, 2014; Wallace et al., 2019). Since 2007, the U.S. has experienced a dramatic increase in state laws related to immigrants, with an average of 350 such laws and resolutions enacted nationwide each year, a five-fold increase from the average of 67 in 2005 and 2006 (Authors' calculations of data from National Conference of State Legislatures). Most of these policies—only some of which are directly related to health care access—fall into three broad categories: 1) public benefits

policies such as access to welfare and health insurance, 2) integration such as access to driver licenses, higher education, and employment, and 3) immigration enforcement policies such as local law enforcement cooperation with federal immigration authorities (Gelatt, Bernstein, & Koball, 2017; Motomura, 2014; Wallace et al., 2019). Collectively, these policies contribute to exclusive or inclusive climates that shape immigrants' well-being and access to resources (Perreira & Pedroza, 2019).

State policy climates can influence immigrants' health care utilization through both direct and indirect mechanisms (Perreira & Pedroza, 2019; Philbin et al., 2018; Toomey et al., 2014). Policies can directly provide or restrict access to health insurance, health-related public benefits such as food assistance programs, and funds to federally qualified health centers that serve immigrants (Perreira & Pedroza, 2019). Policies can also indirectly encourage or discourage immigrants from accessing care by creating a stressful or welcoming climate that shapes immigrants' decisions about seeking health care (Toomey et al., 2014). For example, policies unrelated to health care, such as English-only laws or laws regulating immigrants' access to higher education, often reflect public sentiment toward immigrants, signaling how welcome immigrants are and influencing their own perceptions of belonging (Perreira & Pedroza, 2019). Other policies, such as enforcement policies, can also operate indirectly through psychosocial mechanisms such as fear, distrust, and perceptions of surveillance that discourage immigrants from seeking care and interacting with health care institutions. Indeed, prior research finds that, in response to enforcement laws, foreign-born adults reported distrust of health care institutions (Rhodes et al., 2015), fear of hospital staff reporting citizenship status to authorities (Maldonado, Rodriguez, Torres, Flores, & Lovato, 2013), and generalized fear and stress of deportation of one's self and/or loved ones (Salas, Ayón, & Gurrola, 2013).

Avoidance of the health care system has detrimental individual- and societal-level health consequences. Restrictive immigrant policies are associated with adverse health outcomes including decreases in self-reported health among Spanish-only-speaking Latinos (Anderson & Finch, 2014), low birthweight among babies born to immigrant mothers in Arizona (Torche & Sirois, 2018), and poorer mental health among both foreign- and U.S.-born Latinos in states with restrictive policies (Hatzenbuehler et al., 2017). The confluence of increased need for health services and decreased health care utilization in states with restrictive policies may heighten unmet need for care among immigrants and create or exacerbate health disparities between immigrants and other groups, thus weakening overall population health. Furthermore, the impacts of immigrant policies on health care utilization might be far-reaching, extending beyond those immigrants to whom most policies directly apply. Although most immigrant policies apply only to unauthorized immigrants and legal permanent residents who have been in the U.S. for less than 5 years, there may be spillover effects for naturalized citizens, U.S.-born citizens in mixed status families (i.e., families in which only some members have legal status), and U.S.-born citizens of racial/ethnic groups such as Latinos/as that are often racialized as (undocumented) immigrants (Asad & Clair, 2018; Jiménez, 2008; Pedraza, Nichols, & LeBrón, 2017).

A small literature has examined the association between state-level immigrant policies and health care utilization. For example, Rhodes et al. (2015) conducted a mixed methods study of prenatal care among Latina mothers in North Carolina following the uneven county-level adoption of section 287(g) of the Immigration and Nationality Act and the Secure Communities program, which granted state and local law enforcement the power to enforce federal immigration law. No significant differences existed in prenatal care between Latina mothers in counties that adopted the policy and those that did not, but focus group interviews found that mothers distrusted health care settings and other agencies, fearing that institutional interaction would put them at risk for deportation or discrimination. Other qualitative studies corroborate this finding, with immigrants reporting that restrictive immigrant policies induce stress and fear (Hardy et al., 2012; Salas et al., 2013) that can

contribute to immigrants' lower prevalence of health care utilization (LeBrón et al., 2018; Martinez et al., 2015). Yet, few large-scale quantitative studies have documented whether these processes translate into lower levels of health care utilization at the population-level.

Furthermore, most prior studies on immigrant policies and health care utilization have focused on single, often restrictive, policies (Wallace et al., 2019). Less attention has been paid to whether the overall state policy climate is associated with health care utilization (for exceptions see Gelatt, 2016; Hatzenbuehler et al., 2017; De Trinidad Young and Wallace 2019). Examining the overall policy climate, including inclusive climates, is critical to understanding whether such policies collectively operate as social determinants of immigrants' health care utilization.

### 3. Data and methods

#### 3.1. Dataset and analytic sample

We used data from Wave 1 of the 2014 Survey of Income and Program Participation (SIPP), a nationally representative household-based panel survey of household and individual-level economic well-being and public program use in the preceding 12 months (i.e. the 2013 calendar year). Most relevant to our study, the SIPP collects health care utilization information and provides respondents' state of residence information that is not always publicly available in surveys containing health data— from a large sample of households including immigrant households. Additionally, the timing of the survey followed years of heavy immigration legislation activity, including the enactment of several high-profile omnibus policies such as Arizona SB 1070 in 2010 and similar laws in Alabama, Georgia, Indiana, South Carolina, and Utah in 2011.

Following convention (Bustamante et al., 2019; Diehr, Yanez, Ash, Hornbrook, & Lin, 1999; National Center for Health Statistics, 2018), we stratified the sample into two age-based subsamples—working-age (18–65,  $N = 44,876$ ) and older adults (66 and older,  $N = 10,405$ )—to reflect age differences in health care needs. The recommended preventive care schedule varies widely for working-aged adults, who might be more likely than their older counterparts to forgo preventive care and utilize healthcare only when sick. In contrast, older adults typically have increased health needs due to aging and are typically recommended to receive at least yearly check-ups and screenings.

#### 3.2. Measures

##### 3.2.1. Dependent variable

Because the key theoretical concept is whether respondents had any interaction with a health care provider or whether they forewent care in the last year, we operationalized health care utilization, the dependent variable, as a dichotomous indicator of any health provider visits in the last 12 months (yes = 1). This measure has been used in prior studies to assess health care utilization (Akresh, 2009; Bustamante, Fang, Rizzo, & Ortega, 2009; Durazo & Wallace, 2014; Ortega et al., 2007).

##### 3.2.2. Independent variables

A global measure of state immigrant policy climate served as the focal independent variable. Rather than focus on a single policy, we created a measure of the overall state immigrant policy climate. We used the Urban Institute's Immigration Policy Resource (Gelatt et al., 2017) to determine whether or not a state had enacted one of 14 immigrant policies from three broad domains—public benefits, integration, and enforcement—by the end of the 2013 calendar year. Modifying Wallace et al.'s (2019) approach, we created an exclusion score measuring how restrictive the state policy climate was toward immigrants. We coded a policy as *restrictive* (1) if it restricted rights, protections, or eligibility based on immigration status, *inclusive* (−1) if it extended rights, protections, or eligibility based on immigration status, or *neutral* (0) if the

lack of a policy could not be equated with a deliberate decision to exclude immigrants. For example, states with policies offering in-state tuition to undocumented students received a −1 (inclusive) and states without this policy received a 1 (restrictive). We summed scores for each state into a single exclusion score ranging from −9 (most inclusive) to 10 (most restrictive). (See Appendix Table A1 for a listing of policies and coding schemes). Supplementary analyses indicated that state percent foreign-born and percent Latino/a were associated with a lower exclusion score while whether a state voted Republican in the 2012 presidential election was associated with a higher exclusion score.

A possible limitation of the exclusion score is that it does not weight policies according to their potential relevance for immigrants' health care utilization. For example, policies regulating immigrants' access to health care might be more salient to health care utilization. Instead, it assumes that all immigrant policies contribute equally to the overall state-level climate of immigrant inclusion or exclusion. Conceptually, this approach is built on a Health in All Policies premise (Wallace et al., 2019), which recognizes that policies from different non-health-related sectors can impact health, and that policies can contribute to an overall climate that shapes health beyond any single policy.

Fig. 1 maps the state immigrant policy exclusion scores, and Table 1 ranks states by exclusion score. Mississippi, Alabama, and South Carolina rank among the states with the most exclusive immigrant policy environments, whereas California, Washington, and New York have the most inclusive climates.

##### 3.2.3. Control variables

Demographic and socioeconomic controls included: sex (male = reference), age in years, self-reported race/ethnicity (white = reference, Black, Latino, Asian, and other), marital status (married = reference, widowed, divorced, separated, and never married), educational attainment (less than high school = reference, high school, some college, and college), annual household income (logged), and the presence of any children under 17 in the household (yes = reference).

Health-related controls included whether the respondent had any health insurance coverage during the past 12 months (yes = reference), number of days that illness or injury kept the respondent in bed more than half the day, a dichotomous indicator of fair/poor self-rated health status (reference) versus good/very good/excellent health, and whether the respondent had any of the following disabilities (yes = reference): serious difficulty walking or climbing stairs; hearing; seeing; concentrating, remembering, or making decisions; dressing or bathing; and/or finding a job or remaining employed.

State-level controls included two variables derived from the 2013 American Community Survey: the proportion of state residents who live below the federal poverty level and the proportion of state residents who are foreign-born. We also included a dichotomous indicator of whether the majority of state residents voted Republican in the 2012 presidential election using data from the MIT Data Election and Science Lab.

#### 3.3. Analytic strategy

Our first task was to confirm whether nativity disparities in health provider visits exist in bivariate analyses. Our second task was to test, in multivariable analyses, whether state immigrant policies exacerbate the disparity in health care utilization between immigrants and U.S.-born adults. We used logistic regression to predict the odds of having any health provider visits in the preceding 12 months and included an interaction term between the state policy exclusion score and nativity. We used a nested model-building approach in which we included the two focal predictors—state immigrant policy exclusion score and nativity—in the first model, then added the nativity\*state policy interaction term in the second model, followed by all controls in the third model.

However, unlike in models with continuous dependent variables, interaction terms in categorical models cannot be interpreted by adding the main effects and the interaction effect (Long & Mustillo, 2018; Mize,

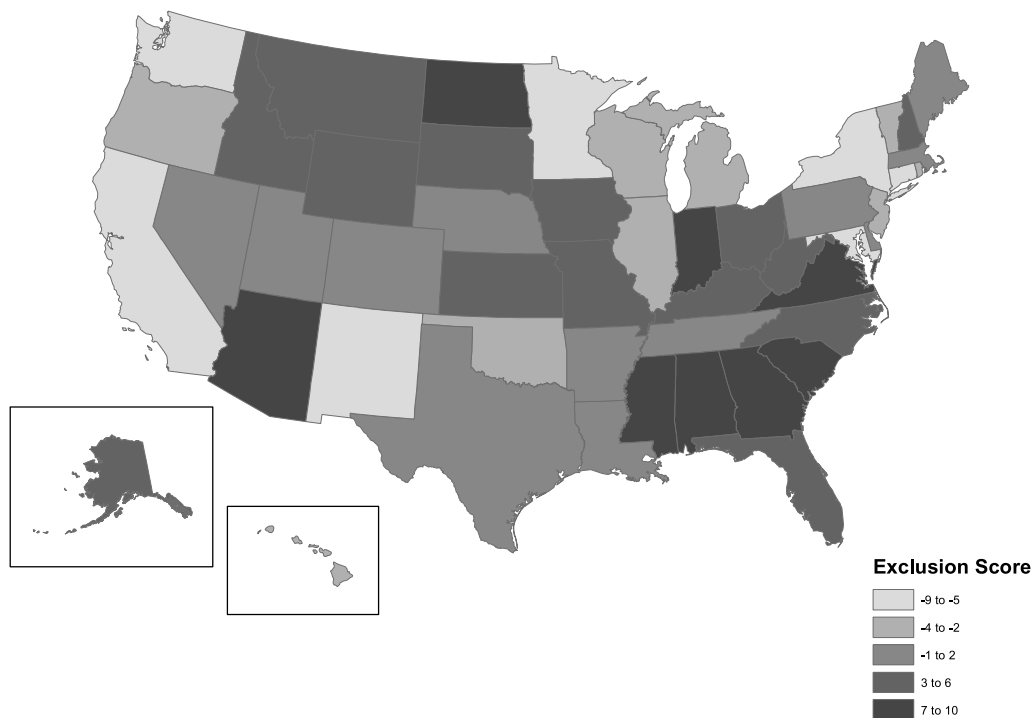


Fig. 1. Immigrant policy exclusion score by state, United States 2013.

**Table 1**  
State ranking of state immigrant policy exclusion score.

Rank	State								Exclusion Score	
1	Mississippi	Alabama							10 (most restrictive)	
2	South Carolina								9	
3	Indiana								8	
4	Arizona	Georgia	Virginia	South Dakota					7	
5	Missouri	Florida							6	
6	Iowa	Wyoming	New Hampshire	Idaho	Montana	South Dakota	Alaska	North Carolina	5	
7	West Virginia								4	
8	Kentucky	Kansas	Ohio						3	
9	Nevada	Louisiana	Tennessee	Arkansas					2	
10	Delaware	Maine							1	
11	Pennsylvania	Texas	Colorado	Utah	Nebraska	Massachusetts			0	
12	Michigan	New Jersey	Oklahoma						-2	
13	Oregon	Wisconsin	Hawaii	Rhode Island	Vermont					-3
14	Illinois								-4	
15	District of Columbia	Connecticut	Maryland						-5	
16	Minnesota								-6	
17	New Mexico	New York	Washington						-7	
18	California								-9 (most inclusive)	

2019). Furthermore, the *p*-values for interaction terms with a continuous predictor such as ours can be misleading because the interaction might be significant at some values of the predictor but not others (Mize, 2019). Therefore, following best practices for interpreting interaction effects in categorical models, we did not rely on the interaction term and its *p*-value to determine whether a significant statistical interaction exists. We instead used marginal effects, which are better suited for understanding the direction, magnitude, and significance of statistical interactions in categorical models because they are expressed in probabilities, which are the natural metric of categorical outcomes (Long & Mustillo, 2018; Mize, 2019).

We first estimated marginal effects (using the *margins* post-estimation command in Stata 16) on the predicted probabilities of health provider visits by nativity at the lowest and highest exclusion scores, with other variables held at their means. We then conducted tests of first difference, which test within-group differences in the probability of health provider visits at the lowest and highest exclusion scores. We

then conducted tests of second differences (i.e. the difference between the first differences), which test between-group differences in the probability of health provider visits. These tests confirm whether the effect of exclusionary policy climates varies significantly by nativity. We graphed the predicted probabilities by nativity across the range of exclusion scores and tested whether significant nativity differences exist at each exclusion score.

To account for the SIPP’s stratified sampling design, we used robust standard errors clustered by state using Stata’s *vce(cluster)* command. In supplementary analyses, we used multilevel models to account for the dependence of observations within states and found substantively similar results (available upon request). We weighted all analyses using the final person year survey weight. For missing values, we used the values imputed by the Census Bureau.

## 4. Results

### 4.1. Descriptive statistics

Table 2 reports descriptive statistics. In both age groups, there are significant nativity gaps in health provider visits. Only 63% of foreign-born working-age adults visited a health provider in the last 12 months compared to 76% of U.S.-born adults. The gap is smaller but still significant among older adults, with 89% of foreign-born adults having visited a health provider compared to 92% of U.S.-born adults. On average, foreign-born adults live in states with more inclusive policy scores than do their U.S.-born counterparts, as denoted by the negative mean exclusion scores (−2.13 and −2.64 among working-age and older foreign-born adults compared to .17 and .42 among U.S.-born adults).

Nativity differences also exist in overall health and health insurance. Compared to U.S.-born adults, a higher proportion of foreign-born adults were uninsured, though the gap is larger among working-age adults. A similar proportion of working-age foreign and U.S.-born adults reported being in fair/poor health, but working-age foreign-born adults reported fewer sick days on average. In contrast, a higher proportion of older foreign-born adults reported being in fair/poor health but had a similar mean number of sick days compared to older U.S.-born adults.

### 4.2. Main results

Table 3 shows the odds ratios from the separate models predicting any health provider visits for working-age and older adults. Consistent with previous research (Ku & Matani, 2001), Models 1a and 1b also

show that foreign-born adults have significantly lower odds of visiting a health provider than do their U.S.-born counterparts (O.R. = 0.53,  $P < .001$  for working-age foreign-born adults and O.R. = 0.64,  $P < .01$  for older foreign-born adults). These models also show that the main effect of the state policy exclusion score is not significantly associated with the odds of visiting a health provider. In unadjusted models (2a and 2b) with the interaction term between the state policy exclusion score and nativity, a higher state policy exclusion score, or more restrictive policy climate, is negatively associated with the odds of health provider visits for both working-age and older foreign-born adults. After the inclusion of controls, working-age foreign-born adults have significantly lower odds of visiting a health provider and older foreign-born adults have marginally significantly lower odds (Models 3a and 3b). These models also show that the interaction term remains less than one, suggesting that more restrictive policy climates might exacerbate the nativity disparities in health provider visits.

To interpret the interaction term, we present tests of first and second difference of marginal effects on the predicted probability of a health provider visit. Panel A of Table 4 shows that in the states with the most inclusive policies (exclusion score of −9), the predicted probability of a health provider visit for working-age foreign-born adults is approximately .68 whereas in states with the most restrictive policies (exclusion score = 10), the predicted probability drops to .61. Tests of first difference show that this 0.07 difference in probabilities between working-age foreign-born adults in the most inclusive and most restrictive states is marginally significant. In contrast, U.S.-born working-age adults experience a negligible, non-significant difference in the predicted probability as the between states with the lowest and highest exclusion scores (first difference = 0.005,  $p = n.s.$ ). Tests of second difference confirm

**Table 2**  
Weighted means and proportions of variables by nativity and age, U.S. Adults, 2014

	Ages 18-65				Ages 66 and older			
	Foreign-born		U.S.-born		Foreign-born		U.S.-born	
Any health provider visits in last 12 months	0.63		0.76	*	0.89		0.92	*
State immigrant policy exclusion score	−2.13	(0.10)	0.17	(0.04)	−2.64	(5.25)	0.42	(5.72)
Age	41.25	(11.25)	41.10	(14.09)	74.57	(6.04)	74.90	(7.07)
Male	0.49		0.49		0.42		0.44	
Race/ethnicity								
White	0.18		0.73	*	0.33		0.85	*
Black	0.09		0.13	*	0.06		0.09	*
Latino	0.46		0.10	*	0.32		0.04	*
Asian	0.25		0.01	*	0.28		0.01	*
Other	0.01		0.03	*	0.01		0.02	
Marital status								
Married	0.63		0.49	*	0.59		0.57	
Widowed	0.02		0.02		0.24		0.25	
Divorced	0.08		0.12	*	0.08		0.13	*
Separated	0.03		0.02	*	0.03		0.01	*
Never married	0.24		0.35	*	0.05		0.04	
Annual household income (logged)	10.62	(1.81)	10.78	(1.74)	10.48	(1.41)	10.68	(1.20)
Education level								
Less than high school	0.25		0.08	*	0.35		0.15	*
High school	0.23		0.29	*	0.26		0.35	*
Some college	0.21		0.33	*	0.13		0.24	*
College	0.20		0.20		0.14		0.14	
Advanced degree	0.12		0.10	*	0.12		0.11	
Child under age 18 in the household	0.27		0.19	*	0.00		0.01	*
Any health insurance in last 12 months	0.69		0.85	*	0.94		0.98	*
Self-rated health status								
Excellent/very good/good	0.88		0.86	*	0.61		0.71	*
Fair/poor	0.12		0.14	*	0.39		0.29	*
Number of sick days	3.36	(18.87)	6.28	(29.61)	9.46	(36.69)	9.51	(44.41)
Has a disability	0.09		0.16		0.43		0.47	
Proportion of state residents below federal poverty line	0.18	(0.02)	0.18	(0.03)	0.18	(0.02)	0.18	(0.03)
Proportion of state residents who are foreign-born	0.17	(0.07)	0.11	(0.08)	0.18	(0.07)	0.11	(0.08)
State voted Republican in 2012 presidential election	0.28		0.41	*	0.17		0.39	*
N	7357		37,519		1078		9327	

Note: Standard deviations in parentheses. \*Significant nativity difference in mean or proportion at  $p \leq .05$ .

Source: Survey of Income and Program Participation 2014

**Table 3**  
Odds ratios from logistic regression models predicting any health provider visits in last 12 months, U.S. Adults, 2014

	Panel A: Ages 18-65						Panel B: Ages 66 and older											
	Model 1a		Model 2a		Model 3a		Model 1b		Model 2b		Model 2b							
State immigrant policy exclusion score	0.99	(0.01)	1.00	(0.01)	1.00	(0.01)	1.00	(0.01)	1.00	(0.01)	1.00	(0.01)	1.01	(0.02)				
Foreign-born	0.53	(0.03)	***	0.51	(0.02)	***	0.75	(0.04)	***	0.64	(0.10)	**	0.61	(0.09)	***	0.74	(0.13)	~
State immigrant policy exclusion score*foreign-born				0.98	(0.01)	**	0.98	(0.01)	*				0.97	(0.03)		0.98	(0.02)	
Male							0.51	(0.02)	***							0.88	(0.08)	
Age							1.02	(0.00)	***							1.02	(0.01)	*
Race/ethnicity (reference = white)																		
Black							0.90	(0.04)	*							0.85	(0.13)	
Latino							0.83	(0.04)	***							0.72	(0.12)	*
Asian							0.76	(0.07)	**							0.85	(0.28)	
Other							0.82	(0.08)	*							0.65	(0.20)	
Marital Status (reference = married)																		
Widowed							0.93	(0.09)								0.76	(0.10)	*
Divorced							0.86	(0.04)	**							0.71	(0.10)	*
Separated							0.86	(0.07)	~							0.89	(0.32)	
Never married							0.89	(0.03)	**							0.68	(0.12)	*
Education level (reference = less than high school)																		
High school							1.03	(0.05)								1.1	(0.15)	
Some college							1.27	(0.06)	***							1.19	(0.18)	
College							1.41	(0.08)	***							1.53	(0.31)	*
Advanced degree							1.58	(0.12)	***							1.64	(0.27)	**
Annual household income (logged)							1.08	(0.01)	***							1.17	(0.03)	***
Child under 17 in the household							1.08	(0.05)	~							0.51	(0.13)	**
Had health insurance in the last 12 months							4.01	(0.17)	***							3.15	(0.44)	***
Fair/poor health							1.97	(0.10)	***							1.71	(0.20)	***
Number of sick days							1.02	(0.01)	***							1.01	(0.00)	*
Has a disability							1.50	(0.07)	***							1.43	(0.16)	***
Proportion of state residents in poverty							0.18	(0.21)	~							0.13	(0.36)	
Proportion of state residents who are foreign-born							0.80	(0.35)								2.97	(3.01)	
State voted Republican in 2012 presidential election							1.05	(0.05)								1.1	(0.20)	
Constant	3.12	(0.13)	***	3.12	(0.12)	***	0.35	(0.08)	***	12.3	(0.83)	***	12.3	(0.80)	***	0.21	(0.18)	~
N	44,876						10,405											

Note: Data are weighted. Standard errors in parentheses. ~p < .10; p < .05; \*\*p < .01; \*\*\*p < .001.  
Source: Survey of Income and Program Participation 2014

that the difference between those first differences—that is, between foreign- and U.S.-born working-age adults— is significant (second difference = 0.07, p < .05) and thus indicate that the effect of restrictive policy climates varies significantly by nativity for working-age adults.

Fig. 2 graphs the predicted probability of any health provider visits across the range of exclusion scores for working-age adults. Among U.S.-born adults, the predicted probability of visiting a health provider remains stable at around 0.8 across the range of the policy exclusion scores. In contrast, among foreign-born adults, the probability of a having a health provider visit declines linearly as a state’s immigrant policy exclusion score increases. Tests of equality of nativity differences (available upon request) showed that differences between foreign- and U.S.-born working-age adults in the probability of visiting a health provider is significant at each exclusion score. The significant 0.07 increase in the nativity gap in the probability of health provider visits from the most inclusive to most restrictive states suggests that restrictive policy climates widen gaps in health provider visits for working-age adults.

Turning to older adults, results from the tests of first and second differences in Panel B of Table 4 show that there are no significant differences in the marginal effects on the predicted probabilities among and between foreign and U.S.-born adults. However, Fig. 3, which plots predicted probabilities for older adults, shows that a significant, albeit

modest, nativity gap in the probability of health provider visits emerges at higher levels of exclusion. As denoted by the dotted line in Fig. 3, in states with exclusion scores less than -5—that is, states with more inclusive policy climates—there is no significant difference between foreign- and U.S.-born adults. The difference becomes significant in states with exclusion scores above -4—that is, states with more restrictive policy climates.

#### 4.3. Sensitivity analyses

We conducted sensitivity analyses to test the robustness of our findings to other theoretical and methodological explanations. A key theoretical question is whether the association between restrictive policy climates and health provider visits varies by legal status, and in particular, whether the negative association between restrictive state policies and nativity is stronger for unauthorized immigrants compared to legal immigrants.

Although the SIPP does not directly ask about unauthorized status, we infer it by combining responses to the SIPP’s questions on citizenship, legal permanent residence, and participation in federal program public assistance programs. Described elsewhere (Hall, Greenman, & Farkas, 2010), this approach classifies foreign-born individuals as having legal status if they meet any one of the following conditions: 1) they

**Table 4**  
Marginal effects of state policy exclusion score on predicted probability of visiting a health provider, U.S. adults.

Panel A. Adults age 18–65						
	First difference Foreign-born		First difference U.S.-born		Second difference (Foreign-born - U.S.-born)	
Exclusion scale (-9)	0.68	(0.01)	0.80	(0.01)		
Exclusion scale (10)	0.61	(0.02)	0.80	(0.01)		
First difference	0.07	(0.04)	~	-0.01	(0.02)	0.07 (0.04) *
Panel B. Adults age 66 and older						
	First difference Foreign-born		First difference U.S.-born		Second difference (Foreign-born - U.S.-born)	
Exclusion scale (-9)	0.91	(0.02)	0.93	(0.01)		
Exclusion scale (10)	0.89	(0.02)	0.94	(0.01)		
First difference	0.02	(0.04)	-0.01	(0.02)		0.03 (0.04)

Note: Standard errors in parentheses. ~p < .10, \*p < .05; \*\*p < .01; \*\*\*p < .001. Source: 2014 Survey of Income and Program Participation

are currently a citizen, 2) they were a legal permanent resident upon entry to the U.S., and/or 3) they received benefits in their own name from federal public assistance programs (for which unauthorized immigrants are ineligible). We classified immigrants as unauthorized if they did not meet any of these conditions. Unlike previous survey years, the 2014 SIPP no longer asks noncitizen respondents if they adjusted their immigration status since entry to the U.S. Thus, legal status cannot be ascertained with the same degree of certainty because some respondents who have adjusted their status might be misclassified as unauthorized. However, we find that approximately 3% of the sample was unauthorized—an estimate similar to the Pew Research Center’s estimates of the unauthorized population (Krogstad, Passel, & Cohn, 2019).

Due to insufficient samples sizes of unauthorized immigrants in the older adult sample, we ran these analyses among the working-age sample only. We found a legal status gradient in the probability of health provider visits, with unauthorized immigrants having the lowest probabilities of health provider visits. However, the negative effect of the state policy exclusion score on the probability of health provider visits did not vary significantly between legal and unauthorized

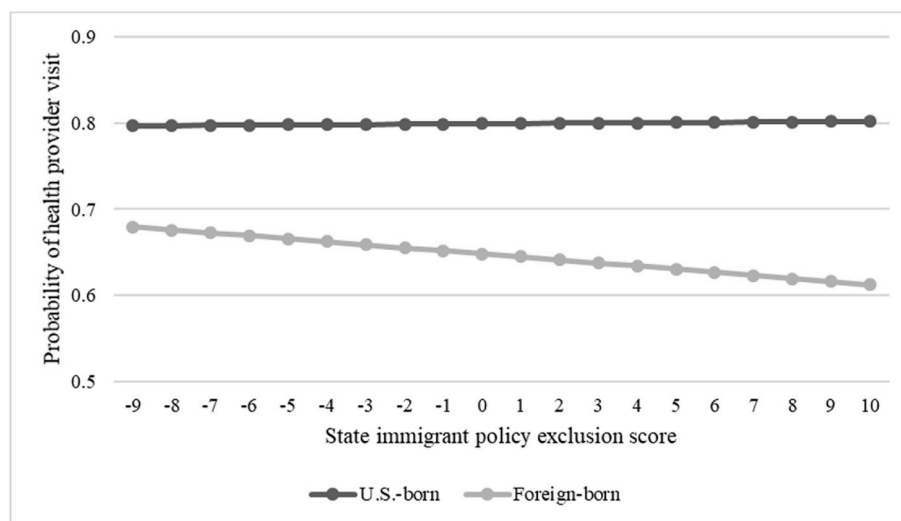
immigrants. That is, for both legal and unauthorized immigrants, the probability of health provider visits decreased as the exclusion score increased, while remaining unchanged for U.S.-born citizens. This suggests that exclusionary policies, which in law restrict access and resources for unauthorized immigrants (and in some cases recent permanent residents) only, have a chilling effect that extends to immigrants with legal status, including naturalized citizens.

In other supplementary analyses, we investigated whether similar patterns exist for U.S.-born Latinos/as, given evidence that they are often racialized as (unauthorized) immigrants (Asad & Clair, 2018; Jiménez, 2008) and that some adverse effects of restrictive policies extend to them (Philbin et al., 2018). We found no significant differences in the effect of state policy restrictiveness on the probability of health provider visits between U.S.-born Latinos/as and whites. To test whether our results were driven by the state political climate rather than state policy restrictiveness, we interacted whether the majority of the state voted Republican in the 2012 presidential election and nativity, but found no significant nativity differences in the effect of political climate on the probability of health provider visits.

Methodologically-focused sensitivity tests included alternate specifications of the outcome and state policy exclusion score. For working-age adults, we tested zero-inflated negative binomial regression models—which account for the large number of individuals without any health provider visits and separately model the likelihood of having no health provider visit and the number of health provider visits—and found substantively similar results to those from the logistic regression models; higher exclusion scores were associated with higher log odds of having no health provider visit for immigrants but not with the number of visits. For older immigrant adults, negative binomial models showed that a modest and marginally significant negative association between the exclusion score and number of visits. We tested cutoff points for the state policy exclusion score (terciles, quartiles, and binary indicators) and found the results best fit the linear term. We also tested separate summed indices of enforcement, public benefits, and integration policies and found enforcement policies to be associated with lower odds and public benefits and integration policies to be associated with higher odds of health provider visits for immigrants.

### 5. Discussion

The proliferation and uneven geographic distribution of state immigrant policies has created wide variation in the receptivity of state-level immigrant policy climates. Although not all immigrant policies are



**Fig. 2.** Predicted probability of health provider visit by nativity and state immigrant policy exclusion score, U.S. adults ages 18-65. Source: 2014 Survey of Income and Program Participation.

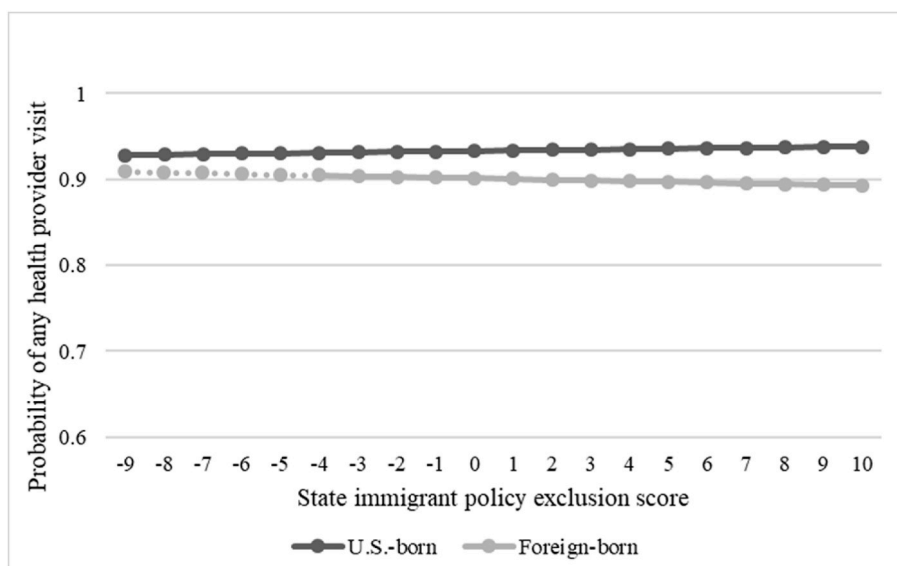


Fig. 3. Predicted probability of health provider visit by nativity and state immigrant policy exclusion score, U.S. adults ages 66 and older. Source: 2014 Survey of Income and Program Participation. Note: Dotted line denotes group differences not significant at  $p < .05$  level.

related to health care access, these policies can contribute to an overall climate of inclusion or exclusion that can shape immigrants' health care utilization. Understanding whether and how immigrant policies function as structural determinant of immigrants' health care utilization is important because immigrants are an underserved population in the U.S. health care system. Yet, to date, there is limited national-level evidence of whether restrictive state immigrant policy climates contribute to disparities in health care utilization between foreign and U.S.-born adults.

This study examined the association between state immigrant policy climates and health provider visits among working-age and older adults in the U.S. We found that more restrictive policy climates are associated with a lower likelihood of visiting a health care provider among working-age immigrant adults, but not for their U.S.-born counterparts, and that the nativity gap in health provider visits among working-age adults is significantly larger in states with the most restrictive climates compared to states with the most inclusive climates. In contrast, the association between state policy restrictiveness and health provider visits does not vary by nativity for older adults. However, the nativity gap in health provider visits, while smaller than the gap among working-age adults, is significant in states with the most restrictive climates but not in the most inclusive climates, suggesting that restrictive policy climates might contribute to disparities among older adults.

These findings raise questions about the mechanisms underlying the association between restrictive policy climates and health provider visits among working-age adults and the attenuated association for older adults. Although we are not able to test mechanisms with the SIPP data, existing qualitative studies provide insight into potential mechanisms, particularly psychosocial mechanisms, that might explain the patterns we observe. For instance, distrust of formal institutions, fear of discrimination and/or deportation, and lack of knowledge about rights to public benefits and health care access may contribute to immigrants' avoidance of the health care system (Hardy et al., 2012; LeBrón et al., 2018; Salas et al., 2013).

We further speculate that working-age immigrants' lower likelihood of visiting a health provider in restrictive policy climates could be primarily driven by foregone routine preventive care. Because younger and more recently arrived immigrants tend to be in relatively good health (Antecol and Bedard 2006), the potential risks of interacting with a health care institution in a restrictive policy climate might outweigh the need for routine care. Although foregone preventive care might not have

major *short-term* negative impacts on immigrants' health, it can have profound, detrimental *long-term* implications. Foregone care creates the potential for using unsafe or suboptimal alternate health care (Rhodes et al., 2015) and increases the risk of undiagnosed diseases and the need for costlier treatment of illnesses at more advanced stages. Indeed, some evidence suggests lack of access to the doctor explains part of the immigrant health advantage and is associated with a higher prevalence of undiagnosed diseases (Barcellos, Goldman, & Smith, 2012; Read & Reynolds, 2012). In the long-term, foregone care might contribute to the erosion of the immigrant health advantage and the creation or exacerbation of nativity disparities in health. The SIPP does not distinguish between type of health provider visits (i.e. routine care, diagnostic visits, treatments, or emergency room visits) nor does it ask about the need for care over the past 12 months. Future studies would benefit from this information in order to determine which types of care immigrants are most likely to forgo and to more directly measure whether immigrants' unmet need for health care varies by state policy restrictiveness.

A combination of factors, including smaller sample size, likely contributes to the attenuated patterns for older adults. One probable explanation stems from age differences in health needs, which increase as individuals age and create reason for more health provider visits. Even if older foreign-born adults fear interacting with health care institutions in restrictive policy climates, they may be less willing or able to forgo care than their working-age counterparts, especially if they have chronic conditions that require regular treatment. Some evidence suggests that the immigrant health advantage diminishes, or even reverses, at older ages, as in the case of disability (Hayward, Hummer, Chiu, González-González, & Wong, 2014), which might contribute to a narrowing of the nativity gap in health provider visits at older ages. Another possibility is that older immigrants—particularly those in poor health—return to their countries of origin, a phenomenon known as “salmon bias.” However, the magnitude of this type of return migration is likely to be too small to fully explain the smaller nativity disparity in health provider visits at older ages (Riosmena, Wong, and Palloni 2013; Turra & Elo, 2008).

Another explanation may be related to older immigrants' longer duration of residence in the U.S. Many older immigrants have lived in the U.S. longer than their working-age counterparts. As a result, they may be more familiar with the health care system and with state policies than their younger counterparts. Legal status composition might also explain the findings for older adults. In contrast to working-age adults, a



smaller share of older adults is unauthorized. Although sensitivity analyses among working-age adults indicated that the association between state policy restrictiveness and health provider visits did not vary significantly by legal status, unauthorized immigrants had the lowest probability of health provider visits, which contribute in part to the larger magnitude of the nativity disparity in health provider visits for working-age adults compared to older adults. However, estimates suggest that at least 12% of the unauthorized population is older than 55 (Migration Policy Institute, 2019) and that challenges to health care access for older unauthorized immigrants persist through old age (Balakrishnan & Jordan, 2019) and end-stage illness (Gray, Boucher, Kuchibhatla, & Johnson, 2017).

Although our study advances knowledge about the health care implications of immigrant policies, certain limitations warrant mention and identify questions for future research. First, with cross-sectional data we cannot make causal inferences about the association between state immigrant policies and health provider visits. Second, other than self-rated health, number of sick days, and disability, the SIPP does not contain information about respondents' health conditions. Thus, it is possible that differences in unobserved health conditions—both between foreign- and U.S.-born adults and between immigrants in different policy climates—contribute to the observed patterns. For example, sicker immigrants may move to states with more welcoming policy climates because they require more frequent health care. Third, we recognize that even policies that are proposed but not yet enacted can contribute to climates of inclusion or exclusion, and that because our policy measure relies on policies' enactment date, we cannot determine if the association between state policy climates and health provider visits is sensitive to proposed policies. Fourth, the analysis cannot account for within-state variation in local-level immigrant policies and enforcement of state policies because the SIPP does not contain publicly-available geographic information below the state level. Similarly, our study does not capture enforcement of federal immigration policy within states, which is not necessarily correlated with restrictive state policies (Moinester, 2018).

As the first national-level study of state immigration policy climates and health care utilization among U.S. adults, this study provides evidence of policies as important structural determinants of immigrants' health and health care utilization. Specifically, by using a global measure of state policy restrictiveness rather than a single policy, results

indicate that policies can collectively create an overall climate of inclusion or exclusion that can encourage or discourage immigrants from utilizing health care. Findings demonstrate that restrictive policy climates contribute to nativity disparities in health provider visits in the short-term, which in turn may contribute to disparities in health conditions and to the erosion of immigrant health advantages in the long-term. However, a more optimistic interpretation views the finding that nativity disparities in health provider visits are smaller, or in the case of older adults, not significant, in states with more inclusive policy climates as evidence that policy climates are *modifiable* structural determinants of health that can also be associated with the reduction or elimination of population health disparities. More broadly, our findings firmly suggest that immigrant policies are health policies: even immigrant policies that are not directly related to health care have consequences for immigrants' health care utilization.

**Funding**

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Ethics approval statement not required**

Because this research was based on secondary data analysis of the Survey of Income and Program Participation, no further ethics approval was required.

**Declaration of competing interest**

None.

**CRediT authorship contribution statement**

**Molly Dondero:** Conceptualization, Writing - original draft, Formal analysis. **Claire E. Altman:** Writing - review & editing.

**Acknowledgements**

The authors thank Mackenzie Kelley and Dashiell Nusbaum for their excellent research assistance.

**Appendix B. Supplementary data**

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmph.2020.100559>.

**Appendix A**

**Appendix Table A1**

Coding scheme for state immigrant policies, 2013.

	Policy Description	Inclusive (-1)	Neutral (0)	Restrictive (1)
<b>Integration Policies</b>	Offers in-state tuition to undocumented immigrants	Yes		No policy
	Offers financial aid to undocumented immigrants	Yes		No policy
	Prohibits undocumented immigrants from enrolling in higher education	No policy		Yes
	Allows undocumented immigrants to get driver licenses and ID cards	Yes		No policy
	Formally recognizes English as its official language	No policy		Yes
<b>Enforcement Policies</b>	Has a 287(g) jail model in place		No policy	Yes
	Has policy mandating some or all employers use E-Verify		No policy	Yes
	Limits E-Verify	Yes		No policy
<b>Public Benefit Policies</b>	Provides TANF to LPRs after first 5 years with this status	Yes		No policy
	Provides cash assistance for LPRs during five-year bar	Yes		No policy
	Allows Medicaid for LPRs after five-year bar	Yes		No policy
	Allows Medicaid for LPR pregnant women during five-year bar	Yes		No policy
	Allows Medicaid for unauthorized immigrant pregnant women	Yes		No policy
	Provides public health insurance for LPR adults during five-year bar	Yes		No policy

Source: Policy information comes from Urban Institute State Immigration Policy Resource

Note: LPR = legal permanent resident.

## References

- Akresh, I. R. (2009). Health service utilization among immigrants to the United States. *Population Research and Policy Review*, 28(6), 795. <https://doi.org/10.1007/s11113-009-9129-6>.
- Andersen, R. (1968). *A behavioral model of families' use of health services*. Chicago, IL: Center for Health Administration Studies.
- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36, 1–10. <https://doi.org/10.2307/2137284>.
- Anderson, K. F., & Finch, J. K. (2014). Racially charged legislation and Latino health disparities: The case of Arizona's SB 1070. *Sociological Spectrum*, 34(6), 526–548. <https://doi.org/10.1080/02732173.2014.947452>.
- Antecol, H., & Kelly, B. (2006). Unhealthy assimilation: Why do immigrants converge to American health status levels? *Demography*, 43(2), 337–360. <https://doi.org/10.1353/dem.2006.0011>.
- Asad, A. L., & Clair, M. (2018). Racialized legal status as a social determinant of health. *Social Science & Medicine*, 199, 19–28. <https://doi.org/10.1016/j.socscimed.2017.03.010>.
- Balakrishnan, A., & Jordan, N. (2019). The undocumented elderly: Coverage gaps and low health care use. *Journal of Health Care for the Poor and Underserved*, 30(3), 891–898. <https://doi.org/10.1353/hpu.2019.0062>.
- Barcellos, S. H., Goldman, D. P., & Smith, J. P. (2012). Undiagnosed disease, especially diabetes, casts doubt on some of reported health 'advantage' of recent Mexican immigrants. *Health Affairs*, 31(12), 2727–2737. <https://doi.org/10.1377/hlthaff.2011.0973>.
- Berchick, E. R., Barnett, J. C., & Upton, R. D. (2019). Health insurance coverage in the United States: 2018. In *Current population reports*. Washington, DC.
- Bustamante, A. V., Chen, J., McKenna, R. M., & Ortega, A. N. (2019). Health care access and utilization among U.S. Immigrants before and after the affordable care Act. *Journal of Immigrant and Minority Health*, 21(2), 211–218. <https://doi.org/10.1007/s10903-018-0741-6>.
- Bustamante, A. V., Fang, H., Rizzo, J. A., & Ortega, A. N. (2009). Understanding observed and unobserved health care access and utilization disparities among U.S. Latino adults. *Medical Care Research and Review*, 66(5), 561–577. <https://doi.org/10.1177/1077558709338487>.
- Carrasquillo, O., Carrasquillo, A. I., & Shea, S. (2000). Health insurance coverage of immigrants living in the United States: Differences by citizenship status and country of origin. *American Journal of Public Health*, 90(6), 917–923. <https://doi.org/10.2105/ajph.90.6.917>.
- Choi, S. (2006). Insurance status and health service utilization among newly-arrived older immigrants. *Journal of Immigrant and Minority Health*, 8(2), 149–161. <https://doi.org/10.1007/s10903-006-8523-3>.
- De Trinidad Young, Maria-Elena, & Wallace, S. P. (2019). Included, but deportable: A new public health approach to policies that criminalize and integrate immigrants. *American Journal of Public Health*, 109(9), 1171–1176.
- Diehr, P., Yanez, D., Ash, A. S., Hornbrook, M. C., & Lin, D. (1999). Methods for analyzing health care utilization and costs. *Annual Review of Public Health*, 20(1), 125–144. <https://doi.org/10.1146/annurev.publhealth.20.1.125>.
- Durazo, E. M., & Wallace, S. P. (2014). Access to health care across generational status for Mexican-origin immigrants in California. *Field Actions Science Reports*. The journal of field actions (Special Issue 10).
- Gelatt, J. (2016). Immigration status and the healthcare access and health of children of immigrants. *Social Science Quarterly*, 97(3), 540–554. <https://doi.org/10.1111/ssqu.12261> (Wiley-Blackwell).
- Gelatt, J., Bernstein, H., & Koball, H. (2017). *State immigration policy resource*. Washington D.C: Urban Institute.
- Glasziou, P., Straus, S., Shannon, B., Trevena, L., Dans, L., Guyatt, G., et al. (2017). Evidence for underuse of effective medical services around the world. *The Lancet*, 390(10090), 169–177. [https://doi.org/10.1016/S0140-6736\(16\)30946-1](https://doi.org/10.1016/S0140-6736(16)30946-1).
- Gray, N. A., Boucher, N. A., Kuchibhatla, M., & Johnson, K. S. (2017). Hospice access for undocumented immigrants. *JAMA Internal Medicine*, 177(4), 579–580. <https://doi.org/10.1001/jamainternmed.2016.8870>.
- Hadley, J. (2003). Sicker and poorer—the consequences of being uninsured: A review of the research on the relationship between health insurance, medical care use, health, work, and income. *Medical Care Research and Review*, 60(2\_suppl), 3S–75S. <https://doi.org/10.1177/1077558703254101>.
- Hall, M., Greenman, E., & Farkas, G. (2010). Legal status and wage disparities for Mexican immigrants. *Social Forces*, 89(2), 491–513. <https://doi.org/10.1353/sof.2010.0082>.
- Hardy, L. J., Getrich, C. M., Quezada, J. C., Guay, A., Michalowski, R. J., & Henley, E. (2012). A call for further research on the impact of state-level immigration policies on public health. *American Journal of Public Health*, 102(7), 1250–1253. <https://doi.org/10.2105/ajph.2011.300541>.
- Hatzenbuehler, M. L., Prins, S. J., Flake, M., Morgan, P., Frazer, M. S., Hagen, D., et al. (2017). Immigration policies and mental health morbidity among Latinos: A state-level analysis. *Social Science & Medicine*, 174, 169–178. <https://doi.org/10.1016/j.socscimed.2016.11.040>.
- Hayward, M. D., Hummer, R. A., Chiu, C.-T., González-González, C., & Wong, R. (2014). Does the Hispanic paradox in U.S. Adult mortality extend to disability? *Population Research and Policy Review*, 33(1), 81–96. <https://doi.org/10.1007/s11113-013-9312-7>.
- Jiménez, T. R. (2008). Mexican immigrant replenishment and the continuing significance of ethnicity and race. *American Journal of Sociology*, 113(6), 1527–1567. <https://doi.org/10.1086/587151>.
- Krogstad, J. M., Passel, J. S., & Cohn, D'Vera (2019). *5 Facts about illegal immigration*. Washington D.C.: Pew Research Center.
- Kuile, S., Rousseau, C., Munoz, M., Nadeau, L., & Ouimet, M. (2007). The universality of the Canadian health care system in question: Barriers to services for immigrants and refugees. *International Journal of Migration, Health and Social Care*, 3(1), 15–26. <https://doi.org/10.1108/17479894200700003>.
- Ku, L., & Matani, S. (2001). Left out: Immigrants' access to health care and insurance. *Health Affairs*, 20(1), 247–256.
- LeBrón, A. M. W., Schulz, A. J., Gamboa, C., Reyes, A., Viruell-Fuentes, E. A., & Israel, B. A. (2018). "They are clipping our wings": Health implications of restrictive immigrant policies for Mexican-origin women in a northern border community. *Race and Social Problems*, 10(3), 174–192. <https://doi.org/10.1007/s12552-018-9238-0>.
- Long, J. S., & Mustillo, S. A. (2018). Using predictions and marginal effects to compare groups in regression models for binary outcomes. *Sociological Methods & Research*, 0049124118799374. <https://doi.org/10.1177/0049124118799374>.
- Maldonado, C. Z., Rodriguez, R. M., Torres, J. R., Flores, Y. S., & Lovato, L. M. (2013). Fear of discovery among latino immigrants presenting to the emergency department. *Academic Emergency Medicine*, 20(2), 155–161. <https://doi.org/10.1111/acem.12079>.
- Martinez, O., Wu, E., Sandfort, T., Dodge, B., Carballo-Diequez, A., Pinto, R., et al. (2015). Evaluating the impact of immigration policies on health status among undocumented immigrants: A systematic review. *Journal of Immigrant and Minority Health*, 17(3), 947–970. <https://doi.org/10.1007/s10903-013-9968-4>.
- Migration Policy Institute. (2019). Profile of the unauthorized population: United States accessed September 19, 2019 <https://www.migrationpolicy.org/data/unauthorized-immigrant-population/state/US>.
- Mize, T. D. (2019). Best practices for estimating, interpreting, and presenting nonlinear interaction effects. *Sociological Science*, 6, 81–117. <https://doi.org/10.15195/v6.a4>.
- Moinester, M. (2018). Beyond the border and into the heartland: Spatial patterning of U. S. Immigration detention. *Demography*, 55(3), 1147–1193. <https://doi.org/10.1007/s13524-018-0679-2>.
- Montez, J. K., Hayward, M. D., & Douglas, A. W. (2017). Do US states' socioeconomic and policy contexts shape adult disability? *Social Science & Medicine*, 178, 115–126. <https://doi.org/10.1016/j.socscimed.2017.02.012>.
- Motomura, H. (2014). *Immigration outside the law*. Oxford University Press.
- National Center for Health Statistics. (2018). *Health, United States, 2017: With special feature on mortality [internet]*. Hyattsville, MD: National Center for Health Statistics.
- National Conference of State Legislatures. (2019). State laws related to immigration and immigrants accessed September 19 <http://www.ncsl.org/research/immigration/state-laws-related-to-immigration-and-immigrants.aspx>.
- Nolte, E., & McKee, C. M. (2012). In amenable mortality—deaths avoidable through health care—progress in the US lags that of three European countries. *Health Affairs*, 31(9), 2114–2122. <https://doi.org/10.1377/hlthaff.2011.0851>.
- Ortega, A. N., Fang, H., Perez, V. H., Rizzo, J. A., Carter-Pokras, O., Wallace, S. P., et al. (2007). Health care access, use of services, and experiences among undocumented Mexicans and other Latinos. *Archives of Internal Medicine*, 167(21), 2354–2360. <https://doi.org/10.1001/archinte.167.21.2354>.
- Pedraza, F. I., Nichols, V. C., & LeBrón, A. M. W. (2017). Cautious citizenship: The deterring effect of immigration issue salience on health care use and bureaucratic interactions among Latino US citizens. *Journal of Health Politics, Policy and Law*, 42(5), 925–960. <https://doi.org/10.1215/03616878-3940486>.
- Perreira, K. M., & Pedroza, J. M. (2019). Policies of exclusion: Implications for the health of immigrants and their children. *Annual Review of Public Health*, 40(1), 147–166. <https://doi.org/10.1146/annurev-publhealth-040218-044115>.
- Philbin, M. M., Morgan, F., Hatzenbuehler, M. L., & Hirsch, J. S. (2018). State-level immigration and immigrant-focused policies as drivers of Latino health disparities in the United States. *Social Science & Medicine*, 199, 29–38. <https://doi.org/10.1016/j.socscimed.2017.04.007>.
- Pitkin Derosé, K., Bahney, B. W., Lurie, N., & Escarce, J. J. (2009). Review: Immigrants and health care access, quality, and cost. *Medical Care Research and Review*, 66(4), 355–408. <https://doi.org/10.1177/1077558708330425>.
- Prus, S. G., Tfaily, R., & Lin, Z. (2010). Comparing racial and immigrant health status and health care access in later life in Canada and the United States. *Canadian Journal on Aging/La Revue Canadienne du Vieillessement*, 29(3), 383–395. <https://doi.org/10.1017/S0714980810000358>.
- Read, Jen'nan G., & Reynolds, M. M. (2012). Gender differences in immigrant health: The case of Mexican and middle eastern immigrants. *Journal of Health and Social Behavior*, 53(1), 99–123. <https://doi.org/10.1177/0022146511431267>.
- Rhodes, S. D., Mann, L., Simán, F. M., Song, E., Alonzo, J., Downs, M., et al. (2015). The impact of local immigration enforcement policies on the health of immigrant Hispanics/Latinos in the United States. *American Journal of Public Health*, 105(2), 329–337. <https://doi.org/10.2105/AJPH.2014.302218>.
- Riosmena, F., Wong, R., & Alberto, P. (2013). Migration selection, protection, and acculturation in health: A binational perspective on older adults. *Demography*, 50(3), 1039–1064. <https://doi.org/10.1007/s13524-012-0178-9>.

- Salas, L. M., Ayón, C., & Gurrola, M. (2013). Estamos traumatados: The effect of anti-immigrant sentiment and policies on the mental health of Mexican immigrant families. *Journal of Community Psychology, 41*(8), 1005–1020. <https://doi.org/10.1002/jcop.21589>.
- Solar, O., & Irwin, A. (2010). A conceptual framework for action on the social determinants of health. In *Social determinants of health discussion paper 2 (policy and practice)*. World Health Organization.
- Thamer, M., Richard, C., Casebeer, A. W., & Ray, N. F. (1997). Health insurance coverage among foreign-born US residents: The impact of race, ethnicity, and length of residence. *American Journal of Public Health, 87*(1), 96–102. <https://doi.org/10.2105/ajph.87.1.96>.
- Toomey, R. B., Umaña-Taylor, A. J., Williams, D. R., Harvey-Mendoza, E., Jahromi, L. B., & Updegraff, K. A. (2014). Impact of Arizona's SB 1070 immigration law on utilization of health care and public assistance among Mexican-origin adolescent mothers and their mother figures. *American Journal of Public Health, 104*(S1), S28–S34. <https://doi.org/10.2105/ajph.2013.301655>.
- Torche, F., & Sirois, C. (2018). Restrictive immigration law and birth outcomes of immigrant women. *American Journal of Epidemiology, 188*(1), 24–33. <https://doi.org/10.1093/aje/kwy218>.
- Turra, C. M., & Elo, I. T. (2008). The impact of salmon bias on the Hispanic mortality advantage: New evidence from social security data. *Population Research and Policy Review, 27*(5), 515–530. <https://doi.org/10.1007/s11113-008-9087-4>.
- Wallace, S. P., Young, M.-E. De T., Rodríguez, M. A., & Brindis, C. D. (2019). A social determinants framework identifying state-level immigrant policies and their influence on health. *SSM-Population Health, 7*, 100316. <https://doi.org/10.1016/j.ssmph.2018.10.016>.
- Xu, K. T., & Borders, T. F. (2008). Does being an immigrant make a difference in seeking physician services? *Journal of Health Care for the Poor and Underserved, 19*(2), 380–390. <https://doi.org/10.1353/hpu.0.0001>.
- Yang, P. Q., & Hwang, S. H. (2016). Explaining immigrant health service utilization: A theoretical framework. *SAGE Open, 6*(2). <https://doi.org/10.1177/2158244016648137>, 2158244016648137.
- Zallman, L., Woolhandler, S., Himmelstein, D. U., Bor, D. H., & McCormick, D. (2013). Immigrants contributed an estimated \$115.2 billion more to the Medicare trust fund than they took out in 2002–09. *Health Affairs, 32*(6), 1153–1160. <https://doi.org/10.1377/hlthaff.2012.1223>.