

## InCK Marks Statistical Note

### The Geography of Vulnerability, Resilience, and Opportunity

#### Key Findings and Policy Points

Many investments to “build back better” through the American Rescue Plan Act and proposed in the American Jobs and the American Families Plans regarding infrastructure are designed to be targeted by place – to communities with the greatest need. Such targeted investments are key to addressing inequities and disparities.

How place is defined and what is then done by place, however, will impact the degree to which these investments achieve their goals. The American Community Survey (ACS) of the United State Census provides sufficient information to do such targeting.

Although it should be enhanced, the Centers for Disease Controls and Prevention (CDC) Social Vulnerability Index (SVI) provides sufficient data from the ACS at both the census tract and county levels to conclude the following:

1. Defining place by neighborhood and not county or state is essential to identifying places of greatest vulnerability and opportunity;
2. The demographics of high SVI neighborhoods show the need for a focus on children (and their families) as a priority population for response; and
3. These neighborhoods are deeply segregated by race and ethnicity and working with their residents and members is key to reducing inequities by race and ethnicity as well as income and socio-economic status.

*The Geography of Vulnerability, Opportunity, and Resilience* provides relevant examples from use of the SVI for these findings. There is a broader literature that reinforces and goes into more depth on many of these points.

As Congress and the Administration continue to develop strategies to “build back better” and to rectify inequities by race, ethnicity, language, and socio-economic status, it is essential they build these findings into their policies and strategies.

# The Geography of Vulnerability, Resilience, and Opportunity: The Importance of Drilling Down to the Neighborhood Level

Charles Bruner – June, 2021

The Centers for Disease Control and Prevention (CDC) has constructed a Social Vulnerability Index (SVI), composed of fifteen indicators from the American Community Survey (ACS). CDC provides this information for download by state at both the census tract level and the county level.<sup>1</sup>

SVI is one of several indices that have been constructed at the tract level for assessing vulnerability, opportunity, persistent poverty, risk, or resilience.<sup>2</sup> The U.S. Census Bureau has used SVI as a basis for developing its new Community Resilience Estimate (CRE), describing “community resilience” as the “the capacity of individuals and households to absorb, endure, and recover from the health, social, and economic impacts of a disaster such as a hurricane or pandemic”<sup>3</sup> (see Appendix 2 for a discussion of the CRE).

These indices have taken on increasing prominence in light of the COVID-19 pandemic and federal responses to that pandemic, some of which are specifically targeting responses to high need communities. For instance, in making \$300 million available in a competitive application process to develop a community health workforce to respond to COVID-19, future health crises, and social determinants of health, the CDC targeted those funds to county catchment areas defined by their poverty rates and the impact of COVID-19 upon them. HRSA referenced a primary tool for identifying target communities in its \$121 million grant opportunity directed to expanding community health workers in underserved and vulnerable neighborhoods. The Black Congressional Caucus has promoted directing an increased share of discretionary federal funding to counties which have experienced persistent poverty (at least 20 percent poverty rates over three decennial censuses).

As work continues to develop and use such indices or measures, particularly for identifying

## CDC Social Vulnerability Index Description

“Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado or disease outbreak, or a human-made event such as a harmful chemical spill. A number of factors, including poverty, lack of access to transportation, and crowded housing may weaken a community’s ability to prevent human suffering and financial loss in a disaster. These factors are known as **social vulnerability.**” ... [The SVI is designed] “to help emergency response planners and public health officials identify and map communities that will most likely need support before, during, and after a hazardous event.”

<sup>1</sup> Available at: <https://www.census.gov/data/experimental-data-products/community-resilience-estimates.html>

<sup>2</sup> Among these are: the Child Vulnerability Index presented in Chapter Two of *Village Building and School Readiness*, the Child Opportunity Index developed by [diversitydatakids.org](http://diversitydatakids.org), and the characterization of geographies a persistently poor.

<sup>3</sup> See note 1.

high vulnerability/opportunity/resilience geographies and responding to them, the following are issues that need to be addressed:

1. The difference between using the county (or municipal level) for such identification and using a neighborhood (census tract, combination of tracts, zip code, or other sub-level unit of analysis) in directing attention and resources.
2. The use of the most fulsome data elements from the ACS regarding vulnerability/opportunity/resilience to construct the index, based upon the current knowledge about determinants of health and well-being.
3. The inclusion of additional data elements about the demographic characteristics of the geography (age, race, ethnicity, gender, immigration status, home language, etc.) that do not represent risks or vulnerability in themselves but further help define the characteristics of the geography and offer information valuable for appropriate actions to reduce vulnerability, increase resiliency, and create opportunity.
4. The actual use of the indices and the data elements from which they are developed and the core findings from the indices to inform deeper understanding of and action to respond to those high vulnerability/resilience/opportunity geographic areas.

Fortunately, there already are proximate answers to the questions these issues present, ones which can be used to further develop indices and the present them. There also is information showing the value not only of establishing an index to identify specific geographies, but also presenting and examining the elements that make up the index, to focus attention on specific places deserving attention and investment. The following offers some of these proximate answers.

### **Geography: County vs. Census Tract**

There are a little over 3,000 county and county equivalents in the United States, compared with over 73,000 census tracts. The population of counties varies from under 100 to over 10 million residents. Census tracts vary in size from about 1,200 residents to 8,000 residents, with an average of 4,500 residents. Counties represent political units of government, while census tracts do not – but census tracts provide a much more granular way to identify geographies deserving special attention and focus.

Most counties are not homogenous across their geographies. They include different communities and neighborhoods with different population demographics and infrastructure. Many even are recognized as specific, named neighborhoods by residents and by their larger communities. In identifying geographic areas in terms of their vulnerability, opportunity, or resiliency, it is important to compare these communities and neighborhoods with one another and with the county (and the state and nation) as a whole.

When indicators such as the SVI are employed, they provide a picture of variations across both census tracts and counties in a state. Both counties and census tracts receive SVI scores (on a scale of 0 to 1, or 0-100 percent) related to their ranking in comparison with other counties or other census tracts. What comes from comparing the SVI as established by county and that established by census tract is that:

- Variations in the SVI are much greater within counties and by census tract than among or across counties only;

- Identifying the highest SVI counties will only include a portion of the highest SVI census tracts, and likely omit major populations of high SVI tracts that are located in larger metropolitan counties;
- The high SVI census tracts both have high proportions of children in their populations and very high proportions and degrees of segregation by race and ethnicity, while the high SVI counties are much less pronounced in this respect.

To illustrate, the following data, using the SVI and select data elements that comprise it, are provided for Iowa in Table One, with its 99 counties and 823 census tracts.

**TABLE ONE: IOWA CENSUS TRACTS AND COUNTIES AND SELECT CHARACTERISTICS FROM SOCIAL VULNERABILITY INDEX, HIGHEST 10% OF TRACTS OR COUNTIES**

	90%+ SVI Tracts	90%+ SVI Counties	State of Iowa
Total Population	287,635	301,904	3,132,499
Per Capita Income	\$ 20,090	\$ 26,211	\$ 29,984
Percent Poverty	25.1%	14.6%	12.5%
Percent No HS Diploma	21.0%	13.5%	8.7%
Percent 0-17	26.3%	23.9%	23.0%
Percent Single Parent	15.4%	9.4%	8.7%
Percent Minority	41.0%	18.7%	13.5%
SVI Index	95.0%	95.0%	50.0%
Percent Uninsured	9.8%	6.8%	5.2%

As Table One shows, the highest SVI counties are modestly more vulnerable on the indicators that make up the SVI, but very much less so than the highest SVI census tracts. For instance, the poverty rate of the counties is about 15 percent above the state average, but the poverty rate of the tracts is more than double the state average. Clearly, the variation on the SVI within counties is much greater than the variation across counties.

Further, only 17 of the 79 census tracts with SVI index score above 90 percent are within the 10 counties with SVI index scores above 90 percent. Polk County, which is not ranked in the top 10 percent of counties, has 22 such census tracts, more than the number for the 10 highest SVI counties combined. If the goal is to use the SVI to identify and respond to geographies that have the greatest overall vulnerability, it is necessary to focus on subcounty, e.g. census tract, data.

Moreover, there are very significant demographic differences (proportion of children and proportion of minorities) for the high SVI tracts that deserve significant attention, which might not be apparent when looking at the county level. Iowa is a racially very White, non-Hispanic state, and later data presented from Texas provides an even greater distinction by race for the highest SVI tracts. Appendix 1 shows similar analyses for the states of Washington and Connecticut.

### ACS Data Elements to Measure Social Determinants of Well-Being

The ACS is the single best source of information on the characteristics of the American population that exists at the national, state, county, and small area (census tract, zip code) level. The SVI and the CRE draw certain information from the ACS to construct their indices. The SVI itself has 15 indicators (and also includes but does not use a 16<sup>th</sup>, health insurance, in calculating the SVI). Of those, four of the SVI indicators are demographic elements (proportion of seniors, proportion of children, proportion of the population that is minority, and proportion of non-English speaking adults) that do not constitute “risk factors” or “vulnerabilities” per se (see next section). The remaining eleven indicators include several, but far from all, of the indicators that others constructing indices employing ACS data have employed. Table Two shows the sixteen indicators used by the SVI on the left side (health insurance, although provided but not used in the calculation) and shows other indicators which have been used for constructing indices of vulnerability and opportunity.<sup>4</sup>

**Table Two: The Social Vulnerability Index (SVI) and Its Themes and Indicators and Indicators Used in Other Vulnerability and Opportunity Indices**

SVI Index by SVI Theme	ACS Indicators Used in Other Indices to Measure Vulnerability/Opportunity
<p><u>Theme One – Socioeconomic status</u></p> <ul style="list-style-type: none"> <li>• Percent population below poverty</li> <li>• Percent population unemployed</li> <li>• Median per capita income</li> <li>• Percent adult population no high school diploma</li> <li>• (Percent population without health insurance)</li> </ul>	<p><u>Theme One – Income, Wealth, Education Status</u></p> <ul style="list-style-type: none"> <li>• Percent children in poverty</li> <li>• Percent population at 200% or less of poverty</li> <li>• Percent of 15-64 population working</li> <li>• Percent population with children where both/only parent are working</li> <li>• Median <u>household/family</u> income</li> <li>• Percent home ownership</li> <li>• Percent renters paying more than 30% of income for renters</li> <li>• Percent having rent, interest, or dividend income</li> <li>• Percent receiving public assistance</li> <li>• Percent adult population with college diploma or more</li> <li>• Percent 16-19 year olds not working or in school</li> <li>• Percent 3-5 year olds in preschool</li> <li>• Percent under 65 without health insurance</li> <li>• Percent children without health insurance</li> </ul>

<sup>4</sup> InCK Marks has conducted a crosswalk of a number of different efforts to categorize census tracts by their vulnerability, opportunity, or resilience, and Table Two is based upon this crosswalk.

<p><u>Theme Two – Household composition and disability</u></p> <ul style="list-style-type: none"> <li>• Percent age 65 and older</li> <li>• Percent age 17 and younger</li> <li>• Percent older than 5 with a disability</li> <li>• Percent single parent households</li> </ul>	<p><u>Theme Two – Age and Household Demographics and Disability</u></p> <ul style="list-style-type: none"> <li>• (Percent age 4 and younger)</li> <li>• (Other age groupings)</li> <li>• Percent 17 and under with a disability</li> <li>• Percent single parent families <u>as share of families with children</u></li> <li>• Percent households with children headed by a grandparent</li> </ul>
<p><u>Theme Three – Minority status and language</u></p> <ul style="list-style-type: none"> <li>• Percent minority</li> <li>• Percent speak English “less than well”</li> </ul>	<p><u>Theme Three – Race, Ethnicity, Language, and Immigration Status</u></p> <ul style="list-style-type: none"> <li>• (Percent total population by race / ethnicity, e.g. White, non-Hispanic; Hispanic; Black NH; Asian/PI NH; etc.)</li> <li>• (Percent child population by race/ethnicity)</li> <li>• (Percent adults not U.S. citizens)</li> </ul>
<p><u>Theme Four – Household type and transportation</u></p> <ul style="list-style-type: none"> <li>• Percent multi-unit structures</li> <li>• Percent mobile homes</li> <li>• Percent crowding</li> <li>• Percent group quarters</li> <li>• Percent households with no vehicle</li> </ul>	<p><u>Theme Four – Built infrastructure</u></p> <ul style="list-style-type: none"> <li>• Percent vacant houses</li> <li>• Percent households with no internet access</li> </ul> <p><b><i>(Note: Those in parenthesis are included in the data but not in the calculation of the index score.)</i></b></p>

As Table Two shows, the SVI has relatively fewer indicators that reflect socio-economic status while having a large share on population demographics (scoring those while calculating the index, which other indices generally do not do). It does not include home ownership, vacant housing, internet access, or housing costs – which other indices generally employ around housing, but uses four measures (multi-unit structures, mobile homes, group quarters, and crowding) which others do not.

In general, composite indices are designed to show general overall vulnerability or opportunity or resilience – recognizing that such vulnerability/opportunity/resilience is a multi-dimensional concept. In constructing that overall index, different characteristics, themes, or factors that make up the concept are represented, often with several different specific indicators for each.

While the overall index can point to areas of greatest concern or attention, it also is important to look at the measures that make of that index to understand where and why a particular geography is of concern

and attention and what aspects are of greatest concern and attention. If there is not information about many of the items that are on the right side of the table, the opportunity to identify particular important features may be lost.

It is important to acknowledge that the name given an index (e.g. “vulnerability,” “opportunity,” “resilience”) does not mean that the index actually is a reflection of that name – although people may perceive it as such. People using the index really need access to and be encouraged to examine the fuller data upon which the index is based.

In terms of identifying geographies of concern, the CVI is “good enough” for many purposes, but it would be helpful to have more fulsome information on many socio-economic concerns, family structures and relationships, and demographic information. The next section provides information on what the CVI shows, with the demographic factors are looked at contextually and not as elements of risk or vulnerability.

### **ACS Data Elements Providing Important Contextual Factors in Relation to Social Determinant Elements**

Diversity can and should be a strength – provided personal, institutional, or structural discrimination does not serve as a barrier to growth and well-being. Just because one is aged or has a disability does not mean that one cannot or is not living a full life, provided supports are in place. Some seniors are struggling in terms of income and their housing, but seniors currently disproportionately hold society’s wealth, with many very economically and socially secure and among the most advantaged in society.

Meanwhile, children currently are the age group most likely to live in poverty and developing their health and life course well-being trajectories. Many measures of medical health and disease (diabetes, pulmonary and respiratory illnesses) have their roots in child health trajectories. In many respects, adversity experienced in childhood has greater impacts than adversity experienced in adulthood, and it certainly has longer-term impacts. In terms of responding to disasters and pandemics, infants and toddlers, in particular, sometimes are the most impacted in safety and medical terms.

In short, race/ethnicity and age (either old or young) do not constitute risk or vulnerability factors in themselves, but they are population characteristics to consider in fashioning responses to vulnerability and opportunity. Where children, seniors, and persons of color geographically reside impacts their security, well-being, and opportunity for growth. Particularly for very young children, the home and immediate surrounding neighborhood is where they spend most of their time, learning, and growth.

In constructing and presenting an index, there should be a distinction between social and economic factors (social determinants) and context factors. Table Three, using the SVI at the census tract level for the state of Texas, shows such interaction between demographic data and measures of vulnerability.

<b>TABLE THREE: TEXAS CENSUS TRACTS GROUPED BY SOCIAL VULNERABILITY INDEX (SVI)</b>
<b>2014-2018 American Community Survey Data, CDC Tables</b>

	SV 90-100	SV 40-60	SV 0-10
	Percent	Percent	Percent
Population	2,466,305	5,580,277	2,811,881
Percent Poverty	36.4%	15.0%	4.1%
Percent Unemployed	9.4%	5.5%	3.2%
Median Personal Income	\$ 13,890	\$ 26,232	\$ 60,883
Percent over 25 No High School Diploma	39.4%	16.5%	3.1%
Percent over 65	<b>11.8%</b>	<b>13.7%</b>	<b>13.5%</b>
Percent under 18	<b>30.9%</b>	<b>24.1%</b>	<b>23.1%</b>
Percent over 5 with Disability	16.1%	13.3%	7.3%
Percent Single Parent	17.8%	11.4%	4.4%
Percent Minority	<b>90.9%</b>	<b>52.8%</b>	<b>29.5%</b>
Percent over 5 Limited English	<b>19.4%</b>	<b>5.5%</b>	<b>1.3%</b>
Percent Multi-Unit Housing	16.0%	12.7%	11.0%
Percent Mobile Homes	7.9%	10.5%	0.1%
Percent Overcrowded Homes	11.7%	4.4%	0.8%
Percent Households No Auto	14.2%	5.0%	1.6%
Percent Group Quarters	2.5%	3.1%	0.7%
Social Vulnerability Score	0.950	0.500	0.050
Percent Uninsured	29.4%	17.7%	5.5%

As Table Three shows, in terms of children, Texas census tracts identified at the highest SVI have much larger proportions of children (0-17) and somewhat smaller proportions of seniors. Addressing that vulnerability and improving the opportunity in those highest SVI census tracts therefore requires both quantitatively and qualitatively different investments, particularly when it comes to addressing child health, education, and social needs and family needs associated with raising children.

While some impacts of disasters such as hurricanes or pandemics may make seniors and those with chronic conditions more vulnerable, they also may create disproportionate vulnerability of children, particularly if they become separated from key supports in their lives. While the COVID-19 pandemic primarily affected seniors, the polio epidemic had its greatest impact upon the young and the Zika virus had its greatest adverse impact upon pregnant women. Many environmental disasters and the release of toxins into the community have their most pronounced impacts upon children who are developing their immune systems.

One of the additional contextual age variables that is important is the very young population (four years old and younger). Other indices which have examined vulnerability by tract level have shown that high vulnerability tracts have very pronounced differences in the proportion of young children (and single



parents raising them), even greater than for children as a whole.<sup>5</sup> This has implications to the types of strategies needed to support those parents and young children and their providing safe, stable, and nurturing home environments.

In terms of race and ethnicity, Table Three shows the degree to which the minority population is concentrated and segregated within high SVI geographies. Again, this information is contextual – but it also is essential for developing strategies and responses – particularly ones that are consonant with the race, language, and culture of the geography. While the term “minority” is applied by the CVI, in the highest CVI census tracts White, non-Hispanic (majority) people actually are a tiny part of the population.

Particularly when examining and responding at the community level, it also is essential to employ the array of information available through the ACS on race and ethnicity. While the SVI includes the percentage of people who are White, non-Hispanic (called minority), in some geographies racial and ethnic composition includes large numbers of people from one group, while in others includes large numbers in a different group or groups.

## Core Findings from a Neighborhood Focus

Developing indices in order to designate and focus attention and action on specific geographies is important in targeting resources and guiding how they are used – particularly to reduce disparities by socio-economic status, by race and ethnicity, and by age. While the ACS does not provide data on some important conditions and elements (which administrative data or other survey information or community mapping could provide), if well-used it provides sufficient information to offer that multi-dimension picture and provide a multi-dimensional index for overall focus.

The ACS represents by far the best available source for such information at the granular level (census tract/neighborhood) necessary to identify specific geographies and their particular characteristics. As development of indices and presentation of information about “vulnerability,” “opportunity,” or “resilience” progresses, there is opportunity, employing the ACS, to construct a more fulsome set of readily available data elements than those in the SVI (or other indices), ones that include most, if not all, of those shown in the second column of Table Two. The discussion above provides the following initial answers to the questions raised at the beginning of this paper:

1. **Geographic focus.** The major variations that exist across geographies are at a very granular level and not at the county level. While county-level data can be a starting point, addressing issues related to disparities by race, ethnicity, and socio-economic status requires a focus at a census tract (or aggregation of tracts) level.
2. **ACS measures used to construct an index.** The ACS has a broad range of data that speaks to socio-economic factors and social determinants of health and well-being – income, employment, wealth, family structure, housing conditions, educational capital, health coverage and disability, and access to transportation and information. An index, whatever its name, will only be as useful or representative of its name to the extent it includes and presents the relevant information from the ACS.

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<sup>5</sup> Bruner, C (2018). “ACE, Race, Place, and Poverty: Building Hope in Communities,” *Academic Pediatrics*. Bruner, C et. al. (2007). *Village Building and School Readiness*. State Early Childhood Technical Assistance Network.

- a. Any overall vulnerability, opportunity, or resiliency index should not be presented or used separate from the information that is used to derive it.
  - b. Future indices should build upon existing work and provide a broader array of measures that cover more socio-economic and social determinant factors available in the ACS.
3. **Contextual measures.** Where people live – by race, ethnicity, socio-economic status, citizenship, home language, and age – varies profoundly. While not representing risk or vulnerability factors in themselves, this information is vital to understanding geographies and their particular needs. It is essential to addressing issues of disparity and the qualitatively as well as quantitatively different investments that are needed by neighborhood.
4. **Age and Geography.** The above is particularly true for children, and young children in particular. Children are those for whom neighborhood and associations and resources within neighborhoods are most important, and the concentrations of children, and young children (and, per force, children of color) are in high vulnerability census tracts. Alternatively, the proportion of those over 65 is not associated with most other socio-economic indicators and their risks or vulnerabilities. Seniors deserve attention and are more likely to have health conditions and limitations, but the major variations that deserve attention by geography are related to young children, children, the families who are raising them, and our future.

## **Appendix 1: Presentations of SVI Data from Washington State and Connecticut**

In addition to the tables in the text shown for Iowa and Texas, InCK Marks has done similar tables for the states of Washington and Connecticut. These are shown below, with their own explanations and analysis.

### **King County and Washington State as an Example of the Need to Look within Counties and Focus Upon Children and Communities of Color**

The Table provided below uses the SVI to provide information on the highest vulnerability census tracts (above .9) in King County and to compare that with King County and Washington state as a whole and with the four counties whose vulnerability scores are above .9. Although King County has a low SVI score overall, it has 39 census tracts with SVIs over .9, representing over 165,000 people, in a roughly contiguous set of tracts, that actually make up a number of different neighborhoods, but here are presented together. If criteria are established only by county to determine vulnerability, these people and their neighborhoods would not be considered. At the same time, the census tracts they represent not only have high SVIs; the indicators making up the SVI show the importance of doing so from a racial equity perspective and the importance of focusing significant attention on children and their families.

SOCIAL VULNERABILITY INDEX AND INDICATORS -- 2014-2018				
WASHINGTON, KING COUNTY, AND .9+ SVI COUNTIES AND KING CENSUS TRACTS				
	King Co. .9+SVI CTs	King County Total	State of Washington	Counties .9+ SVI
Population	178,469	2,163,257	7,294,336	317,991
Households	65,704	865,627	2,800,423	108,805
Percent Minority	64.4%	39.6%	24.1%	45.8%
Percent Lim. Engl. Prof.	11.9%	4.6%	3.7%	8.7%
Percent 65 and older	13.0%	12.7%	19.7%	17.2%
Percent 17 and younger	24.9%	20.6%	21.7%	26.5%
Percent Poverty	23.1%	9.5%	14.2%	20.7%
Percent Unemployed	7.3%	4.5%	6.1%	6.8%
Median Per Capita Income	\$ 25,473	\$ 49,298	\$ 29,279	\$ 22,303
% 25+ No High School Dipl.	20.3%	7.0%	11.2%	23.2%
% Disability	14.3%	9.5%	16.5%	16.9%
% Single Parent Family	13.6%	6.2%	7.9%	11.8%
% Uninsured	11.2%	5.7%	7.9%	9.6%
% Multi-Unit Housing	36.5%	27.9%	6.9%	3.6%
% Mobile Homes	5.0%	1.9%	12.1%	16.6%
% Overcrowded	10.0%	3.7%	3.4%	7.6%
% Group Quarters	2.6%	1.0%	2.8%	2.7%
% No Vehicle	18.0%	10.1%	5.2%	5.3%
SVI Score	0.953	0.315	0.500	0.096

### CONNECTICUT, HARFORD COUNTY AND ITS HIGH AND LOW VULNERABILITY TRACTS

The Table shows SVI information for the county of Hartford and the state as a whole (Hartford is the county with the highest SVI score). The Table also shows the census tracts in Hartford that have the highest (above .9) and lowest (below .1) scores. These tracts largely are contiguous with one another and substantial in population, likely comprising a number of recognized areas and neighborhoods. Similar Tables have been constructed for Texas, Washington State, and Iowa – and these show comparable information (although their largest counties – Harris, King, and Polk – are not themselves high SVI counties in their states).

What the Table for Connecticut shows is consistent with those for these other states. Specifically, it shows that:

- (1) The variations by county are quite small in comparison with the variations by census tract – and drilling down below the county level is necessary to identify areas with the greatest concern from an SVI perspective. Other counties which would not show up as having a high SVI, such as Fairfield County, have population areas within them very similar to those of Hartford’s .9+ tracts. Targeting at the county level will omit many of the highest SVI geographies in any state and a large proportion of most counties that are identified will not have particularly high indicators of vulnerability compared with just as larger or larger population areas within counties.
- (2) Drilling down to the tract level in using the SVI shows that high vulnerability tracts are much more racially and ethnically populated and often segregated from the composition of the larger county in which they exist. While the CDC uses the term “minority” to refer to all individuals who do not designate themselves as White, only, and non-Hispanic, people of color generally constitute the majority of the population in higher vulnerability SVIs. To address issues of inequity and disparity by race and ethnicity, going below the county level to identify target areas is essential. They also are much more likely to have a large immigrant population, as indicated by their proportion of limited English-speaking people.
- (3) These high SVI areas, when looked at from a sub-county level, are rich in children and are much younger (with fewer people over 65) than the county, state, or nation. They require, in particular, effective strategies to improve the safety, stability, and nurturing young children receive and the educational and community supports and opportunities that school-aged children have available. The InCK Marks Initiative has produced a number of resources for doing so, based upon research and science and, in particular, exemplary and research-based successes in providing primary and preventive child health services.
- (4)

CONNECTICUT 2014-2018 SVI INDEX FOR .9+ HARTFORD TRACTS, HARTFORD, CONNECTICUT, AND .1- HARTFORD TRACTS				
	Hartford Tracts+.9	Hartford Total	Connect. Total	Hartford Tracts-.1
Total Population	104,183	894,730	3,581,504	85,855
Percent Population 65 and Over	<b>10.5%</b>	16.5%	<b>16.9%</b>	16.4%
Percent Population 17 and Younger	<b>27.7%</b>	21.3%	<b>20.0%</b>	23.6%
Percent Minority Population	<b>86.1%</b>	38.1%	<b>24.4%</b>	12.2%
Percent Lim. Engl. Proficiency Population	13.3%	4.3%	2.7%	0.6%
Median Per Capita Income	\$16,479	\$39,230	\$41,021	\$60,723
Percent Poverty	<b>34.9%</b>	11.1%	<b>9.4%</b>	2.5%
Percent Unemployed	15.4%	6.5%	6.0%	3.5%

Percent 25+ No High School Diploma	29.60%	10.5%	8.6%	3.1%
Percent Single Parent Families	23.8%	9.3%	8.1%	4.3%
Percent Persons with Disability	16.3%	11.8%	8.1%	7.7%
Percent Uninsured	8.7%	4.4%	4.6%	0.6%
Percent Households No Vehicle	34.8%	10.6%	7.3%	1.7%
Percent Overcrowded Housing	4.9%	1.7%	1.5%	0.2%
Percent Multi-Unit Housing	28.3%	14.3%	9.8%	1.9%
Percent Group Quarters	3.7%	2.9%	4.1%	0.3%
Percent Mobile Homes	20.3%	0.5%	1.2%	0.1%
SVI Score	0.957	1.000	0.500	0.056

## Appendix 2: The Community Resilience Estimate of the United States Census

The United States Census Bureau has developed and in June 2020 posted a new “Community Resilience Estimate.” That CRE provides state, county, and sub-county estimates based upon 2014-8 ACS data and select disease registries from the CDC. The Census indicates that it is an experimental estimate, with community resilience described as “the capacity of individuals and households to absorb, endure, and recover from the health, social, and economic impacts of a disaster such as a hurricane or pandemic.” It provides profiles based upon the percent of residents with no risk factors, one or two risk factors, or three risk factors. While it provides some additional information in a “COVID-19 Impact Planning Report,” the readily available and searchable information is based upon and shows only the risk factor scores.

Such an index, provided by the Census Bureau, takes on significant weight. Its name also has connotations to potential users, with “resilience” an emerging new focus for advancing health and well-being.

While starting from the SVI, however, the CRE is based upon a smaller and narrower set of ACS indicators than the SVI. **In effect, the CRE goes in the opposite direction from the findings about vulnerability, opportunity, and resilience in other indices development, and even the SVI.** As described in its technical report for the CRE:

*Resilience to a disaster is partly determined by the vulnerabilities within a community. In order to measure these vulnerabilities, and construct the community resilience estimates, we designed an individual risk index. The risk index is a weighted aggregate of the risk factors. The risk factors are binary components that add up to 11 possible risks in the risk index. The specific ACS-defined measures we use are as follows:*

### *ACS-defined Risk Factors (RF) for Households (HH) and Individuals (I)*

- *RF 1: Income-to-Poverty Ratio (IPR) < 130 percent (HH).*
- *RF 2: Single or zero caregiver household - only one or no individuals living in the household who are 18-64 (HH).*
- *RF 3: Crowding defined as either*
  - *Unit-level crowding defined as > 0.75 persons per room (HH) or*
  - *Household resides within a high-density tract defined as 75% of the population living in blocks with greater than 4,000 people per square mile*
- *RF 4: Communication barrier defined as either*
  - *Linguistically isolated (HH) or*
  - *No one in the household over the age of 16 with a high school diploma (HH)*
- *RF 5: No employed persons (HH)*
- *RF 6: Disability posing constraint to significant life activity: Persons who report having any one of the six disability types (I): hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty.*
- *RF 7: No health insurance coverage*
- *RF 8: Age >= 65*

*It is important to note that the ACS-defined risk factors three and four are not double flagged. For example, crowding is defined either at the housing unit level or the tract level. A person satisfying both crowding conditions is flagged once.*

*We also use several area-level NHIS-defined risk factors: Health Condition*

- *RF 9: Serious heart condition*
- *RF 10: Diabetes*
- *RF 11: Emphysema or current asthma*

**Discussion.** Compared with the SVI on the ACS indicators, the CRE omits the percentage of persons seventeen and under and changes the measure of family structure from percentage of single parent families to households with none or only one adult between 18 and 64. It changes from the unemployment rate to no persons employed. It collapses into one measure of communications (and therefore reduces the weighting) of what had been the two measures of adult education level and household language. It adds three health conditions that largely are manifested in the older population, with no commensurate measures for children (e.g. low birthweight, a known risk factor).

All these serve to both increase emphasis on the senior population (which remains an indicator in itself) and reduce emphasis upon the child population. While the SVI identifies single parenting as a household risk factor, the ACS identifies households without working age adults (including a seniors living alone or with their spouses). While unemployment is a measure for people seeking work, no employed person in the household includes persons who are retired and not seeking work.

To the extent the CRE measures resilience, it does so very narrowly and with a preponderant emphasis upon resilience among the senior population. **In responding to a disaster or pandemic which has its preponderant impact upon seniors and the frail elderly, the CRI may have some limited use, but it does not represent a “resilience estimate” for geographies in any common sense use of that term and its use in focusing resources should be very limited.**

As an experimental index, it should be assessed against other indices (such as the child opportunity index developed by [diversitydatakids.org](http://diversitydatakids.org), the child vulnerability index, and persistently poor census tracts, as well as the SVI). If continued as a special focus upon adult health conditions, disabilities and mobility issues (which it largely measures), it should be renamed, and not called an overall “community resilience estimate.”

Ideally, it would be substantially broadened and expanded, incorporating many more of the indicators in column two of Table Two, and separating out the age and other demographic data as contextual data but not as factors in constructing the index. In any event, however, there is value in working toward a broader and more fulsome list of indicators to go into an overall index, with the information made readily available on both the index and the indicators that make up that index by the geographic unit described. The Kinder Institute’s Houston data site does much of this for Harris County, Texas, and could be contrasted for the information it provides to that provided for the CRE.