

Special Topics

Jackson 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 9 key cities within the county (Altus, Blair, Eldorado, Olustee, Headrick, Elmer, East Duke, Martha, Friendship).

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.

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.

Jackson County does have a Hazard Mitigation Plan and an Emergency Operations Plan.

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.

The Jackson County HMP first identified the vulnerability and risks for the area

HAZARD VULNERABILITY BY JURISDICTION												
COUNTY	DAM FAILURE	DROUGHT	EARTHQUAKE	EXTREME HEAT	FLOOD	HAIL	HAZARDOUS MATERIALS	HIGH WINDS	LIGHTNING	TORNADO	WILDFIRE	WINTER STORM
Jackson		X	X	X	X	X	X	X	X	X	X	X
SCHOOLS												
Altus		X	X	X		X	X	X	X	X		X
Eldorado		X	X	X		X	X	X	X	X		X
Navajo		X	X	X		X	X	X	X	X	X	X
Olustee		X	X	X		X	X	X	X	X		X
Southwest Technology Center		X	X	X		X	X	X	X	X	X	X
CITIES/TOWNS												
Altus		X	X	X	X	X	X	X	X	X	X	X
Blair		X	X	X	X	X	X	X	X	X	X	X
East Duke		X	X	X		X	X	X	X	X	X	X
Eldorado		X	X	X	X	X	X	X	X	X	X	X
Friendship		X	X	X		X	X	X	X	X	X	X
Headrick		X	X	X		X	X	X	X	X	X	X
Martha		X	X	X	X	X	X	X	X	X	X	X
Olustee		X	X	X	X	X	X	X	X	X	X	X

p. 16

Dam Failures

Dam/dike failures have not occurred in any years between 1950 and 2012. Damages to personal property are estimated at \$0.00. p. 18

Flooding

“Flood Zones of Jackson County

All of Jackson County and participating jurisdictions are still subject to riverine and flash flooding. The Town of Blair has flooding in the areas of U.S. Hwy. 283 and 1st Street, east on 1st Street, north on Stonehocker Street, north on Taylor Street, east on 4th Street and west on Main Street. The Town of Eldorado has flooding in the areas of Lloyd Street and A Street, A Street and 8th Street, 8th Street and Main and Market Street and A Street. The Town of Martha has flooding in the areas of north Main Street and south Main Street, north Popular Street east Church Street and west Church Street. The Town of Olustee has flooding in the areas of D Street and 5th Street and east 7th Street. The City of Altus has flooding in the areas of Galaxy and Kenwood Streets, Falcon Road and Kenwood Street, C Street and East Asalee and Park Street. There are no schools which are participating in this plan that are subject to flooding.” P. 28

“National Climatic Data Center storm event statistics record 12 flood events in Jackson County and participating jurisdictions during the 10-year period 1993-2003. There were no reported damages. According to National Flood Insurance Program statistics, Jackson County residents had four reported losses and received payments totaling \$5,164.00 as of May 2011.” P. 28



“Flood Events

August 2, 1995 - In Jackson County, SH 5 was closed due to high water four miles south of Humphries.

March 23, 2000 - Highway 62 west of Altus was covered by water at either the Salt Fork of the Red River or Bitter Creek. Flooding was also reported on Highway 283 near Blair, where several creeks overflowed. Widespread 2-3 inch rainfall amounts were reported across central and northern Jackson County.

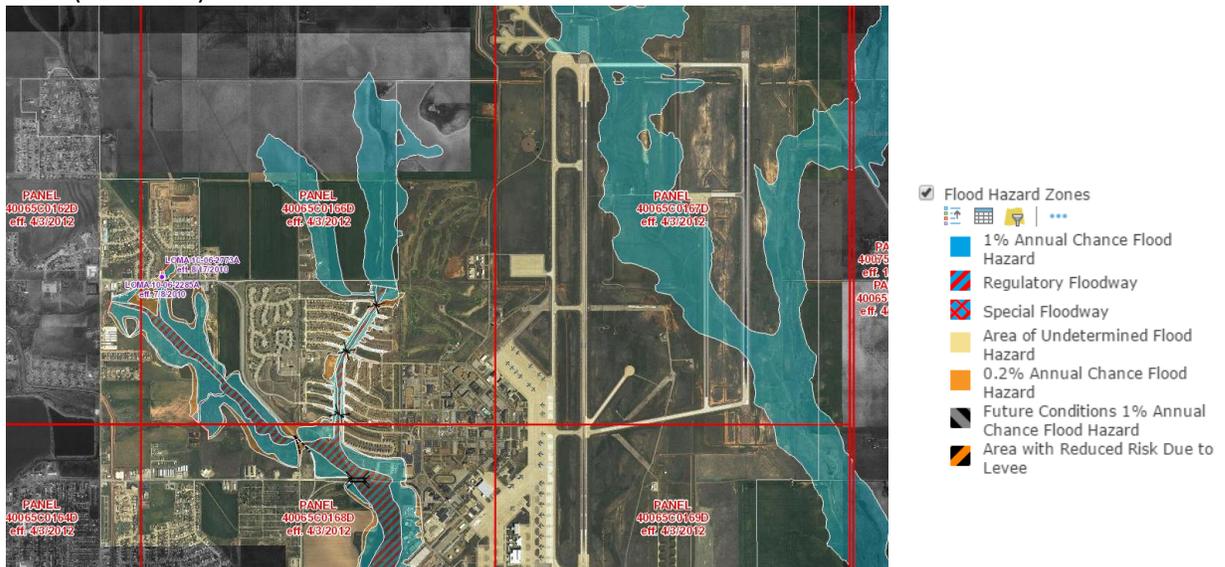
May 24, 2003 – In Eldorado Three to four foot deep water was reported across several city streets.

June 28, 2004 - Flash flooding occurred during the evening as rainfall totals up to 4 inches over Jackson County in southwestern Oklahoma. OK State Highway 6 was covered by floodwaters and mud at two locations on the highway about 1 mile north of Olustee, OK.”p. 28

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.

Altus (northeast)



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

Altus (central)



- Flood Hazard Zones
- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

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

Martha



- Flood Hazard Zones
- 1% Annual Chance Flood Hazard

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

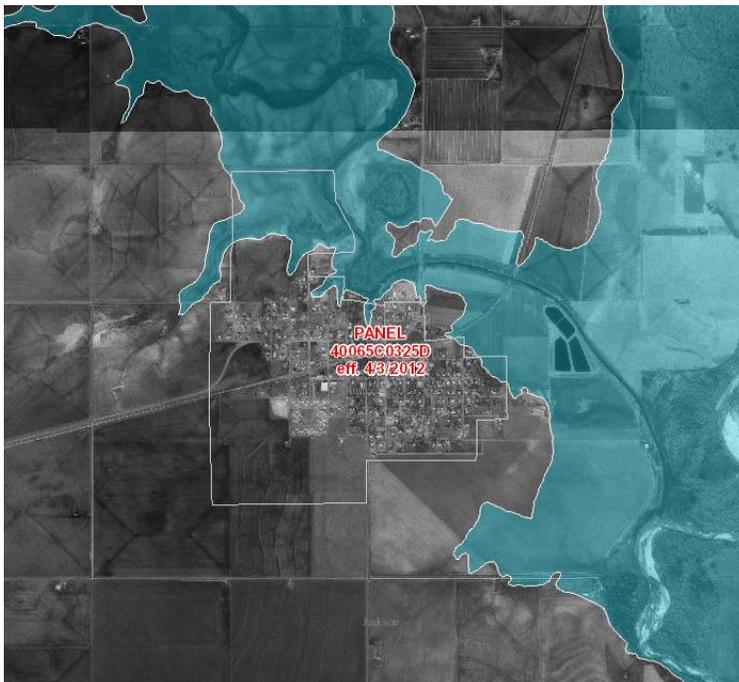
El Dorado



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

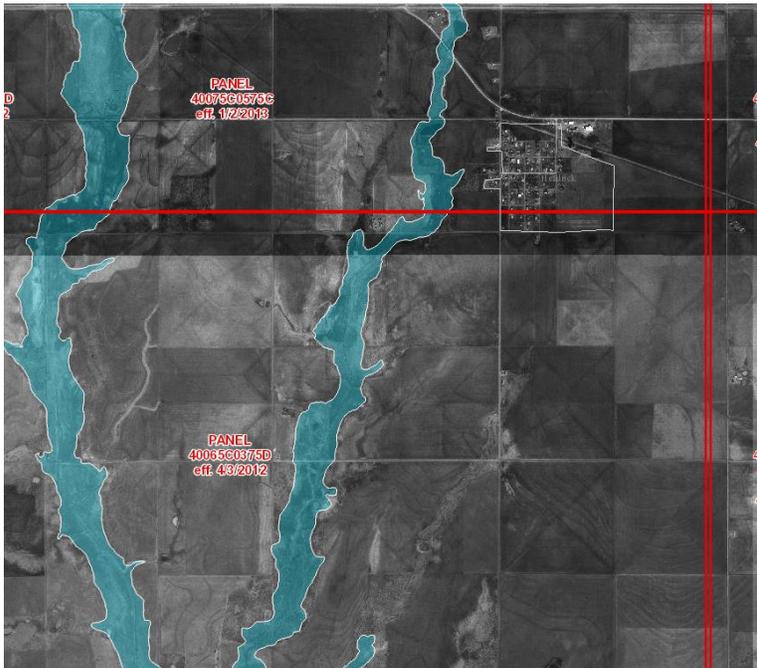
Olustee



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Headrick



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Friendship



Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Blair



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Elmer

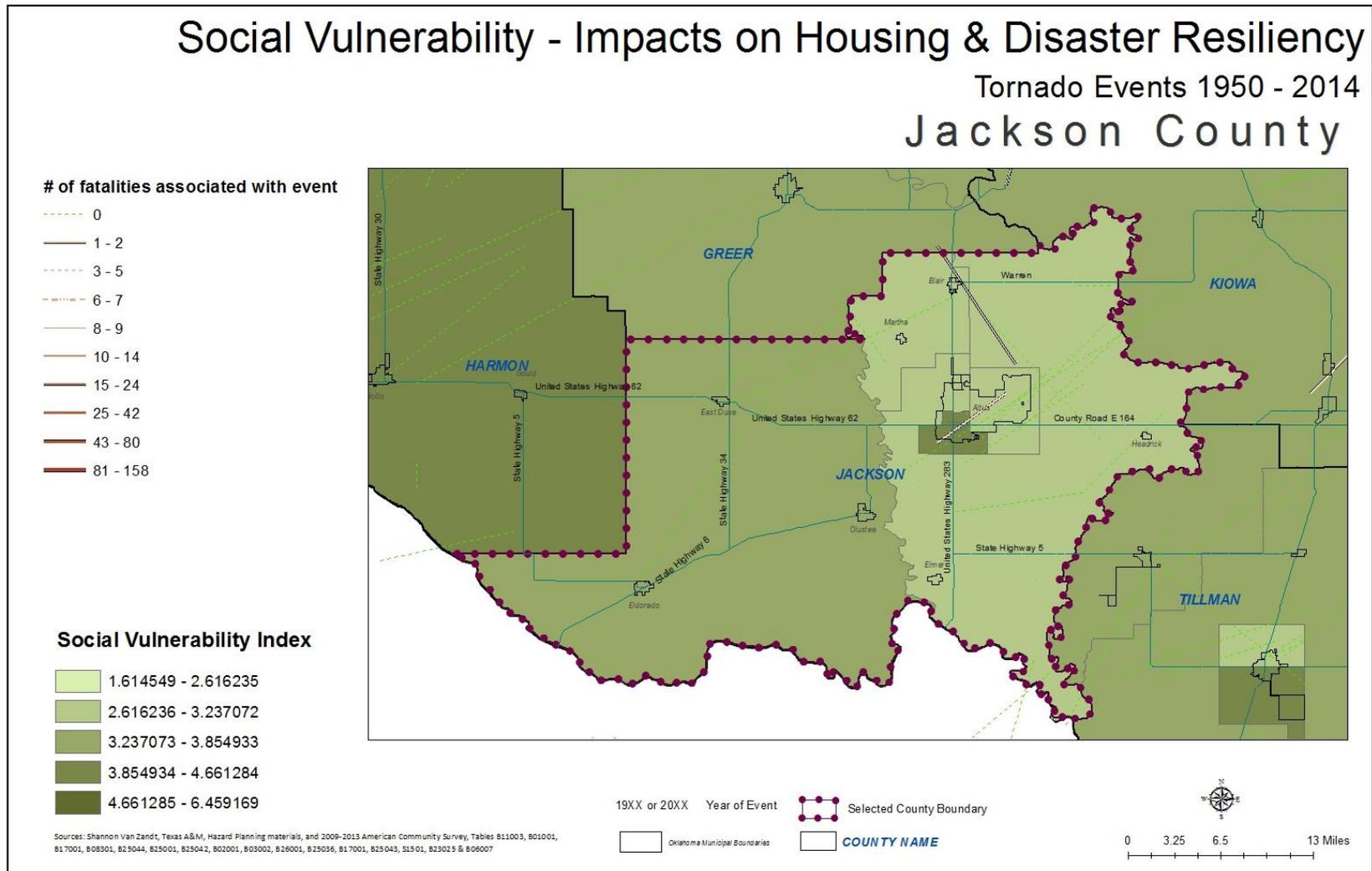


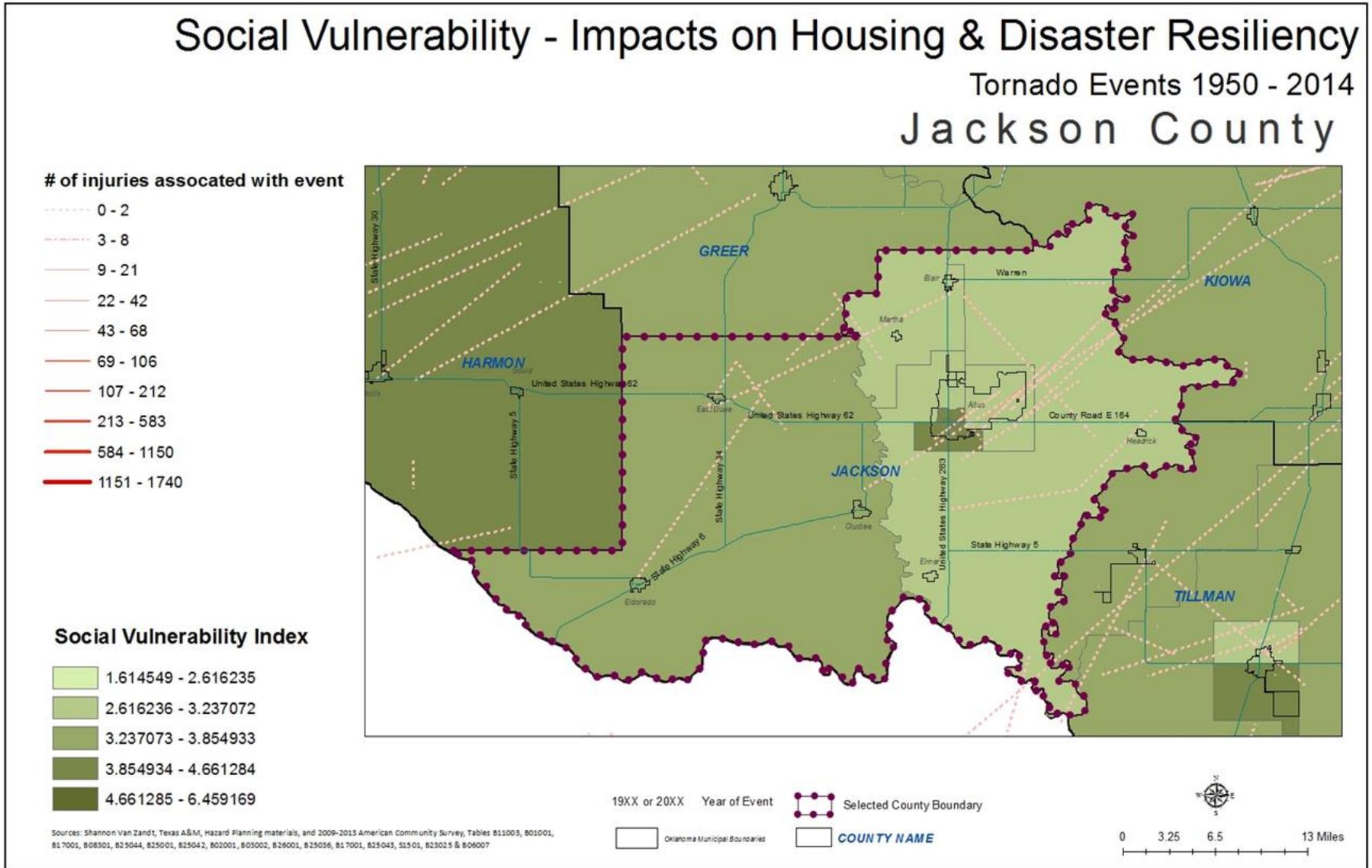
FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

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

Historic data on tornados between 1950-2014 there are 63 tornados documented. There were 77 injuries that occurred connected to these tornados, with 59 of those injuries happening in the 1982 tornado. There were 4 fatalities connected to tornadoes during this time period, 2 of which occurred in 1982. Property losses between 1950-1996 ranged from \$51,788,307.00 to \$517,883,350.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was \$20,000.00 .





Social Vulnerability - Impacts on Housing & Disaster Resiliency

Tornado Events 1950 - 2014

Jackson 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

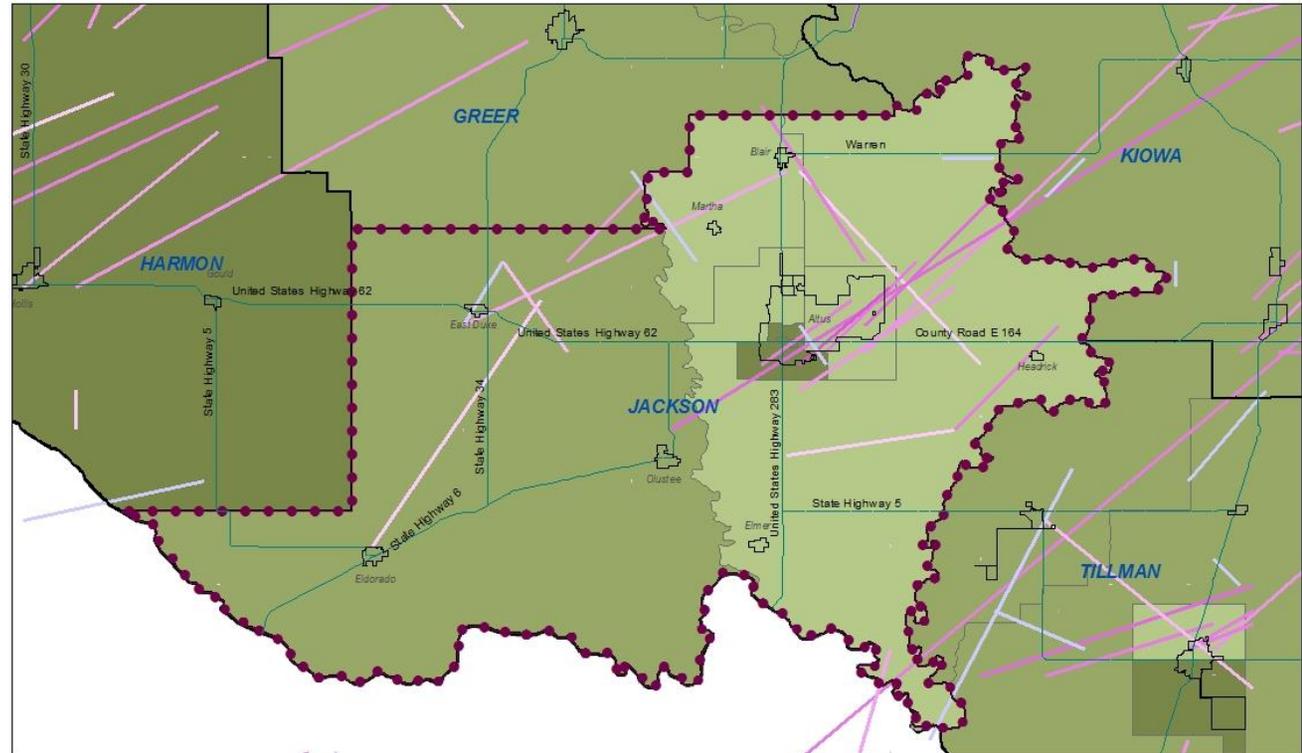
Tornadoes after 1996

\$ 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

—●—●—● Selected County Boundary

Oklahoma Municipal Boundaries

COUNTY NAME



0 3.25 6.5 13 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

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

Jackson HMP recommends:

- Create database on citizens with existing storm shelters (p. 56, 64, 80, 85, 93, 95)
- Build safe rooms/storm shelters to protect from tornados and high winds (p.56)
- City of Altus: Storm shelter GPS identification and plan to remove citizens from these shelters if necessary and GPS devices for all city vehicles (p.64)

According to the Jackson County EOP the only town with a public tornado/storm shelters is El Dorado (**Emergency Operation Center**) (EOP, p. 112)

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

Information not available.

C.2.1.4 Local Emergency Response Agency Structure

The Jackson County EOP spells out the direction and control process and structure.

C.2.1.5 Threat & Hazard Warning Systems

Jackson County HMP proposes:

- Improve Warning Systems (storm sirens, cell phone notification, fire alert, etc.)(p. 56)
- City of Altus: Purchase 11 sirens and 11 battery back-ups. Installation location not yet determined. (p. 65)
- Town of Blair has purchased 3 storm sirens (p. 72)
- Town of Duke, El Dorado, Headrick, Martha, and Olustee proposed purchase of storm sirens (p. 80)

Sirens:

ALTUS Number of Sirens: 12

BLAIR Number of Sirens: 2

EAST DUKE Number of Sirens: 1

ELDORADO Number of Sirens: 2

ELMER Number of Sirens: Zero

FRIENDSHIP Number of Sirens: Zero

HEADRICK Number of Sirens: Zero

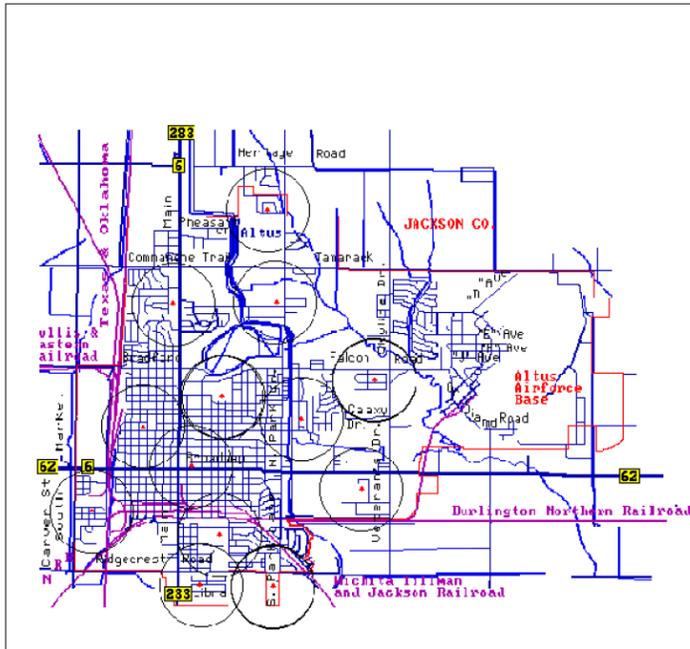
MARTHA Number of Sirens: One

OLUSTEE Number of Sirens: One

(EOP, p. 83-85)

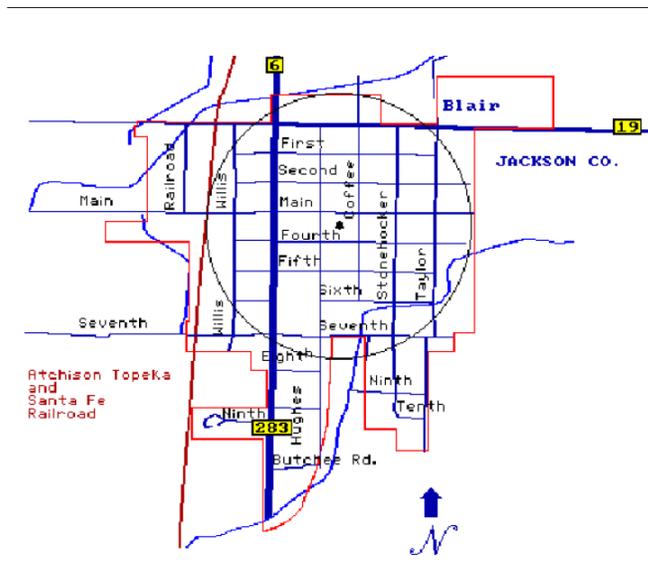
City of Altus: "Sirens are strategically located around the City of Altus. These devices are out-of-door warning devices only. There are not sufficient sirens to cover the entire City." (EOP, p. 80)

TAB A TO APPENDIX 5
SIREN LOCATIONS, MAP OF ALTUS, OK



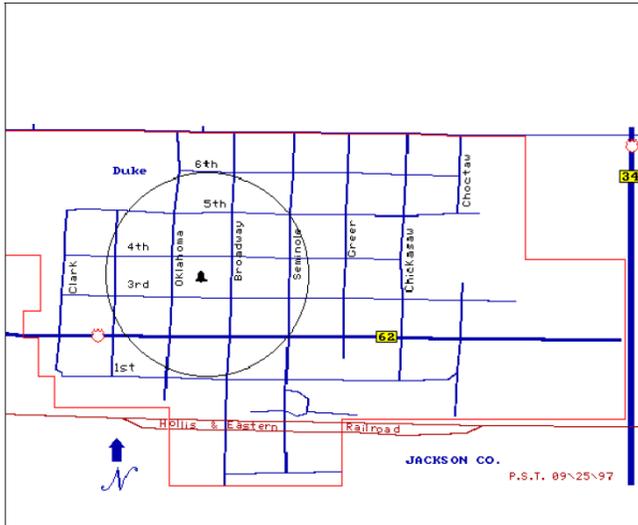
EOP, p. 85

TAB B TO APPENDIX 5
SIREN LOCATION MAP OF BLAIR, OK



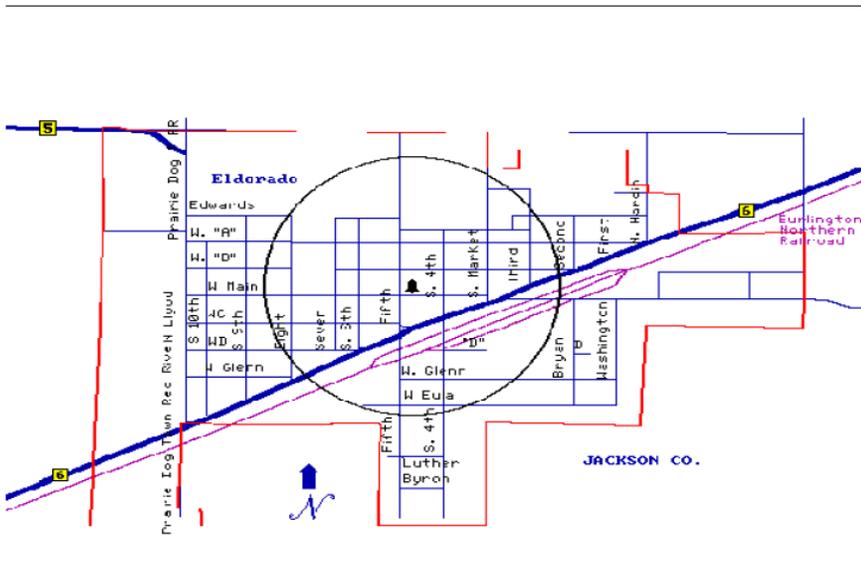
EOP, p. 86

TAB C TO APPENDIX 5
SIREN LOCATION FOR DUKE, OK



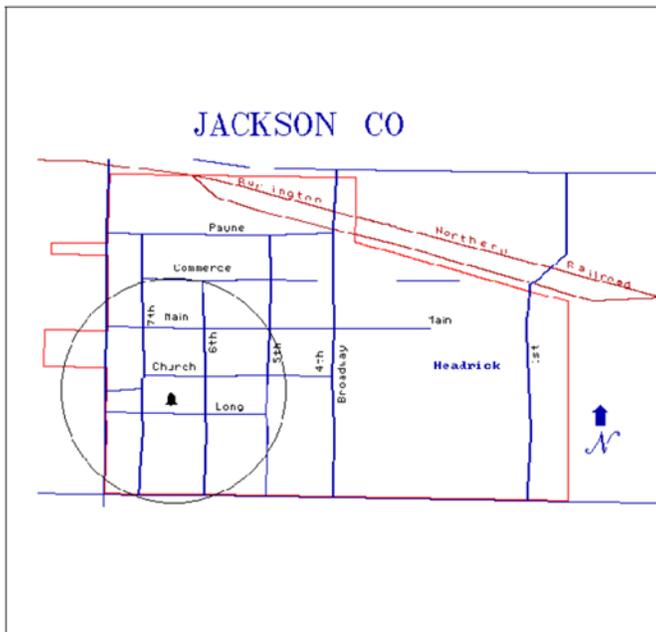
EOP, p. 87

TAB D TO APPENDIX 5
SIREN LOCATION FOR ELDORADO, OK



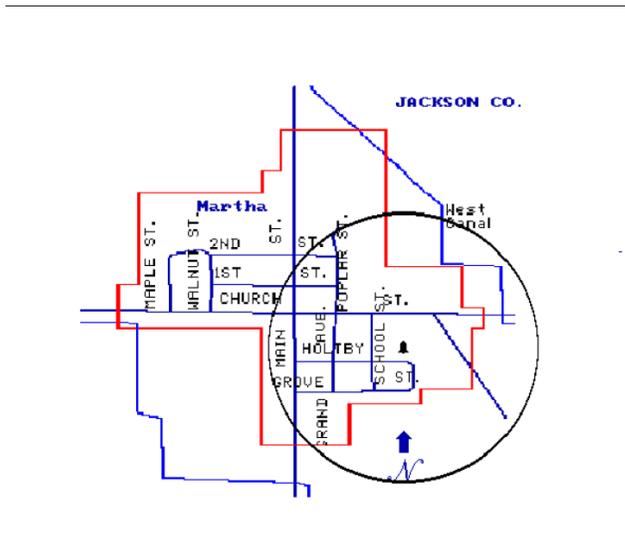
EOP, p. 88

TAB F FOR APPENDIX 5
SIRENE LOCATION FOR HEADRICK, OK



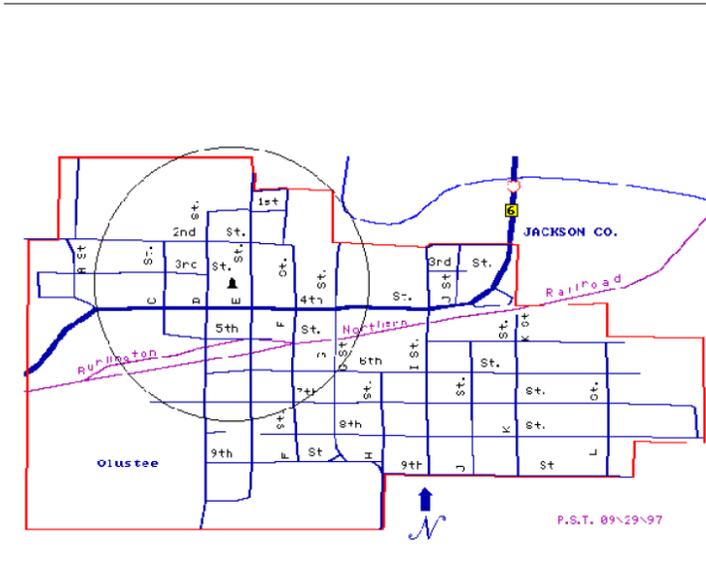
EOP, p. 90

TAB G FOR APPENDIX 5
SIRENE LOCATION FOR MARTHA, OK



EOP, p. 91

TAB H FOR APPENDIX 5
SIREN LOCATION FOR OLUSTEE, OK



(EOP, p.92)

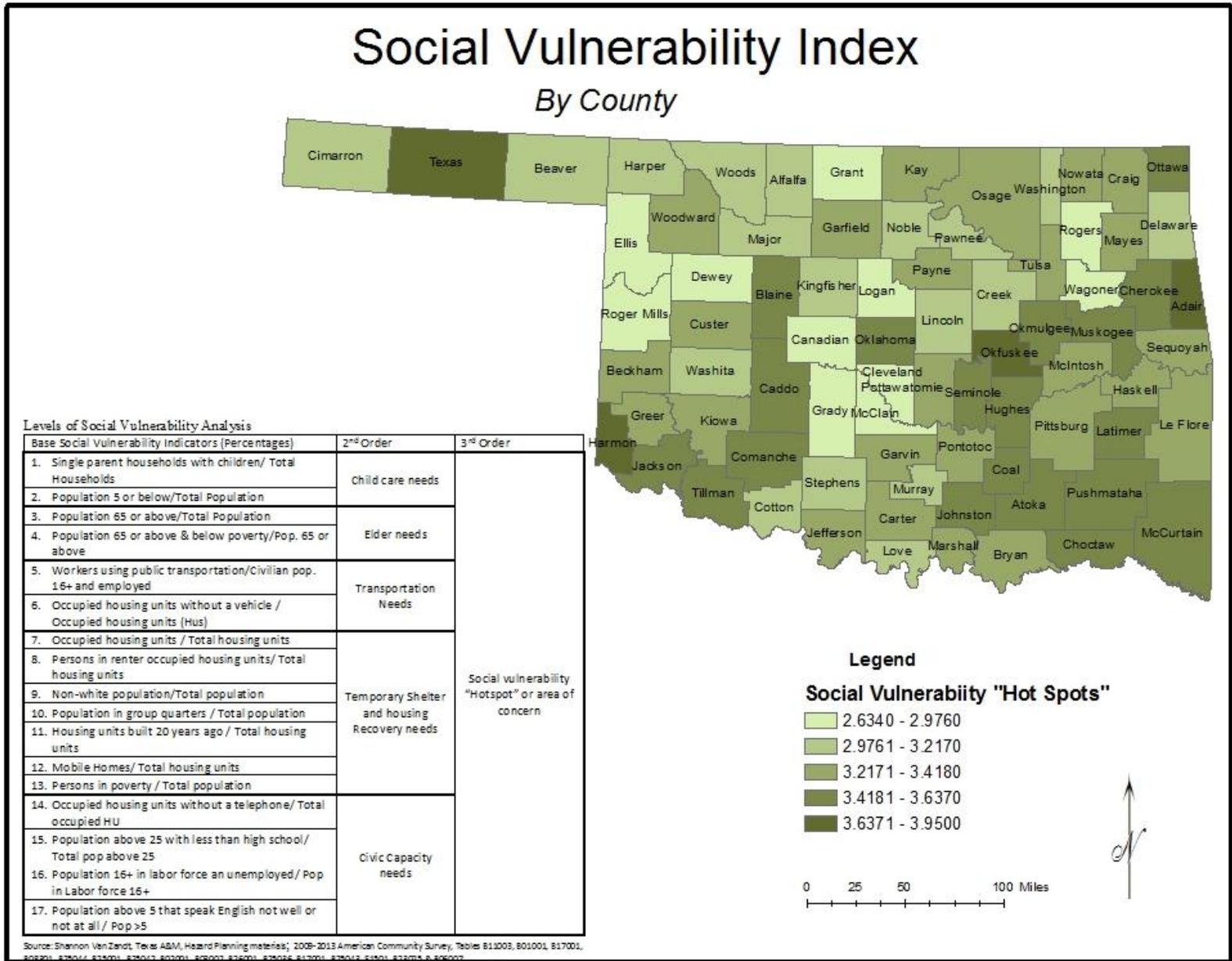
Social Vulnerability

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.

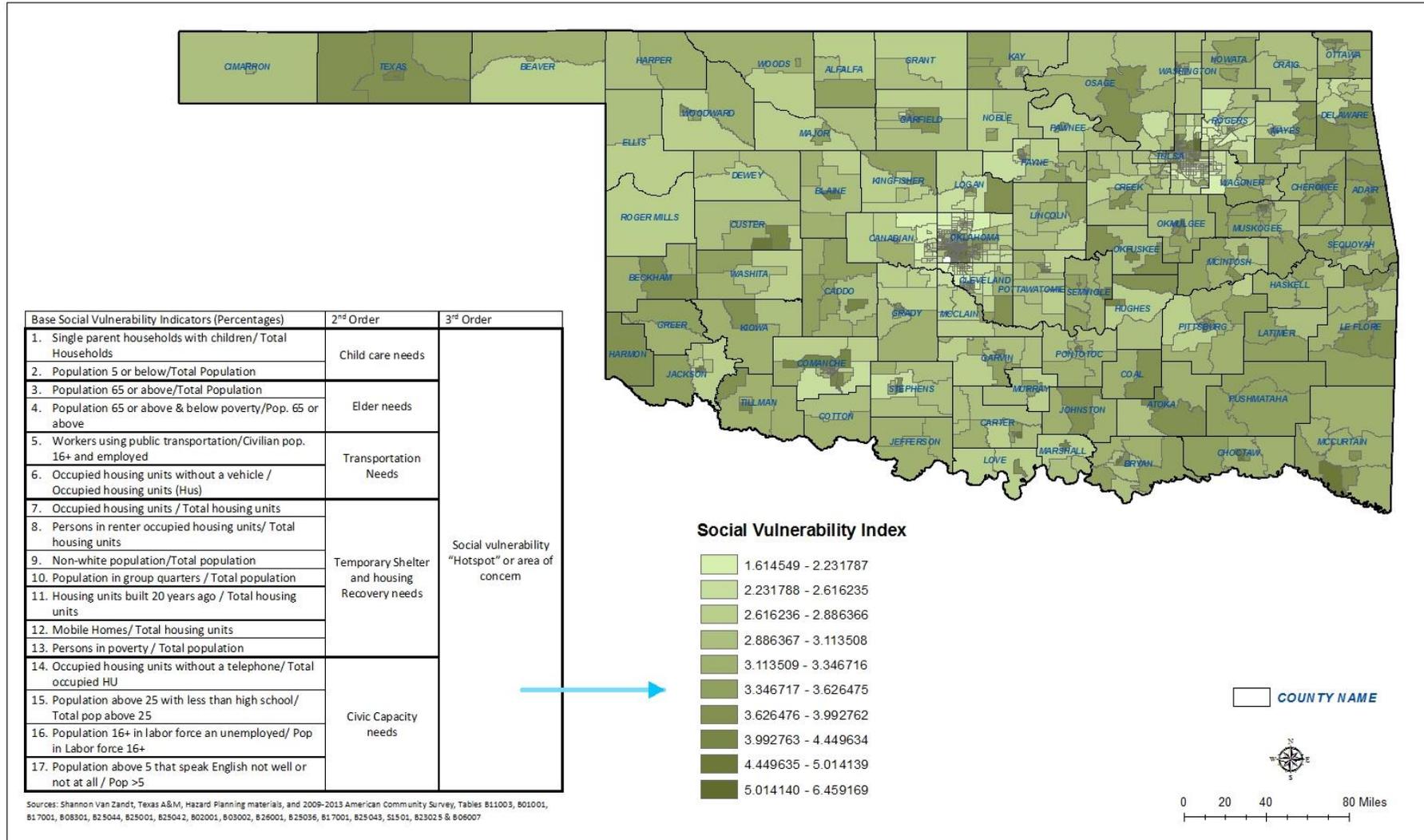
Social Vulnerability Analysis - Jackson County

Base Social Vulnerability Indicators (%)		2nd Order	3rd Order
1.) Single Parent Households	14.71%	0.227	3.47 Social Vulnerability 'Hotspot' or Area of Concern
2.) Population Under 5	7.99%	(Child Care Needs)	
3.) Population 65 or Above	13.08%	0.25	
4.) Population 65 or Above & Below Poverty Rate	11.94%	(Elder Needs)	
5.) Workers Using Public Transportation	0.10%	0.045	
6.) Occupied Housing Units w/o Vehicle	4.45%	(Transportation Needs)	
7.) Housing Unit Occupancy Rate	86.53%	2.645 (Temporary Shelter and Housing Recovery Needs)	
8.) Rental Occupancy Rate	38.22%		
9.) Non-White Population	34.73%		
10.) Population in Group Quarters	2.98%		
11.) Housing Units Built Prior to 1990	80.90%		
12.) Mobile Homes, RVs, Vans, etc.	4.68%	0.302 (Civic Capacity Needs)	
13.) Poverty Rate	16.51%		
14.) Housing Units Lacking Telephones	2.06%		
15.) Age 25+ With Less Than High School Diploma	15.90%		
16.) Unemployment Rate	6.91%		
17.) Age 5+ Which Cannot Speak English Well or Not At All	5.29%		

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



Social Vulnerability - Impacts on Housing & Disaster Resiliency

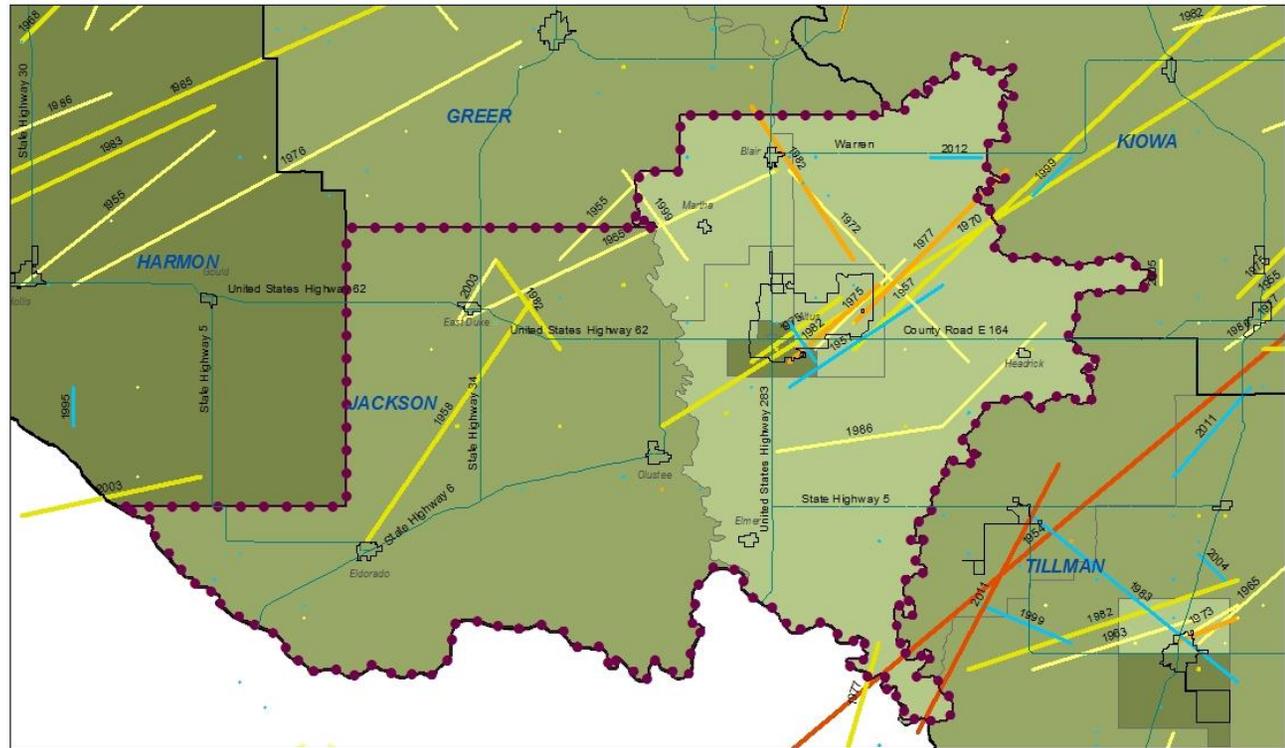
Tornado Events 1950 - 2014

Jackson County

Tornado Magnitude



Social Vulnerability Index



19XX or 20XX Year of Event

Selected County Boundary

Oklahoma Municipal Boundaries

COUNTY NAME



0 3.25 6.5 13 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 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 above average 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 area of Altus and western portion of the county. 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:

- Continue to update and maintain the county HMP and include attention to areas within the county that in addition to physical vulnerability may have compounding social vulnerability factors.
- Efforts to strengthen building codes related to tornadoes and natural disasters should be considered.
- 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.