MINORITY HEALTH SOCIAL VULNERABILITY INDEX

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INTRODUCTION

Systemic socioeconomic inequities like poverty, poor housing conditions, and lack of access to quality health care lead to worse health outcomes among racial and ethnic minority groups in the United States (U.S.).[1] These factors can also make it more difficult for racial and ethnic minority populations to anticipate, confront, repair, and recover from the effects of a disaster or public health emergency. This is known as social vulnerability.[2]

The Minority Health Social Vulnerability Index (SVI) enhances existing resources to support the identification of racial and ethnic minority communities at greatest risk for disproportionate impact and adverse outcomes from the COVID-19 pandemic. It was created by the Centers for Disease Control and Prevention (CDC), the Agency for Toxic Substances and Disease Registry (ATSDR), and the U.S. Department of Health and Human Services Office of Minority Health. During the pandemic, certain groups experienced worse outcomes. This included racial and ethnic minority groups and others whose homes or workplaces put them at higher risk of becoming infected or exposed to hazards. The pandemic confirmed and exacerbated existing disparities associated with the social determinants of health and underlying health conditions. We need to examine data at the local level to see these locality-based differences in COVID-19 outcomes. Aggregated data, which is combined from several measurements for two or more racial/ethnic groups, often hides the differences. In addition, understanding local-level social risk factors and identifying groups at the highest risk for disproportionate impact are critical for informing and ensuring equitable response and recovery efforts for COVID-19. Given the evidence on common factors contributing to social vulnerability, the Minority Health SVI could also be applied to other public health emergencies.

WHAT IS THE MINORITY HEALTH SOCIAL VULNERABILITY INDEX?

The Minority Health SVI is an extension of the CDC/ATSDR SVI that includes additional community characteristics that contribute to social vulnerability, such as health care access and chronic disease prevalence. Both the CDC/ATSDR SVI and the Minority Health SVI are databases that help emergency response planners and public health officials identify, map, and plan support for communities that will most likely need support before, during, and after a public health emergency. In each database, social vulnerability is determined by an index that is calculated from selected demographic indicators (variables). The index is used to rank counties and determine the relative vulnerability of each community compared to other communities. The Minority Health SVI provides the relative vulnerability of each county.

The Minority Health SVI combines the social factors included in the CDC/ATSDR SVI with additional factors known to impact social vulnerability associated with COVID-19. The factors are organized into six themes. The first four themes are also in the CDC/ATSDR SVI, but the last two themes are specific to the Minority Health SVI.

- Theme 1 | Socioeconomic Status
- Theme 2 | Household Characteristics
- Theme 3 | Racial & Ethnic Minority Status
- Theme 4 | Housing Type & Transportation
- Theme 5 | Health Care Infrastructure and Access
- Theme 6 | Medical Vulnerability

[1] CDC Office of Health Equity. What is Health Equity? https://www.cdc.gov/healthequity/whatis/index.html.

[2] Flanagan BE, Hallisey EJ, Adams E, and Lavery A, 2018. "Measuring community vulnerability to natural and anthropogenic hazards: The centers for disease control and prevention's social vulnerability index." J. Environ. Health 80(10): 34-36.

In addition to adding Themes 5 and 6, the Minority Health SVI includes statistics for language spoken at home among respondents with limited English proficiency (LEP) in Theme 2 and individual racial/ethnic identities in Theme 3. Specifically, the index includes data for the four minority race categories and the Hispanic/Latino ethnicity category, as defined by the 1997 OMB Directive 15, as well as the five languages most commonly spoken by LEP populations at the county level. The index also includes categories for "two or more races" and "some other race alone," plus a derived variable to capture non-English languages outside of the top five.

The Minority Health SVI is derived from publicly available data from the U.S. Census Bureau's American Community Survey (ACS), CDC, Department of Homeland Security (DHS), RX Open, and Institute for Health Metrics and Evaluation (IHME). The full database includes percentages or counts for each variable along with margins of error (MOE), where applicable, as well as percentile rankings for each variable, each theme, and overall social vulnerability. Data are available for counties within each state and the District of Columbia to enable analysis of relative vulnerability across states and the United States. Full documentation can be found in the Minority Health SVI data dictionary.

HOW DO I USE THE MINORITY HEALTH SVI DASHBOARD?

The Minority Health SVI dashboard is an interactive platform for users to view and map Minority Health SVI variables and index by county. The dashboard is a deployment of Esri ArcGIS Enterprise hosted on the CDC/ATSDR OneMap platform. Data visualization features of the dashboard include a map of Minority Health SVI percentile rankings by county and a bar chart of mean (average) values for individual variables.

Within the dashboard, users can customize the bar chart through a drop-down menu of variables and can filter the data by state, county, and Minority Health SVI percentile ranking. For example, if a user selects the poverty rate variable and filters to Virginia counties in the top 20 percent for Medical Vulnerability, the chart updates to display the mean poverty rate in those counties. This interaction makes it possible to look at a subset of counties based on different factors contributing to vulnerability and explore how individual variables change accordingly.

User interaction with the dashboard map can begin with either search criteria or a geographic area of interest. When the user selects a subset of counties with the filter function, the map updates to show only those counties. In this way, a user would be able to identify which counties in Virginia are ranked highest for Medical Vulnerability. Conversely, if a user adjusts the map to focus on a geographic region, the chart will update to show the statistics for counties currently visible on the map.

WHAT CAN I DO WITH THE MINORITY HEALTH SVI?

The Minority Health SVI can be used to apply a health equity lens to research, strategic planning, program design, and evaluation related to response and recovery for COVID-19 and other public health emergencies. Here are some of the many research questions that users could explore with the Minority Health SVI dashboard:

- Which counties in California are above the 90th percentile for Socioeconomic Status Vulnerability?
- What is the mean cardiovascular disease mortality rate in the area surrounding Washington, D.C.?
- For counties with the lowest access to health care infrastructure, what percent of the population, on average, speaks Spanish and is also LEP?

The Minority Health SVI databases and dashboard can also be used to do the following:

- inform efforts for focused and equitable testing and vaccine and treatment distribution and administration in under-resourced communities;
- identify communities with LEP individuals (and the languages spoken) who may need language assistance for outreach efforts and services;

- support program planning and evaluation efforts, including those that may link Minority Health SVI with other databases;
- identify medically under-resourced communities for which strategic efforts are needed to improve health care infrastructure and access;
- plan community-level efforts to address systemic factors related to the social determinants of health;
- help decide how many public health and emergency personnel are required to assist people in case of emergencies at the county level;
- foster multi-sector collaboration at the community level by offering a tool that is inclusive of a diverse range of place-based factors;
- inform the design of tailored programs and services needed to address chronic disease disparities; and
- inform research examining the correlation between socioeconomic, health care infrastructure, and demographic characteristics of an area.

WHAT ARE THE DATA SOURCES AND TECHNICAL NOTES FOR THE MINORITY HEALTH SVI?

The Minority Health SVI includes health outcomes data from CDC and IHME, healthcare facility locations from DHS and RX Open, and demographic data from the ACS 5-Year Estimates. The ACS is a survey that collects data from a sample of people in the U.S., so the estimates are subject to sampling error. The Minority Health SVI dataset includes the MOE for each applicable variable based on a 90 percent confidence interval. More information on ACS methods is available in the ACS data user handbook.

It is important to note that the Minority Health SVI treats social vulnerability as a characteristic of a community, which is defined here as a county. As is always the case when data are aggregated to a geographic unit, there may be significant spatial variation in vulnerability within a given county. County-level measures of vulnerability do not necessarily reflect the experiences of all individuals living in the county (ecological fallacy).

WHAT CHANGES WERE MADE IN THE LATEST UPDATE TO THE MINORITY HEALTH SVI?

The Minority Health SVI was updated in June 2023 to include the latest available data and to align with changes to the 2020 CDC/ATSDR SVI.

Changes to Data

The data sources used in the Minority Health SVI update periodically. The updated Minority Health SVI version includes data that have been updated since the 2018 version was released. For example, the 2016-2020 ACS 5-Year Estimates were used for all variables coming from the ACS. See the Minority Health SVI data dictionary to view the data source for each variable.

Changes to Variables and Themes

To align with the 2020 CDC/ATSDR SVI, new variables were added to the Minority Health SVI.

- Other Languages was added to Theme 2 to include respondents with LEP who chose a language other than the five most common non-English languages as well as those who selected “some other language.”
- Two or More Races was added to Theme 3.
- Below 150% of Poverty Line replaced Below Poverty Line in Theme 1.
- Housing Cost Burden replaced Per Capita Income in Theme 1.

The CDC/ATSDR SVI also reorganized a few existing variables into different themes. The same was done in the updated Minority Health SVI so that the indices are still comparable.

- Health Insurance was moved to Theme 1.
- Language variables (e.g., LEP Spanish speakers, Chinese speakers, etc.) were moved to Theme 2.
- Theme 2 was renamed to Household Characteristics.

- Theme 3 was renamed to Racial & Ethnic Minority Status.

The language variables were relocated from Theme 3 to Theme 2 not only to align with the CDC/ATSDR but also to allow the Minority Health SVI to detect the nuanced difference between racial/ethnic minority status and LEP. As the CDC/ATSDR SVI 2020 data documentation explains, "although people in racial and ethnic minority groups are overall more likely to have limited English language proficiency than non-Hispanic whites, most (90.9%) are English language proficient." So, including both variables in the same theme could inappropriately cancel out the impact of the two factors in the index calculation.

Please refer to the Minority Health SVI data dictionary for more information on specific variables.

Please continue onto the next page to view a comparison chart.

Note: The findings and conclusions in this study have not been formally disseminated by the Centers for Disease Control and Prevention or the Agency for Toxic Substances and Disease Registry and should not be construed to represent any agency determination or policy.

HOW DOES THE MINORITY HEALTH SVI DIFFER FROM THE CDC/ATSDR SVI?

The table below shows the comparison between the CDC/ATSDR SVI and Minority Health SVI themes and variables, for both the updated SVI versions and the previous versions. There were significant changes to the 2020 CDC/ATSDR SVI compared to prior years; the updated MH SVI mirrors those changes. Variables that are new to the index are marked with the dagger symbol (†). Variables that have been moved from one theme to another are marked with the double dagger symbol (‡). Note that Themes 2 and 3 have been renamed. Full documentation can be found in the Minority Health SVI data dictionary and the CDC/ATSDR SVI data documentation.

Theme	2020 CDC/ATSDR SVI	Updated Minority Health SVI	Theme	2018 CDC/ATSDR SVI	Previous Minority Health SVI
Theme 1: Socioeconomic Status	Below 150% Poverty †	Below 150% Poverty †	**Theme 1: Socioeconomic Status**	Below Poverty	Below Poverty
	Unemployed	Unemployed		Unemployed	Unemployed
	Housing Cost Burden †	Housing Cost Burden †		Income	Income
	No High School Diploma	No High School Diploma		No High School Diploma	No High School Diploma
	No Health Insurance †	No Health Insurance ‡			
Theme 2: Household Characteristics	≥65 Years	≥65 Years	**Theme 2: Household Composition & Disability**	≥65 Years	≥65 Years
	≤17 Years	≤17 Years		≤17 Years	≤17 Years
	Civilian with a Disability	Civilian with a Disability		Civilian with a Disability	Civilian with a Disability
	Single-Parent Households	Single-Parent Households		Single-Parent Households	Single-Parent Households
	Speaks English "Less than Well" ‡	Spanish Speakers ‡			
		Chinese Speakers ‡			
		Vietnamese Speakers ‡			
		Korean Speakers ‡			
		Russian Speakers ‡			
		Other Languages †			
Theme 3: Racial & Ethnic Minority Status	Minority	Hispanic or Latino	**Theme 3: Minority Status & Language**	Minority	Hispanic or Latino
		Black or African American*			Black or African American*
		Asian*			Asian*
		American Indian or Alaska Native*			American Indian or Alaska Native*
		Native Hawaiian or Pacific Islander*			Native Hawaiian or Pacific Islander*
		Some Other Race*			Some Other Race*
		Two or More Races* †			
				Speaks English "Less than Well"	Spanish Speakers
					Chinese Speakers
					Vietnamese Speakers
					Korean Speakers
	Multi-Unit Structures	Multi-Unit Structures		Multi-Unit Structures	Multi-Unit Structures
	Mobile Homes	Mobile Homes		Mobile Homes	Mobile Homes

Theme	2020 CDC/ATSDR SVI	Updated Minority Health SVI	Theme	2018 CDC/ATSDR SVI	Previous Minority Health SVI
Theme 4: Housing Type & Transportation	Crowding	Crowding	**Theme 4: Housing Type & Transportation**	Crowding	Crowding
	No Vehicle	No Vehicle		No Vehicle	No Vehicle
	Group Quarters	Group Quarters		Group Quarters	Group Quarters
Theme 5: Health Care Infrastructure & Access		Hospitals	**Theme 5: Health Care Infrastructure & Access**		Hospitals
		Urgent Care Clinics			Urgent Care Clinics
		Pharmacies			Pharmacies
		Primary Care Physicians			Primary Care Physicians
		Health Insurance			Health Insurance
Theme 6: Medical Vulnerability		Cardiovascular Disease	**Theme 6: Medical Vulnerability**		Cardiovascular Disease
		Chronic Respiratory Disease			Chronic Respiratory Disease
		Obesity			Obesity
		Diabetes			Diabetes
		Internet Access			Internet Access
Adjunct Variables[3] †	Hispanic or Latino (of any race)				
	Black or African American*				
	Asian*				
	American Indian or Alaska Native*				
	Native Hawaiian or Pacific Islander*				
	Two or More Races*				
	Other Races*				
	No Broadband Internet				
	Daytime Population				

* *Single- and multi-race categories do not include individuals who identified as Hispanic or Latino.*

[3] The 2020 CDC/STSDR SVI database includes adjunct variables for the first time. Adjunct variables are not used in any percentile ranking calculations.