

Special Topics

McCurtain 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: Idabel and Broken Bow.

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.

Of the 2 cities, no adopted have comprehensive plans were found.

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.

No Hazard Mitigation Plan was found for McCurtain County or key cities within county.

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

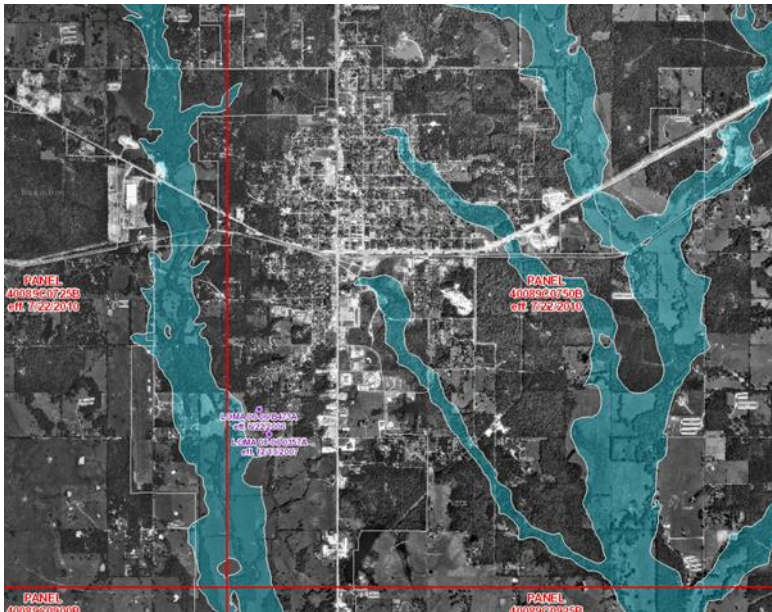
Data on historical damages and casualties is typically collected as part of a **Hazard Mitigation Plan** preparation to determine the appropriate planning measures and actions to take before and after an event.

No HMP was found. However according to <http://www.city-data.com/city/Broken-Bow-Oklahoma.html> & <http://www.city-data.com/city/Idabel-Oklahoma.html> McCurtain County had 12 declared natural disasters: Major Disasters (Presidential) Declared: 7 and Emergencies Declared: 5. See below for those listed for the cities of Idabel and Broken Bow.

Flooding

All parts of the county may be subject to flash flooding, freeze-thaw flooding and extreme precipitation that can cause flooding, unrelated to the streams and rivers. Development in the floodplain, however, increases risk of damages and property loss potentially repeatedly

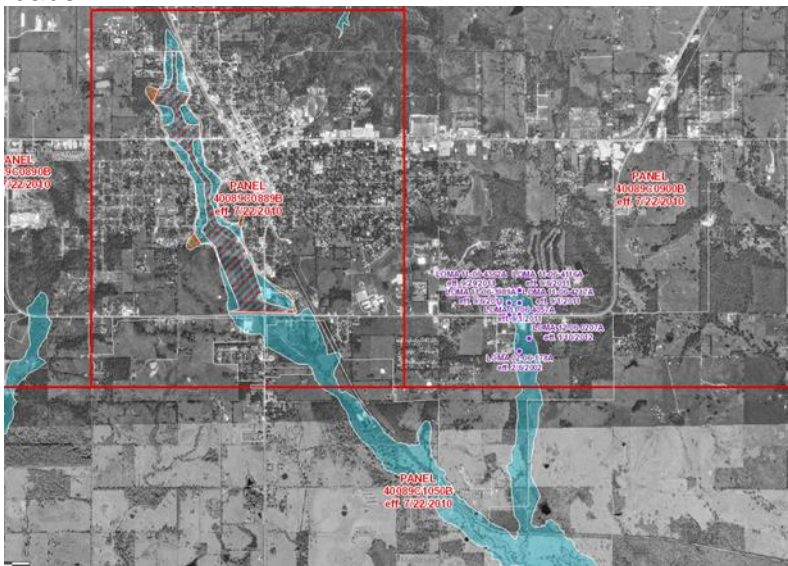
Broken Bow



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Idabel



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Garvin



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones

■ 1% Annual Chance Flood Hazard

Millerton



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones

■ 1% Annual Chance Flood Hazard

Valiant



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Wright City



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Haworth



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Smithville



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Tornado

- *On 4/2/1982, a category F5 (max. wind speeds 261-318 mph) tornado 9.8 miles away from the Broken Bow city center injured 29 people and caused between \$500,000 and \$5,000,000 in damages.*
- *On 4/2/1982, a category F4 (max. wind speeds 207-260 mph) tornado 27.1 miles away from the city center killed 3 people and injured 23 people and caused between \$500,000 and \$5,000,000 in damages.*
- *On 10/22/1972, a category F3 (max. wind speeds 158-206 mph) tornado 0.3 miles away from the Idabel city center injured one person and caused between \$5000 and \$50,000 in damages.*

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

Historic data on tornados between 1950-2014 there are 54 tornados documented. There were 97 injuries that occurred connected to these tornados, with 7 of those injuries happening in the 2009 tornado. There were 1 fatalities connected to tornadoes during this time period, which occurred in 1953. Property losses between 1950-1996 ranged from \$860,003.00 to \$8,600,150.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was \$6,610,000.00.

Social Vulnerability - Impacts on Housing & Disaster Resiliency

Tornado Events 1950 - 2014

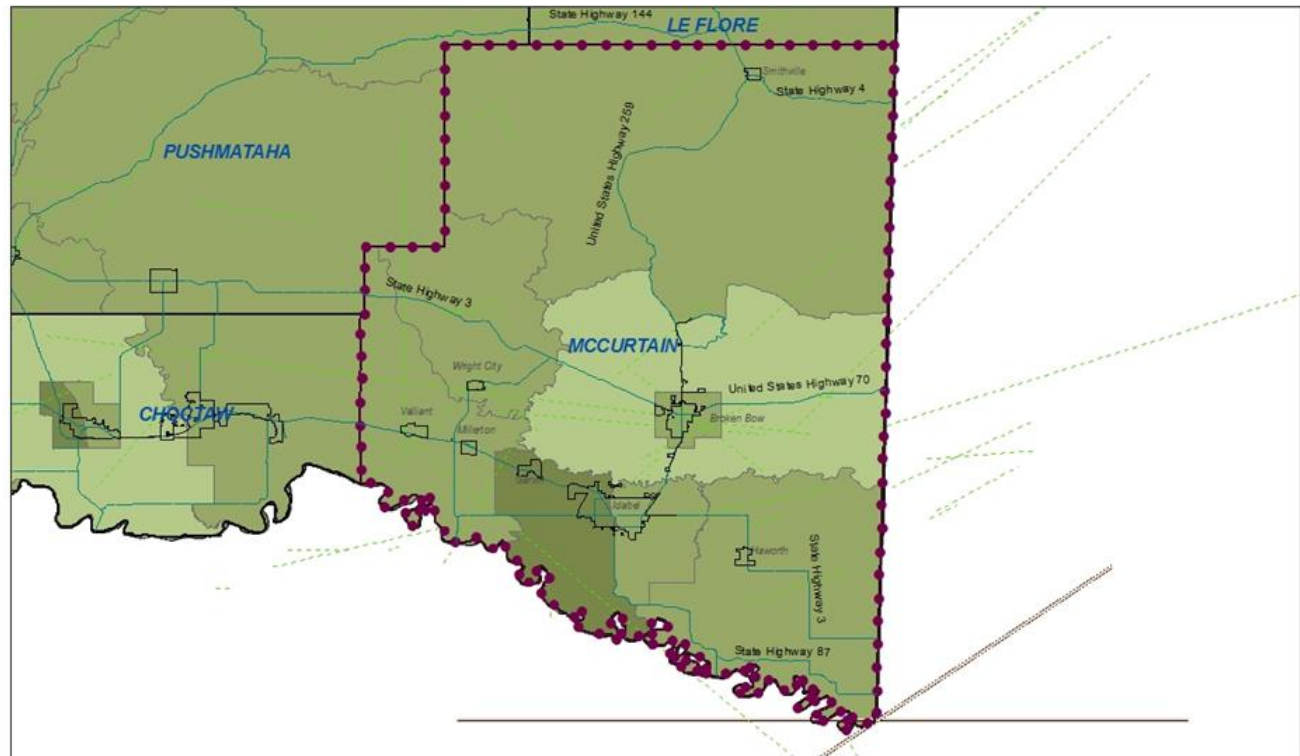
McCurtain County

of fatalities associated with event

- 0
- 1 - 2
- 3 - 5
- 6 - 7
- 8 - 9
- 10 - 14
- 15 - 24
- 25 - 42
- 43 - 80
- 81 - 158

Social Vulnerability Index

- 1.614549 - 2.616235
- 2.616236 - 3.237072
- 3.237073 - 3.854933
- 3.854934 - 4.661284
- 4.661285 - 6.459169



19XX or 20XX Year of Event
 Selected County Boundary
 Oklahoma Municipal Boundaries
 COUNTY NAME



0 5 10 20 Miles

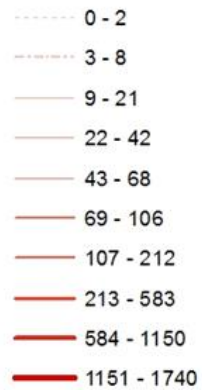
Sources: Shannon Van Zandt, Texas A&M, Hazard Planning materials, and 2009-2013 American Community Survey, Tables 811003, 801001, 817001, 808301, 825044, 825001, 825042, 802001, 803002, 826001, 825036, 817001, 825043, 51501, 823025 & 806007

Social Vulnerability - Impacts on Housing & Disaster Resiliency

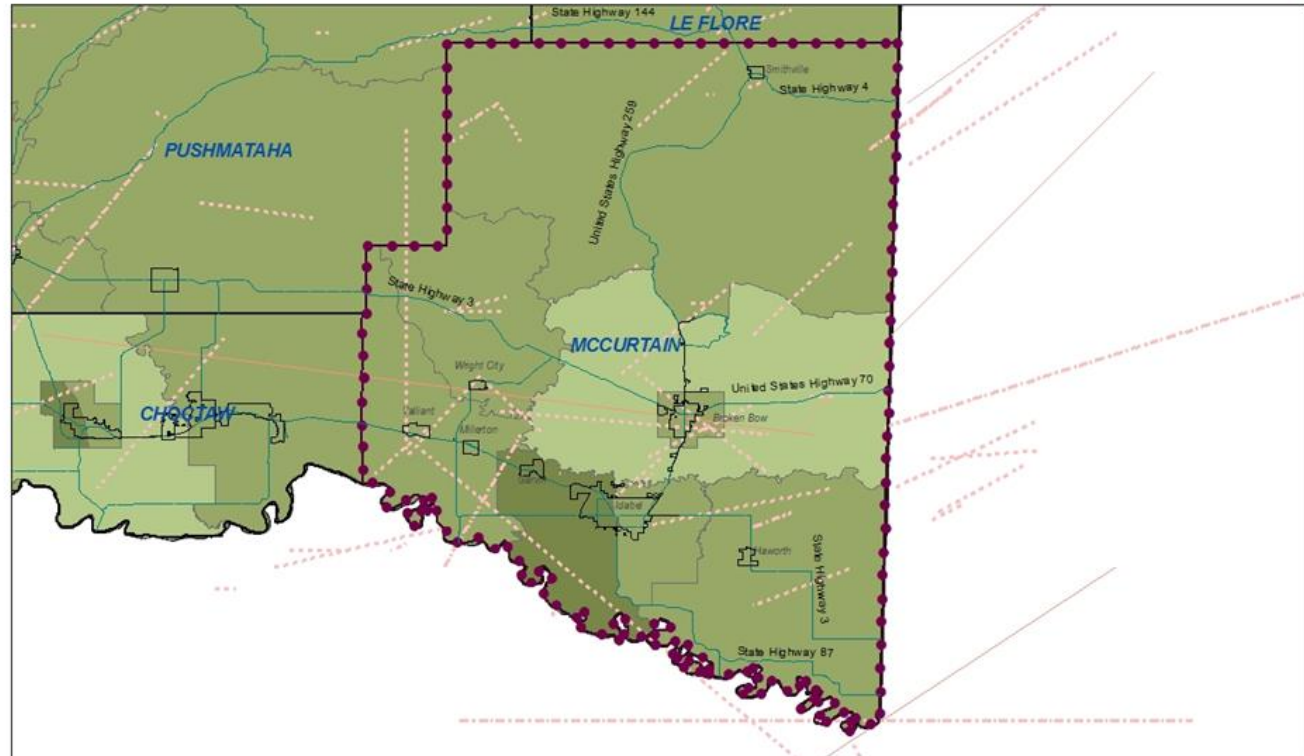
Tornado Events 1950 - 2014

McCurtain County

of injuries associated with event



Social Vulnerability Index



19XX or 20XX Year of Event

Selected County Boundary

Oklahoma Municipal Boundaries

COUNTY NAME



0 5 10 20 Miles

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 - Impacts on Housing & Disaster Resiliency

Tornado Events 1950 - 2014

McCurtain County

Tornado prior to 1996
\$ losses associated with event

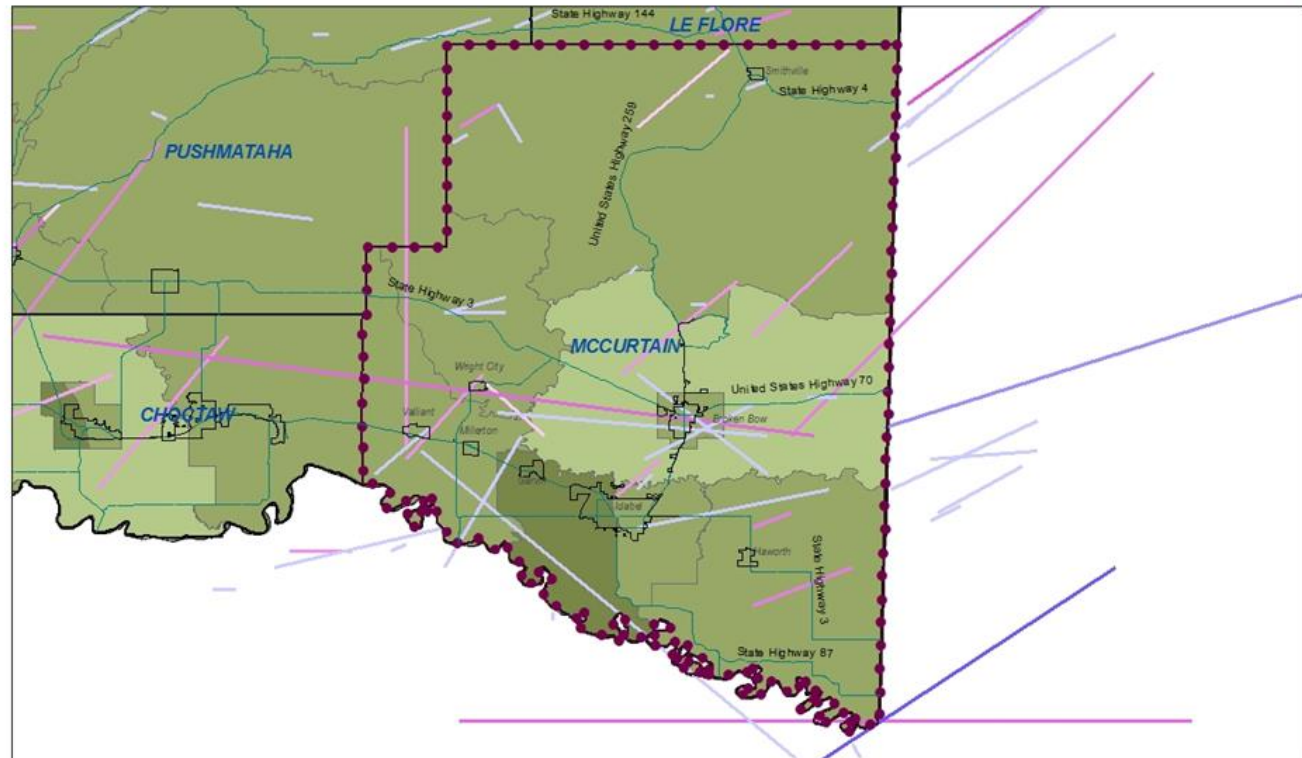
- >\$50
- \$50-\$500
- \$500-\$5,000
- \$5,000-\$50,000
- \$50,000-\$500,000
- \$500,000-\$5,000,000
- \$5,000,000-\$50,000,000
- \$500,000,000

Tornadoes after 1996
\$ in millions in losses associated with event
(accounting categories changed in 1996)

- 0.00 - 0.91
- 0.92 - 3.20
- 3.21 - 8.50
- 8.51 - 13.11
- 13.12 - 125.34
- 125.35 - 370.00
- 370.01 - 1000.00
- 1000.01 - 2800.10

Social Vulnerability Index

- 1.614549 - 2.616235
- 2.616236 - 3.237072
- 3.237073 - 3.854933
- 3.854934 - 4.661284
- 4.661285 - 6.459169



19XX or 20XX Year of Event
 Oklahoma Municipal Boundaries
 Selected County Boundary
 COUNTY NAME



0 5 10 20 Miles

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

Earthquake

- 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 106.3 miles away from the city center
- On 1/21/1982 at 00:33:54, a magnitude 4.7 (4.5 MB, 4.7 LG, 4.5 LG) earthquake occurred 164.2 miles away from Broken Bow center
- On 5/4/2001 at 06:42:12, a magnitude 4.7 (4.2 MB, 4.7 LG, 4.5 LG, Depth: 6.2 mi) earthquake occurred 166.0 miles away from the city center
- On 3/25/1976 at 00:41:20, a magnitude 5.0 (4.9 MB, 5.0 LG, Class: Moderate, Intensity: VI - VII) earthquake occurred 273.9 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) earthquake occurred 354.3 miles away from Broken Bow 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 171.0 miles away from the city center

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

No online registry was found for McCurtain County nor were any storm shelters listed or identified.

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

According to municipal code for Broken Bow

(found at www.municode.com/library/ok/broken_bow/codes/code_of_ordinances):

- Residential construction. New construction and substantial improvement of any residential structure shall have the lowest floor (including basement) elevated at least one foot above the base flood elevation.
- Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- The Flood Insurance Study for McCurtain County, Oklahoma and Incorporated Areas" dated July 22, 2010, with the accompanying Flood Insurance Rate Map (FIRM) are hereby adopted by reference and declared to be a part of this article; however, until this date the current effective FIRM and FIS for the City of Broken Bow shall continue to be used until July 22, 2010.

C.2.1.4 Local Emergency Response Agency Structure

Information not available.

C.2.1.5 Threat & Hazard Warning Systems

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

- Social Media (McCurtain County Emergency Management Facebook web page, <https://www.facebook.com/emermgt>)

No other threat or hazard warning systems were found for McCurtain County.

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 - McCurtain County			
Base Social Vulnerability Indicators			
(%)		2nd Order	3rd Order
1.) Single Parent Households	15.89%	0.229	3.597 Social Vulnerability 'Hotspot' or Area of Concern
2.) Population Under 5	7.00%	(Child Care Needs)	
3.) Population 65 or Above	15.78%	0.278	
4.) Population 65 or Above & Below Poverty Rate	12.03%	(Elder Needs)	
5.) Workers Using Public Transportation	0.34%	0.083	
6.) Occupied Housing Units w/o Vehicle	7.99%	(Transportation Needs)	
7.) Housing Unit Occupancy Rate	84.15%	2.667 (Temporary Shelter and Housing Recovery Needs)	
8.) Rental Occupancy Rate	31.95%		
9.) Non-White Population	34.83%		
10.) Population in Group Quarters	1.64%		
11.) Housing Units Built Prior to 1990	74.49%		
12.) Mobile Homes, RVs, Vans, etc.	13.60%		
13.) Poverty Rate	26.09%		
14.) Housing Units Lacking Telephones	2.84%	0.339 (Civic Capacity Needs)	
15.) Age 25+ With Less Than High School Diploma	19.20%		
16.) Unemployment Rate	10.54%		
17.) Age 5+ Which Cannot Speak English Well or Not At All	1.34%		

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

By County



Levels of Social Vulnerability Analysis

Base Social Vulnerability Indicators (Percentages)	2 nd Order	3 rd Order
1. Single parent households with children/ Total Households	Child care needs	Social vulnerability "Hotspot" or area of concern
2. Population 5 or below/Total Population		
3. Population 65 or above/Total Population		
4. Population 65 or above & below poverty/Pop. 65 or above	Elder needs	
5. Workers using public transportation/Civilian pop. 16+ and employed	Transportation Needs	
6. Occupied housing units without a vehicle / Occupied housing units (Hus)		
7. Occupied housing units / Total housing units	Temporary Shelter and housing Recovery needs	
8. Persons in renter occupied housing units/ Total housing units		
9. Non-white population/Total population		
10. Population in group quarters / Total population		
11. Housing units built 20 years ago / Total housing units		
12. Mobile Homes/ Total housing units		
13. Persons in poverty / Total population	Civic Capacity needs	
14. Occupied housing units without a telephone/ Total occupied HU		
15. Population above 25 with less than high school/ Total pop above 25		
16. Population 16+ in labor force an unemployed/ Pop in Labor force 16+		
17. Population above 5 that speak English not well or not at all / Pop >5		

Legend

Social Vulnerability "Hot Spots"

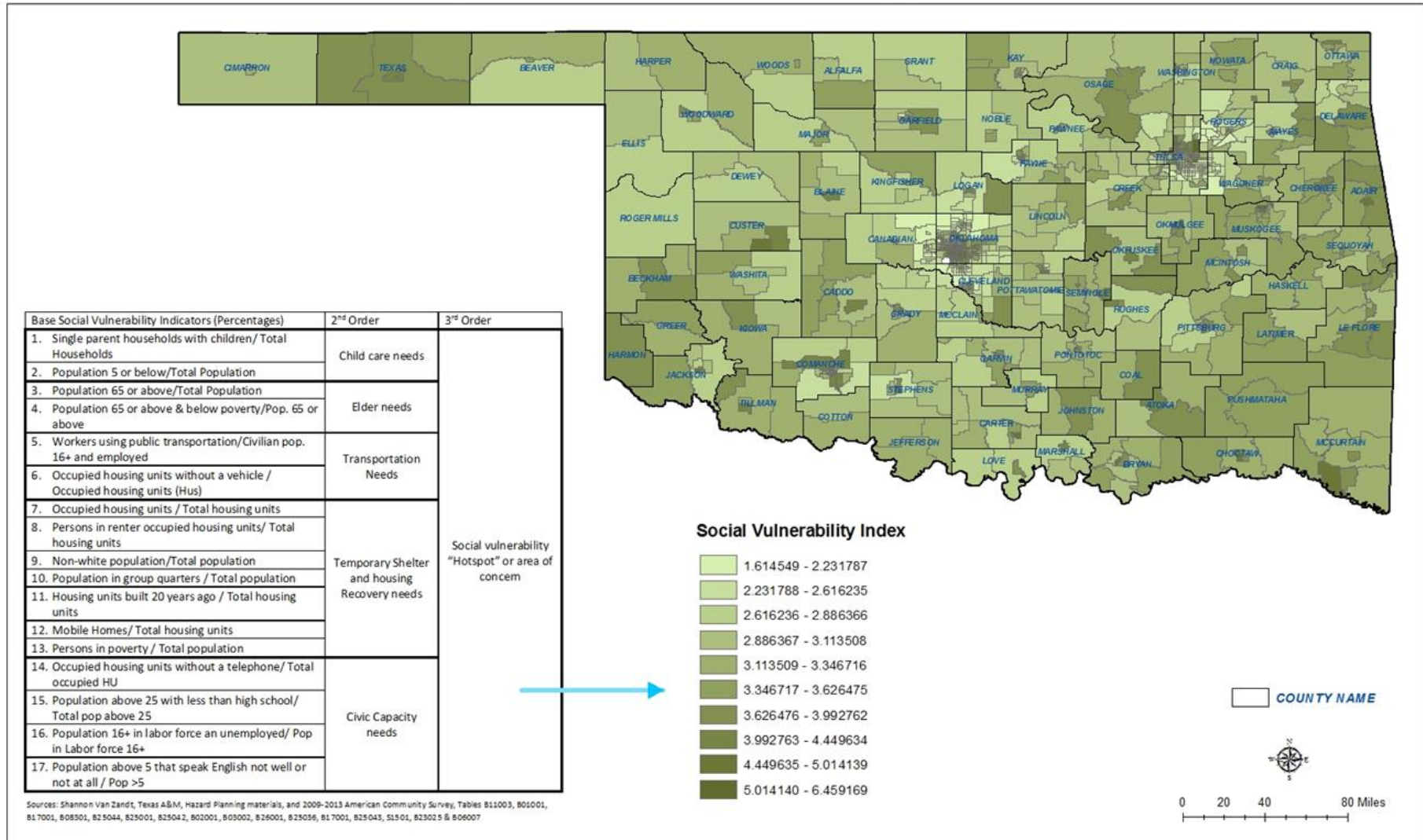
- 2.6340 - 2.9760
- 2.9761 - 3.2170
- 3.2171 - 3.4180
- 3.4181 - 3.6370
- 3.6371 - 3.9500

0 25 50 100 Miles



Source: Shannon VanZandt, Texas A&M, Hazard Planning materials; 2008-2013 American Community Survey, Tables B13003, B01001, B17001, B08001, B09004, B23001, B25002, B25003, B25004, B25005, B25006, B25007, B25008, B25009, B25010, B25011, B25012, B25013, B25014, B25015, B25016, B25017, B25018, B25019, B25020, B25021, B25022, B25023, B25024, B25025, B25026, B25027, B25028, B25029, B25030, B25031, B25032, B25033, B25034, B25035, B25036, B25037, B25038, B25039, B25040, B25041, B25042, B25043, B25044, B25045, B25046, B25047, B25048, B25049, B25050, B25051, B25052, B25053, B25054, B25055, B25056, B25057, B25058, B25059, B25060, B25061, B25062, B25063, B25064, B25065, B25066, B25067, B25068, B25069, B25070, B25071, B25072, B25073, B25074, B25075, B25076, B25077, B25078, B25079, B25080, B25081, B25082, B25083, B25084, B25085, B25086, B25087, B25088, B25089, B25090, B25091, B25092, B25093, B25094, B25095, B25096, B25097, B25098, B25099, B25100, B25101, B25102, B25103, B25104, B25105, B25106, 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Social Vulnerability - Impacts on Housing & Disaster Resiliency



Social Vulnerability - Impacts on Housing & Disaster Resiliency

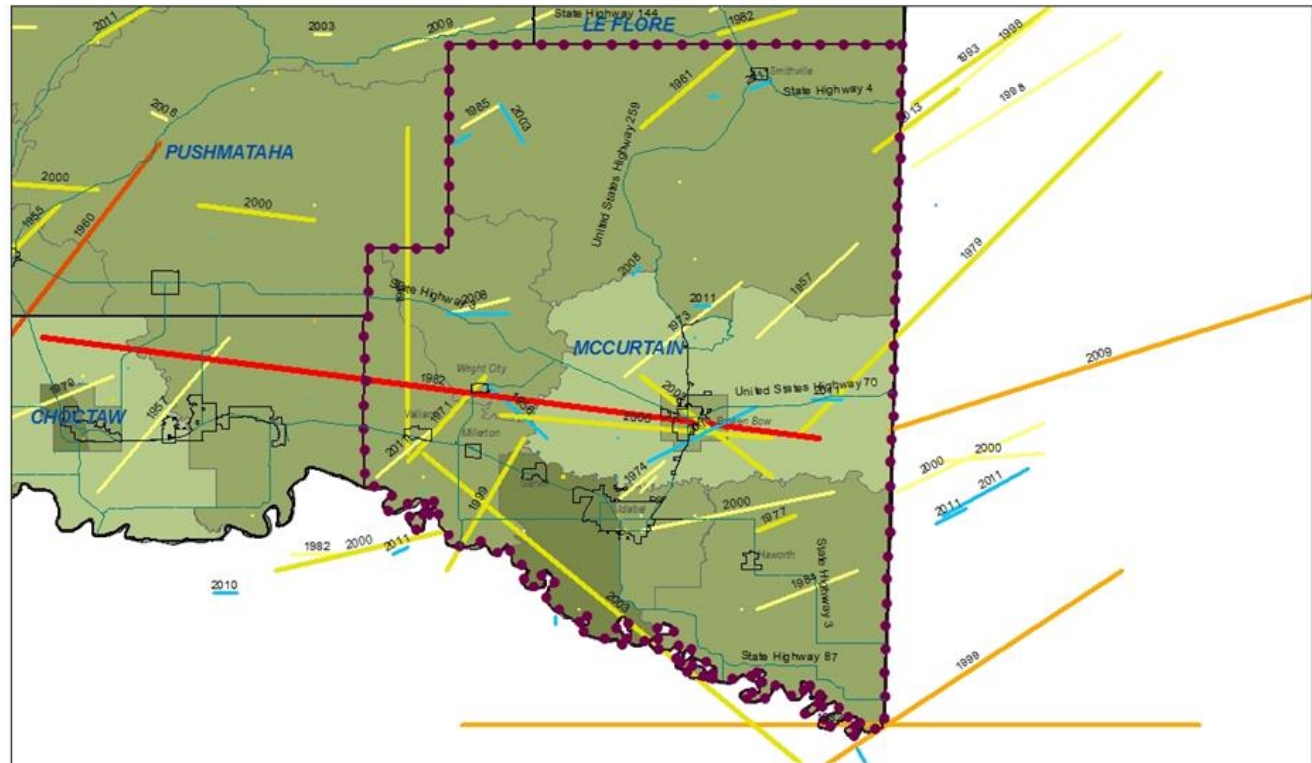
Tornado Events 1950 - 2014

McCurtain County

Tornado Magnitude

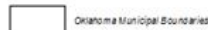


Social Vulnerability Index

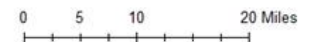


Sources: Shannon Van Zandt, Texas A&M, Hazard Planning materials, and 2009-2013 American Community Survey, Tables B11003, B01001, B17001, B08301, B25044, B25001, B25042, B02001, B03002, B26001, B29036, B17001, B25043, S1501, B23025 & B06007

19XX or 20XX Year of Event



Selected County Boundary



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 has an above average score per this index for social vulnerability when comparing as a county to other counties in the state. Looking at the census tract level, the Broken Bow and Idabel areas have elevated scores for social vulnerability. Combine that with the tornados, as one physical hazard or event that occurs, people in these areas may have additional difficulties during an event due to transportation and family needs. Additionally recovery for socially vulnerable populations can be slow and may require additional outside assistance.

Recommendations for this county:

- 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.