

Special Topics

Marshall County Disaster Resiliency Assessment

The purpose of this section is to assess at the county level key components of disaster resiliency. Housing location and quality as well as planning activities can help reduce impacts from disaster events and allow for faster recovery. Disasters can include tornadoes, extreme weather, high winds, as well as man-made events. These events may largely be inevitable, but the ability to reduce damage and casualties as well recovery can be improved with good planning.

C.0 Comprehensive Plans & Hazard Mitigation Plans

There are 2 key cities within the county: Madill and Kingston.

Comprehensive plans are the guiding documents for cities of various sizes to address key aspects of their community from land use, transportation, environment, housing, and economic development.

No comprehensive plans were found for Madill or Kingston.

The other key plan for a city to manage, mitigate and plan for recovery related to disasters is a **Hazard Mitigation Plan** (or Emergency Management Plan). Often low density counties, the Hazard Mitigation Plan is done at the county level, though some cities may augment the county plan with a city plan.

Marshall County does have a Hazard Mitigation Plan, but was unavailable for this study.

C.2.1.1. Historical Data on Natural Disasters and Other Hazards

Data on historical damages and casualties is typically collected as part of a Hazard Mitigation Plan preparation to determine the appropriate planning measures and actions to take before and after an event. No HMP was found for Marshall County.

Flooding

Flooding, based on FEMA FIRM maps, does not show floodplain areas in the county. The National Flood Hazard Layer (Official) is not available for this area. Flash flooding is a concern for all parts of the state after heavy precipitation.

City-Data.com show that Marshall County has had 12 declared natural disasters. Six have been Presidential Declared Major Disasters. Six were declared emergencies.

Tornadoes

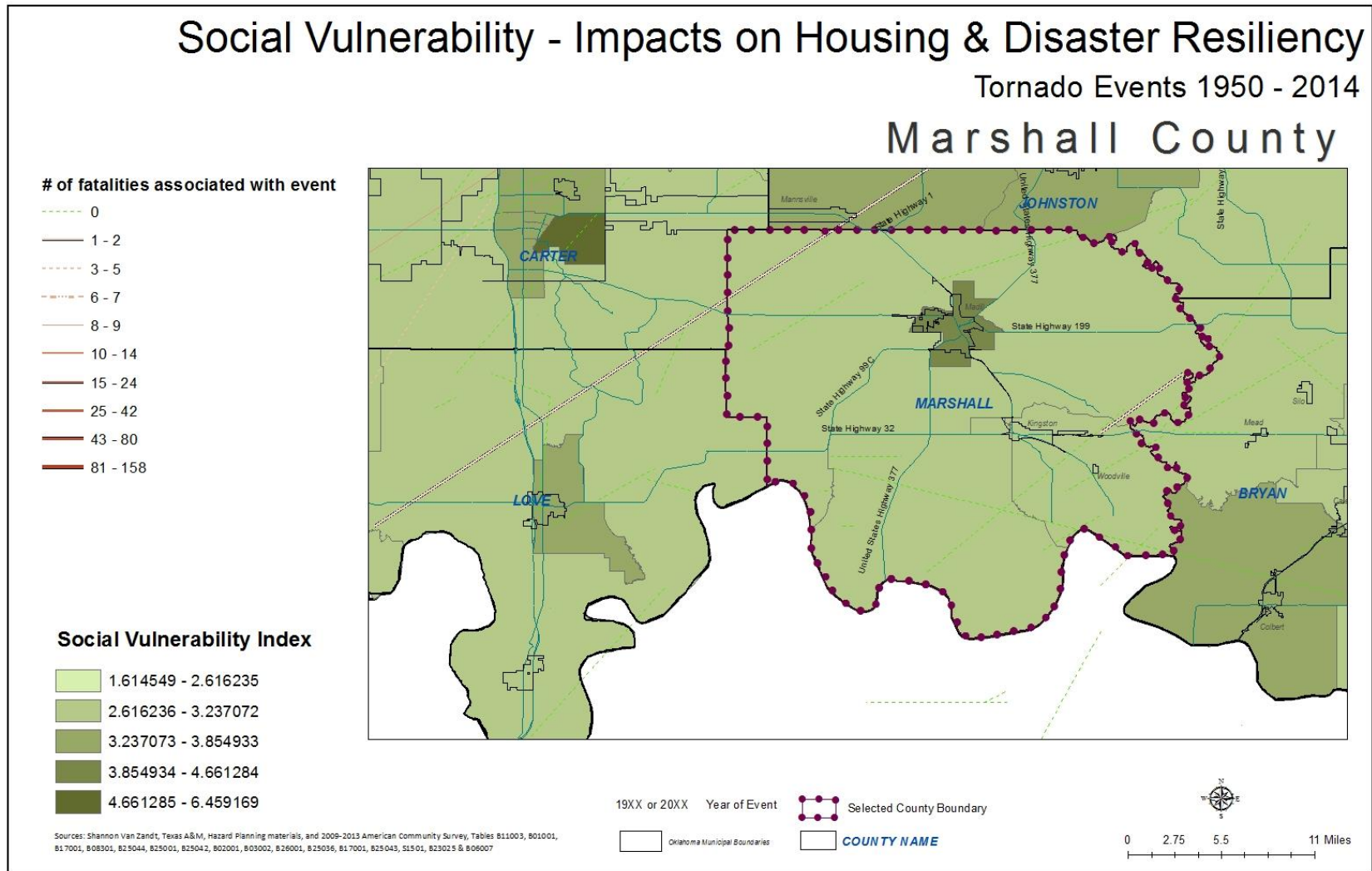
This includes 3 tornadoes prior to 1950 and 28 tornadoes since 1950; -2 F4 tornado and 3 F3 tornadoes.

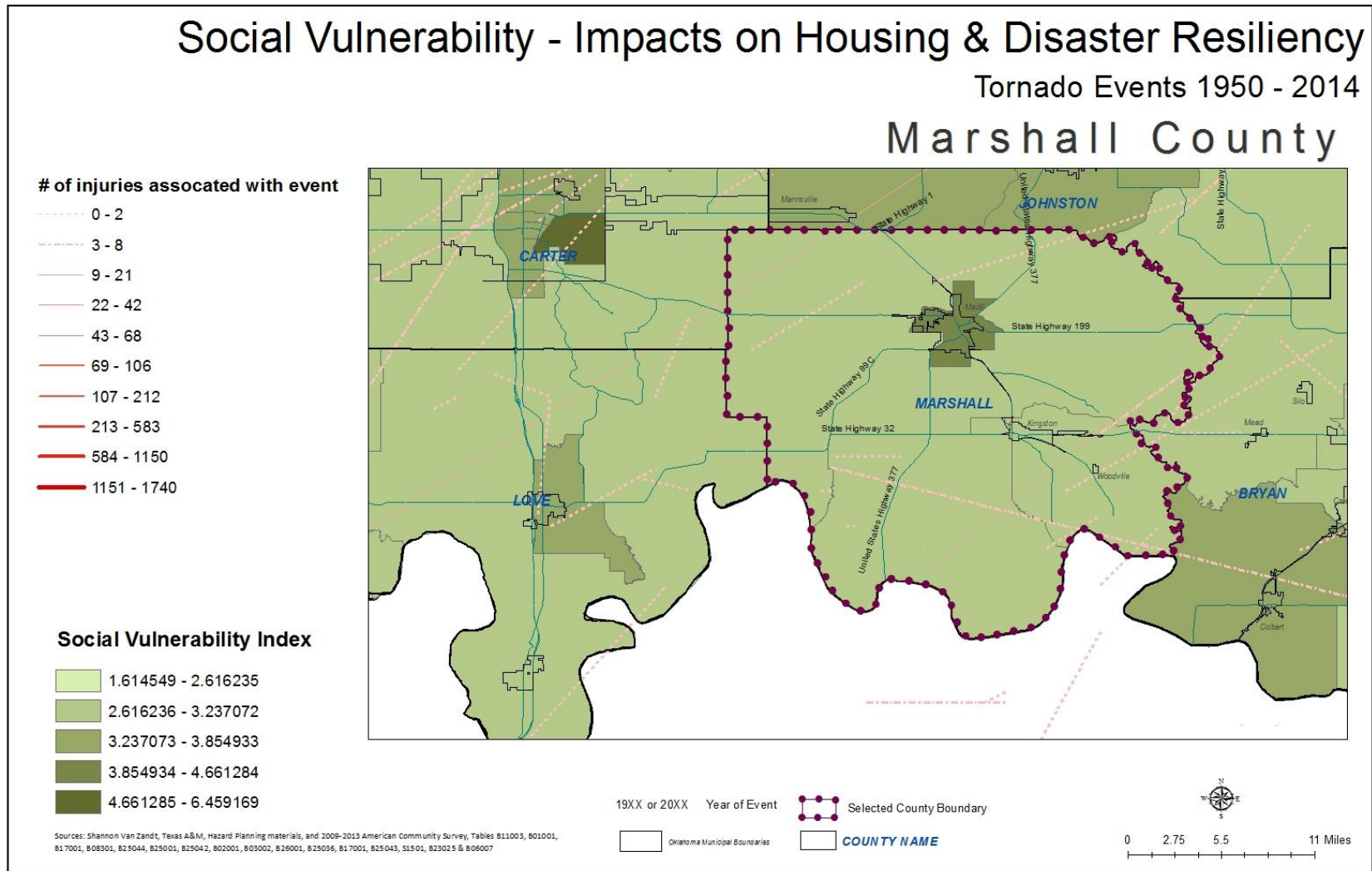
- On 4/2/1957, a category F4 (max. wind speeds 207-260 mph) tornado 9.5 miles away from the Madill city center killed 2 people and injured 6 people and caused between \$500,000 and \$5,000,000 in damages.
- On 4/27/1966, a category F4 tornado 21.1 miles away from the city center injured 2 people and caused between \$50,000 and \$500,000 in damages. (Only recorded on City-data.com. Not recorded by NOAA.)

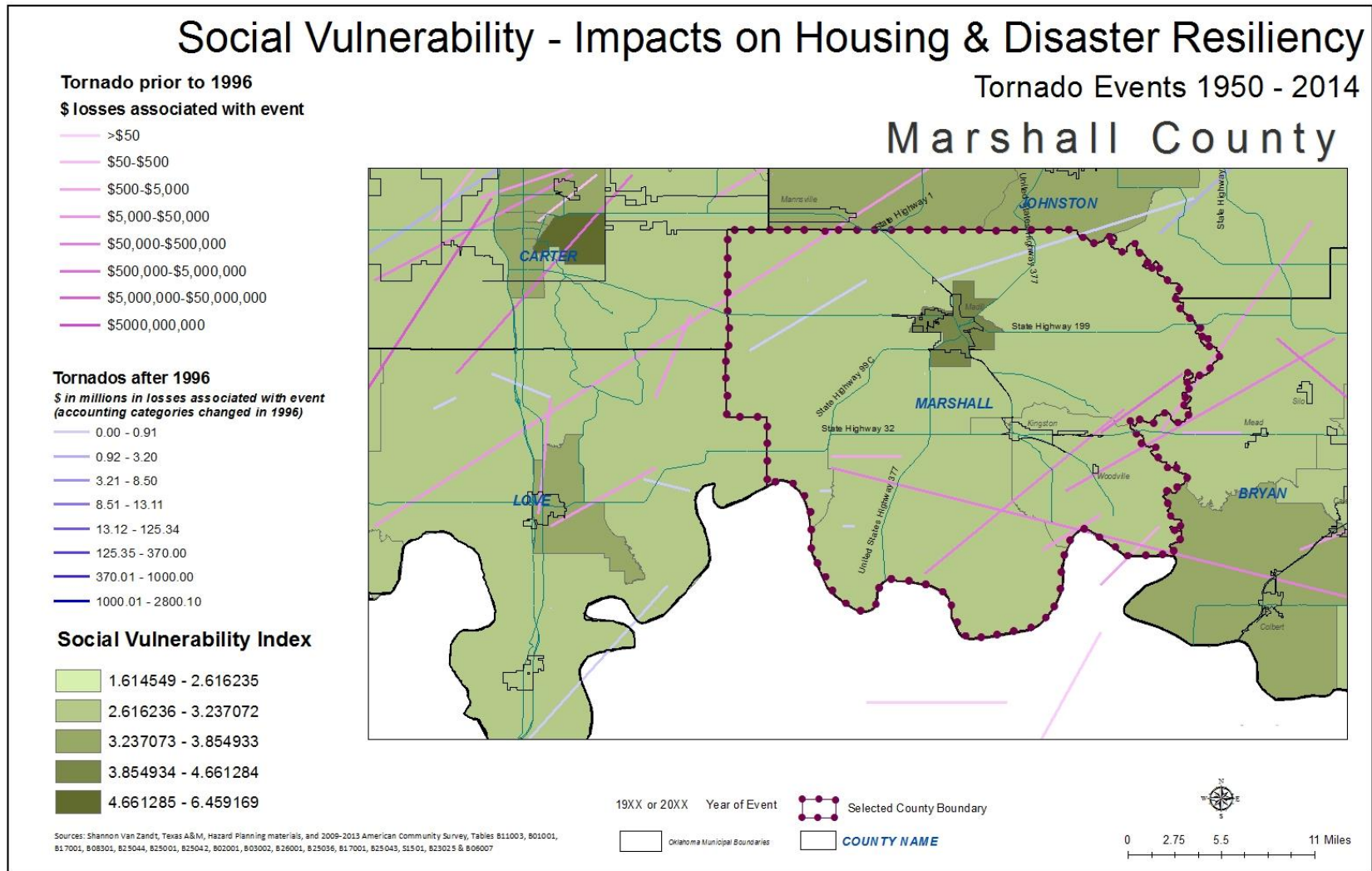
- On 03/31/1959, a category F3 tornado took the Willis path and injured 10 people.
- On 04/03/1964, a category F3 tornado took a path near Woodville - Lake Texoma - 2 W Cobb and injured 1 person.
- On 03/12/1971, a category F3 tornado took a path between 10 SW Madill - Cartwright - Colbert - Achille – Yuba and injured 4 people.

NOAA data shows the following historic data on disaster events for the county:

Historic data on tornados between 1950-2014 shows 32 tornados documented. There were 46 injuries that occurred connected to these tornados. There were 4 fatalities connected to tornadoes during this time period, two of which occurred in the 1957 F4 tornado. Property losses between 1950-1996 ranged from \$1,181,102.00 to \$11,811,100.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was \$100,000.00.







Earthquakes

- On 9/6/1997 at 23:38:00, a magnitude 4.5 (4.5 LG, 4.2 LG, Depth: 3.1 mi, Class: Light, Intensity: IV - V) earthquake occurred 43.8 miles away from the city center.
- On 6/16/1978 at 11:46:54, a magnitude 5.3 (4.4 MB, 4.6 UK, 5.3 ML, Class: Moderate, Intensity: VI - VII) earthquake occurred 241.5 miles away from Madill center.
- On 1/18/1995 at 15:51:39, a magnitude 4.2 (4.0 LG, 4.2 LG, Depth: 3.1 mi) earthquake occurred 66.6 miles away from the city center.
- On 4/28/1998 at 14:13:01, a magnitude 4.2 (3.9 MB, 4.2 LG, Depth: 3.1 mi) earthquake occurred 105.2 miles away from the city center.
- On 11/15/1990 at 11:44:41, a magnitude 3.9 (3.6 LG, 3.9 LG, Depth: 3.1 mi, Class: Light, Intensity: II - III) earthquake occurred 65.6 miles away from Madill center.
- On 6/8/2004 at 00:15:09, a magnitude 3.5 (3.5 LG, Depth: 3.1 mi) earthquake occurred 29.2 miles away from the city center.

See the following historic data on disaster events for the county:

<http://www.srh.noaa.gov/oun/?n=tornadodata-county-ok-marshall> & <http://www.city-data.com/city/Madill-Oklahoma.html>

C.2.1.2; C.2.1.6; C.2.1.7; C.2.1.8 Shelters from Disaster Event

No information available.

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

No information available.

C.2.1.4 Local Emergency Response Agency Structure

No information available.

C.2.1.5 Threat & Hazard Warning Systems

The identified Threat & Hazard Warning Systems for Marshall County include:

- Sirens (It appears that Madill and Kingston both have emergency sirens however there is no indication of quantities or coverage area. See <http://www.madillrecord.net/v2/content.aspx?ID=16488&MemberID=1828&Title=this-weeks-issuepdf&SiteSearch=1&Search=siren>)
- Phone notification (Based on 2013 newspaper records, the City of Madill discussed utilizing Black Board Connect however no other information was found regarding this system. See <http://www.madillrecord.net/v2/content.aspx?ID=16488&MemberID=1828&Title=this-weeks-issuepdf&SiteSearch=1&Search=black+board>)

Social Vulnerability

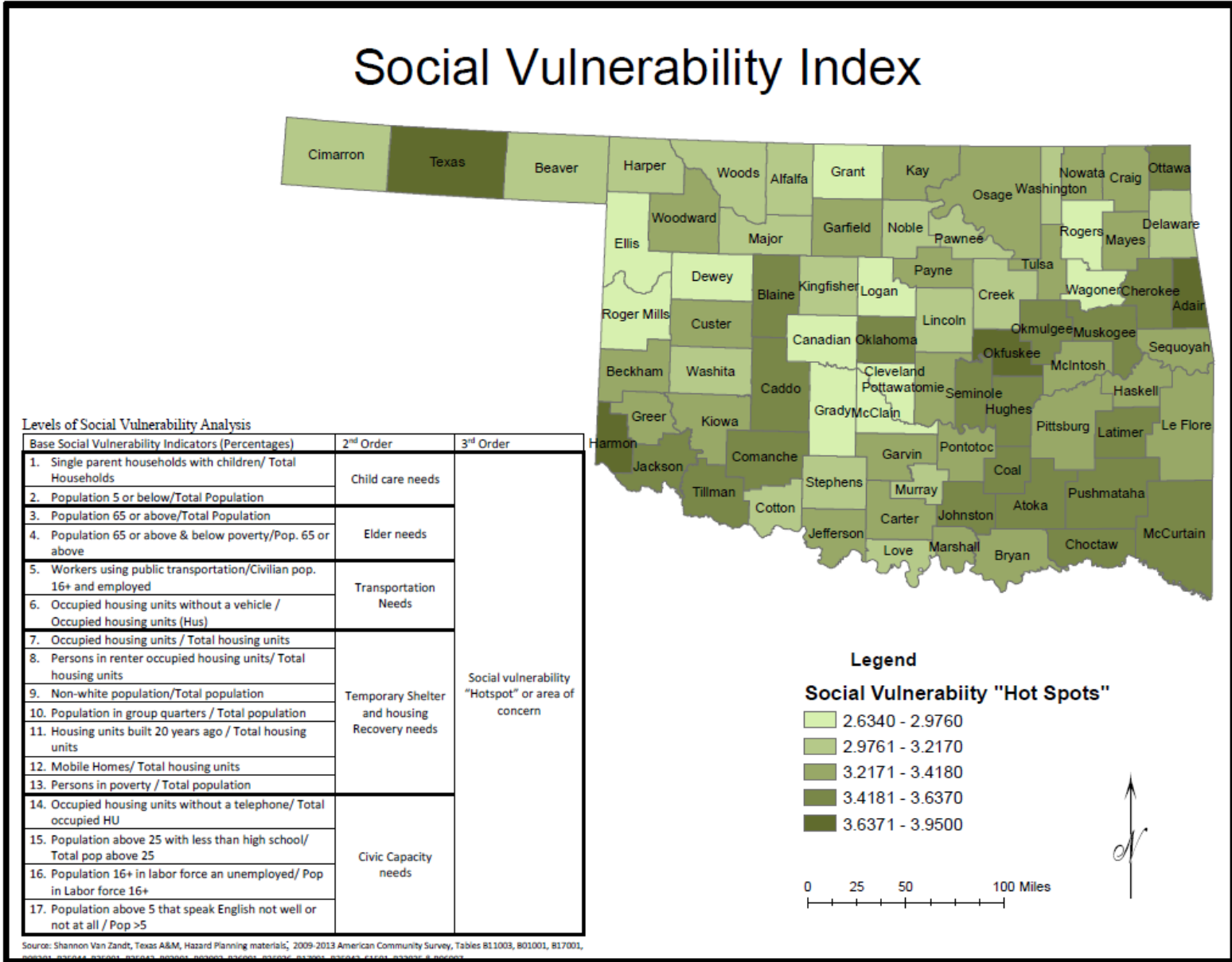
Based on the research work done by the Texas A&M University Hazard Reduction and Recovery Center, an added component is being included in this section. Social vulnerability can place households at a further disadvantage during and after a disaster. This analysis is assessing for the county the levels of social vulnerability based on demographic indicators to highlight 'hotspots' or counties that have higher social vulnerability. That combined with Hazard Mitigation Plans – or lack thereof – can highlight places where additional work is needed to reduce impacts on households.

Social Vulnerability Analysis - Marshall County

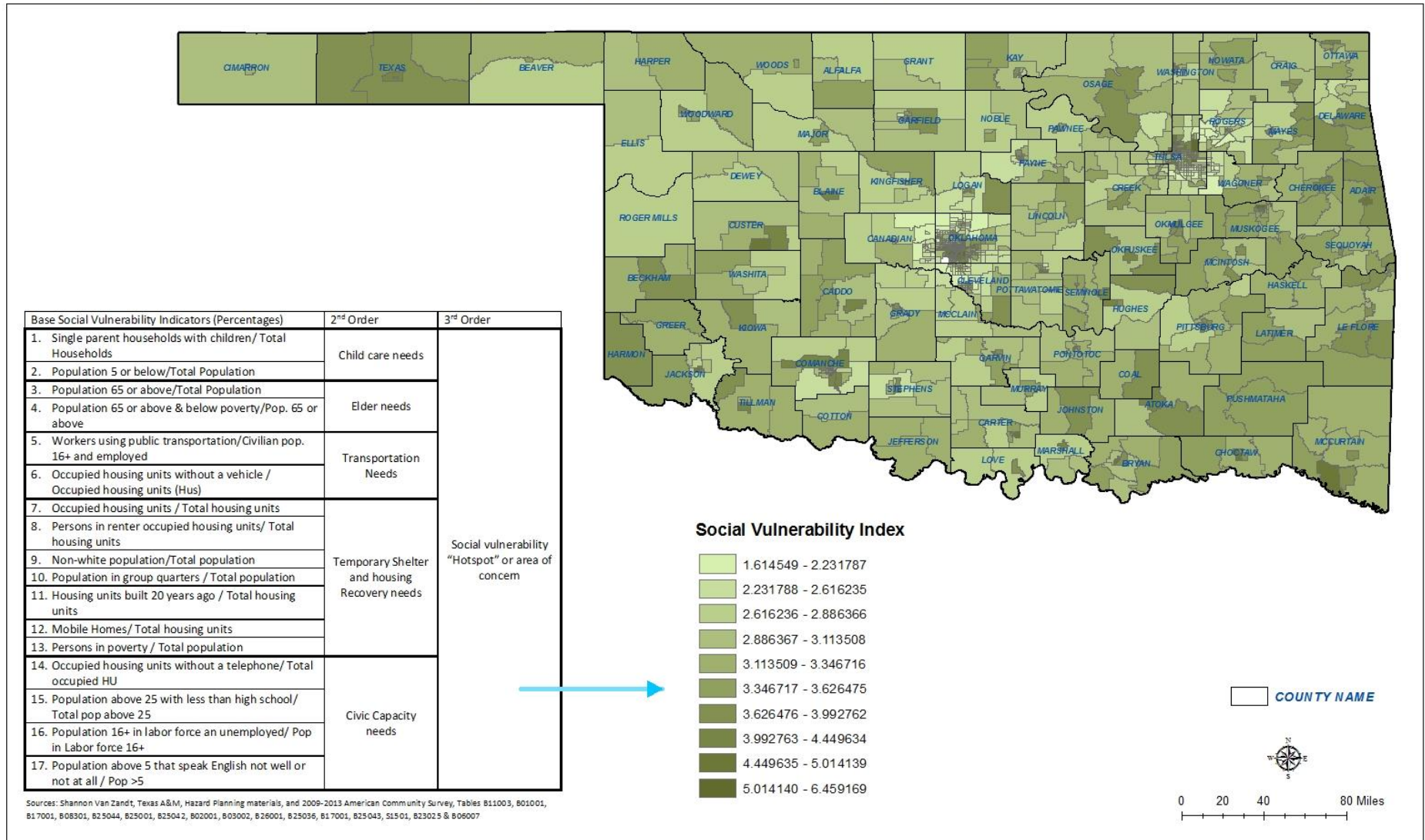
Base Social Vulnerability Indicators (%)		2nd Order	3rd Order
1.) Single Parent Households	10.62%	0.171	3.289 Social Vulnerability 'Hotspot' or Area of Concern
2.) Population Under 5	6.48%	(Child Care Needs)	
3.) Population 65 or Above	20.21%	0.331	
4.) Population 65 or Above Poverty Rate	12.91%	(Elder Needs)	
5.) Workers Using Public Transportation	1.25%	0.065	
6.) Occupied Housing Units w/o Vehicle	5.21%	(Transportation Needs)	
7.) Housing Unit Occupancy Rate	59.98%	2.363 (Temporary Shelter and Housing Recovery Needs)	
8.) Rental Occupancy Rate	20.65%		
9.) Non-White Population	31.20%		
10.) Population in Group Quarters	1.46%		
11.) Housing Units Built Prior to 1990	71.86%		
12.) Mobile Homes, RVs, Vans, etc.	33.92%		
13.) Poverty Rate	17.28%		
14.) Housing Units Lacking Telephones	1.32%	0.359 (Civic Capacity Needs)	
15.) Age 25+ With Less Than High School Diploma	20.70%		
16.) Unemployment Rate	9.02%		
17.) Age 5+ Which Cannot Speak English Well or Not At All	4.83%		

Sources: Shannon Van Zandt, Texas A&M, Hazard Planning materials, and 2009-2013 American Community Survey, Tables B11003, B01001, B17001, B08301, B25044, B25001, B25042, B02001, B03002, B26001, B25036, B17001, B25043, S1501, B23025 & B06007

Social Vulnerability Index



Social Vulnerability - Impacts on Housing & Disaster Resiliency



Social Vulnerability - Impacts on Housing & Disaster Resiliency

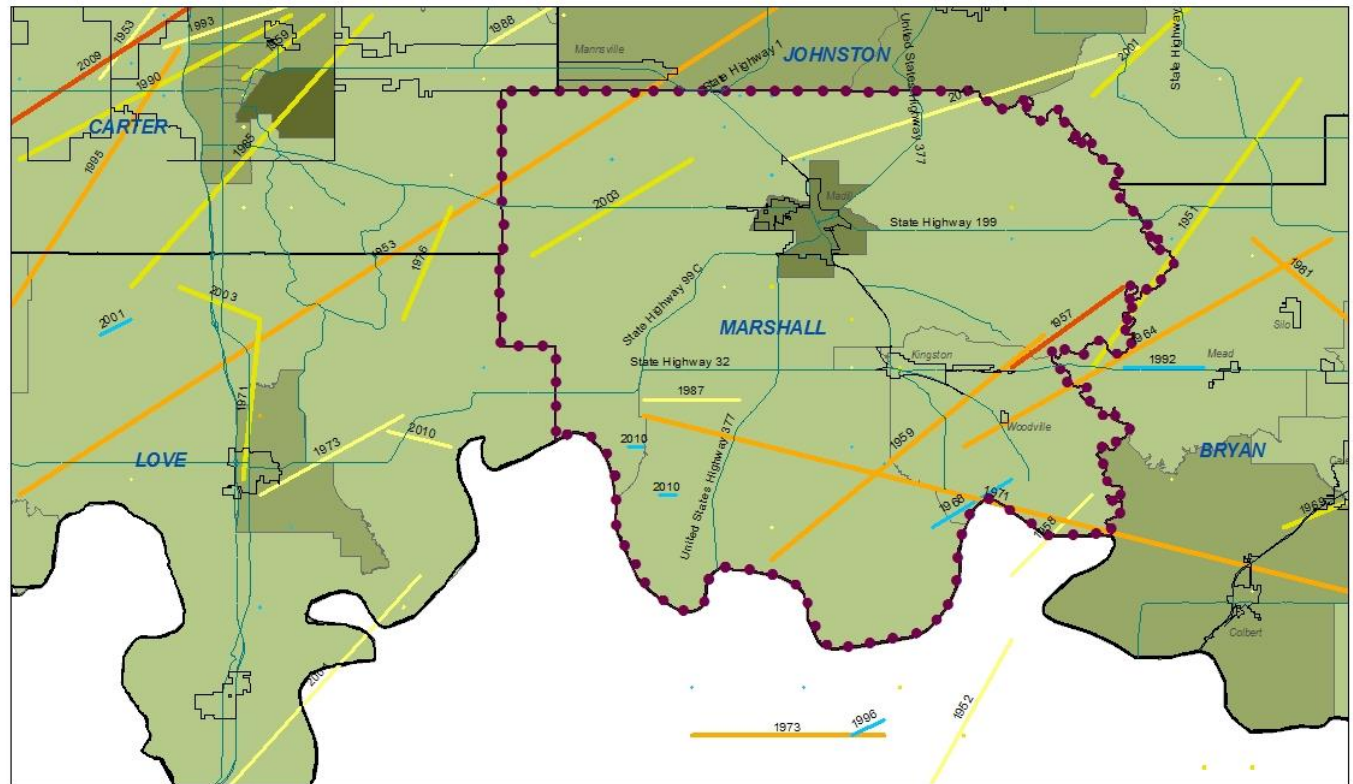
Tornado Events 1950 - 2014

Marshall County

Tornado Magnitude



Social Vulnerability Index



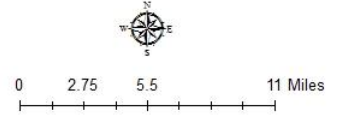
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19XX or 20XX Year of Event

Oklahoma Municipal Boundaries

Selected County Boundary

COUNTY NAME



Social vulnerability combined with the devastating impacts of a natural or man-made disaster can compound a household's ability to recover and in fact can place those individuals at an even greater gap or disadvantage prior to the event (Shannon Van Zandt, Texas A&M, Hazard Planning).

This county falls below the state score per this index for social vulnerability when comparing as a county to other counties in the state. The area most vulnerable by census tract is in the populated area of Madill.

Recommendations for this county:

- If a no Hazard Mitigation Plan exists, apply for grants/funding to develop a county hazard mitigation plan. The HMP must then be approved by the state and FEMA. Include attention to areas within the county that may have compounding social vulnerability factors.
- Pursue efforts to strengthen building codes related to tornadoes and natural disasters should be considered (such as the use of "hurricane clips" for all new residential construction).
- Pursue funding/grants for public shelters. As city pursues planning for shelters from disaster events for multifamily, HUD and LIHTC units, in addition to all housing in the community should be incorporated with any effort to increase housing.