Special Topics

Okmulgee 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 10 key cities within the county (Okmulgee, Henryetta, Beggs, Morris, Dewar, Schulter, Grayson, Hoffman, Liberty, Winchester).

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.

City of Okmulgee has a comprehensive plan. Which contain discussion on flooding as a hazard they should plan to avoid where possible:

"The majority of Okmulgee lies within the limits of the Okmulgee Creek Drainage Basin that includes a flood prone area in the southwest corner of the City abutting Okmulgee Creek. The location of the flood prone area in southern Okmulgee has an impact on urbanization in its immediate area. Because the cost of solving flooding problems is almost always more expensive than the cost of prevention, careful attention must be given to the manner in which
development is allowed to occur in the vicinity."

<u>Goal:</u>

Protect the community from the adverse effects of flooding, erosion, siltation, and standing water. (p. 67)

- Minimize loss of life and property caused by flooding.
  - Require new subdivisions to bear the cost of constructing appropriate storm drainage facilities in accordance to the Code of Ordinances for the City of Okmulgee.
  - Prohibit development that does not conform to the City's floodplain regulations.
  - Allow only agricultural or recreational development in the flood plain.
  - Correct flooding problems along Okmulgee Creek.
  - Provide for the construction of a regional system of professionally designed and engineered facilities.
- Eliminate fire hazards that endanger life and property. (p. 68)
  - Provide adequate water supply for fighting fires.
  - Evaluate all new development proposals to determine if the street layout and utilities provided are adequate to provide fire protection for the development.
  - A contiguous pattern of urban development is desirable in order to economically provide public safety services.

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.

Okmulgee County in progress of finalizing/finishing a Hazard Mitigation Plan.

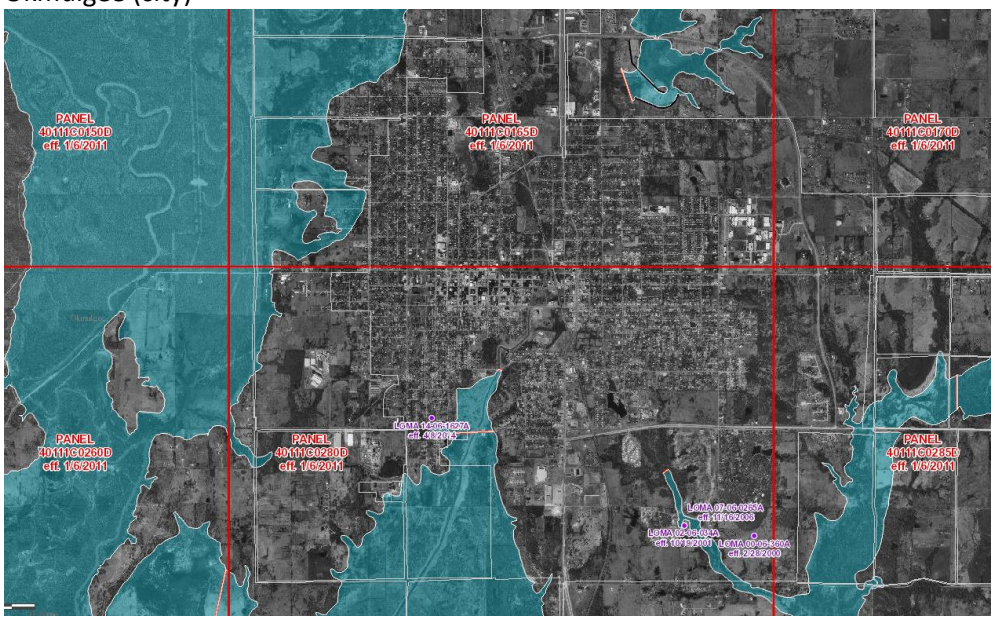
C.2.1.1. Historical Data on Natural Disasters and Other Hazards

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.

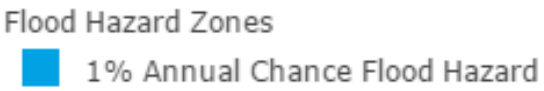
Flooding

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.

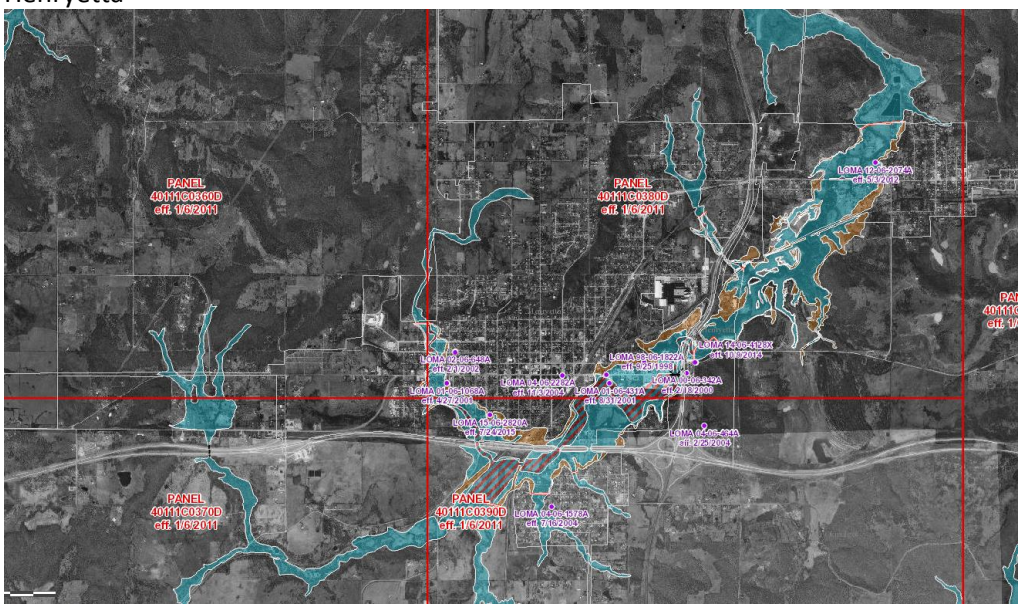
Okmulgee (city)



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



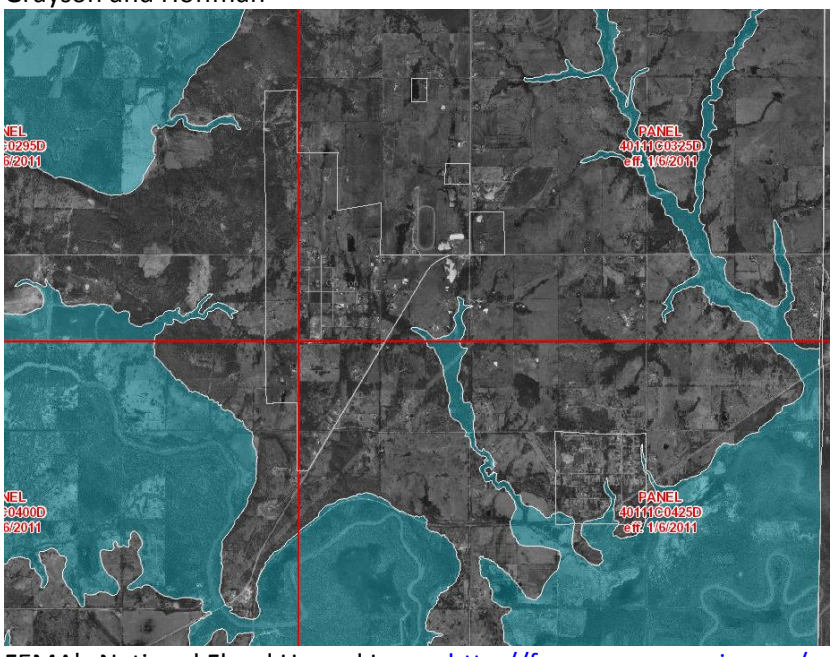
Henryetta



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

Flood Hazard Zones
1% Annual Chance Flood Hazard

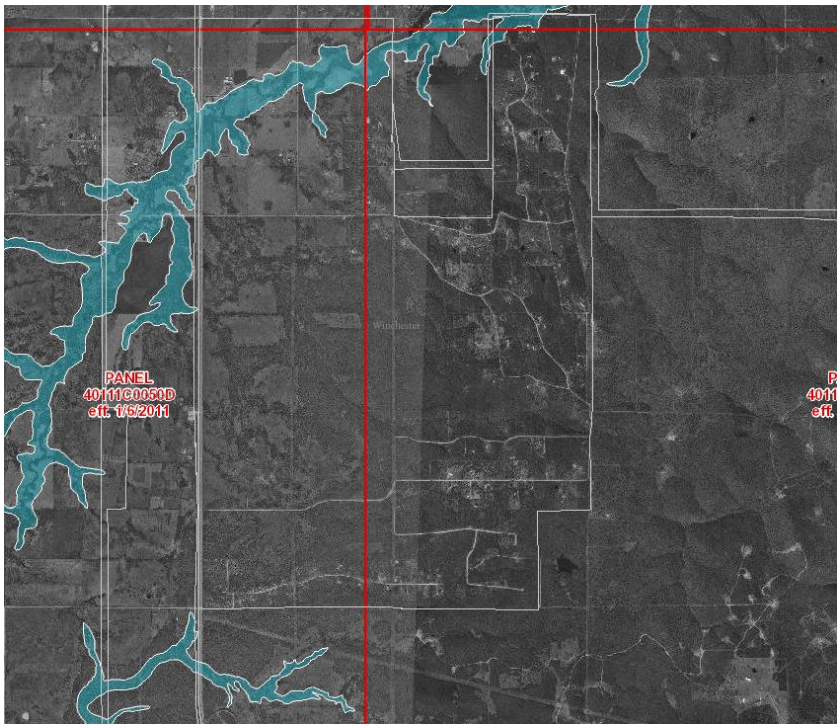
Grayson and Hoffman



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

Flood Hazard Zones
1% Annual Chance Flood Hazard

Winchester



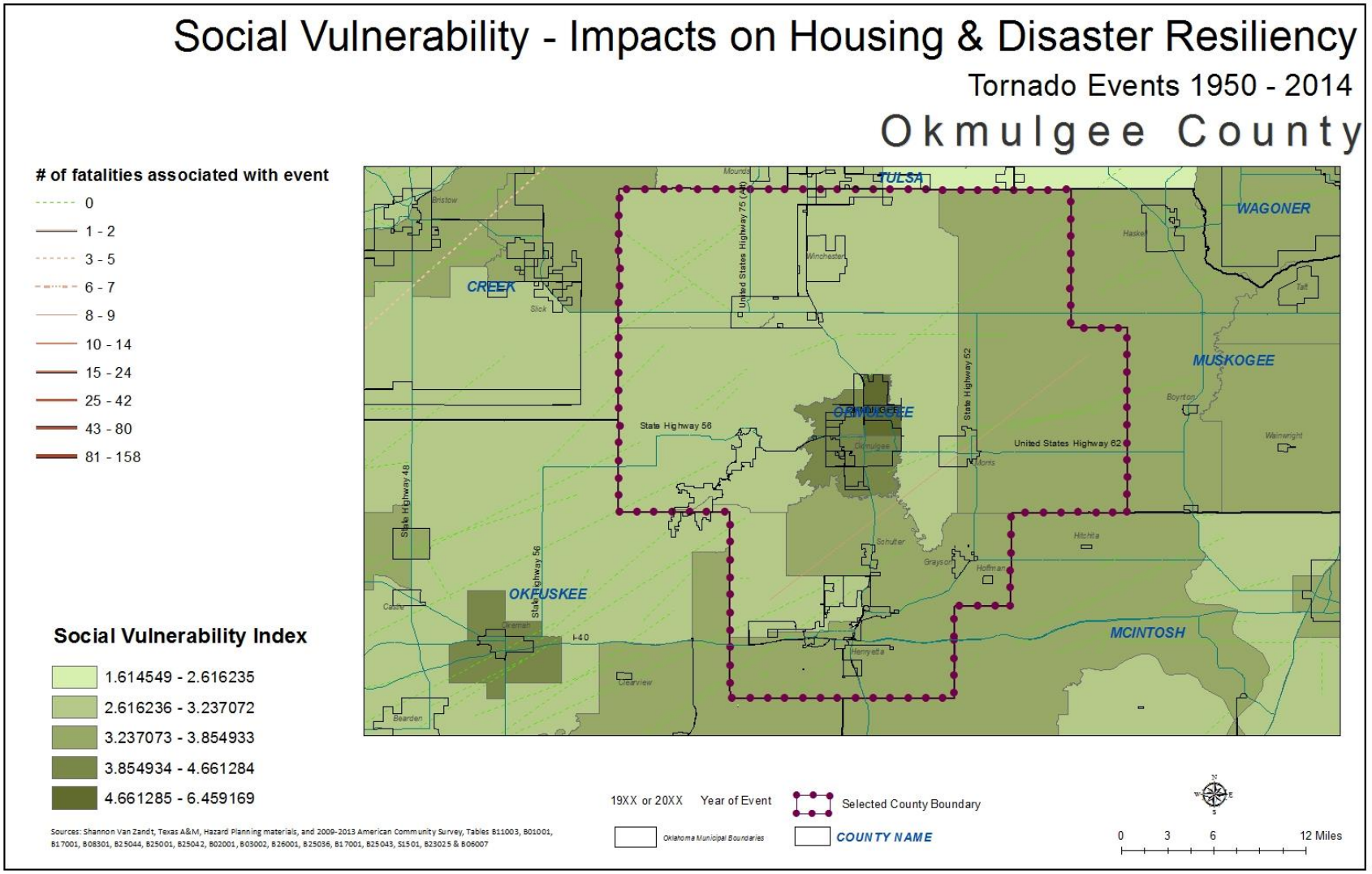
FEMA's National Flood Hazard Layer http://fema.maps.arcgis.com/

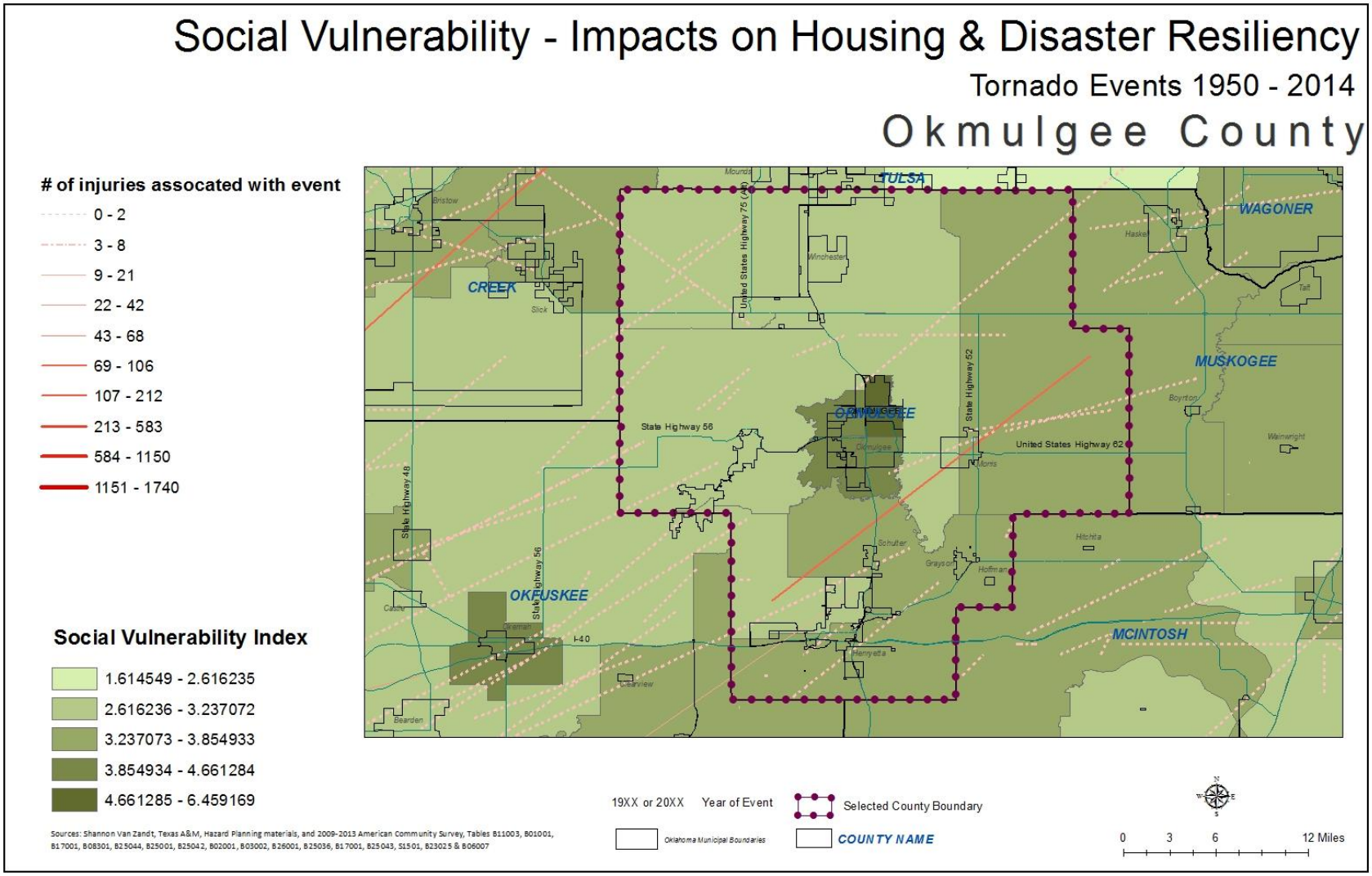
Flood Hazard Zones

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 46 tornados documented. There were 127 injuries that occurred connected to these tornados, with 4 of those injuries happening in the 1998 and 95 occuring in 1984 tornado. There were 10 fatalities connected to tornadoes during this time period, 8 of which occurred in 1984. Property losses between 1950-1996 ranged from $6,332,003.00 to $63,320,150.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was $1,560,000.00.


Social Vulnerability - Impacts on Housing & Disaster Resiliency
Tornado Events 1950 - 2014
Okmulgee 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
TULSA
WAGONER
CREEK
MUSKOGEE
OKMULGEE
OKFUSKEE
MCINTOSH
State Highway 56
United States Highway 62
State Highway 52
State Highway 48
United States Highway 75 (Alt)
I-40
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 6 12 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
Okmulgee County
# of injuries assocated with event
0 - 2
3 - 8
9 - 21
22 - 42
43 - 68
69 - 106
107 - 212
213 - 583
584 - 1150
1151 - 1740
Social Vulnerability Index
1.614549 - 2.616235
2.616236 - 3.237072
3.237073 - 3.854933
3.854934 - 4.661284
4.661285 - 6.459169
TULSA
WAGONER
MUSKOGEE
CREEK
OKFUSKEE
MCINTOSH
State Highway 56
United States Highway 62
United States Highway 75 (Alt)
State Highway 52
State Highway 48
I-40
19XX or 20XX Year of Event
Selected County Boundary
Oklahoma Municipal Boundaries
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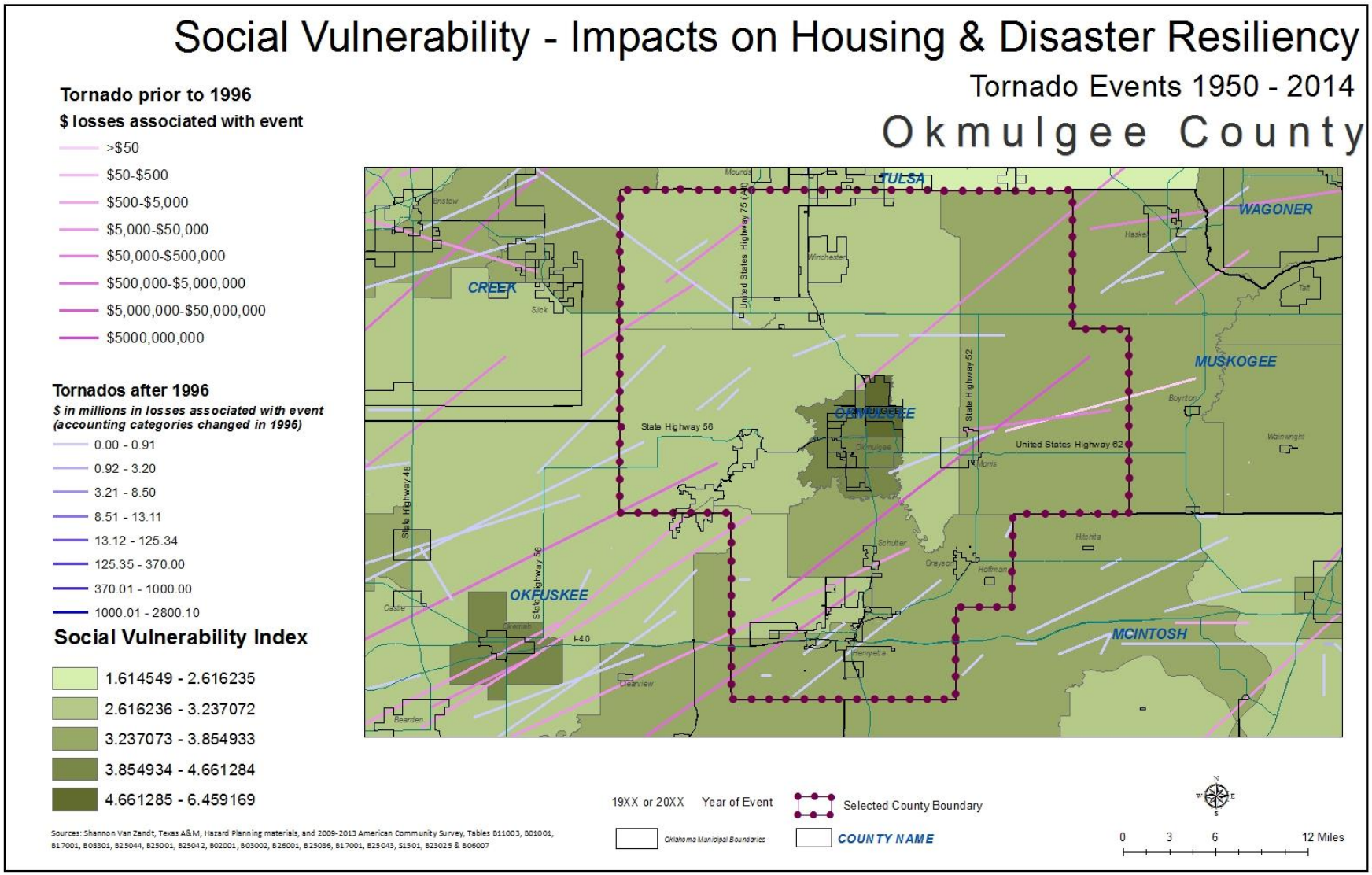
Sources: Shannon Van Zandt, Texas A&M, Hazard Planning materials, and 2009-2013 American Community Survey, Tables B11003, B01001, B17001, B08301, B25044, B25001, B25042, B02001, B03002, B26001, B25036, B17001, B25043, S1501, B23025 & B06007

Social Vulnerability - Impacts on Housing & Disaster Resiliency

Tornado Events 1950 - 2014

Okmulgee County



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

No public shelters were identified in Okmulgee County. The Emergency Manager was quoted in the news that a need for more shelters was included in their HMP but their plan was not approved by FEMA which limited access to funds.

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

No information available.

C.2.1.4 Local Emergency Response Agency Structure

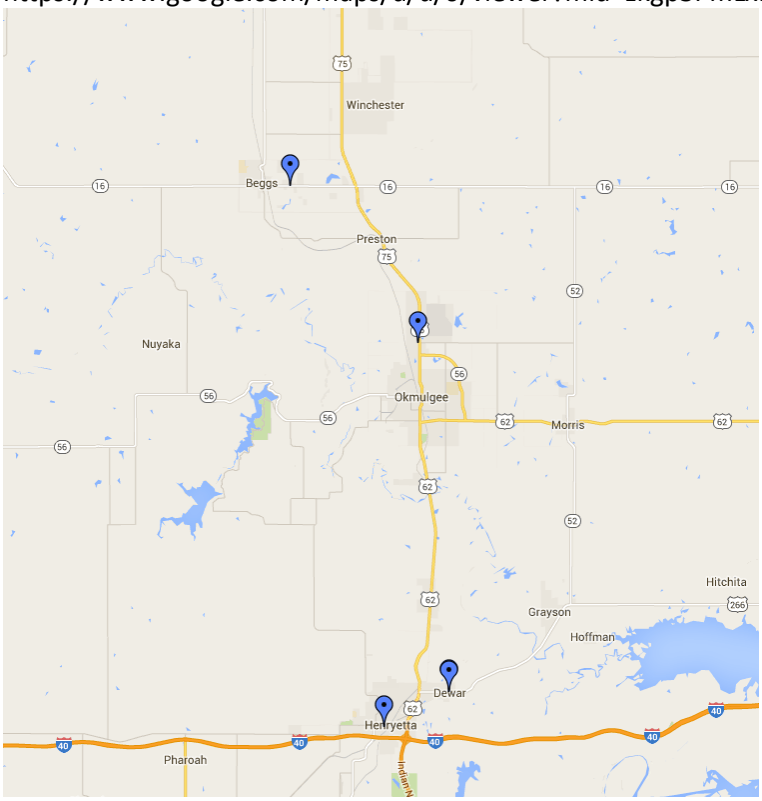
No information available.

C.2.1.5 Threat & Hazard Warning Systems

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

- ☐ Sirens
- ☐ Emergency Broadcast System
- ☐ Facebook, radio

Google Mapped sirens in Oklahoma:
https://www.google.com/maps/d/u/0/viewer?mid=zkgp3PmLxLzg.kXQeGF45FpQg&hl=en



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.

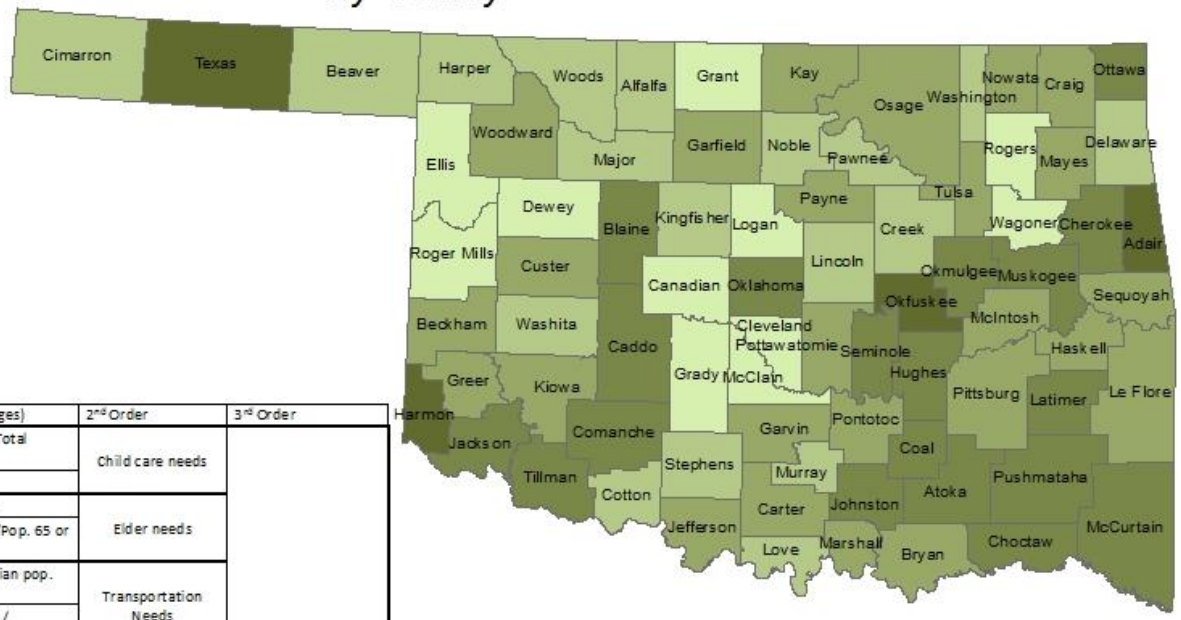
Social Vulnerability Analysis - Okmulgee County

Base Social Vulnerability Indicators (%)		2nd Order	3rd Order
1.) Single Parent Households	17.14%	0.235 (Child Care Needs)	**3.564 Social Vulnerability 'Hotspot' or Area of Concern**
2.) Population Under 5	6.38%		
3.) Population 65 or Above	15.99%	0.289 (Elder Needs)	
4.) Population 65 or Above & Below Poverty Rate	12.89%		
5.) Workers Using Public Transportation	0.21%	0.085 (Transportation Needs)	
6.) Occupied Housing Units w/o Vehicle	8.33%		
7.) Housing Unit Occupancy Rate	84.80%	2.645 (Temporary Shelter and Housing Recovery Needs)	
8.) Rental Occupancy Rate	30.29%		
9.) Non-White Population	35.83%		
10.) Population in Group Quarters	2.95%		
11.) Housing Units Built Prior to 1990	74.89%		
12.) Mobile Homes, RVs, Vans, etc.	16.27%		
13.) Poverty Rate	19.48%		
14.) Housing Units Lacking Telephones	4.19%	0.31 (Civic Capacity Needs)	
15.) Age 25+ With Less Than High School Diploma	14.60%		
16.) Unemployment Rate	11.25%		
17.) Age 5+ Which Cannot Speak English Well or Not At All	0.92%		

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)	2nd Order	3rd 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	Elder needs	
4. Population 65 or above & below poverty/Pop. 65 or above		
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		
14. Occupied housing units without a telephone/ Total occupied HU	Civic Capacity needs	
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		

Source: Shannon VanZandt, Texas A&M, Hazard Planning materials; 2009-2013 American Community Survey, Tables B11003, B01001, B17001, B08201, B25044, B25091, B25043, B01001, B08007, B25091, B25085, B17001, B25043, B25091, B25075 & B05002

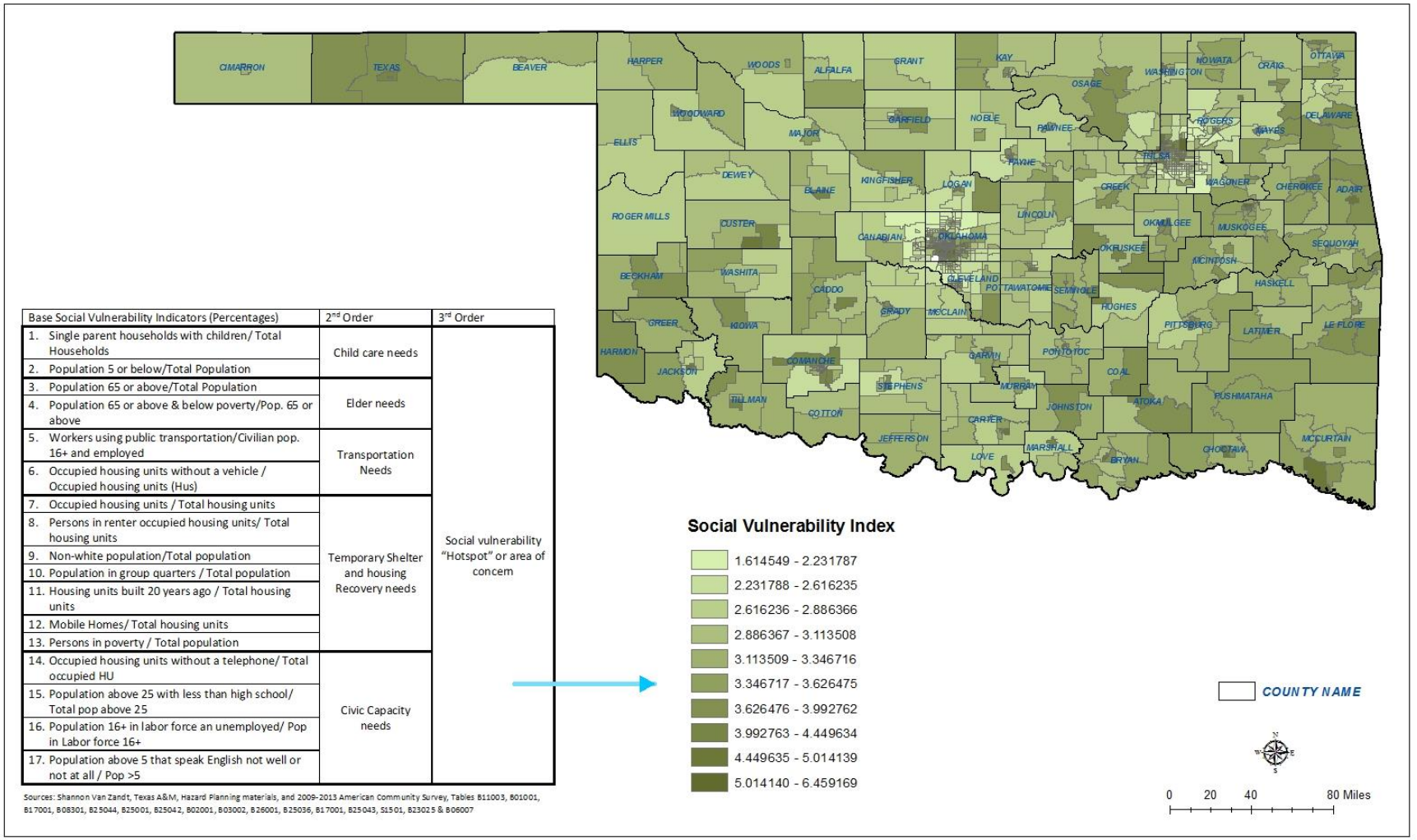
Legend

Social Vulnerabiity "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

Social Vulnerability - Impacts on Housing & Disaster Resiliency



Base Social Vulnerability Indicators (Percentages)	2nd Order	3rd Order
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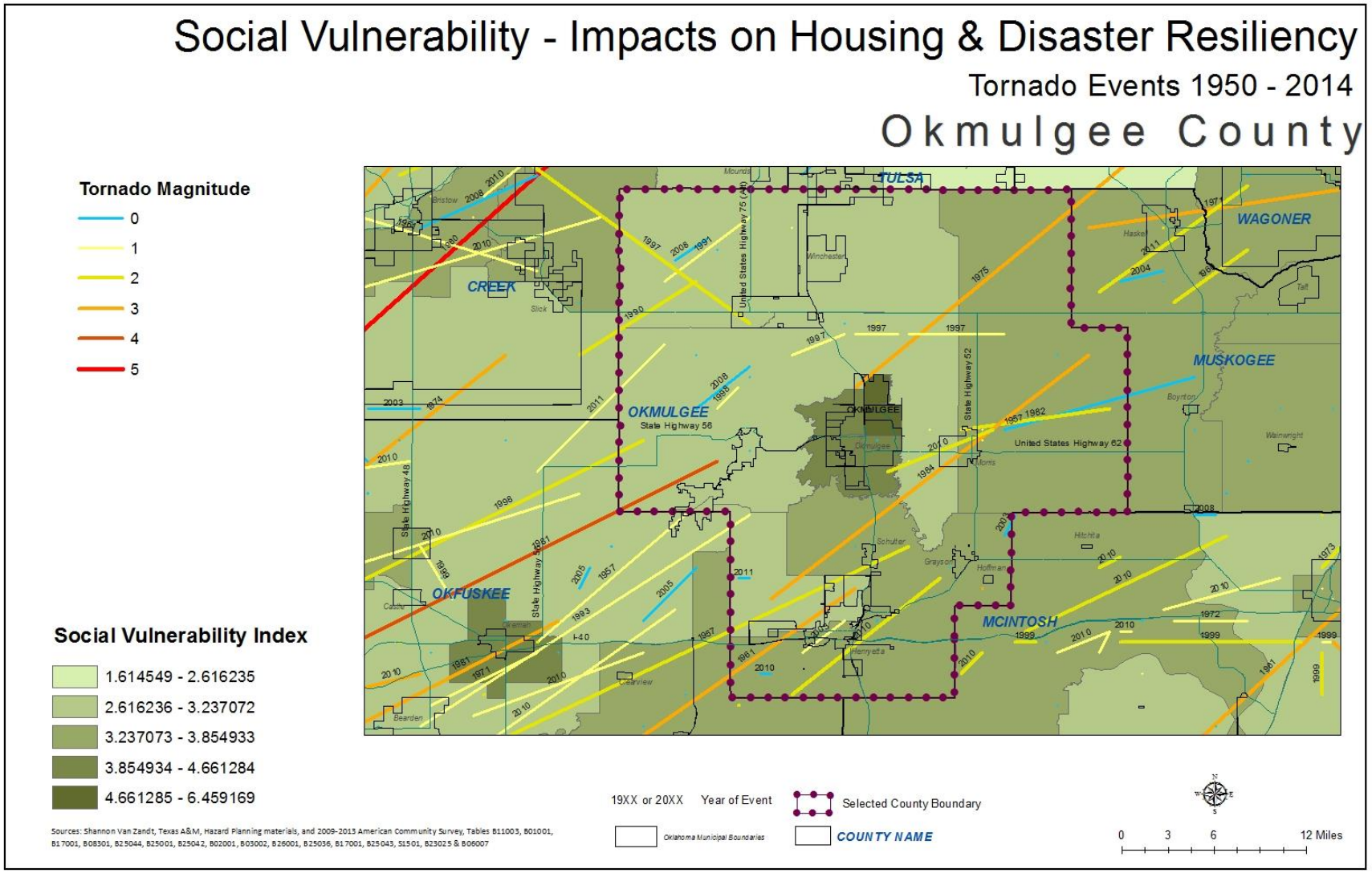
2. Population 5 or below/Total Population		
3. Population 65 or above/Total Population	Elder needs	
4. Population 65 or above & below poverty/Pop. 65 or above		
5. Workers using public transportation/Civilian pop. 16+ and employed	Transportation Needs	
6. Occupied housing units without a vehicle / Occupied 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		
14. Occupied housing units without a telephone/ Total occupied HU	Civic Capacity needs	
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		

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

Okmulgee County



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 great gap or disadvantage prior to the event (Shannon Van Zandt, Texas A&M, Hazard Planning).

This county falls above the average per this index for social vulnerability when comparing as a county to other counties in the state. The census tracts nearest to Okmulgee have elevated social vulnerability factors and therefore attention to these populations during an event and during recovery should be considered.

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.