Using The Social Vulnerability Index for Local Public Health Needs



Lindsay Townes, MPH Child & Adolescent Health Epidemiologist MDHHS

Agenda

Introduction The Social Vulnerability Index (SVI) -how to link it your community The American Community Survey (ACS) -how to find your community's data Questions



Introduction

Hi! I'm Lindsay Townes, the Child & Adolescent Health Epidemiologist at MDHHS.

A large part of my job is working with geographic data to identify highneed/high-risk areas to allocate resources where they might have the most impact

I'm going to walk you through some basics of these data sources today!

The Social Vulnerability Index (SVI)

An index of several variables produced by the CDC

What is the SVI?

- The SVI compiles data at census tract or county-level for 15 different variables
 - These were selected by CDC to identify areas that might be particularly at risk in the event of natural disaster
 - They include:
 - Socioeconomic status (poverty, unemployment, housing cost burden, no HS diploma, no health insurance)
 - Household characteristics (age 65+, age 17 & under, disability, single-parent households, English language proficiency)
 - Race/ethnic minority status (both as an overall percentage and broken out by specific groups)
 - Housing type & transportation (multi-unit housing, mobile homes, crowding, no vehicle, group, homes)



Where to find SVI data?

- SVI data are derived from the American Community Survey, which is administered by the US Census Bureau
 - The data set is updated every other year
- It utilizes ACS 5-year data and can be found here:

https://www.atsdr.cdc.gov/placeandhealth/s vi/data_documentation_download.html

- Most recent year is 2020
- For geography, select Michigan
- Geography type has two options: County or Census Tracts
 - I strongly prefer census tracts as they provide fine scale data about our communities
- Download the CSV file type, which can be opened in Excel and saved as an .xlsx file type
 - ESRI geodatabase is strictly for people with access to ArcGIS

† Place and Health	CDC/ATSDR SVI Data and Documentation Download
How Does Place Affect Health?	
About the GRASP Program	
Explore Our Work	Year
CDC/ATSDR Social Vulnerability - Index (SVI)	2020 🗸
Interactive Map	Geography Michigan v
Data & Documentation Download	If you choose "United States" as your option under Geography, all U.S. census tracts, or counties, are ranked against one another.
Publications & Materials	Use "United States" for U.Swide or multi-state mapping and analysis. If you choose an individual state, or "District of Columbia." or "Puerto Rico." tracts or counties are ranked against other tracts or
Frequently Asked Questions	counties in that state/district/territory.
SVI At A Glance	Geography Type
Fact Sheet	Census Tracts v
CDC/ATSDR Environmental Justice - Index (EJI)	• File (table data) • ESRI Geodatabase (map data)
Map Gallery	Go



Let's look at this data set!

- Despite only including 15 variables, there are many more columns in the SVI data set
 - They include each of the variables in the following ways:
 - E_variablename (<u>e</u>stimated count)
 - EP_variablename (<u>e</u>stimated <u>p</u>ercentage)
 - EPL_variablename (estimated percentile)
 - Percentiles are a way of standardizing values across all variables
 - For example, we might expect very different ranges for % unemployed vs % age 17 & under, but within each variable, each value can be ranked on a scale from 0-1 based on the high and low values for that variable
 - Consider what 3% unemployment tells you vs 3% of the population being under 18
 - You can then make comparisons across variables based on those shared scales
 - F_variablename are <u>flags</u> for tracts at or above the 90th percentile for a given variable
 - M_variablename (margin of error all the M_ or MP_ prefixed variables refer to margins of error and are likely not relevant to your data reporting needs
 - SPL_theme# is the sum of the percentiles of all variables in a given theme (eg, socioeconomic status)
 - SPL_themes is the sum of percentiles for all variables in the index
 - Full data guide can be found here: <u>https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/SVI_documentation_2020.html</u>



The very attractive SVI data set

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27	26 Michigan	MI	26005 Allegan	2.6005E+	10 Census Tract 310).02, Alle 5	50.84103	28	27	122	78	25.1	8.2	6.7	3.9	20.2	5.9	10	3.8	7.9	6.3
28	26 Michigan	MI	26005 Allegan	2.6005E+	10 Census Tract 311	.01, Alle	31.79619	43	39	89	87	12.3	4.4	3.1	2.2	18.7	6.9	12	4.6	2.9	1.8
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Linking SVI data to your town

- Whew, I wish I had a better answer for you here
 - I usually work with these data in GIS software, so linking to cities is fairly straightforward
 - I recognize most people do not work with GIS software
 - Best non-GIS solution I found:
 - Census tract reference maps by county for MI: <u>https://www2.census.gov/geo/maps/DC2020/PL20/st26_mi/censustract_maps/</u>
 - They are all in PDF form because literally no part of this is particularly userfriendly
 - Then look up the tract number(s) in the SVI file



Two examples of linking FIPS codes to specific locations

- 1. One tract for a whole township or other unincorporated place
- 2. Multiple tracts for a larger town or city

1. Jerome Township, Midland County (single tract)

- Go to Census Tract Reference Map for Midland County (https://www2.census.gov/geo/maps/DC2020/PL 20/st26_mi/censustract_maps/c26111_midland/ DC20CT_C26111.pdf)
 - Find Jerome Twp on the map the red number is the tract number



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1. Jerome Township, Midland County (cont)

- Filter the SVI data to only include Midland County
 - The easiest way to find it is in the Location field
 - You can then filter your spreadsheet to only include that row

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1429	26	Michigan	MI	26111	Midland		26	111290400	Census Tract 29	904. M	idland County, N	Michigan		4.584391	2208	313	793
1430	26	Michigan	MI	26111	Midland		26	111290500	Census Tract 29	905. M	idland County, N	Vichigan		7.734088	1810	164	764
1431	26	Michigan	MI	26111	Midland		26	111290600	Census Tract 29	906. M	idland County, N	Vichigan		8,467311	2475	399	1029
1432	26	Michigan	MI	26111	Midland		26	111290700	Census Tract 29	, 907. М	idland County, N	Michigan		1.888077	3767	412	1947
1433	26	Michigan	MI	26111	Midland		26	111290800	Census Tract 29	, 908, M	idland County, N	Michigan		1.727089	5123	473	2044
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1435	26	Michigan	MI	26111	Midland		26	111290902	Census Tract 29	909.02	, Midland Count	y, Michigan		1.496483	5026	567	2032
1436	26	Michigan	MI	26111	Midland		26	111291000	Census Tract 29	910, M	, idland County, N	Michigan		2.202426	6059	646	2791
1437	26	Michigan	MI	26111	Midland		26	111291101	Census Tract 29	911.01	, Midland Count	y, Michigan		64.32778	3812	271	1717
1438	26	Michigan	MI	26111	Midland		26	111291103	Census Tract 29	911.03	, Midland Count	y, Michigan		29.89376	3757	310	1688
1439	26	Michigan	MI	26111	Midland		26	111291104	Census Tract 29	911.04	, Midland Count	y, Michigan		26.46911	5801	382	2370
1440	26	Michigan	MI	26111	Midland		26	111291200	Census Tract 29	912, M	idland County, N	Michigan		23.2139	5571	361	2425
1441	26	Michigan	MI	26111	Midland		26	111291300	Census Tract 29	913, M	idland County, N	Michigan		59.55625	4379	240	1793
1442	26	Michigan	MI	26111	Midland		26	111291400	Census Tract 29	914, M	idland County, N	Michigan		107.0081	4143	341	1852
1443	26	Michigan	MI	26111	Midland		26	111291500	Census Tract 29	915, M	idland County, N	Michigan		35.61809	4271	16	1783
1444	26	Michigan	MI	26111	Midland		26	111291601	Census Tract 29	916.01	, Midland Count	y, Michigan		34.81983	2538	19	1319
1445	26	Michigan	MI	26111	Midland		26	111291602	Census Tract 29	916.02	, Midland Count	y, Michigan		32.22524	4708	34	1983
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2. Midland city, Midland County (multiple tracts)

- Like most cities, Midland is divided into more than one tract
 - Midland has 10: 2901-2904, 2906-2910
 - Most tracts have no decimal point and their FIPS codes end in 00, but two in Midland end in .01 and .02



2. Midland city, Midland County (continued)

There are a few options to summarize these data for Midland:

- Create a City variable in the data and label those 10 tracts as Midland
 - You can then use a Pivot Table to calculate your values of interest
- Copy and paste the relevant rows to a new sheet and calculate totals and averages there
 - For percentages and percentiles, =AVERAGE is the most useful formula for summary

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433	26 N	1ichigan	MI	26111	Midland		26111290800	Census Tract 2	908, Midland County, N	lichigan	1.72	7089	5123
434	26 N	lichigan	MI	26111	Midland		26111290901	Census Tract 2	909.01, Midland County	, Michigan	1.02	1745	3032
435	26 N	1 ichigan	MI	26111	Midland		26111290902	Census Tract 2	909.02, Midland County	, Michigan	1.49	6483	5020
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439	26 N	1ichigan	MI	26111	Midland		26111291104	Census Tract 2	911.04, Midland Count	, Michigan	26.4	6911	580
440	26 N	1ichigan	MI	26111	Midland		26111291200	Census Tract 2	912, Midland County, N	1ichigan	23	2139	557:
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2. Midland city, Midland County (calculations in Excel)

- For this demo, I have copied and pasted the data from Midland tracts into its own sheet
 - Sums (for getting population count totals): =SUM(AA2:AA11)
 - for youth under 18 specifically
 - Averages (for percentiles): =AVERAGE(cell1:last cell)
 - To calculate city wide average percentages for variables, your most accurate route would be to divide the sum of your variable of interest by the total population: =AA12/I12 (for example, total under age 17/total population)
 - Using the =AVERAGE formula will likely give you a close approximation, but not all tracts are the same population (range in Midland: 2208-6059)
 - if 50% of the small tract is under 18, that 1104 youths, but that is only 18% of the largest

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2	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2901,	Midland County,	144	542	121	681	166
3	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2902,	Midland County,	100	762	241	642	171
4	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2903,	Midland County,	69	606	92	963	273
5	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2904,	Midland County,	82	332	73	364	144
6	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2906,	Midland County,	66	263	78	511	140
7	26	Michigan	MI	26111	. Midland	2.61E+10	Census Tract 2907,	Midland County,	166	614	229	726	147
8	26	Michigan	MI	26111	. Midland	2.61E+10	Census Tract 2908,	Midland County,	126	980	168	1168	192
9	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2909.	01, Midland Coun	47	710	211	573	241
10	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2909.	02, Midland Coun	57	698	214	1232	222
11	26	Michigan	MI	26111	Midland	2.61E+10	Census Tract 2910,	Midland County,	187	1157	258	1443	391
12												=sum(aa2	:aa11)
13													
14													
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<u> </u>		Michigan	(2) Mid	lland city	(+)								:

Pros and Cons of SVI data

Pros 😳

- Data are already cleaned, compiled, and easily downloaded in a single file
- Census tract-level data allow folks to identify specific ٠ neighborhoods of interest
- Variables across domains can give a fuller portrait of community strengths and needs ٠
- Precalculated percentages and percentiles in addition ٠ to population and household counts
- Can use Excel to calculate needed data ٠
- Also usable within GIS software ٠
- Are defined consistently from year to year
- Free!

Cons 🛞

- Can be difficult to link tracts to your village, ٠ town or city
- For larger towns, this requires some ٠ additional calculations (either summary formulas or Pivot Tables)
- Not all variables included in the SVI ٠ summary score are relevant for MCH needs
- County-level data can wash out important local areas of need ٠
- Typically 1-2 year lag compared to pulling ACS data directly



Using American Community Survey data directly

ACS data

- ACS and US Census data are both available at https://data.census.gov/
- The search is fairly intuitive but you will quickly see that any search tends to generate <u>a lot</u> of results
 - These data tend to get sliced in a lot of different ways by the Census Bureau
 - If you find a table that answers your questions, <u>document</u> the code for this table:
 - S1701 is poverty status of individuals
 - S1702 is poverty status of families
 - S1703 is characteristics of people at specified levels of poverty
 - These are all closely related and easy to confuse if you are updating needs assessment or grant form a year or more after the last time you did this!
- The 'products' listed under each table are typically different years
 - For census tract and minor civil division-level data, this will typically be 5-year data
 - County and state level may have one-year data available
 - They used to do 3-year data but no longer!





Example: child poverty in Taylor, MI

- A search for "child poverty in Taylor city, Michigan" generates these results →
 - When you find the table that answers the question you have, I strongly suggest you document which table your data come from



Example: child poverty in Taylor, MI (continued)

 Clicking on Table S1701 brings us to this page, which only includes Taylor data, but can include all tracts in the state or county

An o	fficial website of the United States government	Here's how you know ~	······································				
C	United States* ENSUS Burgan	child poverty in Tayl	or city, Michigan X	1 V Advanced S	earch		
	Buleau	All Tables	Maps Profiles Pages			Microdata Help F/	AQ Feedback
O ters	43 Results	*	S1701 Poverty Status in the Past 12 Months American Community Survey 2022: ACS 5-Year Estimates Subject Tables	Notes	Geos Topics Codes Dataset	Image: Second	rror More Tools
Ø	View: 10 25 50	Download Table Data		Taylor city, Michigan			
sults	American Community Survey			Total		Below poverty level	C
	S1701 Poverty Status in the Past 12 M View All 11 Products	onths	Label	Estimate	Margin of Error	Estimate	N
			 Population for whom poverty status is determined 	62,237	±118	9,866	
	American Community Survey	tion	✓ AGE				100
	View All 15 Products	103	✓ Under 18 years	13,491	±881	3,902	
			Under 5 years	4,089	±649	1,823	
	American Community Survey	evel in the Past 12	5 to 17 years	9,402	±703	2,079	
	Months by Nativity of Children Under 18	8 Years in Families	Related children of householder under 18 years	13,406	±895	3,817	
	Parents	s and Mativity of	✓ 18 to 64 years	39,217	±977	5,258	
	View All 13 Products		18 to 34 years	15,866	±866	2,439	
	American Community Survey		35 to 64 years	23,351	±1,044	2,819	
	B10059 Poverty Status in the Past 12	Months of	60 years and over	13,921	±917	1,457	
	Years by Responsibility for Own Grandc	hildren and Age of	65 years and over	9,529	±720	706	
	Grandparent		✓ SEX				
			Male	31,789	±758	4,346	
	American Community Survey		Female	30,448	±751	5,520	
	B17006 Poverty Status in the Past 12 Children Under 18 Years by Family Type	Months of Related by Age of Related	✓ RACE AND HISPANIC OR LATINO ORIGIN				
Ť	Children Under 18 Years		White alone	43,081	±1,447	4,798	
	View Air to Froducts						

Pros and Cons of ACS data

Pros 🙂

- Easier to find data for your specific community without having to check a PDF map
- Intuitive search
- Lots (and lots) of data available
- Most current data
- Data downloadable, usable in CSV format
- Free!

Cons 🛞

- Searching for topics of interest will generate many potential tables to sort through
- Documentation of tables data pulled from necessary for data quality
- Greater potential to make mistakes from year-to-year by selecting slightly different tables
- Limited additional analyses (no precalculated percentiles, for example)



Summary

Both the Social Vulnerability Index data set and the ACS website offer relatively easy ways to access local data for needs assessments, grant applications, and other related applications.

Using census tract-level data allows us to present fine-scaled data to identify the areas of highest need in our communities

Thank you

Lindsay Townes, MPH townesl@michigan.gov

