

Being Prepared for Disaster

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A tornado slashed through San Angelo causing extensive damage to an estimated 100 homes on Saturday, May 18, 2019. The National Weather Service determined that the storm was at least an EF-2 tornado with howling winds reaching 135 miles per hour.

The tornado was packed with severe thunderstorms that caused major flooding across the city as first responders rescued motorists trapped in several locations. Fortunately, no fatalities were reported. Still, the storm wrought an estimated \$7.5 million in property damage.

For decades, the National Centers for Environmental Information (NCEI) has tracked extreme weather events. In fact, the NCEI has recorded 881 severe storms that have hit Tom Green County since 1952.

Of 53 tornadoes included in the county's extreme weather events, three caused fatalities. The last deadly twister touched down outside of Orient in 1984. When longtime San Angelo natives think of tornadoes, however, many remember the EF-4 that steamrolled through the Lake View neighborhood in 1953. The toll was 13 deaths, 159 injuries, and damages of \$2.5 million in 1953 dollars.

Altogether, 15 people have died and 177 more were injured in Tom Green County's 53 twisters since 1952. Still, our area is only a moderate risk spot for tornadoes compared to other parts of Texas. Outside the twisters, however, the people of the local city and county have suffered property and crop damages amounting to more than \$206 million from hundreds of hail and thunder storms.

| Common Extreme Climatic Weather Events Tom Green County (1950-2019) | | | | |
|---|--------|--------|----------|---------------|
| Type | Number | Deaths | Injuries | Damage |
| Hail | 508 | 0 | 31 | \$137,695,150 |
| Thunderstorm | 320 | 0 | 54 | \$68,532,550 |
| Tornado | 53 | 15 | 177 | \$21,370,090 |
| Totals | 881 | 15 | 262 | \$227,597,790 |
| Source: National Centers for Environmental Information https://www.ncdc.noaa.gov/stormevents/ | | | | |

Over the years, scientists have learned a great deal by studying NCEI and related data on weather-driven natural disasters. Forecasters, for instance, have gained greater capacity to predict severe weather events and deliver timely warnings to individuals and communities in harms way. In the public health arena, moreover, researchers are accumulating increasingly deep knowledge of area populations that are most vulnerable to catastrophic damages and financial ruin from severe weather or other disasters.

The Social Vulnerability Index (SVI) is a recent advancement on this front. The Centers for Disease Control and Prevention (CDC) originally developed the SVI to help public officials and local planners prepare and respond to disasterous events. The Index's roots are in research showing how social conditions such as concentrated poverty, subpar housing, family

composition, and isolation affect an area's ability to counteract human suffering and financial loss in the event of a disaster.

The most recent release of the SVI identifies 15 key indicators of vulnerability based on data from the Census Bureau's 2012-2016 American Community Survey (ACS). The SVI groups the indicators into four themes describing the socioeconomic status of an area's people, their household composition and levels of disability, their minority status and language use, and the prevailing housing and transportation conditions in an area. Every county and census tract in the nation received a separate ranking for each of the four themes, as well as an overall social vulnerability ranking.

We adapted the CDC's methodology to provide a customized and updated assessment of social vulnerability in San Angelo's neighborhoods. We used more current data from the Census Bureau's 2013-2017 ACS to develop local SVI indicators. We also adjusted the CDC's indicators on minority status and language use to more precisely reflect the racial and ethnic composition of San Angelo's various census tracts.

Most importantly, we modified the CDC's method of scoring and ranking census tracts. The first step in the CDC method computed the percentile distribution of the nation's census tracts on SVI indicators. Then, each area's percentile scores were used to rank it among more than 70,000 tracts in the country.

Our modified method only compares San Angelo's 20 residential census tracts to each other. Using the SVI indicators, we computed a score for each area on a scale ranging from 0 to 100. Neighborhoods with lower scores have the highest levels of social vulnerability to disaster. Higher scores indicate more resilient social conditions.

To enhance comparisons, we grouped the neighborhoods into quartiles. The five areas in the Upper Quartile are the most resilient neighborhoods of the city and the five tracts in the Lower Quartile are the most vulnerable if disaster strikes.

| San Angelo Social Vulnerability Index Scores for the Upper and Lower Quartile Neighborhoods | | | | | |
|---|-----------------------------|---|-----------------------------------|---------------------------------|-----------------------------------|
| Quartile and Neighborhoods | Socioeconomic Status Scores | Household Composition & Disability Scores | Minority Status & Language Scores | Housing & Transportation Scores | Social Vulnerability Index Scores |
| Upper Quartile Average | 79.1 | 68.1 | 88.8 | 78.9 | 78.7 |
| Bonham | 83.7 | 71.1 | 95.3 | 83.1 | 83.3 |
| Bentwood & Nasworthy | 93.2 | 70.2 | 82.2 | 76.3 | 80.5 |
| Santa Rita | 65.7 | 71.0 | 93.9 | 80.2 | 77.7 |
| Vista del Arroyo | 78.4 | 67.5 | 87.3 | 71.6 | 76.2 |
| Southland | 74.3 | 60.7 | 85.1 | 83.4 | 75.9 |
| Lower Quartile Average | 31.9 | 50.6 | 32.6 | 45.7 | 40.2 |
| Rio Vista | 37.5 | 59.4 | 54.5 | 58.0 | 52.3 |
| Fort Concho | 45.0 | 50.0 | 23.7 | 50.4 | 42.3 |
| East San Angelo | 26.8 | 56.2 | 27.2 | 52.5 | 40.7 |
| Reagan | 34.7 | 50.1 | 27.6 | 48.0 | 40.1 |
| Blackshear & Downtown | 15.5 | 37.2 | 30.2 | 19.7 | 25.6 |
| Upper/Lower Percent Difference | 60% | 26% | 63% | 42% | 49% |
| Sources: Data from the US Census Bureau, American Community Survey 2013-2017. San Angelo Social Vulnerability Index Scores computed by the authors. | | | | | |

An estimated 23,237 people or 24.7% of the city's population reside in the most resilient upper quartile areas. On average, these parts of the city score 78.7 on the 100 point scale. The Bonham neighborhood leads the way with an 83.3 score. The other four most resilient areas are

Bentwood and Nasworthy (80.5), Santa Rita (77.7), Vista del Arroyo (76.2), and Southland (75.9).

Conversely, San Angelo has a significant number of residents living in its most vulnerable parts of town. An estimated 20,343 folks or 21.6% of the population live in the lower quartile neighborhoods. The Blackshear and Downtown area is the most vulnerable tract with a 25.6 score on the 100 point scale. Reagan (40.1), East San Angelo (40.7), Fort Concho (42.3), and Rio Vista (52.3) are the other tracts in the quartile. The average score for these five areas is 40.2. Overall, the lower quartile areas of the city have an average SVI score that is 49% below the upper quartile areas.

The Robert T. Stafford Emergency Relief and Disaster Assistance Act of 1988 is the key legislation authorizing the president to issue disaster declarations for large-scale catastrophes and for more localized events. The Federal Emergency Management Agency (FEMA) is the primary federal agency that responds with funding for disasters. When the president declares a disaster, FEMA distributes money from its Disaster Relief Fund (DRF) for individual assistance, public assistance, and for hazard mitigation.

Sometimes, presidential declarations of disaster and the actions of FEMA stir controversy. For instance, as long as 10 years after Hurricane Katrina, writers like Kenneth Walsh of *U.S. News and World Report* continued to characterize the untimely response to the 2005 disaster as the “Undoing of George W. Bush.”

Certainly, it is not surprising that politics gets in the way. What is clear today, however, is that Donald Trump has politicized disaster relief in ways that defy any previous norms and boundaries. Since Hurricane Maria in 2017, the president has repeatedly distorted the death toll and exaggerated the funding delivered to Puerto Rico in the wake of the disaster. In 2018, Trump threatened to withhold disaster funds from California as the state experienced the deadliest and most destructive wildfires in its history.

This past January, White House officials told various news outlets that Trump was pondering ways to divert disaster funds to build his border wall. When republicans representing disaster-struck states like Texas complained, he backed off the threat. Later, he also claimed he was not looking to declare a national emergency to gain leverage for border wall funding, at least not “right now,” he said.

But “right now” came in February when Trump formally declared a national emergency to lay the ground for diverting cash from the Defense Department for construction of his wall. After litigation reaching to the Supreme Court level, Defense Secretary Mark Esper recently authorized diversion of \$3.6 billion in military construction funds for the border wall with Mexico.

Other recent developments show that Trump has returned to the idea of diverting disaster relief money to other aspects of his immigration project. In late-August as Hurricane Dorian threatened Puerto Rico, the *Washington Post* reported that the Department of Homeland Security was transferring hundreds of millions of dollars from disaster relief to fund more beds in adult detention centers and create temporary facilities to hold people for asylum hearings along the Mexican border.

Given the exploitation of federal disaster relief in the Trump era, San Angelo is fortunate to have strong local organizations to step up after calamity hits. The May tornado emphasized the

priceless contributions of volunteers and organizations such as the Salvation Army and local churches. To bridge the gap between the needs of local households and any federal disaster funds that may arrive, the San Angelo Area Foundation established a San Angelo Disaster Relief Fund to accept donations allowing neighbors to help support the recovery of residents most affected by the May storm.

Every citizen of San San Angelo should be grateful and proud of the local groups and volunteers that are willing to promote the general welfare of the community. In these days, however, when that responsibility falls more and more upon the shoulders of local people, it is essential to reinforce the importance of a reliable and responsive national system of disaster relief.

Without a strong backstop, many local communities may quickly discover the meaning of the tragic message delivered by the American theologian and political activist James Wallis, Jr. In the aftermath of Katrina, he warned, “sometimes it takes a natural disaster to reveal a social disaster.”

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