



CDC's Social Vulnerability Index: Analysis of Uses and Implementation

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Table 1. Demographics of SVI Quartiles in Minnesota

	Q1 SVI (High)	Q2 SVI	Q3 SVI	Q4 SVI (Low)
Race/Ethnicity				
American Indian or Alaska Native	54%	17%	8%	7%
Black or African American	53%	20%	11%	9%
Hispanic or Latinx	47%	22%	17%	14%
Asian or Pacific Islander	24%	22%	22%	26%
White	24%	22%	22%	26%
Multiple	35%	23%	16%	20%
Other	39%	24%	14%	20%



Background

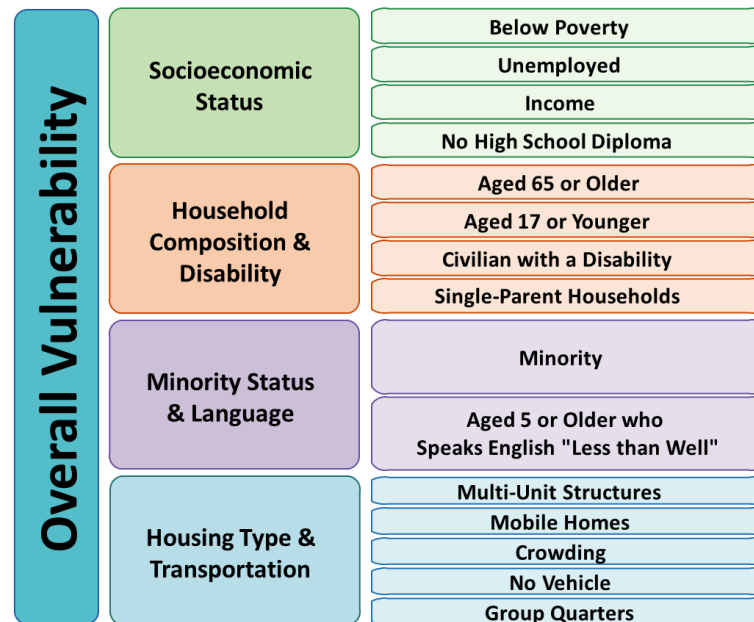


What is social vulnerability?

- the potential negative effects on communities caused by external stresses on human health

CDC's Social Vulnerability Index

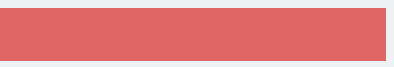
- uses 15 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters
- One of the main indices used for COVID-19 vaccine allocation





Project Goal

To provide an extensive review on the statistical measures and uses of the CDC SVI to mitigate inequities



Significance



Recognize that disadvantaged populations are disproportionately impacted by disasters and pandemics



Integrate equitable practices into health policy and resource allocation



Provide clarification on the broader uses and potential of SVI and other disadvantage indices

Methods

01 Literature Collection

Compiled all articles from PubMed, Embase, and Web of Science that mentioned social vulnerability index

03 Data extraction

Read full texts and extracted data on various criteria in a Google Sheet. Triple verified this data

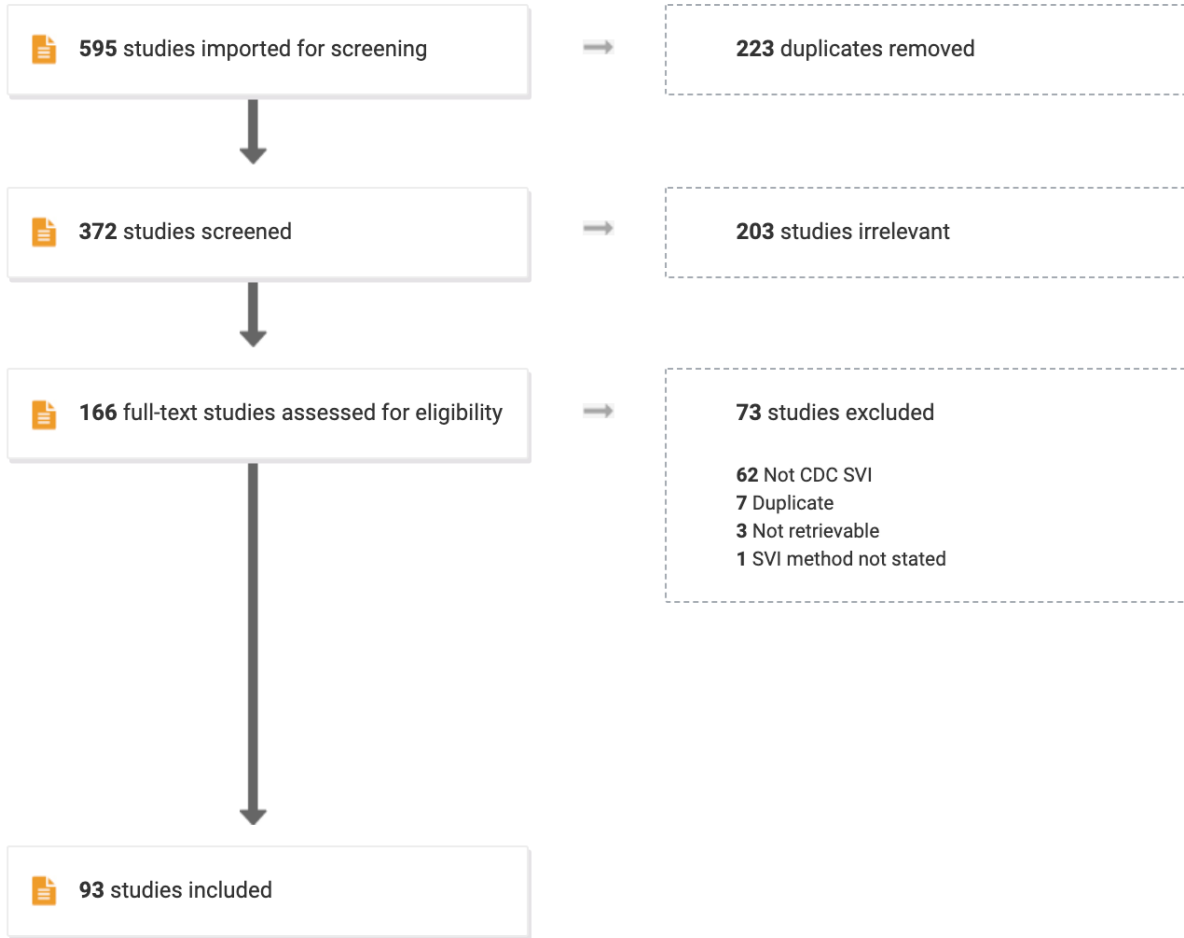
02 Screening

Reviewed all papers and removed all duplicates, international, and non-retrievable papers

04 Results Analysis

Analyze data found and compile this information in a concise way





Data Extraction Tool

C	D	E	F	G	H	I	J	K				
Source and Citation	Objectives	Methods	Results	Conclusion	US focused (yes: 1, no:0)	If US, which state, county and/or city (otherwise which country)	(General Topic in sentence format) i.e. Health Condition, Disease area, or Other application such as Vaccine coverage or infection rate	Population by insurance status: Medicare, Medicaid, other (specify which) if general population, write general population (ex. vaccines)				
Text entry	Verbatim Text	Verbatim Text	Verbatim Text	Verbatim Text	Highlight in gray if index with same name, but different index used abroad	If national sample, write national if provided write number of counties if unclear write "unspecified" if international, use same parameters						
L	M	N	O	P	Q	R	S	T	U	V	W	X
Theoretical (yes: 1, no: 0)	Unit of Geo area Text Entry or #	Evaluation of index to promote equity- will be in abstract	Evaluation Verbatim	Index Increments	References any other disadvantage index?	Index/Scale referenced	Keywords as assigned by author	MESH terms	Corresponding Author Information	Full Text Available and searched in initial extraction	Notes (i.e. did sensitivity analysis, justified choice of index increments ONLY regarding svi or speaks to question of SVI and race/ethnicity	Preprint? (yes: 1, no: 0)
Using or Comparing 2 or more indices (with or without application to a specific health condition) for at least partial purpose of finding performance of indices, i.e. how the index function compares to another index that does the same thing	Ex. block group, census tract, county etc.) if not stated write "unspecified"	Evaluation of index after it has been applied to describe a population in	Text entry (describe what was evaluated) or #	if unspecified because cannot access full paper, write # search in full text for continuous/centiles, quartiles, quintiles	search for "index" and "scale" in full text (yes: 1, no: 0)	Text entry or N/A or #	Verbatim Text if full text is unavailable, only search for keywords in PDF later	search for mesh in PDF if not on Pubmed write "not yet"	Text Entry (name, email, organization/school) search for @ in full paper OR search for	(yes: 1, no: 0)		



Some unique uses

- COVID-19 vaccine hesitancy, allocation
- COVID-19 Incidence and Death Rates
- Pregnancy affected by COVID-19
- Telehealth use
- Access to a primary clinic
- Teen Pregnancy Intervention Need
- Effects of heat on emergency medical service incidents
- Postoperative outcomes
- Post hurricane protection training
- Variations in youth fitness
- Access to Opioid Treatment Programs
- Allocation of PPE
- Impacts of Hurricane Katrina on local populations
- Discharge Destination after surgery



Impact of Race/Ethnicity and County-Level Vulnerability on Receipt of Surgery With Diagnosis of Early Pancreatic Cancer

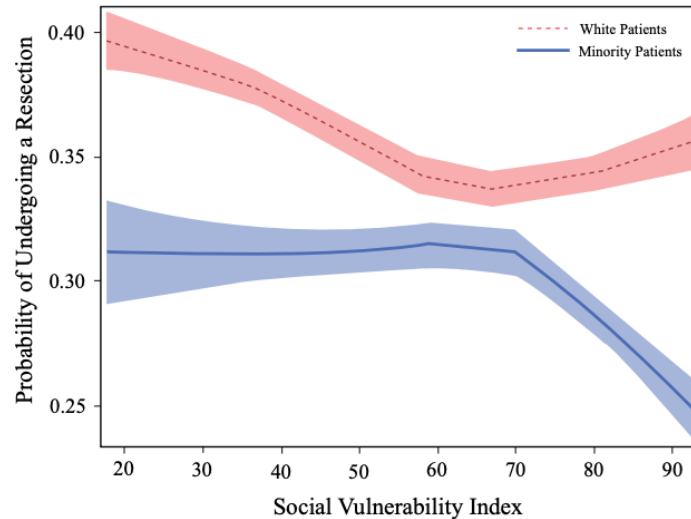
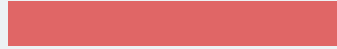


FIG. 1 Probability of patients undergoing resection according to the Social Vulnerability Index. Older Medicare beneficiaries who reside in areas with high social vulnerability were at a higher risk of not undergoing resection for pancreatic cancer. The risk was more pronounced among minority versus White Medicare beneficiaries as social vulnerability increased

My Role



1. Exported all citations and full text documents from databases into Covidence
2. Navigated Covidence to create a compiled list of papers
3. Read all papers and collected data in Google Sheets
4. Cross checked all data extraction with peers
5. Attended team meetings and communicated with peers to create efficient procedures



Lessons Learned

- A lot of verification required to create a robust method (leads to good discussion too)
 - Usually a lot of back and forth involved before finding a fluent procedure
 - Communication is key
- Learned how to use a new software - Covidence



Next Steps

- Project wrap up - Analyze the different purposes and methods in which papers used the SVI
- Future project: Observe uses of other disadvantage indices (area deprivation index, health minority index, etc.)



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Thank you !

Questions?

