

<b>About the Measure</b>	
<b>Domain:</b>	Social Determinants of Health
<b>Measure:</b>	Social Vulnerability
<b>Definition:</b>	The degree to which a community exhibits certain social conditions, including high poverty, low percentage of vehicle access, or crowded 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.
<b>Purpose:</b>	Identifying vulnerable populations can 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.
<b>Essential PhenX Measures:</b>	None
<b>Related PhenX Measures:</b>	Neighborhood Concentrated Disadvantage, Racial/Ethnic Segregation, Social Networks, and Psychological Resilience
<b>Measure Release Date:</b>	

<b>About the Protocol</b>	
<b>Protocol Release Date:</b>	
<b>PhenX Protocol Name:</b>	Social Vulnerability / Community Resilience
<b>Keywords:</b>	Centers for Disease Control and Prevention/ Agency for Toxic Substances and Disease Registry/ Geospatial Research, Analysis, and Services Program (CDC/ATSDR/GRASP), Social Vulnerability Index (SVI), Social Determinants of Health
<b>Protocol Name from Source:</b>	Social Vulnerability Index (SVI)
<b>Description:</b>	<p>The Social Vulnerability Index (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.</p> <p>The Social Vulnerability Index (SVI) provides specific socially and spatially relevant information to help public health officials and local planners better prepare for, respond</p>

	<p>to, recover from, and mitigate natural and human-made emergency events such as severe weather, floods, disease outbreaks, or chemical spills.</p> <p>The SVI can be used to:</p> <ul style="list-style-type: none"> <li>• Allocate emergency preparedness funding by community need.</li> <li>• Estimate the amount and type of needed supplies like food, water, medicine, and bedding.</li> <li>• Decide how many emergency personnel are required to assist people.</li> <li>• Identify areas in need of emergency shelters.</li> <li>• 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 understand English well.</li> <li>• Identify communities that will need continued support to recover following an emergency or natural disaster.</li> </ul> <p>In addition, applications of the SVI increasingly link vulnerability to health behaviors and outcomes such as physical activity, physical fitness, and teen pregnancy (e.g., An &amp; Xiang 2015; Gay et al 2016; Yee et al. 2019).</p> <p>The Social Vulnerability Index measures the relative vulnerability of the population in each U.S. Census tract. Results can be aggregated to and assessed at the county and state levels as well.</p> <p>The SVI evaluates census tracts on 15 social factors, including unemployment, minority status, and disability, and groups them into four related themes: socioeconomic, household composition and disability, minority status and language, and housing and transportation. Each tract receives a ranking for each Census variable, for each of four themes, and also an overall ranking. In a second approach, each tract having a variable at the 90<sup>th</sup> percentile (or higher) is flagged; the flags are then summed to produce counts for each theme and overall.</p>
<p><b>Specific Instructions:</b></p>	<p>SVI can be related to other ecological variables measured at the tract, county, or state level. It can also be included in multilevel analyses of tract, county, or state effects on individual behaviors or outcomes assuming that tract, county, and/or state identifiers are available. An ecological approach is provided by Gay et al. 2016. A multilevel approach is provided by An and Xiang 2015.</p>
<p><b>Protocol:</b></p>	<p>The relative vulnerability of the population in each U.S. Census tract can be determined using the Social Vulnerability Index. The SVI ranks the tracts on 15 social factors, including unemployment, minority status, and disability, and groups them into four related themes: socioeconomic, household composition and disability, minority status and language, and housing and transportation. Each tract receives a ranking for each Census variable and for each of four themes, and also an overall ranking.</p> <p><b>Ranking</b>          Census tracts within each state and the District of Columbia are ranked to enable mapping and analysis of relative vulnerability in individual states. Tracts for the entire United States are also ranked against one another, for mapping and analysis of relative vulnerability in multiple states, or across the U.S. as a whole. Tract rankings are based on percentiles. Percentile ranking values range from 0 to 1, with higher values indicating greater vulnerability.          For each tract, we generated its percentile rank among all tracts for 1) the fifteen individual variables, 2) the four themes, and 3) its overall position.</p>

	<p>Flags</p> <p>The data can also be analyzed using flags as an alternative approach to rankings. Tracts in the top 10%, i.e., at the 90th percentile of values, are given a value of 1 to indicate high vulnerability. Tracts below the 90th percentile are given a value of 0. For a theme, the flag value is the number of flags for variables comprising the theme. The overall flag value for each tract is the number of all variable flags.</p> <p>To access the SVI data, visit <a href="https://svi.cdc.gov/data-and-tools-download.html">https://svi.cdc.gov/data-and-tools-download.html</a> and select "Data" for download type in the Data section of the form. SVI data from 2000, 2010, 2014, and 2016 are available for download in shapefile or .csv format form. The accompanying documentation should also be downloaded with the data. This can be done by selecting "Documentation" for download type in the Data section of the form. The documentation contains further details on the data, including variable definitions.</p>
<b>Selection Rationale:</b>	The SVI is a publicly available composite measure that relies heavily on Census and American Community Survey (ACS) data. Additionally, it provides census tract level information, accounts for housing and transportation factors, and is based on percentile rankings that can be aggregated.
<b>Source:</b>	CDC's Social Vulnerability Index (SVI). (2016, May 19). Retrieved from <a href="https://svi.cdc.gov/data-and-tools-download.html">https://svi.cdc.gov/data-and-tools-download.html</a>
<b>Availability:</b>	Publicly available
<b>Life Stage:</b>	<p>Infant</p> <p>Toddler</p> <p>Child</p> <p>Adolescent</p> <p>Adult</p> <p>Senior</p> <p>Pregnancy</p>
<b>Language:</b>	English
<b>Participant:</b>	Not applicable: Derived from publicly available secondary data
<b>Personnel and Training Required:</b>	<p>Knowledge of U.S. Census and American Community Survey (ACS) data products and websites, such as American Factfinder, or commercial geospatial data products, such as that provided by vendors such as GeoLytics (<a href="http://www.geolytics.com">http://www.geolytics.com</a>).</p> <p>The extracted data need to be manipulated, and the Social Vulnerability Index (SVI) needs to be calculated.</p>
<b>Equipment Needs:</b>	Access to a desktop/laptop computer with internet access to download raw data from the U.S. Census Bureau's American Factfinder website ( <a href="http://factfinder.census.gov">http://factfinder.census.gov</a> ). Statistical Packages (e.g., SPSS, SAS) for data manipulation.
<b>General References:</b>	Flanagan, B. and Hallisey, E. (2013). Social Vulnerability Index and Toolkit [PDF document]. Presentation for the New York State Department of Health and the Albany School of Public Health annual GIS Day. Retrieved from <a href="https://svi.cdc.gov/publications.html">https://svi.cdc.gov/publications.html</a>

	<p>Agency for Toxic Substances and Disease Registry. (09/10/2018). Fact Sheet [PDF file]. Retrieved from <a href="https://svi.cdc.gov/factsheet.html">https://svi.cdc.gov/factsheet.html</a></p> <p>CDC's Social Vulnerability Index (SVI). (2018, September 10). Retrieved from <a href="https://svi.cdc.gov/factsheet.html">https://svi.cdc.gov/factsheet.html</a></p> <p>Flanagan, B. E., Gregory, E. W., Hallisey, E. J., Heitgerd, J. L., &amp; Lewis, B. (2011). A Social Vulnerability Index for Disaster Management. <i>Journal of Homeland Security and Emergency Management</i>, 8(1). doi:10.2202/1547-7355.1792</p> <p>Flanagan, B.E., Hallisey, E.J., Adams, E., Lavery A. (2018). Measuring Community Vulnerability to Natural and Anthropogenic Hazards: The Centers for Disease Control and Prevention’s Social Vulnerability Index. <i>Journal of Environmental Health</i> 80(10): 34-36.</p> <p>An, R., &amp; Xiang, X. (2015). Social Vulnerability and Leisure-time Physical Inactivity among US Adults. <i>American Journal of Health Behavior</i> 39(6): 751-760.</p> <p>Gay, J. L., Robb, S. W., Benson, K. M., &amp; White, A. (2016). Can the Social Vulnerability Index be used for More than Emergency Preparedness? An Examination Using Youth Physical Fitness Data. <i>Journal of Physical Activity and Health</i> 13: 121-130.</p> <p>Yee, C. W., Cunningham, S. D., &amp; Ickovics, J. R. (2019). Application of the Social Vulnerability Index for Identifying Teen Pregnancy Intervention Need in the United States. <i>Maternal and Child Health Journal</i>.</p>										
<b>Mode of Administration:</b>	Secondary Data Analysis										
<b>Derived Variables:</b>	None										
<b>Requirements:</b>	<table border="1"> <thead> <tr> <th data-bbox="391 1360 1027 1440"><b>Requirements Category</b></th> <th data-bbox="1027 1360 1326 1440"><b>Required (Yes/No):</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="391 1440 1027 1493">Major equipment</td> <td data-bbox="1027 1440 1326 1493">No</td> </tr> <tr> <td data-bbox="391 1493 1027 1545">Specialized training</td> <td data-bbox="1027 1493 1326 1545">No</td> </tr> <tr> <td data-bbox="391 1545 1027 1625">Specialized requirements for biospecimen collection</td> <td data-bbox="1027 1545 1326 1625">No</td> </tr> <tr> <td data-bbox="391 1625 1027 1705">Average time of greater than 15 minutes in an unaffected individual</td> <td data-bbox="1027 1625 1326 1705">No</td> </tr> </tbody> </table>	<b>Requirements Category</b>	<b>Required (Yes/No):</b>	Major equipment	No	Specialized training	No	Specialized requirements for biospecimen collection	No	Average time of greater than 15 minutes in an unaffected individual	No
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<b>Annotations for Specific Conditions:</b>	No annotations at this time.										

**Social Vulnerability**

**Date of SC final approval**

<b>Process and Review:</b>	Not applicable
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