Social Vulnerability Index for Seattle-King County

Supplemental Documentation

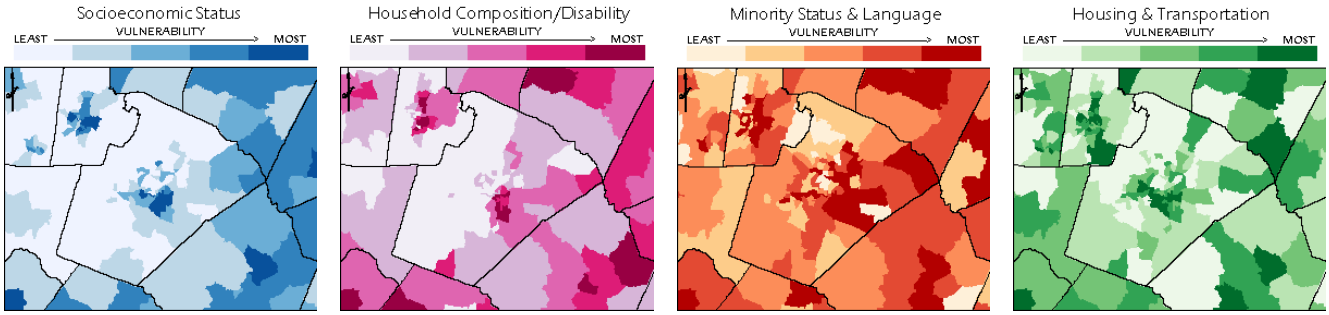
What is Social Vulnerability?

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 its poverty, car ownership, or number of persons in households, may affect that community's ability to prevent human suffering and financial loss in the event of disaster. These factors describe a community's social vulnerability.

What is the Social Vulnerability Index?

The Social Vulnerability Index (SVI) originated through a collaboration among CDC's National Center for Environmental Health, Coordinating Office for Terrorism Preparedness and Emergency Response (COTPER), and the Agency for Toxic Substances and Disease Registry's Geospatial Research, Analysis, and Services Program (GRASP) to produce a social vulnerability index with the intent to help state, local, and tribal disaster management officials identify the locations of their most vulnerable populations. ATSDR's Geospatial Research, Analysis & Services Program (GRASP) created the *Social Vulnerability Index for Disaster Management* 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.

The SVI indicates the relative vulnerability of every US Census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The SVI ranks the tracts on a set of social factors, including unemployment, lack of vehicle access, and crowded housing, and further groups them 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. Maps of the four Domains are shown in the figure below.



For each census tract, percentile rankings were calculated for each of the variables (see below). In the Seattle database, each tract is ranked according to its level of vulnerability in comparison to the average across the 1) state, 2) UASI Region, 3) King County, and 4) EM regions (1, 3 & 5). Those areas with more vulnerable populations are indicated by the darker color and those less vulnerable (relative to other census tracts in the level) are lighter in color. For each tract, the higher the percentile, the more vulnerable the population for that variable. This database also includes "flags" to indicate whether a variable with a percentile rank of 90 or higher.

Additional reading on how the SVI is calculated:

Flanagan, Barry E.; Gregory, Edward W.; Hallisey, Elaine J.; Heitgerd, Janet L.; and Lewis, Brian (2011) "A Social Vulnerability Index for Disaster Management," *Journal of Homeland Security and Emergency Management*: Vol. 8 : Iss. 1. Available at: http://www.bepress.com/jhsem/vol8/iss1/3

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

The 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.

The Social Vulnerability Index (SVI) helps state, local, and federal planning officials identify the locations of their most vulnerable populations. This work builds on research that examines vulnerability as a social condition, or a measure of the resilience of population groups when confronted by disaster. The SVI includes socio-demographic attributes, such as age, race, and economic status, to identify the relative social vulnerability of populations to the effects of natural or anthropogenic disasters.

The SVI can be used to:

- Estimate the amount and type of needed supplies like food, water, medicine, and bedding.
- Help decide how many emergency personnel are required to assist people.
- Identify areas in need of emergency shelters.
- Plan the best way to evacuate people, accounting for those who have special needs, such as those without vehicles, the elderly, or people who do not understand English well.
- Identify communities that will need continued support to recover following an emergency or natural disaster.

What data and variables are used to calculate the SVI for 2000 and 2010?

The census tracts are based on 2000 TIGER boundaries (http://www.census.gov). Note, that these boundaries do not include Broomfield County, Colorado, which was created after the 2000 US Census. Also, note that since the 2000 US Census of the state of Virginia consolidated existing Clifton Forge County into the surrounding Alleghany County, resulting in changes to census tract FIPS codes. SVI values were not calculated for census tracts with a resident population of 0 for 2000. Therefore, polygons representing tracts with "0" population are not in the database. Zero (0) residents does not necessarily mean there are no vulnerable people in the tract, however. There may, for instance, be businesses or industries with employees working in the tract. SVI variables include:

Socioeconomic Status	Household Composition/Disability	Minority Status/Language	Housing/Transportation
▪ Percent of individuals below poverty ▪ Percent unemployed ▪ Per capita income ▪ Percent of persons with no high school diploma	▪ Percent of persons 65 years of age or older ▪ Percent of persons 17 years of age or younger ▪ Percent of persons more than 5 years old with disability* ▪ Percent of single-parent households, with children under 18	▪ Percent minority ▪ Percent of persons 5 years of age or older who speak English "less than well"	▪ Percent multi-unit structures ▪ Percent mobile homes ▪ Crowding ▪ No vehicle available ▪ Percent of persons in group quarters

Disability data, which were included in SVI 2000, were not collected at tract level for either 2010 Census or 2006-2010 ACS. The remaining 14 variables used to calculate the 2010 tract level data include the following data from the US Census and the American Community Survey.

2010 US Census 100% count data (SF1) for the following variables:

- Persons aged 65 and older
- Persons aged 17 and younger
- Single parent households with children under 18
- Minority status (i.e. Total population minus white, non-Hispanic population)
- Persons living in Group Quarters

Raw data values for each variable, for each tract, are included in the database.

To calculate the proportions, SF1 data were processed in similar fashion to 2000 SVI.[1]

- Proportion values were calculated for each variable for each tract, e.g. proportion of persons aged 65 and older, and are included in the database.
- Used appropriate SF1 variables as denominators, e.g. total population.

American Community Survey (ACS), 2006-2010 (5-year) data for the following variables/estimates:

- Persons below the poverty level
- Civilian unemployed
- Per capita income
- No high school diploma for persons aged 25 and older
- Persons who speak English "less than well"
- Housing units with 10 or more units in the structure
- At the household level, more people than rooms
- Mobile homes
- No vehicle access

Raw data estimates for each variable, for each tract, are included in the database. In addition, the margins of error (MOEs) for each estimate are also included.

Because of high levels of error, the ACS data were processed differently.

- Margins of error (MOEs) are included for each estimate, including derived estimates. MOEs were calculated for derived estimates using US Census specifications.[2] The confidence level is at the Census standard of 90%.[3]
- Proportion calculation uses ACS estimates as denominators, e.g. total population estimate.
  Note: Confidence intervals can be calculated by subtracting the MOE from the estimate (lower limit) and adding the MOE to the estimate (upper limit).

A complete list of variables and explanations is provided at the end of this document.

[1] For a detailed description of SVI 2000 methods, see Flanagan et al. 2011. "*A Social Vulnerability Index for Disaster Management.*"

[2] The ACS Toolbox can be used to calculate MOEs for derived values.

[3] See also "A Compass for Understanding and Using. American Community Survey Data. What General Data Users Need to Know" for additional information.

How are percentiles for American Community Survey (ACS), 2006-2010 (5-year) data ranked?

Census tracts were ranked to enable mapping and analysis of relative vulnerability across multiple planning and preparedness jurisdictions, including 1) state, 2) UASI three county area, 3) King County, and 4) EM regions (1, 3 & 5). Tract rankings range from 0 to 1, with higher values indicating greater vulnerability. The data includes CDC tract ranks using two methods (at state-level only):

- **E_PLxxx series.** Using the same percentile method as in the SVI 2000, ignoring any ACS error, and
- **E_PRxxx series.** Incorporating probabilities into the ranking.

The rationale for choosing to rank the tracts using both methods is to provide flexibility to the user. The SVI 2000 percentile method is relatively easy to understand and, with the E_PLxxx series, the user has access to rankings consistent with earlier methods. Due to concerns for high levels of error among individual ACS variables that might lead to erroneous rankings, probabilities were incorporated into the SVI 2010 E_PRxxx series calculations. For the E_PRxxx series, each proportion estimate was given a ranking based on its most likely position on a cumulative sampling distribution. For SVI 2010 variables, SF1 data for individual variables were processed in similar fashion to 2000 SVI.

For Seattle, the database works with the E_PLxxx series for simplicity and for consistency with SVI 2000. The caveat, of course, is that the E_PLxxx series percentile rankings, determined from ACS estimates without considering error, imply a level of precision that doesn't necessarily exist. To address this concern, the coefficient of variation is also provided.

How is ACS Reliability and Relative Sampling Error (CV Calculator) addressed?

Due to the sampling design of the ACS, the US Census encourages the use of a coefficient of variation (CV) to provide a measure of the relative amount of sampling error that is associated with each sample estimate. The CV is calculated as the ratio of the standard error (SE) for an estimate to the estimate itself and is usually expressed as a percent. It is considered to be a useful barometer of the stability, and thus the usability of a sample estimate. CVs may be mapped to show relative sampling error in a study area. As a general rule, the smaller the CV, the more reliable the estimate. In this data, margins of error (MOEs) are provided for all ACS data at the 90% confidence level, where standard error (SE) for ACS data is calculated by:

SE = MOE ACS /1.645

The SE will always be the same for a sample estimate, no matter the confidence level of the MOE.
The Coefficient of Variation (CV) is calculated as follows:

CV = (SE/ACS Estimate) * 100

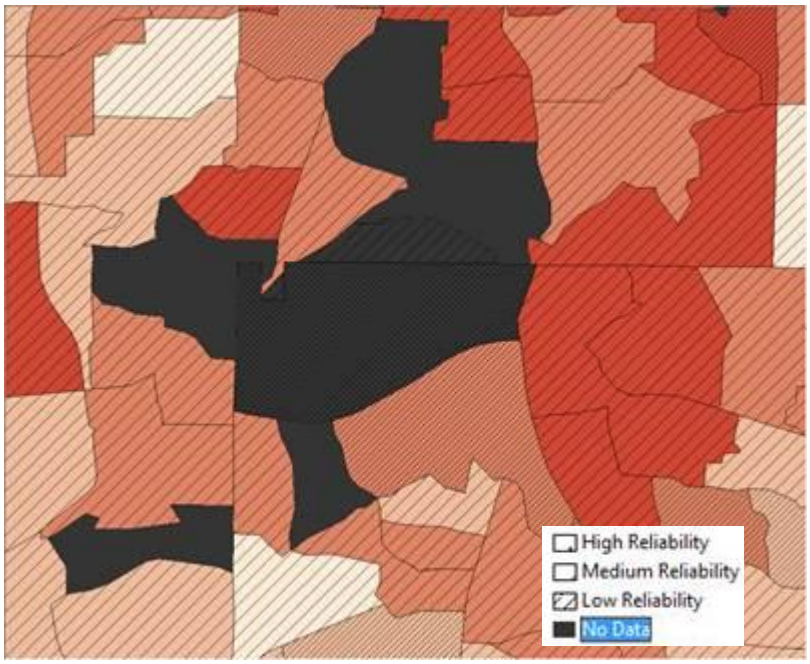
To help data users determine the quality of an estimate, this data utilizes Esri's simplified interpretation of the MOE and adds stippling and hatching, based on Coefficient of Variation (CV), to indicate the reliability of data.

High Reliability  Small CVs, less than or equal to 12 percent, are flagged green to indicate that the sampling error is small relative to the estimate and the estimate is reasonably reliable.
Symbolized by stipple.

Medium Reliability  Estimates with CVs between 12 and 40 are flagged yellow—use with caution.
Symbolized by cross-hatching.

Low Reliability  Large CVs, over 40 percent, are flagged red to indicate that the sampling error is large relative to the estimate. The estimate is considered very unreliable.
Symbolized by dense cross-hatching.

Illustration of CV Symbolization.



In the data, undefined values are shown with a -999. If the input margin of error is -999, then the output will be -999. By default, if the input estimate is 0, the estimate is recoded to 1 and the CV will be approximated using the MOE. These approximated CVs will be very large.

Additional Information

A Compass for Understanding and Using American Community Survey Data: What General Data Users Need to Know

http://www.census.gov/acs/www/Downloads/handbooks/ACSGeneralHandbook.pdf

Esri Reliability Symbols Improve ACS Reports.

http://www.esri.com/software/bao/reliability-flags.html

Important Notes on the SVI Database

- Keep the data in geodatabase format. Converting to shapefile changes the field names.
- Tracts with zero population for 100% counts were removed during the calculation process. These tracts were added back to mapped data and are shown with a TOTPOP field value of 0. All other numeric fields for zero population tracts were set to -999.
- For tracts with > 0 TOTPOP, a value of -999 in any field either means the value was unavailable from the original census data or we could not calculate a value because of unavailable data.
- Any cells with a -999 were not used for further calculations. For example, total flags do not include fields with a -999 value.

Definitions of 2000 and 2010 SVI Variables

2000 FIELD	2010 FIELD	VARIABLE	VARIABLE DESCRIPTION *Calculation/Notes*
OBJECTID	OBJECTID		Object ID
---	GEO_ID		ID field used to join spatial and tabular data
STATE_FIPS	STATE		State FIPS
COUNTY	COUNTY		County Name (2000) & County FIPS (2010)
CNTY_FIPS	---		County FIPS Code
TRACT	TRACT		Census Tract FIPS Code
---	CENSUSAREA		Area of tract (square miles)
STCOFIPS	ST_CO_FIPS		State + County FIPS code
FIPS	FIPS	FIPS Code	FIPS Code
STATE_ABBR	ST		State Abbreviation
STATE_NAME	STATE_1		State name
---	LOCATION		Text description of tract, county, state
Shape_Leng	Shape_Leng		Length of polygon edges (perimeter in decimal degrees)
Shape_Area	Shape_Area		Area of polygon (decimal degrees)
Totpop2000	TOTPOP		Total population, 2010 SF1
---	E_TOTPOP		Population estimate, 2006-2010 ACS
---	M_TOTPOP		Population estimate MOE, 2006-2010 ACS
Totalhu	HU		Housing units, 2010 SF1
---	E_HU		Housing units estimate, 2006-2010 ACS
---	M_HU		Housing units estimate MOE, 2006-2010 ACS
---	HH		Number of households, 2010 SF1
		Washington State SVI Percentile Rankings (base_)	
G1V1N	E_POV	Group 1 Variable 1	Number Individuals Below Poverty Level (2000)/Persons below poverty estimate, 2006-2010 ACS
---	M_POV	Group 1 Variable 1 (MOE)	Persons below poverty estimate MOE, 2006-2010 ACS
G1V2N	E_UNEMP	Group 1 Variable 2	Number Civilian Unemployed 16+yrs/Civilian (age 16+) unemployed estimate, 2006-2010 ACS
---	M_UNEMP	Group 1 Variable 2 (MOE)	Civilian (age 16+) unemployed estimate MOE, 2006-2010 ACS
---	E_PCI	Group 1 Variable 3	Per Capita Income in 1999/Per capita income estimate, 2006-2010 ACS
---	M_PCI	Group 1 Variable 3 (MOE)	Per capita income estimate MOE, 2006-2010 ACS
G1V4N	E_NOHSDIP	Group 1 Variable 4	Number Persons with No High School Diploma 25+yrs/Persons (age 25+) with no high school diploma estimate, 2006-2010 ACS
---	M_NOHSDIP	Group 1 Variable 4 (MOE)	Persons (age 25+) with no high school diploma estimate MOE, 2006-2010 ACS
G2V1N	AGE65	Group 2 Variable 1	Number Persons 65 years or older/Persons aged 65 and older, 2010 SF1
G2V2N	AGE17	Group 2 Variable 2	Number Persons 17 years or younger/Persons aged 17 and younger, 2010 SF1
G2V3N	---	Group 2 Variable 3	Number Persons with Disability 5+yrs
G2V4N	SNGPRNT	Group 2 Variable 4	Number Single HH with Children 18-yrs/Single parent household with children under 18, 2010 SF1
G3V1N	MINORITY	Group 3 Variable 1	Number Minority/Minority (all persons except white, non-Hispanic), 2010 SF1
G3V2N	E_LIMENG	Group 3 Variable 2	Number Persons 5+yrs who Speak English less than 'well'/Persons (age 5+) who speak English "less than well" estimate, 2006-2010 ACS
---	M_LIMENG	Group 3 Variable 2 (MOE)	Persons (age 5+) who speak English "less than well" estimate MOE, 2006-2010 ACS
G4V1N	E_MUNIT	Group 4 Variable 1	Percent Housing with 10+units/Housing in structures with 10 or more units estimate, 2006-2010 ACS
---	M_MUNIT	Group 4 Variable 1 (MOE)	Housing in structures with 10 or more units estimate MOE, 2006-2010 ACS
G4V2N	E_MOBILE	Group 4 Variable 2	Number Housing that are Mobile Homes/Mobile homes estimate, 2006-2010 ACS
---	M_MOBILE	Group 4 Variable 2 (MOE)	Mobile homes estimate MOE, 2006-2010 ACS
G4V3N	E_CROWD	Group 4 Variable 3	Number HH with more People than Rooms/At household level, more people than rooms estimate, 2006-2010 ACS
---	M_CROWD	Group 4 Variable 3 (MOE)	At household level, more people than rooms estimate MOE, 2006-2010 ACS
G4V4N	E_NOVEH	Group 4 Variable 4	Number HH with No Vehicle Access/Households with no vehicle available estimate, 2006-2010 ACS
---	M_NOVEH	Group 4 Variable 4 (MOE)	Households with no vehicle available estimate MOE, 2006-2010 ACS
G4V5N	GROUPQ	Group 4 Variable 5	Number of Persons who are in Instit & Non-Instit Group Quarters/Persons in institutionalized group quarters, 2010 SF1
G1V1R	E_P_POV	Group 1 Variable 1	Percent Individuals Below Poverty Level/Proportion of persons below poverty estimate *E_POV/Persons for whom poverty is determined estimate. Multiply by 100 to get a percentage.*
---	M_P_POV	Group 1 Variable 1 (MOE)	Proportion of persons below poverty estimate MOE
G1V2R	E_P_UNEMP	Group 1 Variable 2	Percent Civilian Unemployed 16+yrs/Proportion of civilian (age 16+) unemployed estimate *E_UNEMP/Civilians estimate. Multiply by 100 to get a percentage.*
---	M_P_UNEMP	Group 1 Variable 2 (MOE)	Proportion of civilian (age 16+) unemployed estimate MOE
G1V3R	E_P_PCI	Group 1 Variable 3	Per Capita Income in 1999/Per capita income estimate, 2006-2010 ACS *Same as E_PCI. Multiply by 100 to get a percentage.*
---	M_P_PCI	Group 1 Variable 3 (MOE)	Per capita income estimate MOE, 2006-2010 ACS *Same as M_PCI.*
G1V4R	E_P_NOHSDI	Group 1 Variable 4	Percent Persons with No High School diploma 25+yrs/Proportion of persons with no high school diploma (age 25+) estimate *E_NODIPL/Persons aged 25+ estimate. Multiply by 100 to get a percentage.*
---	M_P_NOHSDI	Group 1 Variable 4 (MOE)	Proportion of persons with no high school diploma (25+) estimate MOE
G2V1R	P_AGE65	Group 2 Variable 1	Percent Persons 65 years or older/Proportion of persons aged 65 and older *AGE65/TOTPOP. Multiply by 100 to get a percentage.*
G2V2R	P_AGE17	Group 2 Variable 2	Percent Persons 17 years or younger/Proportion of persons aged 17 and younger *AGE17/TOTPOP. Multiply by 100 to get a percentage.*
G2V3R	---	Group 2 Variable 3	Percent Persons with Disability 5+yrs (2000 only)
G2V4R	P_SNGPRNT	Group 2 Variable 4	Percent Single HH with Children 18-yrs/Proportion of single parent households with children under 18 *SNGPRNT/HH. Multiply by 100 to get a percentage.*
G3V1R	P_MINORITY	Group 3 Variable 1	Percent Minority/Proportion minority (all persons except white, non-Hispanic) *MINORITY/TOTPOP. Multiply by 100 to get a percentage.*
G3V2R	E_P_LIMENG	Group 3 Variable 2	Percent Persons 5+yrs who Speak English less than 'well'/Proportion of persons (age 5+) who speak English "less than well" estimate *E_LIMENG/Persons aged 5+ estimate. Multiply by 100 to get a percentage.*
---	M_P_LIMENG	Group 3 Variable 2 (MOE)	Proportion of persons (age 5+) who speak English "less than well" estimate MOE

**Variables beginning or including "E_" represent estimates. Variables beginning or including "M_" are margins of error for those estimates.*

Definitions of 2000 and 2010 SVI Variables

2000 FIELD	2010 FIELD	VARIABLE	VARIABLE DESCRIPTION *Calculation/Notes*
G4V1R	E_P_MUNIT	Group 4 Variable 1	Percent Housing with 10+units/Proportion of housing in structures with 10 or more units estimate *E_MUNIT/E_HU. Multiply by 100 to get a percentage.*
---	M_P_MUNIT	Group 4 Variable 1 (MOE)	Proportion of housing in structures with 10 or more units estimate MOE
G4V2R	E_P_MOBILE	Group 4 Variable 2	Percent Housing that are Mobile Homes/Proportion of mobile homes estimate *E_MOBILE/E_HU. Multiply by 100 to get a percentage.*
---	M_P_MOBILE	Group 4 Variable 2 (MOE)	Proportion of mobile homes estimate MOE
G4V3R	E_P_CROWD	Group 4 Variable 3	Percent HH with more People than Rooms/Proportion of households with more people than rooms estimate *E_CROWD/Occupied housing units estimate. Multiply by 100 to get a percentage.*
---	M_P_CROWD	Group 4 Variable 3 (MOE)	Proportion of households with more people than rooms estimate MOE
G4V4R	E_P_NOVEH	Group 4 Variable 4	Percent HH with No Vehicle Access/Proportion of households with no vehicle available estimate *E_NOVEH/Occupied housing units estimate. Multiply by 100 to get a percentage.*
---	M_P_NOVEH	Group 4 Variable 4 (MOE)	Proportion of households with no vehicle available estimate MOE
G4V5R	P_GROUPQ	Group 4 Variable 5	Percent of Persons who are in Instit & Non-Instit Group Quarters/Proportion of persons in institutionalized group quarters *GROUPQ/TOTPOP. Multiply by 100 to get a percentage.*
		Reliability of ACS variables (Coefficient of Variation - CV)	
---	CV_P_POV	Group 1 Variable 1 CV	Coefficient of Variation (CV) for the proportion of persons below poverty estimate *(M_P_POV/1.645)/E_P_POV*100*
---	CV_P_UNEMP	Group 1 Variable 2 CV	Coefficient of Variation (CV) for the proportion of civilian (age 16+) unemployed estimate *(M_P_UNEMP/1.645)/E_P_UNEMP*100*
---	CV_P_PCI	Group 1 Variable 3 CV	Coefficient of Variation (CV) for the per capita income estimate *(M_P_PCI/1.645)/E_P_PCI*100*
---	CV_P_NOHSD	Group 1 Variable 4 CV	Coefficient of Variation (CV) for the proportion of persons with no HS diploma (25+yrs) *(M_P_NOHSDI/1.645)/E_P_NOHSDI*100*
---	CV_P_LIMEN	Group 3 Variable 2 CV	Coefficient of Variation (CV) for the proportion of persons, who speak English "less than well" estimate *(M_P_LIMENG/1.645)/E_P_LIMENG*100*
---	CV_P_MUNIT	Group 4 Variable 1 CV	Coefficient of Variation (CV) for the proportion of housing in structures with 10 or more units estimate *(M_P_MUNIT/1.645)/E_P_MUNIT*100*
---	CV_P_CROWD	Group 4 Variable 2 CV	Coefficient of Variation (CV) for the proportion of HH w/ more people than rooms estimate *(M_P_CROWD/1.645)/E_P_CROWD*100*
---	CV_P_MOBIL	Group 4 Variable 3 CV	Coefficient of Variation (CV) for the *(M_P_MOBILE/1.645)/E_P_MOBILE*100*
---	CV_P_NOVEH	Group 4 Variable 4 CV	Coefficient of Variation (CV) for the proportion of HH w/ no vehicle available estimate *(M_P_NOVEH/1.645)/E_P_NOVEH*100*
		UASI SVI Percentile Rankings	
UASIG1V1P	UASI_E_PL_POV	Group 1 Variable 1 Percentile	Percentile w/in UASI region of the proportion of persons below poverty estimate, no consideration of MOE *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored. Values in the E_PLxxx series range from 0 to 1 with those values closer to 1 meaning higher probability of vulnerability.*
UASIG1V2P	UASI_E_PL_UNEMP	Group 1 Variable 2 Percentile	Percentile w/in UASI region of the proportion of civilian (age 16+) unemployed estimate, no consideration of MOE *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG1V3P	UASI_E_PL_PCI	Group 1 Variable 3 Percentile	Percentile w/in UASI region of per capita income estimate, no consideration of MOE *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG1V4P	UASI_E_PL_NOHSD	Group 1 Variable 4 Percentile	Percentile w/in UASI region of the proportion of persons with no high school diploma (age 25+) estimate, no consideration of MOE *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG1TP	UASI_PL_G1TTL	Group 1 Total Percentile	Percentile ranking w/in UASI region for Socioeconomic theme *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG2V1P	UASI_PL_AGE65	Group 2 Variable 1 Percentile	Percentile w/in UASI region of the proportion of persons aged 65 and older *Based on 100% counts - no sampling error.*
UASIG2V2P	UASI_PL_AGE17	Group 2 Variable 2 Percentile	Percentile w/in UASI region of the proportion of persons aged 17 and younger *Based on 100% counts - no sampling error.*
UASIG2V3P		Group 2 Variable 3 Percentile	Percentile w/in UASI region of the persons with disability 5+yrs
UASIG2V4P	UASI_PL_SNGPRNT	Group 2 Variable 4 Percentile	Percentile w/in UASI region of the proportion of single parent households with children under 18 *Based on 100% counts - no sampling error.*
UASIG2TP	UASI_PL_G2TTL	Group 2 Total Percentile	Percentile ranking w/in UASI region for Household Composition theme *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG3V1P	UASI_PL_MINORIT	Group 3 Variable 1 Percentile	Percentile w/in UASI region of the proportion minority (all persons except white, non-Hispanic) *Based on 100% counts - no sampling error.*
UASIG3V2P	UASI_E_PL_LIMENG	Group 3 Variable 2 Percentile	Percentile w/in UASI region of the proportion of persons (age 5+) who speak English "less than well" estimate, no consideration of MOE *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG3TP	UASI_PL_G3TTL	Group 3 Total Percentile	Percentile w/in UASI region ranking for Minority Status/Language theme *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG4V1P	UASI_E_PL_MUNIT	Group 4 Variable 1 Percentile	Percentile w/in UASI region of the proportion of housing in structures with 10 or more units estimate *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG4V2P	UASI_E_PL_MOBILE	Group 4 Variable 2 Percentile	Percentile w/in UASI region of the proportion of mobile homes estimate *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to the SVI 2000 percentiles. Error is ignored.*

**Variables beginning or including "E_" represent estimates. Variables beginning or including "M_" are margins of error for those estimates.*

Definitions of 2000 and 2010 SVI Variables

2000 FIELD	2010 FIELD	VARIABLE	VARIABLE DESCRIPTION *Calculation/Notes*
UASIG4V3P	UASI_E_PL_CROWD	Group 4 Variable 3 Percentile	Percentile w/in UASI region of the proportion of households with more people than rooms estimate *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG4V4P	UASI_E_PL_NOVEH	Group 4 Variable 4 Percentile	Percentile w/in UASI region of the proportion of households with no vehicle available estimate *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to the 2000 percentiles. Error is ignored.*
UASIG4V5P	UASI_PL_GROUPQ	Group 4 Variable 5 Percentile	Percentile w/in UASI region of the proportion persons in institutionalized group quarters *Based on 100% counts - no sampling error.*
UASIG4TP	UASI_PL_G4TTL	Group 4 Total Percentile	Percentile w/in UASI region ranking for Housing/Transportation theme *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASITP	UASI_PL_TTL	Total Percentile	Overall percentile ranking w/in UASI region *The method used to calculate these percentiles (i.e. the E_PLxxx series) is comparable to SVI 2000 percentiles. Error is ignored.*
UASIG1V1F	UASI_F_POV	Group 1 Variable 1 Flag	Flag - for poverty, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG1V2F	UASI_F_UNEMP	Group 1 Variable 2Flag	Flag - for civilian unemployed, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG1V3F	UASI_F_PCI	Group 1 Variable 3 Flag	Flag - for per capita income, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG1V4F	UASI_F_NOHSDIP	Group 1 Variable 4 Flag	Flag - for no high school diploma, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG1TF	UASI_F_G1TTL	Group 1 Total Flags	Sum of flags for Socioeconomic Status theme *F_POV + F_UNEMP + F_PCI + F_NOHSDIP*
UASIG2V1F	UASI_F_AGE65	Group 2 Variable 1 Flag	Flag - Proportion of persons aged 65 and older is in the 90th percentile (1 = yes, 0 = no)
UASIG2V2F	UASI_F_AGE17	Group 2 Variable 2 Flag	Flag - Proportion of persons aged 17 and younger is in the 90th percentile (1 = yes, 0 = no)
UASIG2V3F		Group 2 Variable 3 Flag	Flag - Percent Persons with Disability 5+yrs
UASIG2V4F	UASI_F_SNGPRNT	Group 2 Variable 4 Flag	Flag - Proportion of single parent households is in the 90th percentile (1 = yes, 0 = no)
UASIG2TF	UASI_F_G2TTL	Group 2 Total Flags	Sum of flags for Household Composition theme *F_AGE65 + F_AGE17 + F_SNGPRNT*
UASIG3V1F	UASI_F_MINORITY	Group 3 Variable 1 Flag	Flag - Proportion of minority is in the 90th percentile (1 = yes, 0 = no)
UASIG3V2F	UASI_F_LIMENG	Group 3 Variable 2 Flag	Flag - Limited English, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG3TF	UASI_F_G3TTL	Group 3 Total Flags	Sum of flags for Minority Status/Language theme *F_MINORITY + F_LIMENG*
UASIG4V1F	UASI_F_MUNIT	Group 4 Variable 1 Flag	Flag - Multi-unit housing, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG4V2F	UASI_F_MOBILE	Group 4 Variable 2 Flag	Flag - for mobile homes, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG4V3F	UASI_F_CROWD	Group 4 Variable 3 Flag	Flag - for crowded housing, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG4V4F	UASI_F_NOVEH	Group 4 Variable 4 Flag	Flag - for no vehicle access, the proportion of the individual probability curve that exceeds 90% of the sampling distribution
UASIG4V5F	UASI_F_GROUPQ	Group 4 Variable 5 Flag	Flag - the proportion of persons in institutionalized group quarters is in the 90th percentile (1 = yes, 0 = no)
UASIG4TF	UASI_F_G4TTL	Group 4 Total Flags	Sum of flags for Housing/Transportation theme *F_MUNIT + F_MOBILE + F_CROWD + F_NOVEH + F_GROUPQ Flags are based on the PRxxx series*
UASITF	UASI_F_TTL	Total Flags	Sum of flags for the four themes *F_THEME1 + F_THEME2 + F_THEME3 + FTHEME4 Flags are based on the PRxxx series*
			King County SVI
KCG1V1PR	KING_E_PL_POV	Group 1 Variable 1 Percentile	Percentile w/in King County for the proportion of persons below poverty estimate, no consideration of MOE
KCG1V2PR	KING_E_PL_UNEMP	Group 1 Variable 2 Percentile	Percentile w/in King County for the proportion of civilian (age 16+) unemployed estimate, no consideration of MOE
KCG1V3PR	KING_E_PL_PCI	Group 1 Variable 3 Percentile	Percentile w/in King County for the per capita income estimate, no consideration of MOE
KCG1V4PR	KING_E_PL_NOHSD	Group 1 Variable 4 Percentile	Percentile w/in King County for the proportion of persons with no high school diploma (age 25+) estimate, no consideration of MOE
KCG1TPR	KING_PL_G1TTL	Group 1 Total Percentile	Percentile ranking w/in King County for Socioeconomic theme
KCG2V1PR	KING_PL_AGE65	Group 2 Variable 1 Percentile	Percentile w/in King County for the proportion of persons aged 65 and older
KCG2V2PR	KING_PL_AGE17	Group 2 Variable 2 Percentile	Percentile w/in King County for the proportion of persons aged 17 and younger
KCG2V3PR	---	Group 2 Variable 3 Percentile	Percentile w/in King County for the persons with disability 5+yrs
KCG2V4PR	KING_PL_SNGPRNT	Group 2 Variable 4 Percentile	Percentile w/in King County for the proportion of single parent households with children under 18
KCG2TPR	KING_PL_G2TTL	Group 2 Total Percentile	Percentile ranking w/in King County for Household Composition theme
KCG3V1PR	KING_PL_MINORITY	Group 3 Variable 1 Percentile	Percentile w/in King County for the proportion minority (all persons except white, non-Hispanic)
KCG3V2PR	KING_E_PL_LIMENG	Group 3 Variable 2 Percentile	Percentile w/in King County for the proportion of persons (age 5+) who speak English "less than well" estimate, no consideration of MOE
KCG3TPR	KING_PL_G3TTL	Group 3 Total Percentile	Percentile ranking w/in King County for Minority Status/Language theme
KCG4V1PR	KING_E_PL_MUNIT	Group 4 Variable 1 Percentile	Percentile w/in King County for the proportion of housing in structures with 10 or more units estimate
KCG4V2PR	KING_E_PL_MOBILE	Group 4 Variable 2 Percentile	Percentile w/in King County for the proportion of mobile homes estimate
KCG4V3PR	KING_E_PL_CROWD	Group 4 Variable 3 Percentile	Percentile w/in King County for the proportion of households with more people than rooms estimate
KCG4V4PR	KING_E_PL_NOVEH	Group 4 Variable 4 Percentile	Percentile w/in King County for the proportion of households with no vehicle available estimate
KCG4V5PR	KING_PL_GROUPQ	Group 4 Variable 5 Percentile	Percentile w/in King County for the proportion persons in institutionalized group quarters
KCG4TPR	KING_PL_G4TTL	Group 4 Total Percentile	Percentile ranking w/in King County for Housing/Transportation theme
KCTPR	KING_PL_TTL	Total Percentile	Overall percentile ranking w/in King County
KCG1V1F	KING_F_POV	Group 1 Variable 1 Flag	Flag - for poverty, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in King County
KCG1V2F	KING_F_UNEMP	Group 1 Variable 2Flag	Flag - for civilian unemployed, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in King County
KCG1V3F	KING_F_PCI	Group 1 Variable 3 Flag	Flag - for per capita income, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in King County
KCG1V4F	KING_F_NOHSD	Group 1 Variable 4 Flag	Flag - for no high school diploma, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in King County
KCG1TF	KING_F_G1TTL	Group 1 Total Flags (sum)	Flag - for Socioeconomic Theme, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in King County
KCG2V1F	KING_F_AGE65	Group 2 Variable 1 Flag	Flag - Proportion of persons aged 65 and older is in the 90th percentile (1 = yes, 0 = no) w/in King County

**Variables beginning or including "E_" represent estimates. Variables beginning or including "M_" are margins of error for those estimates.*

Definitions of 2000 and 2010 SVI Variables

2000 FIELD	2010 FIELD	VARIABLE	VARIABLE DESCRIPTION *Calculation/Notes*
KCG2V2F	KING_F_AGE17	Group 2 Variable 2 Flag	Flag - Proportion of persons aged 17 and younger is in the 90th percentile (1 = yes, 0 = no) w/in King County
KCG2V3F	---	Group 2 Variable 3 Flag	Flag - Percent Persons with Disability 5+yrs w/in King County
KCG2V4F	KING_F_SNGPRNT	Group 2 Variable 4 Flag	Flag - Proportion of single parent households is in the 90th percentile (1 = yes, 0 = no) w/in King County
KCG2TF	KING_F_G2TTL	Group 2 Total Flags (Sum)	Sum of flags for Household Composition theme
KCG3V1F	KING_F_MINORITY	Group 3 Variable 1 Flag	Flag - Proportion of minority is in the 90th percentile (1 = yes, 0 = no) w/in King County
KCG3V2F	KING_F_LIMENG	Group 3 Variable 2 Flag	Flag - Limited English, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in King County
KCG3TF	KING_F_G3TTL	Group 3 Total Flags (Sum)	Sum of flags for Minority Status/Language theme w/in King County
KCG4V1F	KING_F_MUNIT	Group 4 Variable 1 Flag	Flag - Multi-unit housing, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in King County
KCG4V2F	KING_F_MOBILE	Group 4 Variable 2 Flag	Flag - for mobile homes, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in King County
KCG4V3F	KING_F_CROWD	Group 4 Variable 3 Flag	Flag - for crowded housing, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in King County
KCG4V4F	KING_F_NOVEH	Group 4 Variable 4 Flag	Flag - for no vehicle access, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in King County
KCG4V5F	KING_F_GROUPQ	Group 4 Variable 5 Flag	Flag - the proportion of persons in institutionalized group quarters is in the 90th percentile (1 = yes, 0 = no) w/in King County
KCG4TF	KING_G4TTL	Group 4 Total Flags (Sum)	Sum of flags for the four themes w/in King County
KCTF	KING_F_TTL	Total Percentile Flags (Sum)	Sum of flags for the four themes w/in King County
		Emergency Management Zones (R1=EM1, R3=EM3, R5=EM5)	
# =1, 3, or 5			
R#G1V1P	EM#_E_PL_POV	Group 1 Variable 1 Percentile	Percentile w/in each EM Region for the proportion of persons below poverty estimate, no consideration of MOE
R#G1V2P	EM#_E_PL_UNEMP	Group 1 Variable 2 Percentile	Percentile w/in each EM Region for the proportion of civilian (age 16+) unemployed estimate, no consideration of MOE
R#G1V3P	EM#_E_PL_PCI	Group 1 Variable 3 Percentile	Percentile w/in each EM Region for the per capita income estimate, no consideration of MOE
R#G1V4P	EM#_E_PL_NOHSD	Group 1 Variable 4 Percentile	Percentile w/in each EM Region for the proportion of persons with no high school diploma (age 25+) estimate, no consideration of MOE
R#G1TP	EM#_PL_G1TTL	Group 1 Total Percentile	Percentile ranking w/in each EM Region for Socioeconomic theme
R#G2V1P	EM#_PL_AGE65	Group 2 Variable 1 Percentile	Percentile w/in each EM Region for the proportion of persons aged 65 and older
R#G2V2P	EM#_PL_AGE17	Group 2 Variable 2 Percentile	Percentile w/in each EM Region for the proportion of persons aged 17 and younger
R#G2V3P	---	Group 2 Variable 3 Percentile	Percentile w/in each EM Region for the persons with disability 5+yrs
R#G2V4P	EM#_PL_SNGPRNT	Group 2 Variable 4 Percentile	Percentile w/in each EM Region for the proportion of single parent households with children under 18
R#G2TP	EM#_PL_G2TTL	Group 2 Total Percentile	Percentile ranking w/in each EM Region for Household Composition theme
R#G3V1P	EM#_PL_MINORITY	Group 3 Variable 1 Percentile	Percentile w/in each EM Region for the proportion minority (all persons except white, non-Hispanic)
R#G3V2P	EM#_E_PL_LIMENG	Group 3 Variable 2 Percentile	Percentile w/in each EM Region for the proportion of persons (age 5+) who speak English "less than well" estimate, no consideration of MOE
R#G3TP	EM#_PL_G3TTL	Group 3 Total Percentile	Percentile ranking w/in each EM Region for Minority Status/Language theme
R#G4V1P	EM#_E_PL_MUNIT	Group 4 Variable 1 Percentile	Percentile w/in each EM Region for the proportion of housing in structures with 10 or more units estimate
R#G4V2P	EM#_E_PL_MOBILE	Group 4 Variable 2 Percentile	Percentile w/in each EM Region for the proportion of mobile homes estimate
R#G4V3P	EM#_E_PL_CROWD	Group 4 Variable 3 Percentile	Percentile w/in each EM Region for the proportion of households with more people than rooms estimate
R#G4V4P	EM#_E_PL_NOVEH	Group 4 Variable 4 Percentile	Percentile w/in each EM Region for the proportion of households with no vehicle available estimate
R#G4V5P	EM#_PL_GROUPQ	Group 4 Variable 5 Percentile	Percentile w/in each EM Region for the proportion persons in institutionalized group quarters
R#G4TP	EM#_PL_G4TTL	Group 4 Total Percentile	Percentile ranking w/in each EM Region for Housing/Transportation theme
R#TP	EM#_PL_TTL	Total Percentile	Overall percentile ranking w/in each EM Region
R#G1V1F	EM#_F_POV	Group 1 Variable 1 Flag	Flag - for poverty, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in each EM Region
R#G1V2F	EM#_F_UNEMP	Group 1 Variable 2Flag	Flag - for civilian unemployed, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in each EM Region
R#G1V3F	EM#_F_PCI	Group 1 Variable 3 Flag	Flag - for per capita income, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in each EM Region
R#G1V4F	EM#_F_NOHSD	Group 1 Variable 4 Flag	Flag - for no high school diploma, the proportion of the individual probability curve that exceeds 90% of the sampling distribution (1 = yes, 0 = no) w/in each EM Region
R#G1TF	EM#_F_G1TTL	Group 1 Total Flags (Sum)	Sum of flags for Socioeconomic Status theme w/in each EM Region
R#G2V1F	EM#_F_AGE65	Group 2 Variable 2 Flag	Flag - Proportion of persons aged 65 and older is in the 90th percentile (1 = yes, 0 = no) w/in each EM Region
R#G2V2F	EM#_F_AGE17	Group 2 Variable 2 Flag	Flag - Proportion of persons aged 17 and younger is in the 90th percentile (1 = yes, 0 = no) w/in each EM Region
R#G2V3F	---	Group 2 Variable 3 Flag	Flag - Percent Persons with Disability 5+yrs w/in each EM Region
R#G2V4F	EM#_F_SNGPRNT	Group 2 Variable 4 Flag	Flag - Proportion of single parent households is in the 90th percentile (1 = yes, 0 = no) w/in each EM Region
R#G2TF	EM#_F_G2TTL	Group 2 Total Flags (Sum)	Sum of flags for Household Composition theme
R#G3V1F	EM#_F_MINORITY	Group 3 Variable 1 Flag	Flag - Proportion of minority is in the 90th percentile (1 = yes, 0 = no) w/in each EM Region
R#G3V2F	EM#_F_LIMENG	Group 3 Variable 2 Flag	Flag - Limited English, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in each EM Region
R#G3TF	EM#_F_G3TTL	Group 3 Total Flags (Sum)	Sum of flags for Minority Status/Language theme w/in each EM Region
R#G4V1F	EM#_F_MUNIT	Group 4 Variable 1 Flag	Flag - Multi-unit housing, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in each EM Region
R#G4V2F	EM#_F_MOBILE	Group 4 Variable 2 Flag	Flag - for mobile homes, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in each EM Region
R#G4V3F	EM#_F_CROWD	Group 4 Variable 3 Flag	Flag - for crowded housing, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in each EM Region
R#G4V4F	EM#_F_NOVEH	Group 4 Variable 4 Flag	Flag - for no vehicle access, the proportion of the individual probability curve that exceeds 90% of the sampling distribution w/in each EM Region
R#G4V5F	EM#_F_GROUPQ	Group 4 Variable 5 Flag	Flag - the proportion of persons in institutionalized group quarters is in the 90th percentile (1 = yes, 0 = no) w/in each EM Region
R#G4TF	EM#_F_G4TTL	Group 4 Total Flags (Sum)	Sum of flags for the four themes w/in each EM Region
R#TF	EM#_F_TTL	Total Percentile Flags (Sum)	Sum of flags for the four themes w/in each EM Region

**Variables beginning or including "E_" represent estimates. Variables beginning or including "M_" are margins of error for those estimates.*