CDC/ATSDR SVI 2022 Documentation

Please see data dictionary below beginning on page 7.

Introduction

What is Social Vulnerability?

Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado or a disease outbreak, or an anthropogenic event such as a harmful chemical spill. The degree to which a community exhibits certain social conditions, including high poverty, low percentage of vehicle access, or crowded households, among others, may affect that community's ability to prevent human suffering and financial loss in the event of a disaster. These factors describe a community's social vulnerability.

What is the CDC/ATSDR Social Vulnerability Index?

ATSDR's Geospatial Research, Analysis, & Services Program (GRASP) created the Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry Social Vulnerability Index (hereafter, CDC/ATSDR SVI or SVI) to help public health officials and emergency response planners identify and map the communities that will most likely need support before, during, and after a hazardous event.

SVI indicates the relative vulnerability of every U.S. census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. SVI ranks the tracts on 16 social factors, such as unemployment, racial and ethnic minority status, and disability status. Then, SVI further groups the factors into four related themes. Thus, each tract receives a ranking for each Census variable and for each of the four themes as well as an overall ranking.

Below, text that describes "tract" methods also refers to county methods.

How can the SVI help communities be better prepared for hazardous events?

SVI provides specific socially and spatially relevant information to help public health officials and local planners better prepare communities to respond to emergency events such as severe weather, floods, disease outbreaks, or chemical exposure.

SVI can be used to:

- Assess community need during emergency preparedness planning.
- Estimate the type and quantity of needed supplies such as food, water, medicine, and bedding.
- Decide the number of emergency personnel required to assist people.
- Identify areas in need of emergency shelters.
- Create a plan to evacuate people, accounting for those who have special needs, such as those without vehicles, the elderly, or people who do not speak English well.
- Identify communities that will need continued support to recover following an emergency or natural disaster.

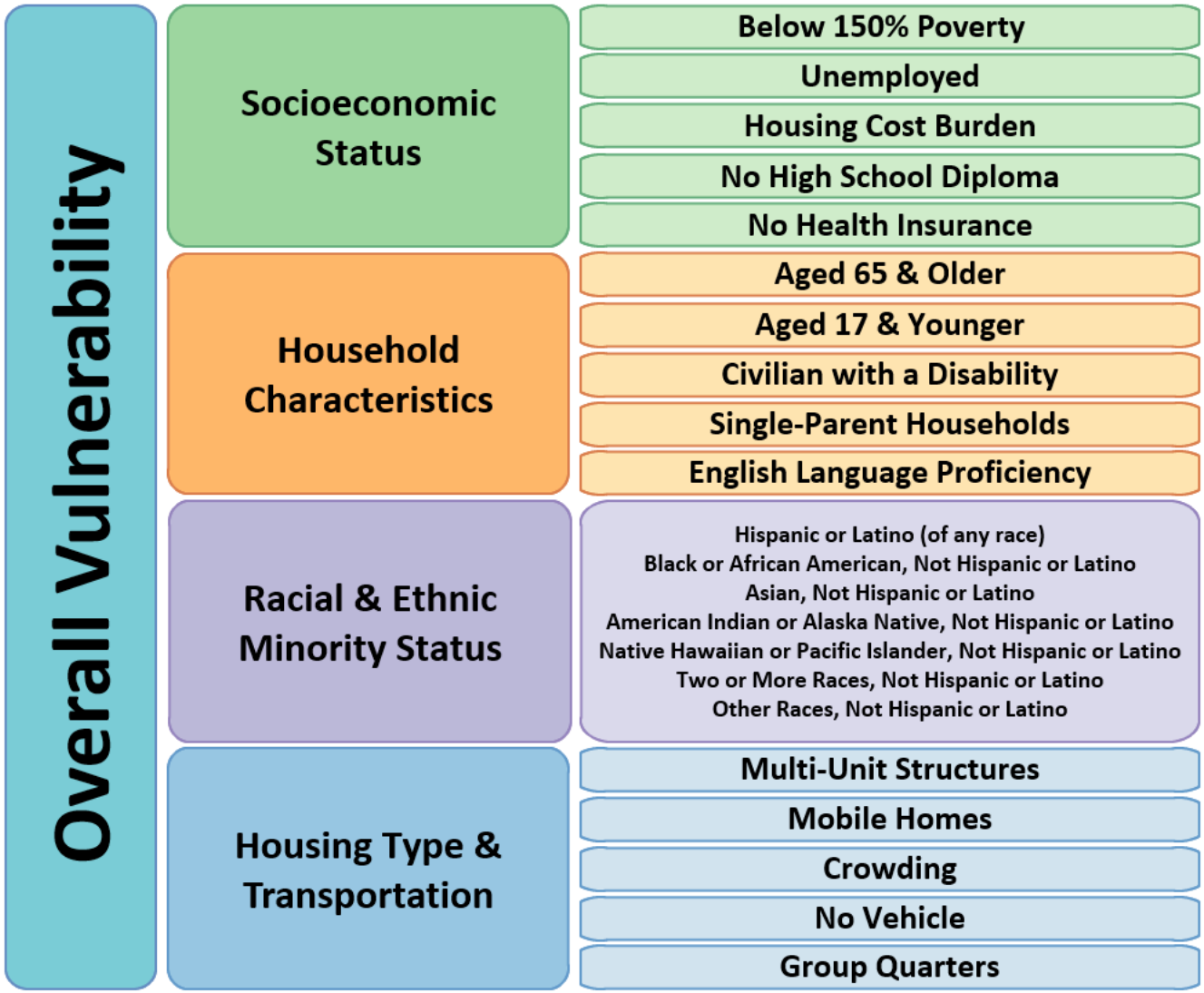
Important Notes on SVI Databases

- All datasets are available for download in a CSV or Geodatabase format from https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html. SVI 2014, 2016, 2018, 2020, and 2022 are also available via ArcGIS Online. Search for "Social Vulnerability Index."
- Any changes to American Community Survey (ACS) field names between SVI 2020 and 2022 are noted in the Data Dictionary below.
- When mapping or analyzing SVI data across multiple states or nationwide, use the U.S. database (i.e., select, "United States" in Geography menu), in which all tracts are ranked against one another. When mapping or analyzing SVI data within a single state, use the state-specific database, in which tracts are ranked only against other tracts in the specified state.
- Starting with SVI 2014, we've added a stand-alone, state-specific Commonwealth of Puerto Rico database. Puerto Rico is not included in the U.S.-wide ranking.
- Starting with SVI 2014, we've added a database of Tribal Census Tracts (https://www.census.gov/newsroom/blogs/random-samplings/2012/07/decoding-state-county-census-tracts-versus-tribal-census-tracts.html). Tribal tracts are defined independently of, and in addition to, standard county-based tracts. The tribal tract database contains only estimates, percentages, and their respective margins of error (MOEs), along with the adjunct variables described in the data dictionary below. Because of geographic separation and cultural diversity, tribal tracts are not ranked against each other nor against standard census tracts.
- Tracts with an estimated population of zero were not included in the ranking process (N = 857 for the U.S., N = 798 excluding Puerto Rico).
    - Of these, 520 tracts (including those of Puerto Rico) were re-added to the SVI databases after the ranking procedure. 337 tracts did not have matching geometry in the 2022 cartographic boundary file and were excluded.
- A value of -999 in any field either means the value was unavailable from the original census data or we could not calculate a derived value because of unavailable Census data.
    - Any cells with a value of -999 were not used for further calculations. For example, total flags do not include fields with a -999 value.
- Whenever available, we use Census-calculated MOEs.
    - If Census MOEs are unavailable, for instance when aggregating variables within a table, we use approximation formulas provided by the Census. U.S. Census Bureau, Understanding and Using American Community Survey Data: What All Data Users Need to Know, U.S. Government Publishing Office, Washington, DC, 2020. pp. 59-67. https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs_general_handbook_2020.pdf
    - If more precise MOEs are required, see Census methods and data regarding Variance Replicate Tables here: https://www.census.gov/programs-surveys/acs/data/variance-tables.html.
- We use the variable "FIPS" as our geographic identification. Please note that a state FIPS code is two digits, a county FIPS code is three digits, and a census tract is 6 digits long. To identify a unique county, you must include the state FIPS along with the county FIPS (ex. 13089 is the state (13) + the county (089)). To identify a unique census tract, you must include the state and county FIPS along with the census tract (ex. 13089022404 is the state (13) + the county (089) + the census tract (022404)).
- Questions? Please visit the SVI website at http://svi.cdc.gov or email the SVI Coordinator at svi_coordinator@cdc.gov for additional information.

Methods

Variables Used

American Community Survey (ACS), 2018-2022 (5-year) data for the following estimates:



Text version of overall social vulnerability image:

- Socioeconomic Status
  - Below 150% Poverty
  - Unemployed
  - Housing Cost Burden
  - No High School Diploma
  - No Health Insurance
- Household Characteristics
  - Aged 65 & Older
  - Aged 17 & Younger
  - Civilian with a Disability
  - Single-Parent Households
  - English Language Proficiency
- Racial & Ethnic Minority Status*
  - Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino
- Housing Type & Transportation
  - Multi-Unit Structures
  - Mobile Homes
  - Crowding
  - No Vehicle
  - Group Quarters

* Estimate total population - White, non-Hispanic population is equivalent to summing Estimate; Hispanic or Latino, Total Population + Estimate; Black and African American Not Hispanic or Latino + Estimate; American Indian and Alaska Native Not Hispanic or Latino + Estimate; Asian Not Hispanic or Latino + Estimate; Native Hawaiian and Other Pacific Islander Not Hispanic or Latino + Estimate; Two or More Races Not Hispanic or Latino + Estimate; Other Races Not Hispanic or Latino.
We used the Estimate total population – White, non-Hispanic – because this more direct calculation provides a smaller margin for error and a simpler calculation as recommended in the ACS guidance document (U.S. Census Bureau, Understanding and Using American Community Survey Data: What All Data Users Need to Know, U.S. Government Publishing Office, Washington, DC, 2020. p. 61.)
https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs_general_handbook_2020.pdf

The following adjunct variables were included in the SVI 2022 database:

- An estimate of daytime population derived from LandScan 2021 estimates**
- 2018-2022 ACS estimates for households without an internet subscription

- 2018-2022 ACS estimates for Hispanic/Latino persons, Not Hispanic or Latino Black/African American persons, Not Hispanic or Latino Asian persons, Not Hispanic or Latino American Indian and Alaska Native persons, Not Hispanic or Latino Native Hawaiian and Other Pacific Islander persons, Not Hispanic or Latino persons of two or more races, and Not Hispanic or Latino persons of some other race

** 2021 is the most recent year available at time of dataset release.
Adjunct variables are not used to calculate any SVI rankings; however, they may provide additional context and are included in the SVI database to make them readily accessible.
Estimated counts and percentages for each variable are included in the database. In addition, the MOE for each estimate, at the Census Bureau standard of 90% confidence, are also included. Confidence intervals can be calculated by subtracting the MOE from the estimate (lower limit) and adding the MOE to the estimate (upper limit). Tracts with relatively small sample sizes (i.e., populations) will have large MOEs. It is important to consider how sampling errors may impact conclusions in any analysis. https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs_general_handbook_2020.pdf pp. 53-58

Rankings
We ranked census tracts within each state, the District of Columbia, and Puerto Rico, to enable mapping and analysis of relative social vulnerability in individual states. We also ranked tracts for the entire United States against one another, for mapping and analysis of relative social vulnerability in multiple states, or across the U.S. SVI rankings are based on percentiles. Percentile ranking values range from 0 to 1, with higher values indicating greater social vulnerability.
For each tract, we generated its percentile rank among all tracts for 1) the 16 individual variables, 2) the four themes, and 3) its overall position.
Theme rankings: For each of the four themes, we summed the percentiles for the variables comprising each theme. We ordered the summed percentiles for each theme to determine theme-specific percentile rankings.

The four theme ranking variables, detailed in the Data Dictionary below, are:
- **Socioeconomic Status - RPL_THEME1**
- **Household Characteristics - RPL_THEME2**
- **Racial & Ethnic Minority Status - RPL_THEME3**
- **Housing Type & Transportation - RPL_THEME4**

Overall tract rankings: We summed the sums for each theme, ordered the tracts, and then calculated overall percentile rankings. Please note taking the sum of the sums for each theme is the same as summing individual variable rankings. **The overall summary ranking variable is RPL_THEMES**.

The general steps to recreating SVI rankings are:
1. E Variables: Obtain estimates of the CDC/ATSDR SVI variables from the Census Bureau.
2. EP Variables: Obtain or derive percentages for the 16 CDC SVI variables.
3. EPL Variables: Rank the EP variables to get percentile rankings (or the CDC/ATSDR SVI rankings) for each of the 16 variables.
4. SPL Variables: Sum the EPL variables by theme.
5. RPL Variables: Rank the theme-specific SPL variable.
6. Overall SPL Variable (SPL_THEMES): Sum the SPL variables from all four themes.
7. Overall RPL Variable (RPL_THEMES): Rank SPL_THEMES. This is the overall summary ranking variable.

Note: Areas with no data should not be included in the calculations.

Flags

Tracts in the top 10%, or the 90th percentile, are given a flag value of 1 to indicate high social vulnerability. Tracts below the 90th percentile are given a flag value of 0.

For a theme, the flag value is the number of flags for variables comprising the theme. We calculated the overall flag value for each tract as the number of all variable flags.

For a detailed description of SVI variable selection rationale and methods, see A Social Vulnerability Index for Disaster Management.

Note on Comparative Rankings between State and National Databases

The order of overall SVI rankings and SVI theme rankings of census tracts may differ between the U.S. and state SVI databases.

Overall and theme rankings are based on cumulative values that are relative to the number of census tracts being compared. Thus, differences between the order of rankings in the U.S. database and that of state databases may arise from the accumulation of differences in summing the percentile ranks for the individual SVI variables.

For example, using the 2018 Georgia SVI database, Fulton County has an overall SVI score of 0.2658 with a ranking of 117 out of 159 Georgia counties. However, using the 2018 U.S. SVI database, Fulton County has an overall SVI score of 0.5268, giving Fulton County a ranking of 125 out of the 159 Georgia counties. The ranking differences between the two databases are due to differences in summed percentile ranks.

In short, because a state has fewer census tracts than the U.S., relative differences are more pronounced at the state level than at the national level. These comparative differences, when summed, can result in a different rank order between the state and U.S. databases.

SVI 2022 Updates

For each SVI release, we review the American Community Survey (ACS) for any changes to the variables and to ensure we are using the most concise and accurate variables.

For the 2022 database, we remapped some of our EP variables directly to ACS percentage variables. This change largely meant, when possible, we favored percentage variables from the ACS Data Profile (DP) and Subject (S) tables rather than calculating from Detailed (B) table count estimates. During our analysis we found the new variable mappings improved SVI processing through simpler calculations, greater transparency, and better accuracy. Furthermore, some variable changes allowed us to use ACS-calculated margins of error rather than deriving our own. These updates follow ACS recommendations noted in their guidance document *U.S. Census Bureau, Understanding and Using American Community Survey Data: What All Data Users Need to Know*, U.S. Government Publishing Office, Washington, DC, 2020. See the data dictionary below for 2022 variable changes.

For percentage margins of error (MP) variables, we established a maximum value of 100 in accordance with ACS guidance on deriving margins of error. (2018-2022 ACS 5-year Accuracy of the Data (US). Pp 14-15.)

CDC SVI 2022 Data Dictionary

Variable changes between 2020 and 2022 are noted in ***RED.*** Variables beginning with "E_" are estimates. Variables beginning with "M_" are margins of error for those estimates. Values of -999 represent "null" or "no data."

Themes
1. Socioeconomic Status
2. Household Characteristics
3. Racial & Ethnic Minority Status
4. Housing Type/Transportation

The four theme ranking variables, detailed in the Data Dictionary below, are:

- **Socioeconomic Status - RPL_THEME1**
- **Household Characteristics - RPL_THEME2**
- **Racial & Ethnic Minority Status - RPL_THEME3**
- **Housing Type & Transportation - RPL_THEME4**

The overall summary ranking variable is RPL_THEMES.

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
ST	State-level FIPS code		SVI	FIPS	
STATE	State name		S0601	NAME	
ST_ABBR	State abbreviation		N/A	N/A	
STCNTY	County-level FIPS code		SVI	FIPS	
COUNTY	County name		S0601	NAME	
FIPS	Tract-level geographic identification		S0601	GEO_ID	
LOCATION	Text description of tract, county, state		S0601	NAME	
AREA_SQMI	Tract area in square miles		Census Cartographic Boundary File - U.S. Tracts 2022 500K	ALAND * 3.86102e-7	
E_TOTPOP	Population estimate, 2018-2022 ACS		S0601	S0601_C01_001E	
M_TOTPOP	Population estimate MOE, 2018-2022 ACS		S0601	S0601_C01_001M	
E_HU	Housing units estimate, 2018-2022 ACS		DP04	DP04_0001E	
M_HU	Housing units estimate MOE, 2018-2022 ACS		DP04	DP04_0001M	
E_HH	Households estimate, 2018-2022 ACS		DP02	DP02_0001E	
M_HH	Households estimate MOE, 2018-2022 ACS		DP02	DP02_0001M	
E_POV150	Persons below 150% poverty estimate, 2018-2022 ACS	1	S1701	S1701_C01_040E	
M_POV150	Persons below 150% poverty estimate MOE, 2018-2022 ACS	1	S1701	S1701_C01_040M	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
E_UNEMP	Civilian (age 16+) unemployed estimate, 2018-2022 ACS	1	DP03	DP03_0005E	
M_UNEMP	Civilian (age 16+) unemployed estimate MOE, 2018-2022 ACS	1	DP03	DP03_0005M	
E_HBURD	Housing cost-burdened occupied housing units with annual income less than $75,000 (30%+ of income spent on housing costs) estimate, 2018-2022 ACS	1	S2503	S2503_C01_028E + S2503_C01_032E + S2503_C01_036E + S2503_C01_040E	
M_HBURD	Housing cost-burdened occupied housing units with annual income less than $75,000 (30%+ of income spent on housing costs) estimate MOE, 2018-2022 ACS	1	S2503	SQRT (S2503_C01_028M ^2 + S2503_C01_032M ^2 + S2503_C01_036M ^2 + S2503_C01_040M ^2)	
E_NOHSDP	Persons (age 25+) with no high school diploma estimate, 2018-2022 ACS	1	B06009	B06009_002E	
M_NOHSDP	Persons (age 25+) with no high school diploma estimate MOE, 2018-2022 ACS	1	B06009	B06009_002M	
E_UNINSUR	Uninsured in the total civilian noninstitutionalized population estimate, 2018-2022 ACS	1	S2701	S2701_C04_001E	
M_UNINSUR	Uninsured in the total civilian noninstitutionalized population estimate MOE, 2018-2022 ACS	1	S2701	S2701_C04_001M	
E_AGE65	Persons aged 65 and older estimate, 2018-2022 ACS	2	S0101	S0101_C01_030E	
M_AGE65	Persons aged 65 and older estimate MOE, 2018-2022 ACS	2	S0101	S0101_C01_030M	
E_AGE17	Persons aged 17 and younger estimate, 2018-2022 ACS	2	DP05	DP05_0019E	B09001_001E
M_AGE17	Persons aged 17 and younger estimate MOE, 2018-2022 ACS	2	DP05	DP05_0019M	B09001_001M
E_DISABL	Civilian noninstitutionalized population with a disability estimate, 2018-2022 ACS	2	DP02	DP02_0072E	
M_DISABL	Civilian noninstitutionalized population with a disability estimate MOE, 2018-2022 ACS	2	DP02	DP02_0072M	
E_SNGPNT	Single-parent household with children under 18 estimate, 2018-2022 ACS	2	DP02	DP02_0007E + DP02_0011E	B11012_010E + B11012_015E
M_SNGPNT	Single-parent household with children under 18 estimate MOE, 2018-2022 ACS	2	DP02	SQRT (DP02_0007M ^2 + DP02_0011M^2)	SQRT (B11012_010M ^2 + B11012_015M ^2)
E_LIMENG	Persons (age 5+) who speak English "less than well" estimate, 2018-2022 ACS	2	B16005	B16005_007E + B16005_008E + B16005_012E + B16005_013E + B16005_017E + B16005_018E + B16005_022E + B16005_023E +	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
				B16005_029E + B16005_030E + B16005_034E + B16005_035E + B16005_039E + B16005_040E + B16005_044E + B16005_045E	
M_LIMENG	Persons (age 5+) who speak English "less than well" estimate MOE, 2018-2022 ACS	2	B16005	SQRT (B16005_007M ^2 + B16005_008M ^2 + B16005_012M ^2 + B16005_013M ^2 + B16005_017M ^2 + B16005_018M ^2 + B16005_022M ^2 + B16005_023M ^2 + B16005_029M ^2 + B16005_030M ^2 + B16005_034M ^2 + B16005_035M ^2 + B16005_039M ^2 + B16005_040M ^2 + B16005_044M ^2 + B16005_045M ^2)	
E_MINRTY	Minority (Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino) estimate, 2018-2022 ACS*	3	DP05	DP05_0001E - DP05_0079E	DP05_0071E + DP05_0078E + DP05_0079E + DP05_0080E + DP05_0081E + DP05_0082E + DP05_0083E
M_MINRTY	Minority (Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino) estimate MOE, 2018-2022 ACS*	3	DP05	SQRT(M_TOTPOP^2 + DP05_0079M ^2)	SQRT (DP05_0071M ^2 + DP05_0078M ^2 + DP05_0079M ^2 + DP05_0080M ^2 + DP05_0081M ^2 + DP05_0082M ^2 + DP05_0083M ^2)
E_MUNIT	Housing in structures with 10 or more units estimate, 2018-2022 ACS	4	DP04	DP04_0012E + DP04_0013E	
M_MUNIT	Housing in structures with 10 or more units estimate MOE, 2018-2022 ACS	4	DP04	SQRT (DP04_0012M ^2 + DP04_0013M ^2)	
E_MOBILE	Mobile homes estimate, 2018-2022 ACS	4	DP04	DP04_0014E	
M_MOBILE	Mobile homes estimate MOE, 2018-2022 ACS	4	DP04	DP04_0014M	
E_CROWD	At household level (occupied housing units), more people than rooms estimate, 2018-2022 ACS	4	DP04	DP04_0078E + DP04_0079E	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
M_CROWD	At household level (occupied housing units), more people than rooms estimate MOE, 2018-2022 ACS	4	DP04	SQRT (DP04_0078M ^2 + DP04_0079M ^2)	
E_NOVEH	Households with no vehicle available estimate, 2018-2022 ACS	4	DP04	DP04_0058E	
M_NOVEH	Households with no vehicle available estimate MOE, 2018-2022 ACS	4	DP04	DP04_0058M	
E_GROUPQ	Persons in group quarters estimate, 2018-2022 ACS	4	B26001	B26001_001E	
M_GROUPQ	Persons in group quarters estimate MOE, 2018-2022 ACS	4	B26001	B26001_001M	
EP_POV150	Percentage of persons below 150% poverty estimate	1	SVI and S1701	(E_POV150 / S1701_C01_001E) * 100	
MP_POV150	Percentage of persons below 150% poverty estimate MOE	1	SVI and S1701	((SQRT (M_POV150^2-((EP_POV150 / 100)^2 * S1701_C01_001M ^2))) / S1701_C01_001E) * 100	
EP_UNEMP	Unemployment Rate estimate	1	DP03	DP03_0009PE	
MP_UNEMP	Unemployment Rate estimate MOE	1	DP03	DP03_0009PM	
EP_HBURD	Percentage of housing cost-burdened occupied housing units with annual income less than $75,000 (30%+ of income spent on housing costs) estimate, 2018-2022 ACS estimate, 2018-2022 ACS	1	SVI and S2503	(E_HBURD / S2503_C01_001E) * 100	
MP_HBURD	Percentage of housing cost-burdened occupied housing units with annual income less than $75,000 (30%+ of income spent on housing costs) estimate MOE, 2018-2022 ACS	1	SVI and S2503	((SQRT (M_HBURD^2 - ((EP_HBURD / 100)^2 * S2503_C01_001M ^2))) / S2503_C01_001E) * 100	
EP_NOHSDP	Percentage of persons with no high school diploma (age 25+) estimate	1	S0601	S0601_C01_033E	
MP_NOHSDP	Percentage of persons with no high school diploma (25+) estimate MOE	1	S0601	S0601_C01_033M	
EP_UNINSUR	Percentage uninsured in the total civilian noninstitutionalized population estimate, 2018-2022 ACS	1	S2701	S2701_C05_001E	
MP_UNINSUR	Percentage uninsured in the total civilian noninstitutionalized population estimate MOE, 2018-2022 ACS	1	S2701	S2701_C05_001M	
EP_AGE65	Percentage of persons aged 65 and older estimate, 2018-2022 ACS	2	S0101	S0101_C02_030E	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
MP_AGE65	Percentage of persons aged 65 and older estimate MOE, 2018-2022 ACS	2	S0101	S0101_C02_030M	
EP_AGE17	Percentage of persons aged 17 and younger estimate, 2018-2022 ACS	2	SVI	DP05_0019PE	(E_AGE17 / E_TOTPOP) * 100
MP_AGE17	Percentage of persons aged 17 and younger estimate MOE, 2018-2022 ACS	2	SVI	DP05_0019PM	((SQRT (M_AGE17^2 - ((EP_AGE17 / 100)^2 * M_TOTPOP^2))) / E_TOTPOP) * 100
EP_DISABL	Percentage of civilian noninstitutionalized population with a disability estimate, 2018-2022 ACS	2	DP02	DP02_0072PE	
MP_DISABL	Percentage of civilian noninstitutionalized population with a disability estimate MOE, 2018-2022 ACS	2	DP02	DP02_0072PM	
EP_SNGPNT	Percentage of single-parent households with children under 18 estimate, 2018-2022 ACS	2	DP02	DP02_0007PE + DP02_0011PE	(E_SNGPNT/E_HH) * 100
MP_SNGPNT	Percentage of single-parent households with children under 18 estimate MOE, 2018-2022 ACS	2	SVI	((SQRT (M_SNGPNT^2 - ((EP_SNGPNT / 100)^2 * M_HH^2))) / E_HH) * 100	
EP_LIMENG	Percentage of persons (age 5+) who speak English "less than well" estimate, 2018-2022 ACS	2	SVI and B16005	(E_LIMENG / B16005_001E) * 100	
MP_LIMENG	Percentage of persons (age 5+) who speak English "less than well" estimate MOE, 2018-2022 ACS	2	SVI and B16005	((SQRT (M_LIMENG^2 - ((EP_LIMENG / 100)^2 * B16005_001M ^2))) / B16005_001E) * 100	
EP_MINRTY	Percentage minority (Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino) estimate, 2018-2022 ACS*	3	DP05	100.0 - DP05_0019PE	(E_MINRTY / E_TOTPOP) * 100
MP_MINRTY	Percentage minority (Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino) estimate MOE, 2018-2022 ACS*	3	SVI	((SQRT (M_MINRTY^2 - ((EP_MINRTY / 100)^2 * M_TOTPOP^2))) / E_TOTPOP) * 100	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
EP_MUNIT	Percentage of housing in structures with 10 or more units estimate	4	DP04	DP04_0012PE + DP04_0013PE	(E_MUNIT / E_HU) * 100
MP_MUNIT	Percentage of housing in structures with 10 or more units estimate MOE	4	SVI	((SQRT (M_MUNIT^2 - ((EP_MUNIT / 100)^2 * M_HU^2))) / E_HU) * 100	
EP_MOBILE	Percentage of mobile homes estimate	4	DP04	DP04_0014PE	
MP_MOBILE	Percentage of mobile homes estimate MOE	4	DP04	DP04_0014PM	
EP_CROWD	Percentage of occupied housing units with more people than rooms estimate	4	DP04	DP04_0078PE + DP04_0079PE	(E_CROWD / DP04_0002E) * 100
MP_CROWD	Percentage of occupied housing units with more people than rooms estimate MOE	4	SVI and DP04	((SQRT (M_CROWD^2 - ((EP_CROWD / 100)^2 * DP04_0002M ^2))) / DP04_0002E) * 100	
EP_NOVEH	Percentage of households with no vehicle available estimate	4	DP04	DP04_0058PE	
MP_NOVEH	Percentage of households with no vehicle available estimate MOE	4	DP04	DP04_0058PM	
EP_GROUPQ	Percentage of persons in group quarters estimate, 2018-2022 ACS	4	SVI	(E_GROUPQ / E_TOTPOP) * 100	
MP_GROUPQ	Percentage of persons in group quarters estimate MOE, 2018-2022 ACS	4	SVI	((SQRT (M_GROUPQ^2 - ((EP_GROUPQ / 100)^2 * M_TOTPOP^2))) / E_TOTPOP) * 100	
EPL_POV150	Percentile percentage of persons below 150% poverty estimate	1	SVI	Percent rank EP_POV150 with 4 significant digits	
EPL_UNEMP	Percentile percentage of civilian (age 16+) unemployed estimate	1	SVI	Percent rank EP_UNEMP with 4 significant digits	
EPL_HBURD	Percentile percentage of housing cost-burdened occupied housing units estimate	1	SVI	Percent rank EP_HBURD with 4 significant digits	
EPL_NOHSDP	Percentile percentage of persons with no high school diploma (age 25+) estimate	1	SVI	Percent rank EP_NOHSDP with 4 significant digits	
EPL_UNINSUR	Percentile percentage of uninsured estimate	1	SVI	Percent rank EP_UNINSUR with 4 significant digits	
SPL_THEME1	Sum of series for Socioeconomic Status theme	1	SVI	EPL_POV150 + EPL_UNEMP + EPL_HBURD + EPL_NOHSDP + EPL_UNINSUR	
RPL_THEME1	Percentile ranking for Socioeconomic Status theme summary	1	SVI	Percent rank SPL_THEME1 with 4 significant digits	
EPL_AGE65	Percentile percentage of persons aged 65 and older estimate	2	SVI	Percent rank EP_AGE65 with 4 significant digits	
EPL_AGE17	Percentile percentage of persons aged 17 and younger estimate	2	SVI	Percent rank EP_AGE17 with 4 significant digits	
EPL_DISABL	Percentile percentage of civilian noninstitutionalized population with a disability estimate	2	SVI	Percent rank EP_DISABL with 4 significant digits	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
EPL_SNGPNT	Percentile percentage of single-parent households with children under 18 estimate	2	SVI	Percent rank EP_SNGPNT with 4 significant digits	
EPL_LIMENG	Percentile percentage of persons (age 5+) who speak English "less than well" estimate	2	SVI	Percent rank EP_LIMENG with 4 significant digits	
SPL_THEME2	Sum of series for Household Characteristics theme	2	SVI	EPL_AGE65 + EPL_AGE17 + EPL_DISABL + EPL_SNGPNT + EPL_LIMENG	
RPL_THEME2	Percentile ranking for Household Characteristics theme summary	2	SVI	Percent rank SPL_THEME2 with 4 significant digits	
EPL_MINRTY	Percentile percentage minority (Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino) estimate*	3	SVI	Percent rank EP_MINRTY with 4 significant digits	
SPL_THEME3	Sum of series for Racial and Ethnic Minority Status theme	3	SVI	EPL_MINRTY	
RPL_THEME3	Percentile ranking for Racial and Ethnic Minority Status theme	3	SVI	Percent rank SPL_THEME3 with 4 significant digits	
EPL_MUNIT	Percentile percentage housing in structures with 10 or more units estimate	4	SVI	Percent rank EP_MUNIT with 4 significant digits	
EPL_MOBILE	Percentile percentage mobile homes estimate	4	SVI	Percent rank EP_MOBILE with 4 significant digits	
EPL_CROWD	Percentile percentage households with more people than rooms estimate	4	SVI	Percent rank EP_CROWD with 4 significant digits	
EPL_NOVEH	Percentile percentage households with no vehicle available estimate	4	SVI	Percent rank EP_NOVEH with 4 significant digits	
EPL_GROUPQ	Percentile percentage of persons in group quarters estimate	4	SVI	Percent rank EP_GROUPQ with 4 significant digits	
SPL_THEME4	Sum of series for Housing Type/ Transportation theme	4	SVI	EPL_MUNIT + EPL_MOBILE + EPL_CROWD + EPL_NOVEH + EPL_GROUPQ	
RPL_THEME4	Percentile ranking for Housing Type/ Transportation theme	4	SVI	Percent rank SPL_THEME4 with 4 significant digits	
SPL_THEMES	Sum of series themes		SVI	SPL_THEME1 + SPL_THEME2 + SPL_THEME3 + SPL_THEME4	
RPL_THEMES	Overall percentile ranking		SVI	Percent rank SPL_THEMES with 4 significant digits	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
F_POV150	Flag - the percentage of persons below 150% poverty is in the 90th percentile (1 = yes, 0 = no)	1	SVI	EPL_POV150 >= 0.90	
F_UNEMP	Flag - the percentage of civilian unemployed is in the 90th percentile (1 = yes, 0 = no)	1	SVI	EPL_UNEMP >= 0.90	
F_HBURD	Flag - the percentage of housing cost-burdened occupied housing units is in the 90th percentile (1 = yes, 0 = no)	1	SVI	EPL_HBURD >= 0.90	
F_NOHSDP	Flag - the percentage of persons with no high school diploma is in the 90th percentile (1 = yes, 0 = no)	1	SVI	EPL_NOHSDP >= 0.90	
F_UNINSUR	Flag - the percentage of uninsured is in the 90th percentile (1 = yes, 0 = no)	1	SVI	EPL_UNINSUR >= 0.90	
F_THEME1	Sum of flags for Socioeconomic Status theme	1	SVI	F_POV150 + F_UNEMP + F_HBURD + F_NOHSDP + F_UNINSUR	
F_AGE65	Flag - the percentage of persons aged 65 and older is in the 90th percentile (1 = yes, 0 = no)	2	SVI	EPL_AGE65 >= 0.90	
F_AGE17	Flag - the percentage of persons aged 17 and younger is in the 90th percentile (1 = yes, 0 = no)	2	SVI	EPL_AGE17 >= 0.90	
F_DISABL	Flag - the percentage of persons with a disability is in the 90th percentile (1 = yes, 0 = no)	2	SVI	EPL_DISABL >= 0.90	
F_SNGPNT	Flag - the percentage of single-parent households is in the 90th percentile (1 = yes, 0 = no)	2	SVI	EPL_SNGPNT >= 0.90	
F_LIMENG	Flag - the percentage those with limited English is in the 90th percentile (1 = yes, 0 = no)	2	SVI	EPL_LIMENG >= 0.90	
F_THEME2	Sum of flags for Household Characteristics theme	2	SVI	F_AGE65 + F_AGE17 + F_DISABL + F_SNGPNT + F_LIMENG	
F_MINRTY	Flag - the percentage of minority is in the 90th percentile (1 = yes, 0 = no)	3	SVI	EPL_MINRTY >= 0.90	
F_THEME3	Sum of flags for Racial and Ethnic Minority Status theme	3	SVI	F_MINRTY	
F_MUNIT	Flag - the percentage of households in multi-unit housing is in the 90th percentile (1 = yes, 0 = no)	4	SVI	EPL_MUNIT >= 0.90	
F_MOBILE	Flag - the percentage of mobile homes is in the 90th percentile (1 = yes, 0 = no)	4	SVI	EPL_MOBILE >= 0.90	

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
F_CROWD	Flag - the percentage of crowded households is in the 90th percentile (1 = yes, 0 = no)	4	SVI	EPL_CROWD >= 0.90	
F_NOVEH	Flag - the percentage of households with no vehicles is in the 90th percentile (1 = yes, 0 = no)	4	SVI	EPL_NOVEH >= 0.90	
F_GROUPQ	Flag - the percentage of persons in group quarters is in the 90th percentile (1 = yes, 0 = no)	4	SVI	EPL_GROUPQ >= 0.90	
F_THEME4	Sum of flags for Housing Type/ Transportation theme	4	SVI	F_MUNIT + F_MOBILE + F_CROWD + F_NOVEH + F_GROUPQ	
F_TOTAL	Sum of flags for the four themes		SVI	F_THEME1 + F_THEME2 + F_THEME3 + F_THEME4	
E_DAYPOP	Adjunct variable - Estimated daytime population, LandScan 2021**		N/A		
E_NOINT	Adjunct variable - Households without an internet subscription estimate, 2018-2022 ACS		S2801	S2801_C01_019E	S2802_C01_001E - S2802_C02_001E
M_NOINT	Adjunct variable - Households without an internet subscription estimate MOE, 2018-2022 ACS		S2801	S2801_C01_019M	SQRT (S2802_C01_001M ^2 - S2802_C02_001M ^2)
E_AFAM	Adjunct variable - Black/African American, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0080E	DP05_0078E
M_AFAM	Adjunct variable - Black/African American, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0080M	DP05_0078M
E_HISP	Adjunct variable – Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0073E	DP05_0071E
M_HISP	Adjunct variable – Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0073M	DP05_0071M
E_ASIAN	Adjunct variable – Asian, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0082E	DP05_0080E
M_ASIAN	Adjunct variable – Asian, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0082M	DP05_0080M
E_AIAN	Adjunct variable - American Indian or Alaska Native, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0081E	DP05_0079E
M_AIAN	Adjunct variable - American Indian or Alaska Native, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0081M	DP05_0079M

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
E_NHPI	Adjunct variable - Native Hawaiian or Other Pacific Islander, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0083E	DP05_0081E
M_NHPI	Adjunct variable - Native Hawaiian or Other Pacific Islander, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0083M	DP05_0081M
E_TWOMORE	Adjunct variable - Two or more races, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0085E	DP05_0083E
M_TWOMORE	Adjunct variable - Two or more races, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0085M	DP05_0083M
E_OTHERRACE	Adjunct variable - Some other race, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0084E	DP05_0082E
M_OTHERRACE	Adjunct variable - Some other race, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0084M	DP05_0082M
EP_NOINT	Adjunct variable - Percentage of households without an internet subscription estimate, 2018-2022 ACS		S2801	S2801_C02_019E	(E_NOINT / S2802_C01_001E) * 100
MP_NOINT	Adjunct variable - Percentage of households without an internet subscription estimate MOE, 2018-2022 ACS		S2801	S2801_C02_019M	((SQRT (M_NOINT^2 - ((EP_NOINT / 100)^2 * S2802_C01_001M^2))) / S2802_C01_001M) * 100
EP_AFAM	Adjunct variable - Percentage of Black/African American, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0080PE	DP05_0078PE
MP_AFAM	Adjunct variable - Percentage of Black/African American, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0080PM	DP05_0078PM
EP_HISP	Adjunct variable - Percentage of Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0073PE	DP05_0071PE
MP_HISP	Adjunct variable - Percentage of Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0073PM	DP05_0071PM
EP_ASIAN	Adjunct variable - Percentage of Asian, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0082PE	DP05_0080PE
MP_ASIAN	Adjunct variable - Percentage of Asian, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0082PM	DP05_0080PM

2022 VARIABLE NAME	2022 DESCRIPTION	THEME	CENSUS or SVI TABLE(S)	2022 TABLE FIELD CALCULATION	2020 TABLE FIELD CALCULATION if changed
EP_AIAN	Adjunct variable - Percentage of American Indian or Alaska Native, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0081PE	DP05_0079PE
MP_AIAN	Adjunct variable - Percentage of American Indian or Alaska Native, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0081PM	DP05_0079PM
EP_NHPI	Adjunct variable - Percentage of Native Hawaiian or Other Pacific Islander, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0083PE	DP05_0081PE
MP_NHPI	Adjunct variable - Percentage of Native Hawaiian or Other Pacific Islander, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0083PM	DP05_0081PM
EP_TWOMORE	Adjunct variable - Percentage of two or more races, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0085PE	DP05_0083PE
MP_TWOMORE	Adjunct variable - Percentage of two or more races, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0085PM	DP05_0083PM
EP_OTHERRACE	Adjunct variable - Percentage of some other race, not Hispanic or Latino persons estimate, 2018-2022 ACS		DP05	DP05_0084PE	DP05_0082PE
MP_OTHERRACE	Adjunct variable - Percentage of some other race, not Hispanic or Latino persons estimate MOE, 2018-2022 ACS		DP05	DP05_0084PM	DP05_0082PM

* Estimate total population - White, non-Hispanic population is equivalent to summing Estimate; Hispanic or Latino, Total Population + Estimate; Black and African American Not Hispanic or Latino + Estimate; American Indian and Alaska Native Not Hispanic or Latino + Estimate; Asian Not Hispanic or Latino + Estimate; Native Hawaiian and Other Pacific Islander Not Hispanic or Latino + Estimate; Two or More Races Not Hispanic or Latino + Estimate; Other Races Not Hispanic or Latino.
We used the Estimate total population – White, non-Hispanic – because this more direct calculation provides a smaller margin for error and a simpler calculation as recommended in the ACS guidance document (U.S. Census Bureau, Understanding and Using American Community Survey Data: What All Data Users Need to Know, U.S. Government Publishing Office, Washington, DC, 2020. p. 61.)
https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs_general_handbook_2020.pdf
** 2021 is the most recent year available at time of dataset release.