



Measuring structural xenophobia: US State immigration policy climates over ten years

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ABSTRACT

There is an increasing need to understand the structural drivers of immigrant health inequities, including xenophobic and racist policies at the state level in the United States. Databases aggregate state policies related to immigration and research using single year indices examines state policy and immigrant health. Yet none of these sources use a theoretically informed social determinants of immigrant health approach to consider state environments longitudinally, include both exclusionary and inclusionary policies, and are relevant to immigrants from any region of the world or ethnic group. Using an established social determinants of immigrant health framework, a measure of structural xenophobia was created using fourteen policies across five domains: access to public health benefits, higher education, labor and employment, driver's licenses and identification, and immigration enforcement over a ten-year period (2009–2019). To create the Immigration Policy Climate (IPC) index, we used data from state legislatures as well as policy databases from foundations, advocacy organizations, and scholarly articles. We identified and coded 714 US state policies across the 50 US States and the District of Columbia from 2009 to 2019. We calculated annual IPC index scores (range: 12 – 12) as a continuous measure (negative scores: exclusionary; positive scores: inclusionary). Results show that the US has an exclusionary immigration policy climate at the state-level (mean IPC score of –2.5). From 2009 to 2019, two-thirds of state-level immigration policies are exclusionary towards immigrants. About 75% of states experienced a 4-point change or less on the IPC index, and no state changed from largely exclusive to largely inclusive. By aggregating comprehensive, detailed data and a measure of state-level immigration policies over time, the IPC index provides population health researchers with rigorous evidence with which to assess structural xenophobia and an opportunity for longitudinal research on health inequities and immigrant health.

1. Introduction

Demographic shifts and renewed attention to racial health justice highlight the need to advance research on health equity, including among the estimated 44.5 million immigrants in the United States, corresponding to a 14% share of the US population (Radford, 2019). In the past ten years, under two different federal Administrations, there has been an uneven and discriminatory application of federal immigration policy. Although the Deferred Action for Childhood Arrivals program was established under the Obama Administration, there were also a record number of federal deportations (Chishti et al., 2017). The Trump Administration implemented an anti-immigration campaign, further cementing xenophobic policy with enactment of numerous exclusionary and discriminatory federal policies. However, immigration policy and

enforcement are also determined at state and local levels (Hardy et al., 2012), with state's policymakers resisting or furthering xenophobia or antiracist policies in response to federal initiatives, ultimately enacting both inclusive and exclusive policies at the state level (Ybarra et al., 2019; Young & Wallace, 2019). Restrictive immigration policies at the federal and exclusive state level policies are forms of structural racism and xenophobia, systemically limiting immigrants' access to needed resources, rights, and health.

Structural racism is defined as “the totality of ways in which societies foster [racial] discrimination, via mutually reinforcing [inequitable] systems (e.g., in housing, education, employment, earnings, benefits, credit, media, health care, criminal justice, etc.) that in turn reinforce discriminatory beliefs, values, and distribution of resources, reflected in history, culture, and interconnected institutions” (Krieger, 2014). In

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Table 1
Summary of sources used to create IPC Index.

Public Health and Welfare Benefits	Higher Education	Labor and Employment	Driver's Licenses and IDs	Immigration Enforcement
The Urban Institute	The Urban Institute	National Council of State Legislatures	The Urban Institute	Immigration Forum
Center for Health Journalism	uLEAD	State legislature websites	News websites	Immigration and Customs Enforcement
Kaiser Family Foundation	National Council of State Legislatures	Findlaw	Homeland Security Today	National Council of State Legislatures
Brooks et al. (2019)		Law Logix	Department of Homeland Security	News websites
Wherry et al. (2017)				
Pintor and Call (2019)				
Medicaid.gov				
National Immigration Law Center				
Georgetown University Health Policy Institute				

Table 2
IPC Index Policy Elements and Coding.

Category	Policy Topic	Exclusive		Inclusive
		-1	0	1
Access to benefits	Does the state provide public health insurance for low-income undocumented children?		No	Yes
	Does the state provide public health insurance for low income LPR children, regardless of waiting period?	No		Yes
	Does the state provide health insurance to pregnant undocumented women?	No		Yes
	Does the state provide health insurance to pregnant LPR women, regardless of waiting period?	No insurance available	Unborn child option only	Waiver of 5-year ban for Medicaid
	Are LPR adults eligible for food assistance regardless of 5 year waiting period?		No	Yes
Education	Does the state provide tuition equity to undocumented students?	No		Yes
	Does the state provide access to scholarships or financial aid for undocumented students?	No		Yes
Labor and employment	E-Verify	Mandates (for some or all)	Neither	Prohibits
	Does the state include undocumented immigrants in the definition of employee?	Excludes	Unspecified	Includes
Identification	Does the state offer drivers' licenses for undocumented immigrants?	No		Yes
	REAL ID	Compliance	Neither	Opposition
Immigration enforcement	Does the state participate in Secure Communities?	Yes	No	
	Has the state passed an Omnibus Immigration Bill?	Yes	No	
	"Sanctuary" city policies	Bans	Unspecified	Limits cooperation with Federal Immigration

response to public awareness and a long-standing need for better measures of structural racism that capture the lived experiences of oppressed communities (Bailey et al., 2017; Ford & Airhihenbuwa, 2010; Gee & Ford, 2011; Gee & Hicken, 2021; Yearby, 2020), there have been recent efforts to create aggregate databases of structural racism as measured by state policies (Agénor et al., 2021; Alson et al., 2021; Bailey et al., 2020). Ultimately, racism and xenophobia both lie at the heart of anti-immigrant sentiment, and similar attention is needed for structural xenophobia, a critical and intersectional aspect of structural racism (Dennis et al., 2021; Priest & Williams, 2021).

Structural xenophobia, or the systemic exclusion of others based on their cultural or national identity as foreign from that of the host country, is rooted in a fear or hatred of immigrants and has been increasingly recognized as an important structural determinant of health (Suleman et al., 2018). Documenting the ways structural racism impacts health and health disparities involves identifying key modifiable mechanisms and evaluating actions that promote and dismantle systemic racism (Priest & Williams, 2021). Similarly, the measurement of structural xenophobia requires going beyond individual measures of anti-immigrant sentiment and immigrant vs. US born social, economic, and health inequities to consider the state policies that produce these inequities. Systematically collecting information on state policies related to structural xenophobia over time and place and linking them to

individual-level health outcomes is critical for rigorously evaluating policy effects on the health of people from immigrant communities and the magnitude of migration-based health inequities (Hardy et al., 2012; Ramanathan et al., 2017).

Social ecological framing identifies state policies as a key structural determinant of health (Wallace et al., 2019), yet little is known about how state policies have subsequently changed over time. The growing body of literature on structural determinants of health shows that policies across multiple sectors impact health and wellbeing—the “health in all policies” approach emphasizes that social policies, such as those related to housing or employment, impact population health (Juarez et al., 2019; Perreira & Pedroza, 2019; Wallace et al., 2019). The effects of policies on immigrant populations vary across different clusters or types of migration-related state policies (Reich, 2019). Laws and policies affect the social, economic, and legal conditions of civic and private lives of immigrants in profound ways, including impeding or facilitating access to health services as well as affecting broader social determinants, such as employment, housing, education, transportation, and law enforcement (Juarez et al., 2019; Perreira & Pedroza, 2019). The US has no formal immigrant integration policies, but rather a patchwork of federal, state, and municipal laws and administrative practices that affect immigrants’ health and access to health services (Castañeda et al., 2015; Perreira & Pedroza, 2019; Wallace et al., 2019).

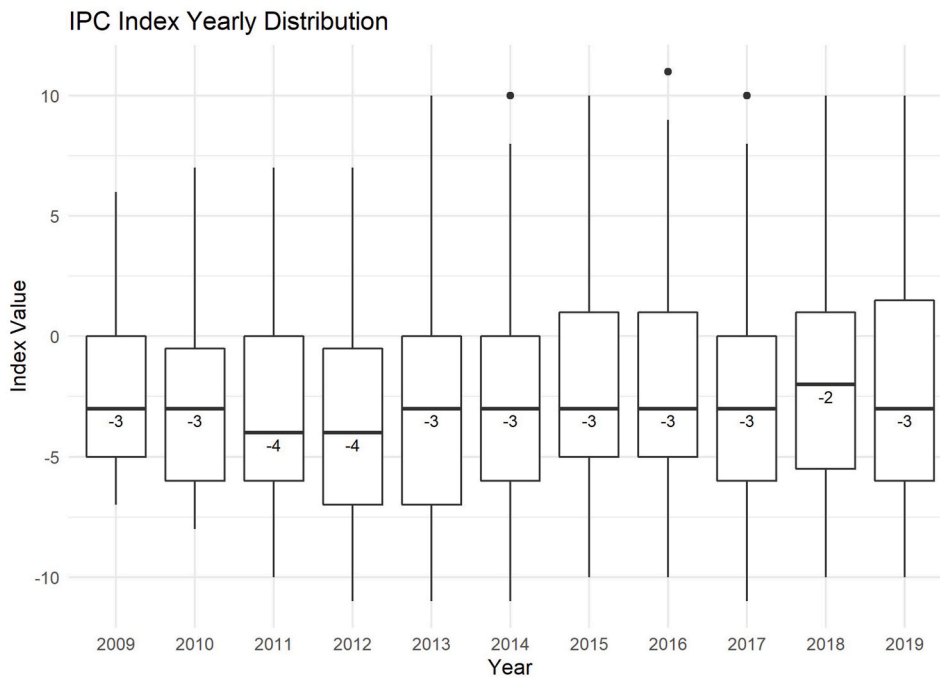


Fig. 1. IPC Index Yearly Distribution 2009 - 2019.

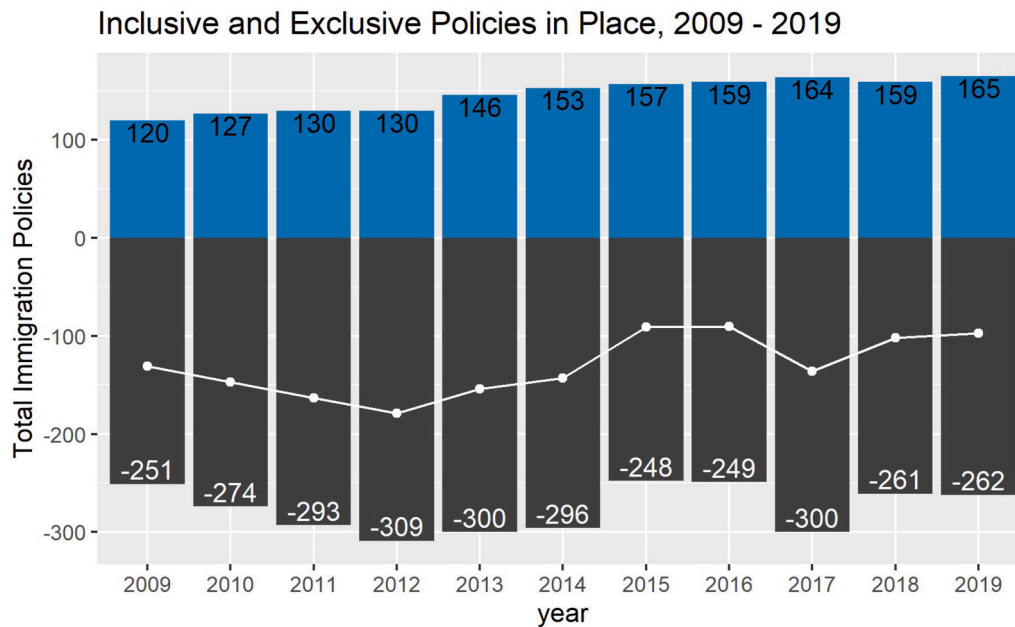


Fig. 2. Total Inclusive and Exclusive IPC Index Policies 2009 - 2019.

Immigration policy measures should be clearly connected and aggregated with an outcome specific theoretical framing, like health outcomes, that the policies are expected to impact (Reich, 2019). Wallace et al.'s (2019) social determinants of health framework for immigration policy includes five state policy domains that impact the health of immigrants, particularly those without legal status. The domains include health and welfare benefits, higher education, labor and employment, drivers' licenses and identification, and immigration enforcement (Wallace et al., 2019). Many different types of policies may have an impact on population and immigrant health (Juarez et al., 2019), but within these five primary domains, state-level policy makers can reinforce disparities and inequities in access and opportunities in

health based on legal status (Motomura, 2008). Thus, Wallace et al.'s (2019) five policy domains are critical to the conceptualization of structural xenophobia and state policies that underlie observed health inequities in immigrants as compared to U.S born individuals.

Inclusive and exclusive state-level immigration policies have the potential to influence immigrant outcomes both directly and indirectly (Reich, 2019). Measures that include both positive and negative policies better reflect immigrant's perceptions of the favorability of the immigration climate in their state than the one-dimensional measures that include only beneficial or only punitive policies (Ybarra et al., 2019). Young and Wallace (2019) established that exclusionary policies include criminalization policies designed to surveil, enforce, and

Table 3
IPC Summary Statistics for U.S. States and DC, 2009 to 2019.

State	Mean	SE	Min	Max
Georgia	-9.73	0.45	-11	-7
Alabama	-9.64	0.56	-11	-6
Indiana	-9.00	0.40	-10	-6
Arizona	-8.36	0.31	-10	-6
Mississippi	-7.45	0.25	-9	-6
South Carolina	-7.27	0.51	-9	-5
Wyoming	-7.18	0.38	-9	-6
South Dakota	-7.00	0.30	-8	-5
Idaho	-6.91	0.21	-8	-6
Tennessee	-6.55	0.39	-8	-4
West Virginia	-6.18	0.64	-9	-4
New Hampshire	-5.91	0.31	-8	-5
North Dakota	-5.73	0.24	-7	-5
Florida	-5.64	0.59	-8	-3
Alaska	-5.55	0.21	-7	-5
Iowa	-5.45	0.21	-6	-4
Kansas	-5.18	0.18	-6	-4
Missouri	-5.18	0.52	-7	-3
Ohio	-5.09	0.64	-8	-3
Louisiana	-4.18	0.30	-6	-3
Utah	-4.00	0.36	-6	-3
Michigan	-3.91	0.31	-6	-3
Montana	-3.91	0.21	-5	-3
Nevada	-3.64	0.34	-5	-2
North Carolina	-3.27	0.19	-4	-2
Pennsylvania	-2.55	0.21	-4	-2
Delaware	-2.45	0.41	-4	-1
Virginia	-2.09	0.21	-3	-1
Kentucky	-1.91	0.48	-4	0
Vermont	-1.91	0.68	-6	0
Arkansas	-1.82	0.33	-3	1
Hawaii	-1.27	0.43	-3	0
Colorado	-1.09	0.79	-5	3
Maine	-0.55	0.21	-2	0
Massachusetts	-0.36	0.20	-2	0
Wisconsin	-0.27	0.52	-2	3
Maryland	0.00	0.60	-3	3
Nebraska	0.00	0.36	-1	3
Oklahoma	0.55	0.21	0	2
Rhode Island	0.73	0.52	-2	3
Connecticut	1.27	0.57	-2	3
New Jersey	1.45	0.61	-1	6
DC	1.73	0.27	0	3
New Mexico	2.00	0.13	1	3
Texas	2.27	0.27	1	3
Minnesota	2.55	0.58	0	5
New York	2.55	0.49	1	7
Illinois	3.64	0.39	2	5
Oregon	3.73	1.38	-2	10
Washington	7.27	0.36	6	9
California	8.18	0.93	2	11

disproportionately target immigrant groups based on legal status and race/ethnicity. These policies create a system of structural racism, which legitimizes discrimination, and fosters fear and mistrust (Dennis et al., 2021; Viruell-Fuentes et al., 2012). By contrast, inclusive or integration policies expand rights and eligibility to incorporate immigrants into society and facilitate access to social and health resources (Perreira & Pedroza, 2019; Young & Wallace, 2019). Even within state and local (county, city, etc.) environments, there is often a combination of both criminalization and integration policies (Young & Wallace, 2019). To understand the pathways between xenophobic environments in the creation of health inequities, there remains a need to describe how structural xenophobia and both exclusionary and inclusive policies at the state level have shifted over time.

There are several databases of state level immigration legislation (Monogan, 2018; Pham & Pham, 2018; Reich, 2017, 2019). These databases often aggregate or catalog laws, but rarely include policy approaches like executive orders and administrative policy (Pham & Pham, 2018). Further, none of these databases were developed as collective and theoretically informed policy indices or are coded in a

meaningful way for use in population health research. In the field of population health, researchers have created individual year indices of migration policy data (Philbin et al., 2018; Rhodes et al., 2020; Young & Wallace, 2019), some of which have been used to examine the association between state-level immigration policies and various health outcomes (Dondero & Altman, 2020; Hatzenbuehler et al., 2017; Sudhinaraset et al., 2021). Yet, the majority of these measures include state environments at one point in time, are not used longitudinally, and do not consider the changes in immigration policies at the state level over a sustained period of time. Furthermore, research to date mostly focuses on immigration policies relevant to a particular racial/ethnic group, most often Latinx as the dominant immigrant group in the US (Hatzenbuehler et al., 2017; Philbin et al., 2018; Stanhope et al., 2021). It remains unclear whether patterns in state-level immigration policy and their relationship with health hold true over time or extend to immigrant subgroups beyond those who identify as Latinx who also experience structural xenophobia (e.g., Middle Eastern, Muslim, African, etc.).

The aggregation of immigration policies based on a clear conceptual framing should be established in advance of any empirical analysis of immigrant outcomes (Reich, 2017, 2019). Thus, in this study, we present a new measure of structural xenophobia for population health research, the Immigration Policy Climate Index (IPC), informed by the Wallace et al.'s (2019) social determinants of health framework for immigration policy. As a measure of structural xenophobia, the IPC index aggregates policies that are exclusionary and inclusionary, are relevant to immigrants from any region of the world or ethnic group, and captures a decade of state-level immigration policies, laws, administrative practices, and policy changes. The IPC index provides an opportunity to operationalize and measure structural xenophobia longitudinally to better estimate structural racism for immigrants and structural determinants of immigrant health.

2. Methods

The Immigration Policy Climate (IPC) Index categorizes, quantifies and tracks policies enacted by US states that have differential impacts on residents based on immigration or legal status. The IPC captures the immigration policy climate, or structural xenophobia, in every US state and the District of Columbia for each year from 2009 to 2019.

2.1. Policy scan

To measure the policy climate across states, we conducted a scan of the policies that affect different aspects immigrants' lives including access to public benefits, labor and employment, education, identification, and immigration enforcement. Fourteen policies were included across five domains (Wallace et al., 2019): public health and welfare benefits (five policies), higher education (two policies), labor and employment (two policies), driver's licenses and identification (two policies), and immigration enforcement (three policies). For the purpose of this scan, policies were included based on content, regardless of how they were enacted (e.g., legislation, executive order, administrative policy, or court decision). This ensures that policies can be tracked consistently across states that implement similar policies with different mechanisms.

Policy implementation can be ambiguous and complicated by administrative or legal barriers. When both law passage and implementation years were known, policies were classified with the earlier date, since policy climate includes the atmosphere of inclusion or exclusion that is created when policies are passed and covered by mass and social media, in addition to the tangible changes of the implemented policies. For example, Arizona's sanctuary city ban was passed as part of SB 1070 in 2010, but an injunction was placed on the policy until that section was upheld by the US Supreme Court in 2012. The sanctuary city topic is coded as "-1 = exclusive" for Arizona beginning in 2010. This approach aligns with prior immigration policy research (Hatzenbuehler

Table 4
State IPC Index Score by Year, 2009–2019.

State	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Alabama	-6	-6	-10	-11	-11	-11	-10	-10	-11	-10	-10
Alaska	-5	-5	-5	-6	-6	-6	-5	-5	-6	-5	-7
Arizona	-6	-8	-8	-8	-8	-8	-9	-9	-10	-9	-9
Arkansas	-2	-2	-2	-2	-2	-2	-3	-3	-2	-1	1
California	2	3	7	7	10	10	10	11	10	10	10
Colorado	-3	-3	-5	-5	-1	-1	1	1	0	1	3
Connecticut	-1	-2	0	-1	2	2	3	3	2	3	3
Delaware	-2	-3	-4	-4	-4	-4	-1	-1	-2	-1	-1
DC	1	1	1	0	2	2	2	2	2	3	3
Florida	-6	-7	-8	-8	-8	-6	-5	-3	-4	-3	-4
Georgia	-7	-7	-9	-11	-11	-11	-10	-10	-11	-10	-10
Hawaii	0	-1	-3	-3	-3	-3	0	0	-1	0	0
Idaho	-6	-7	-7	-7	-7	-7	-6	-6	-7	-8	-8
Illinois	2	2	2	3	5	5	5	4	4	5	3
Indiana	-6	-7	-10	-10	-10	-10	-9	-9	-10	-9	-9
Iowa	-4	-5	-5	-6	-6	-6	-5	-5	-6	-6	-6
Kansas	-4	-5	-5	-5	-6	-6	-5	-5	-6	-5	-5
Kentucky	-2	-4	-4	-4	-2	-2	0	0	-2	-1	0
Louisiana	-3	-3	-4	-4	-4	-4	-3	-5	-6	-5	-5
Maine	0	0	0	-1	-1	-1	0	0	-1	0	-2
Maryland	-3	-3	-1	-1	0	0	1	1	0	3	3
Massachusetts	-2	-1	-1	0	0	0	0	0	0	0	0
Michigan	-3	-3	-3	-4	-4	-4	-3	-3	-6	-5	-5
Minnesota	0	1	1	0	4	4	5	5	4	2	2
Mississippi	-6	-7	-7	-7	-8	-8	-7	-7	-9	-8	-8
Missouri	-6	-7	-7	-7	-7	-5	-3	-3	-4	-3	-5
Montana	-5	-4	-4	-4	-4	-4	-3	-3	-4	-3	-5
Nebraska	3	0	-1	1	-1	-1	0	0	-1	0	0
Nevada	-4	-5	-5	-5	-3	-3	-4	-4	-3	-2	-2
New Hampshire	-5	-5	-5	-6	-6	-6	-5	-5	-8	-7	-7
New Jersey	0	0	0	-1	1	1	2	2	1	4	6
New Mexico	2	2	2	2	2	2	2	2	1	2	3
New York	1	3	2	2	2	2	3	3	1	2	7
North Carolina	-4	-2	-3	-3	-3	-3	-3	-3	-4	-4	-4
North Dakota	-5	-5	-5	-6	-6	-6	-5	-5	-6	-7	-7
Ohio	-6	-7	-7	-8	-8	-4	-3	-3	-4	-3	-3
Oklahoma	2	0	0	0	0	0	1	1	0	1	1
Oregon	-1	-2	-2	-2	6	4	7	7	6	8	10
Pennsylvania	-2	-2	-2	-3	-3	-3	-2	-2	-3	-2	-4
Rhode Island	-2	-2	0	0	0	1	2	2	3	1	3
South Carolina	-5	-6	-9	-9	-9	-9	-8	-8	-5	-6	-6
South Dakota	-5	-6	-6	-8	-8	-8	-7	-7	-8	-7	-7
Tennessee	-4	-5	-6	-7	-7	-7	-6	-6	-8	-8	-8
Texas	3	3	3	3	3	2	3	2	1	1	1
Utah	-3	-3	-4	-4	-6	-6	-5	-3	-4	-3	-3
Vermont	-6	-6	-2	-3	-2	-1	0	0	-1	0	0
Virginia	-2	-2	-3	-2	-2	-2	-1	-1	-2	-3	-3
Washington	6	7	6	6	6	8	9	9	8	7	8
West Virginia	-6	-7	-7	-9	-9	-9	-4	-4	-5	-4	-4
Wisconsin	2	3	1	1	-2	-2	-1	-1	-2	-1	-1
Wyoming	-7	-7	-9	-9	-9	-7	-6	-6	-7	-6	-6

et al., 2017).

From July 2020 through December 2020, two team members collected information on each of the 14 policies for all states and the District of Columbia from 2009 to 2019. Given the importance of consideration of the policies over time and the anomalies that are likely with the COVID-19 pandemic in 2020, we gathered information through 2019, the last year when all states included policy information. We coded 714 US state policies related to structural xenophobia across the 50 US States and the District of Columbia from 2009 to 2019. A variety of sources were used to create the IPC index (Table 1).

The Urban Institute's State Immigration Policy Resource compiled policy information through 2016 that was used to code several domains (Gelatt et al., 2017). Other sources include the National Conference of State Legislatures, Center for Health Journalism, Kaiser Family Foundation, Department of Homeland Security, as well as policy databases from advocacy groups, scholarly articles, and news articles (Adams, 2018; Broder, 2021; Brooks et al., 2019; Gelatt et al., 2017; National Conference of State Legislatures, 2021; Morse et al., 2012; National Conference of State; Pintor & Call, 2019; US Department of Homeland

Security, 2021; Wherry et al., 2017).

2.2. Coding methods

The study team coded the values in the IPC index in alignment with the Young and Wallace (2019) framework considering “-1 = exclusionary”, “0 = neither”, and “1 = inclusionary” to capture both exclusive and inclusive state environments (Table 1). A policy was considered exclusionary if it withholds benefits from or penalizes residents based on immigration status. Generally, a policy was coded as inclusionary when a state took action to extend a benefit not accessible to non-citizens as part of a federal program or when a state limited participation with a mandatory exclusive federal policy. Policies were coded as 0 if states did not specifically include or exclude a particular policy (e.g., definition of an employee, sanctuary policies) or when states accepted maximum federal funding but did not provide their own funding (e.g., using the unborn child health insurance option, not providing food assistance for legal permanent residents). Missing values were used if no state had +1 or -1 values for a policy in a particular year, demonstrating that the

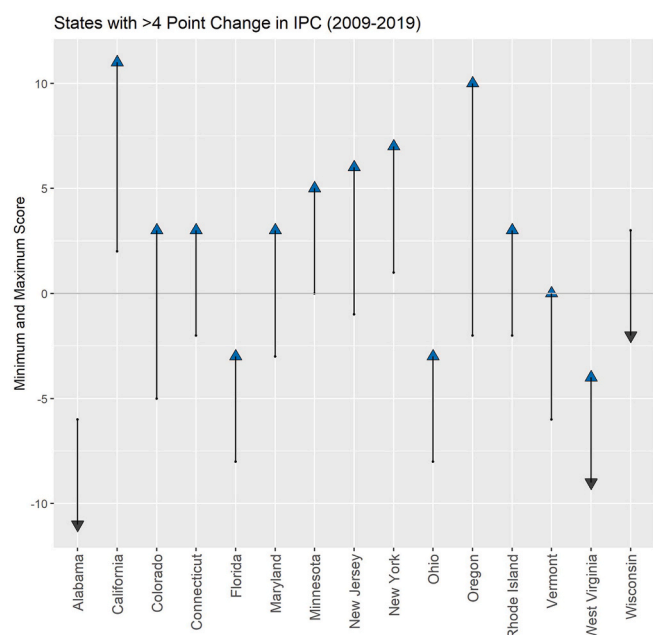


Fig. 3. States with >4 Point Change in IPC Index 2009 - 2019.

policy was not relevant at that time.

Not every policy neatly fits into a three-level ordinal coding scheme. For example, for providing in-state tuition to undocumented students who reside within the state, if the state does so “1 = yes” and if the state does not “-1 = no”, thus taking two of the possible three values. Other policies take all three values, such as if a state mandates the use of E-Verify for some of all employers (-1), if it neither mandates nor prohibits E-Verify (0), or if it prohibits the use of E-Verify (1). In other cases, because the federal government prohibits Medicaid from being used for undocumented people, states that do not offer state-funded health insurance for low-income undocumented children were coded as “0 = neutral” and states that do offer state-funded health insurance were coded as “1 = inclusive”. This coding includes neutrality (0) because the state is not withholding a benefit that is not the state’s benefit to give. However, some states use state funds to provide health insurance for undocumented immigrant children. This action to extend a benefit is coded as inclusive (1). During the study period, the federal government offered the Children’s Health Insurance Program Reauthorization Act (CHIPRA) matching program to provide health insurance for children who are noncitizens but are lawful permanent residents. States either declined this funding and created more exclusion (“-1 = exclusive”) or accepted the funding to create a more inclusive environment (“1 = inclusive”).

This ordinal coding scheme of inclusivity, neutrality, and exclusivity allows changes in the IPC to be a meaningful continuous measure of structural xenophobia and responsive to federal immigration policy over time and across states. Using a transparent and iterative process, the study team carefully documented any questions or issues that arose during the coding process, discussed and resolved them during regular meetings, reconciled discrepancies in sources by confirming with the bill or policy itself when possible, and iteratively revised and reapplied the coding as needed. In addition, the study team compared coding to other aggregate indices of immigration policies (Pham & Pham, 2018) to ensure coding similarity to other researchers with regards to certain policies.

2.3. Analysis

The data were compiled and descriptive patterns in state policies were examined across and within states and years during the study

period (2009–2019). Exploratory factor analysis was conducted to consider the factor structure of the state policies, and Cronbach’s alpha was calculated as a measure of reliability for each year and the entire duration of the study period. The IPC index was calculated by summing the values for all fourteen policies, with more negative scores indicating exclusionary contexts and positive scores indicating inclusive environments. Descriptive statistics were generated to characterize the distribution of all 50 states and the District of Columbia (DC) across all years (2009–2019). States are also described as exclusionary (negative scores) and inclusionary (positive scores), and notable shifts (>4-point difference in min and max IPC score) are highlighted over the study period. Maps were created to show the geographic distribution of the IPC index over time. The maps use the United States Census Bureau state delineations and definitions of US regions (US Census Bureau, 2010). As an example of geographic policy distribution in one year, we additionally present the coding of all 14 policies for all 50 states and the District of Columbia for 2019. The IPC index allows for a standardized comparison of state level structural xenophobia over time. Data are available upon request.

3. Results

The summed IPC index is a continuous measure with a potential range of -12 to 12 for all states and the District of Columbia from 2009 to 2019 because not all fourteen policies utilize the three-category coding (-1, 0, 1) (see Table 2). For the factor analyses, for individual years, a five-factor model is supported (eigenvalues above 1 for five factors). For the entire period from 2009 to 2019, a single factor model is supported with all the policies included on one factor (eigenvalue = 3.16) that explain 79.8% of the variance in structural xenophobia. The alpha for all 14 policies from 2009 to 2019 is 0.73 and for each individual year, ranges from 0.73 to 0.75.

Over the entire study period (2009–2019), the mean IPC score for the United States was -2.5. The median score for each year was between -2 and -4. While the actual range of annual IPC scores was centered around zero (range: 11 to 11), in general, the US has an exclusive and xenophobic policy environment at the state-level. For example, in 2019, state IPC scores ranged from -10 to 10, but the median IPC score was -3.

Fig. 1 shows the distribution of IPC scores across states for each year from 2009 to 2019 and a fairly stable median of -2 to -4. The interquartile range and absolute range in IPC scores increase overtime as states enacted more immigration related policies. Fig. 2 shows the sum of all the policies over all 50 states and DC over the study period (2009–2019). Generally, over time, two-thirds of immigration policies adopted at the state level are exclusionary towards immigrants. The ratio of inclusive and exclusive policies narrows over time (2009 = 32% inclusive to 68% exclusive; 2019 = 39% inclusive to 61% exclusive). In 2012, the most cumulative number of exclusive immigration policies were adopted at the state-level (n = 309), followed by 2013 (n = 300) and 2017 (n = 300). The most cumulative number of state-level inclusionary policies occurred between 2016 – 2019 (2016 = 159; 2017 = 164, 2018 = 159, and 2019 = 165).

Table 3 shows the summary statistics for the IPC index from 2009 to 2019 for each of the 50 US states and DC. States are ordered by mean IPC from more exclusive to most inclusive. From 2009 to 2019, thirty-three states had on average exclusive policy contexts towards immigrants, seven were neutral, and eleven were inclusive. Over time, Georgia, Alabama, and Indiana emerge, on average, as the most exclusionary state environments for immigrants while Oregon, Washington, and California are on average the most inclusive. The most exclusive states range from Georgia (IPC index = -9.73) to Colorado (IPC index = -1.09). The most inclusive states range from Connecticut (IPC index = 1.27) to California (IPC index = 8.18). States that are not overwhelmingly inclusive or exclusive over time include Maryland, Nebraska, Oklahoma and Rhode Island, Wisconsin, Massachusetts, and

Table 5
IPC Index Policy Elements by State, 2019.

State	Health Ins. for Unauth. Immigrant Children	Health Ins. for LPR Children	Health Ins. for Unauth. Pregnant People	Health Ins. for LPR Pregnant People	SNAP for Immigrants	In State College Tuition	College Financial Aid	E-Verify	Definition of Employee	Driver's License	REAL ID	Secure Communities	Omnibus Laws	Sanctuary City	Annual Score
Alabama	0	-1	-1	-1	0	-1	-1	-1	0	-1	-1	.	-1	-1	-10
Alaska	0	-1	-1	-1	0	-1	-1	0	0	-1	-1	.	0	0	-7
Arizona	0	-1	-1	-1	0	-1	-1	-1	1	-1	-1	.	-1	-1	-9
Arkansas	0	1	1	0	0	1	-1	0	1	-1	-1	.	0	0	1
California	1	1	1	1	1	1	1	1	1	1	-1	.	0	1	10
Colorado	0	1	-1	1	0	1	1	-1	1	1	-1	.	0	0	3
Connecticut	0	1	-1	1	1	1	-1	0	0	1	-1	.	0	1	3
DC	1	1	1	1	0	-1	-1	0	0	1	-1	.	0	1	3
Delaware	0	1	-1	1	0	-1	-1	0	0	1	-1	.	0	0	-1
Florida	0	1	-1	-1	0	1	-1	-1	1	-1	-1	.	0	-1	-4
Georgia	0	-1	-1	-1	0	-1	-1	-1	0	-1	-1	.	-1	-1	-10
Hawaii	0	1	-1	1	0	-1	-1	0	1	1	-1	.	0	0	0
Idaho	0	-1	-1	-1	0	-1	-1	-1	0	-1	-1	.	0	0	-8
Illinois	1	1	1	-1	0	1	-1	0	0	1	-1	.	0	1	3
Indiana	0	-1	-1	-1	0	-1	-1	-1	0	-1	-1	.	-1	0	-9
Iowa	0	1	-1	-1	0	-1	-1	0	0	-1	-1	.	0	-1	-6
Kansas	0	-1	-1	-1	0	1	-1	0	0	-1	-1	.	0	0	-5
Kentucky	0	1	-1	-1	0	1	-1	0	1	1	-1	.	0	0	0
Louisiana	0	-1	1	0	0	-1	-1	-1	0	-1	-1	.	0	0	-5
Maine	0	1	-1	1	1	-1	-1	0	0	-1	-1	.	0	0	-2
Maryland	0	1	-1	1	0	1	1	0	0	1	-1	.	0	0	3
Massachusetts	1	1	1	1	0	-1	-1	-1	0	-1	-1	.	0	1	0
Michigan	0	-1	1	0	0	-1	-1	-1	0	-1	-1	.	0	0	-5
Minnesota	0	1	1	1	0	1	1	-1	0	-1	-1	.	0	0	2
Mississippi	0	-1	-1	-1	0	-1	-1	-1	1	-1	-1	.	0	-1	-8
Missouri	0	-1	1	0	0	-1	-1	-1	0	-1	-1	.	0	0	-5
Montana	0	1	-1	-1	0	-1	-1	0	0	-1	-1	.	0	0	-5
Nebraska	0	1	1	1	0	1	-1	-1	0	-1	-1	.	0	0	0
Nevada	0	1	-1	-1	0	-1	-1	0	1	1	-1	.	0	0	-2
New Hampshire	0	-1	-1	-1	0	-1	-1	0	0	-1	-1	.	0	0	-7
New Jersey	0	1	1	1	0	1	1	0	0	1	-1	.	0	1	6
New Mexico	0	1	-1	1	0	1	1	0	0	1	-1	.	0	0	3
New York	1	1	1	1	0	1	1	0	0	1	-1	.	0	1	7
North Carolina	0	1	-1	1	0	-1	-1	-1	1	-1	-1	.	0	-1	-4
North Dakota	0	-1	-1	-1	0	-1	-1	0	0	-1	-1	.	0	0	-7
Ohio	0	1	-1	1	0	-1	-1	0	0	-1	-1	.	0	0	-3
Oklahoma	0	-1	1	0	0	1	1	-1	0	-1	1	.	0	0	1
Oregon	1	1	1	1	0	1	1	0	1	1	1	.	0	1	10
Pennsylvania	0	1	-1	1	0	-1	-1	-1	0	-1	-1	.	0	0	-4
Rhode Island	0	1	1	0	0	1	1	0	0	-1	-1	.	0	1	3
South Carolina	0	1	-1	1	0	-1	-1	-1	0	-1	-1	.	-1	-1	-6
South Dakota	0	-1	-1	-1	0	-1	-1	0	0	-1	-1	.	0	0	-7
Tennessee	0	-1	-1	-1	0	-1	-1	-1	1	-1	-1	.	0	-1	-8
Texas	0	1	1	0	0	1	1	-1	1	-1	-1	.	0	-1	1
Utah	0	1	-1	-1	0	1	-1	-1	0	1	-1	.	-1	0	-3
Vermont	0	1	-1	1	0	-1	-1	0	0	1	-1	.	0	1	0
Virginia	0	1	-1	1	0	-1	-1	-1	1	-1	-1	.	0	0	-3
Washington	1	1	1	1	1	1	1	0	0	1	-1	.	0	1	8
West Virginia	0	1	-1	1	0	-1	-1	-1	0	-1	-1	.	0	0	-4
Wisconsin	0	1	1	1	0	-1	-1	0	0	-1	-1	.	0	0	-1
Wyoming	0	-1	-1	1	0	-1	-1	0	-1	-1	-1	.	0	0	-6

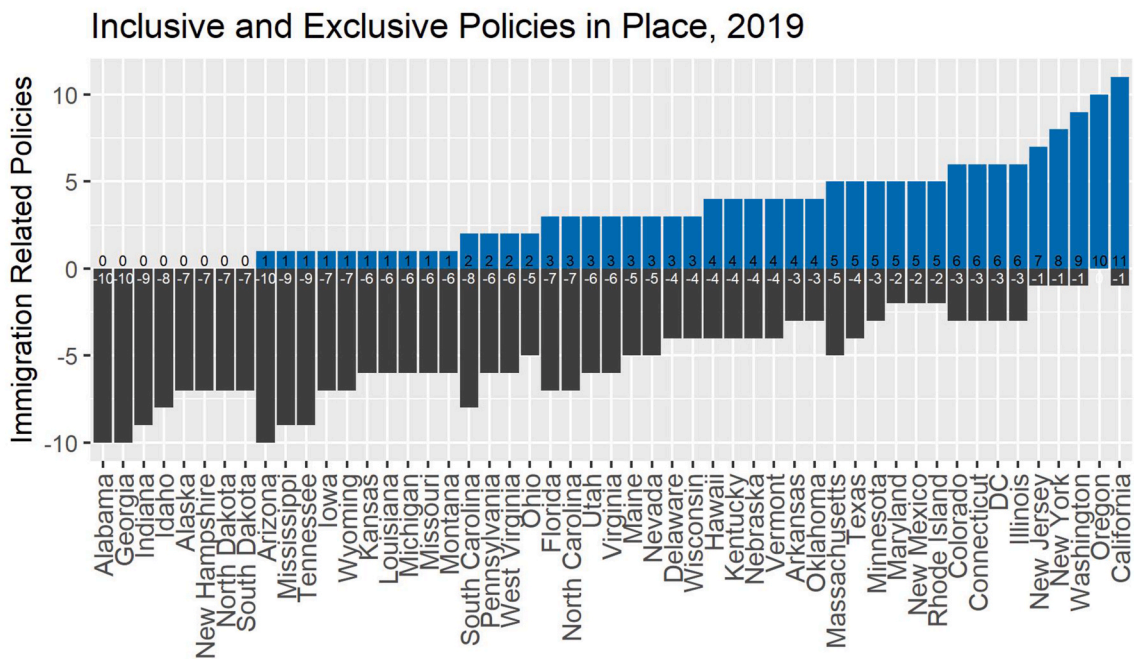


Fig. 4. Inclusive and Exclusive IPC Index Policies for all States in 2019.

Inclusive and Exclusive Policies in States, 2019

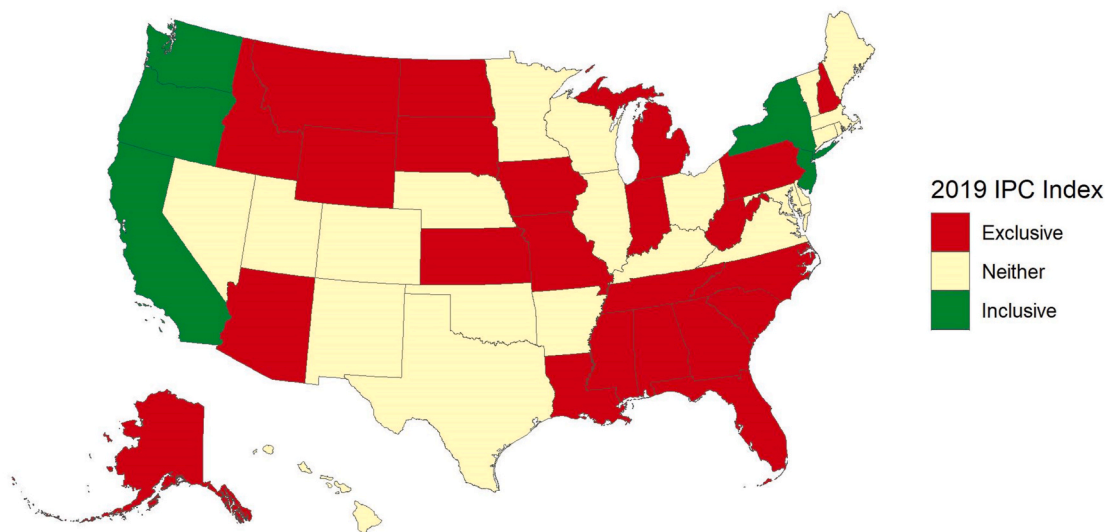


Fig. 5. US Geographic Distribution of Inclusive and Exclusive IPC Index Policies in 2019.

Maine. While many of the most exclusive states are in the south (South Atlantic and East and West South Central), midwestern states (East and West North Central) also appear to be divided on their inclusion of immigrants. For example, Indiana is amongst the most exclusive while Illinois is among the most inclusive. Similarly, the most inclusive states are not all in one region, with Texas and Oklahoma in the most inclusive third. The IPC index summary scores for all US States and DC in alphabetical order are available in the Appendix (Appendix Table 1).

Table 4 shows the annual scores for the IPC index by year (2009–2019) for each of the 50 US states and DC. While there are some shifts towards an environment that is a hybrid of inclusive and exclusive policies over time, and shifts from mixed to inclusive environments, no state changed from largely exclusive to largely inclusive. Approximately, 75% of states experienced a 4-point change or less on the IPC

index over the study period. States that experienced shifts to be more inclusive (>4 point difference in min and max IPC between 2009 and 2019) during the study period are California, Maryland, Minnesota, Oregon, Florida, Ohio, Vermont, Connecticut, Colorado, Rhode Island, New Jersey, and New York. Of those states, Oregon experienced the most change, with its lowest score of -2 in 2012 and its highest score of 10 in 2019. Alabama and Wisconsin experienced notable shifts (>4 point difference in min and max IPC between 2009 and 2019) towards exclusion over the study period (see Fig. 3). West Virginia is the only state that both experienced a shift towards exclusion in one time period and a shift towards inclusion in another over the study period.

Table 5 uses 2019 as an example year and the most recent year for which data is available to show the values for each of the 14 IPC index policies for all 50 states and DC. Annual scores for 2019 are provided in

the last column. In 2019, 34 states provided publicly funded health insurance to legal permanent resident children and only 7 of those states offered such insurance to undocumented children. Ten states had policies in place banning sanctuary city policies, while 10 states and DC have statewide policies limiting cooperation with federal immigration enforcement, a “sanctuary” policy. The remaining 30 states have no sanctuary related policies. Thirty-three states and DC did not allow undocumented immigrants to obtain drivers licenses in 2019, while 17 states explicitly allowed it.

Fig. 3 shows the number of inclusive and exclusive policies in place in each state and DC in 2019. Eight states had no policies in place that are considered inclusive. The four most inclusive states in 2019, California, Oregon, Washington, and New York, had between 7 and 10 inclusive policies in place with 0–1 exclusive policies in place. The four most exclusive states, (Alabama, Georgia, Indiana, and Idaho) had 8–10 exclusive policies in place with no inclusive policies in place. Fig. 4 shows the geographic distribution of states that have exclusive environments (–4 or below), inclusive environments (4 or above) or environments that are either inclusive or exclusive (–3 to 3). The most inclusive states are on the east and west coasts (Middle Atlantic and Pacific regions), but many New England states are not categorized as inclusive in 2019. The south (South Atlantic and East and West South Central regions) have the most exclusive policy environment (see Fig. 5).

4. Discussion

Structural racism, including measures at the state level, has long been identified as playing an important role in shaping population health and health equity (Bailey et al., 2020; Gee & Ford, 2011; Gee & Hicken, 2021; Priest & Williams, 2021), and structural xenophobia is increasingly recognized as an important dimension of structural racism (Dennis et al., 2021). In recent years, responding to a call for further research on the impact of state-level immigration policies (Hardy et al., 2012), several studies have aggregated immigration policy at the state level to capture exclusionary conditions for immigrants (Pham & Pham, 2018; Rhodes et al., 2020; Young & Wallace, 2019). Expanding this work and the call for better measures of structural racism and xenophobia (Chantarat et al., 2021; Devakumar et al., 2020; Priest & Williams, 2021; Yearby, 2020), the Immigration Policy Climate (IPC) index provides a theoretically and policy informed measure of structural xenophobia for use in population health research. The continuous IPC index includes comprehensive, detailed, and analyzable information on inclusive and exclusive state-level immigration policies across five domains rooted in social determinants of health in all 50 US states and the District of Columbia from 2009 to 2019. The IPC index can expand the ability of scholars to rigorously evaluate the multilevel and longitudinal effects of structural xenophobia on immigrant lives and health.

The IPC index shows that the context of immigration policy in the US is generally exclusive and has remained exclusive during the past decade. Between 2009 and 2019, states have primarily created structurally xenophobic environments, with fewer states making a concerted effort to combat xenophobia and create truly inclusive policy climates. There were, however, some shifts towards inclusivity with California, Maryland, Minnesota, Oregon, Florida, Ohio, Vermont, Connecticut, Colorado, Rhode Island, New Jersey, and New York having observed positive shifts. Importantly, some or minor policy movement towards inclusivity is not the same as an inclusive environment. While minor cumulative shifts toward inclusivity in the United States were made in response (2016–2019) to increasingly xenophobic federal policies observed under the Trump Administration, the majority of states remained exclusive and several made major shifts towards exclusivity (Alabama and Wisconsin). Georgia, Alabama, and Indiana exhibited the lowest mean scores over the study period, and Alabama and Wisconsin enacted policies to become more exclusionary (decline of >4 or more on the index) from 2009 to 2019. By in large, thirty-five US states maintained negative average IPC scores and twenty-seven states had ranges

that were never positive, indicating a maintenance and advancement of structural xenophobia and exclusionary state environments over the ten-year study period.

The IPC index captures changes in structurally xenophobic environments over time at the state level and can be included in studies evaluating health outcomes longitudinally. While there have been several studies in recent years to consider the effects of state level immigration policy on health outcomes cross-sectionally (Dondero & Altman, 2020; Hatzenbuehler et al., 2017; Martinez et al., 2015; Vargas & Ybarra, 2017), there is a clear lack of longitudinal measures and outcomes. This longitudinal nature of the IPC index is particularly useful for evaluating trends in health outcomes such as maternal and infant health or mental health and inequities in these outcomes over time (Alson et al., 2021). The measurement of the index over time aligns with studies focusing on other spatial and geographic measures of structural racism, health, and time (Chae et al., 2015; Chu et al., 2019; Nguyen et al., 2020; Stanhope et al., 2021).

The IPC index was created by aggregating theoretically informed domains and is best used as a complete index to measure structural xenophobia across states and across time. However, the coding of the index provides flexibility in its use and researchers can ultimately use the index in different ways based on the needs of the research questions (Reich, 2019). The range in the type of information (overall scores over time, annual scores, and counts of inclusive, neutral, and exclusive policies) in the IPC index enables adaptation to the research. For some research questions, such as outcomes after four years of the Trump Administration, using a composite continuous score of exclusiveness may be the best way to use the index to measure structural xenophobia over a set period of time and a health outcome in a given year. For other research questions, particularly for those focused on immigrant perceptions (Ybarra et al., 2019), using a ratio of inclusive to exclusive policies may be more relevant. The IPC index is designed so that the policies can be categorized, totaled, or averaged, for example, creation of categories relative to the mean/median, as need in singular years or over time enabling a range of immigrant and immigrant health-related research. Further, the IPC index can be combined with other structural measures, such as racism and sexism (Agénor et al., 2021; Homan, 2019), to better capture intersectional environments (Agénor, 2020; Homan et al., 2021) and to more fully understand the magnitude of intersectional racial and ethnic health inequities in the United States.

The IPC index operationalizes structural xenophobia to better understand mechanisms that create and reproduce vulnerability for population health. As such, the IPC index provides a tool that can be used to explore and address several outstanding debates regarding immigrant exclusion and health. For example, although a strength of the index is the ability to evaluate cumulative impacts of structural xenophobia over time on health outcomes and inequities, researchers can also isolate the impact of a single stigmatizing event by examining passage of a single policy included in the index at one point in time. The index as a whole or the specific policies within the IPC index may be used to capture “shocks” or “chilling effects” on health and health inequities in response to policy changes (Desai & Samari, 2020; Perreira et al., 2018; Perreira & Pedroza, 2019; Samari et al., 2020). Further, immigrants are not a homogenous group and may experience structural xenophobia differently. The IPC index can be used to help explain existing health inequities across different immigrant subgroups. For example, researchers can use the index to determine how much of an increasing inequity in a health outcome can be attributed to structural xenophobia over time. Similarly, the index can be used to identify differential impacts of immigration policy on health across different immigrant subgroups (e. g., the differential impact of a sanctuary city ban on the health of Middle Eastern and Latinx immigrants).

Given immigration policy occurs at federal, state, and local levels, the IPC index can also help answer questions on how state-level xenophobia responds to federal xenophobia and/or drives local (county, city, etc.) immigration policy, as well as the relationship between these multi-

level structural contexts on health inequities over time. For example, in response to federal immigration policies from 2016 to 2018, there was concerted effort in states like California to expand policies that limit state law enforcement from collaborating with Immigration and Customs Enforcement (ICE), while Texas passed a bill to mandate collaboration with ICE (McHugh, 2018). The IPC index shows whether states are trending toward inclusivity or exclusivity to anticipate and plan for public health and health policy to mitigate the consequences of exclusive policies or support inclusive policies. Demonstrating how the overall policy environment at the state level changes over time is critical to understanding whether such policies are responses to federal xenophobia and collectively operate as multi-level structural determinates of immigrant health.

Building on foundational work by Wallace et al. (2019), the IPC index measures structural xenophobia and highlights the ways that social inclusion and exclusion operate through a patchwork of state-level policy that ultimately shape immigrant incorporation, lives, and well-being. While federal immigration law determines who can enter the country and legal status for those who are allowed entry, state immigration policies shape access to rights, resources, and opportunities based on legal status. State immigration policies in the sectors of access to public benefits, labor and employment, education, identification, and immigration enforcement are social determinants of health that shape immigrant lives. In addition to the practical impact of policies in limiting access to resources or opportunities, the IPC index shows that the United States is made up of varied, but generally exclusionary contexts, for immigrants and noncitizens, as each state has a unique combination of policies that largely lean towards exclusion of immigrants over a ten-year span of time. Even in relatively inclusive states, the federal anti-immigrant climate may contribute to immigrants' heightened vigilance and avoidance of resources and opportunities (Perreira et al., 2018). Anticipatory stress, or the anticipation of discrimination or xenophobia, is associated with poor health outcomes among immigrants (García, 2018; Grace, 2020). Future research should leverage the IPC index to better understand the observed inequalities and mechanisms that contribute to inequities in immigrant health outcomes. Scholars can also further explore the ways in which immigrants navigate environments of structural xenophobia, in regards to logistic access to resources and opportunities and a discriminatory xenophobic social context, both of which are determinants of immigrant health.

This study has several limitations. While the IPC index identifies a set of exclusive and inclusive immigration policies at the state level over time, more research is needed on the implementation of these policies. For example, there is often a delay between when a policy is enacted and how that policy is implemented and the IPC index includes little information on how policies were enforced and whether states enforced policies in any given year. Although we classified policies by date of passage, rather than implementation, to capture policies that passed but were subsequently enjoined or altered in court, policies that passed but were never implemented in any form may be missing from the IPC index. This limits the ability of the index to capture certain aspects of policy passage or changes that occur in less than a single year. Finally, although US states have been shown to be powerful institutional actors in shaping population health (Montez, 2020), local policy contexts (e.g., county, city) may matter more to immigrants' experiences with discrimination and integration than state-level contexts. The local policy context may also contribute to or determine a state's exclusionary or inclusionary climate, regardless of state-level policies. Nonetheless, the IPC index represents state immigration policy climates across five different domains and operationalizes structural xenophobia at the state level to provide a context to capture immigrant experiences and health inequities.

Given that intersecting oppressed identities (e.g., legal status, race/ethnicity) of immigrants places millions at increased risk for adverse health outcomes, structural xenophobia merits increasing attention in public health research. The COVID-19 pandemic, which was coupled

with restrictive immigration policy and a shutdown of the US immigration system, further demonstrates connections between immigration policy, immigrant exclusion, and population health. This study demonstrates how the overall immigration policy environment at the state level changes over time, which is critical to the understanding of structural xenophobia as a part of structural and systemic racism. Identifying how state-level structural xenophobia affects health outcomes among immigrants and marginalized racial and ethnic groups, may help inform evidence-based policy and system-level initiatives that repeal unjust and harmful laws, policies, and practices and instead promote social justice and health equity.

Credit author statement

Goleen Samari: Conceptualization, Methodology, Formal Analysis, Writing – Original Draft, Supervision; Amanda Nagle: Data Curation, Formal Analysis, Visualization, Writing – Review & Editing Kate Coleman-Minahan: Data Curation, Formal Analysis, Writing –Review & Editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmph.2021.100938>.

Ethics approval statement

This research is exempt. The Columbia University Human Research Protection Office determined that the research does not meet the definition of human subject research because the data are available and are de-identified.

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