WHY DIFFERENT TOOLS FOR MEASURING VULNERABILITY POINT TO DIFFERENT STUDY SITES

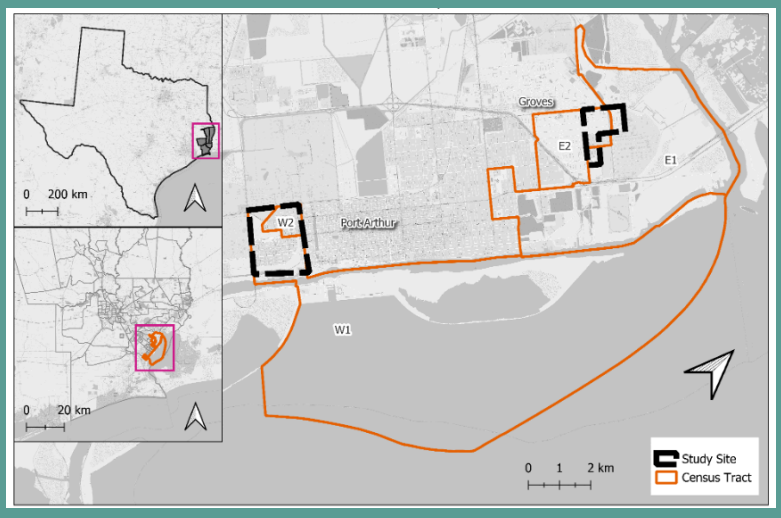
How does the idea of "social vulnerability" shape our site choices in SETx?

WHY NOW?

Social vulnerability is a term to describe the social factors that influence an individual's or community's ability to prepare for, withstand, and recover from hazard events. Social vulnerability is often mapped to identify which neighborhoods may need additional support before, during, and after disasters. In SETx, we compared several numerical representations of the idea of social vulnerability that use different demographic data and methods. The problem is two-fold. First, different methods don't always agree about which places are the "most vulnerable." Second, the areas of community interest may not align with how the government reports data. For example, notice on the map how the study sites do not align with the census tracts. These differences shaped our conversations during site selection and showed why community knowledge is vital for choosing sites that truly reflect local priorities and lived experiences.

WHAT WE DID

The Team compared the specific details from five different ways of representing the idea of Social Vulnerability, which is called a social vulnerability index (SVI). The SVI included what each approach measured and how each one scored neighborhood conditions in the area. Although the indices share many components, they differ in important ways that affect how neighborhoods are ranked. The Team applied each index to the sites identified for this project and examined where the index agreed or disagreed. This helped us understand how choices on what to measure and how shape results and what that means for local site selection.



How study areas align with government data boundaries (census tracts), effects how Social Vulnerability Indices rank sites.

WHO WAS INVOLVED?

Analysis showed the list of sites identified by the Southeast Texas community task force. The team's focus was on comparison of two of these sites, ensuring the work reflected locations the community viewed as most important.

FINDINGS

Comparisons showed that the three vulnerability indices ranked the study sites differently. East Groves was selected as most vulnerable twice, West Port Arthur once. This disagreement came from differences in data choices, scoring methods, and how government data boundaries aligned with study sites. Community perspectives ultimately clarified the picture: members consistently identified West Port Arthur as the more vulnerable site, and that insight guided the study. This example shows that when indices diverge, local knowledge is critical. We suggest that local decision makers use Social Vulnerability indices to understand regional patterns of higher or lower vulnerability but rely on community insight when selecting specific sites for locally relevant work. Local leaders could use these findings to potentially steer state or federal policy changes.

CDC Indicator	West Port Arthur Tract 1	West Port Arthur Tract 2	East Groves Tract 1	East Grove Tract 2
Total Population	1,079	1,459	3,908	5,633
Below 150% Poverty	47%	55%	66%	29%
No High School Diploma	8%	17%	35%	11%
Aged 65 or Older	25%	8%	9%	20%
Aged 17 or Younger	17%	35%	36%	22%
Language needs	0%	0%	15%	3%
No Vehicle	13%	40%	24%	2%
Rank SVI 1	Lower		Higher	
Rank SVI 2	Same		Same	
Rank SVI 3	Lower		Higher	
Rank SVI 4	Higher		Lower	
Rank SVI 5	Same		Same	

Social Vulnerability Indices rank the same places differently, showing why site-specific decisions cannot rely on a single index.

MORE ABOUT SETX-UIFL

The Southeast Texas Urban Integrated Field Lab (SETx-UIFL) is one of four projects funded in 2022 by the U.S. Department of Energy to study how climate, environment, and urban changes affect cities. A team of over 80 researchers from UT, Lamar University, Texas A&M, Prairie View A&M, Oak Ridge National Lab, and Los Alamos National Lab has collected data and conducted modeling across hazards including flooding, hurricanes, heat stress, and air quality. Our Why: Southeast Texas faces numerous hazards, yet smaller communities like this one have often felt forgotten compared to larger cities. The SETx-UIFL was designed to explore the complex dynamics of disaster vulnerability for this economically and culturally vibrant region. We believe Southeast Texas is a bellwether for the entire Gulf Coast, and an exemplar for strategies that protect people and places. We hope this effort supports your path toward lasting resilience.

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