

Special Topics

Carter 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 four key cities within the county: Ardmore, Lone Grove, Heaton, and Wilson.

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 4 key cities, Ardmore was the only comprehensive plan acquired. Of this plan the following contains language in the plan that addresses land use decisions that reduce placing housing and businesses within historical areas of risk (e.g. flooding) and other supporting actions to increase disaster resiliency.

Ardmore- Language in Ardmore Comprehensive Plan 2015 that addresses disaster resiliency:

- Objective 1: Provide fire and police with sufficient personnel and equipment to respond to local needs, based upon accepted standards.
- Policy 1.1.4 – Regular inspections will be conducted of existing commercial, office, and public buildings as well as new construction to discover and eliminate fire hazards.
- Education programs will be utilized to inform the public about fire hazards and fire safety.
- Policy 3.1.1 Paramedic equipped ambulances will be purchased, maintained, and replaced as time and finances warrant.
- Objective 3.2 Southern Oklahoma Ambulance Services will become and accredited provider of emergency service and update all managerial operating procedures.
- Objective 8 The city will establish a storm water drainage district in order to develop special funding mechanisms for mitigation of storm water runoff.
- Environmental Resources and Drainage- Objective 1.1 “The city of Ardmore will adopt, update, and enforce flood plain regulations and enforce building code and grading regulations within those identified flood plain areas.
- Environmental Resources and Drainage- Policy 1.1.1 The City will follow the FEMA standards for flood control and regulation.
- Environmental Resources and Drainage- Objective 1.2 “The city will study feasibility of developing a storm water utility district to address the storm water drainage problems in the community.
- Environmental Resources and Drainage- Policy 1.1.3 “The city will prohibit development within the identified floodway of 100 year flood plain and require flood proofing and construction one foot about the 100 year flood plain level in the flood fringe areas.

- Environmental Resources and Drainage- Objective 3.6 “The city will ensure that hazardous materials are not stored, transported, or used in the city without compliance to city, state, and federal regulations.
- The Ardmore/Carter County Emergency Management Program was created to address the natural, technological, and man-made disasters facing Carter County.

Overall, the 2015 Ardmore Comprehensive Plan included little language that was directly related to Hazard Mitigation or reference plan/procedures for the Emergency Management staff of the city/county. Based on the review of the existing and available comprehensive plans for the area, it is recommended that any future comprehensive planning work done include coordination and goals to address disaster resiliency.

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.

Though materials were found referencing scheduled updates to the Carter County Hazard Mitigation Plan, no plan was attained.

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

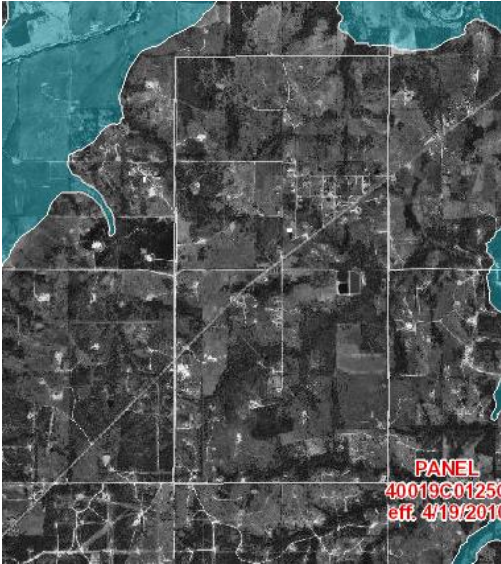
Data on historical damages and casualties is typically collected as part of a **Hazard Mitigation Plan** preparation to determine the appropriate planning measures and actions to take before and after an event.

The Hazard Mitigation Plan for Carter County was not acquired. As such, no historical information was found regarding disasters/hazards in Carter County.

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. However, floodplain areas should be avoided for development as it may cause repeated damages and losses

Tatums – rural area, development appears to avoid floodplain



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

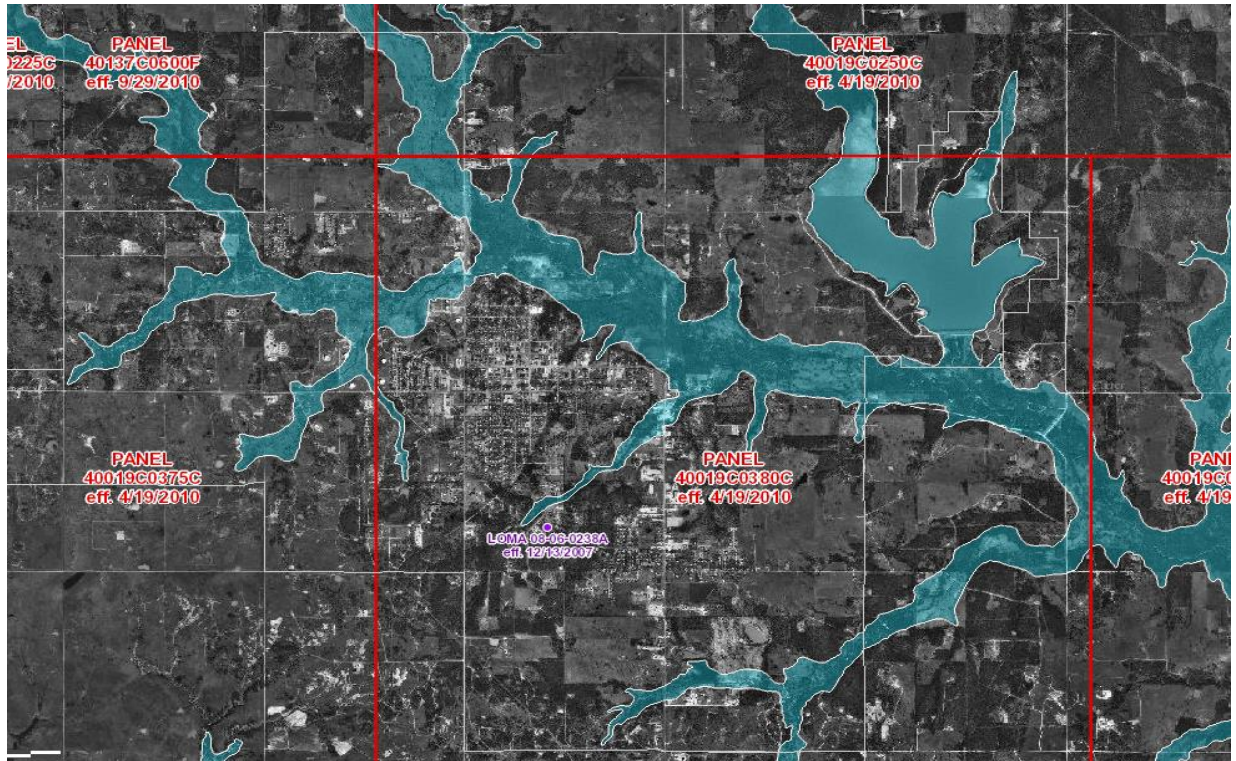
Ratliff City



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Healdton



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

Flood Hazard Zones

■ 1% Annual Chance Flood Hazard

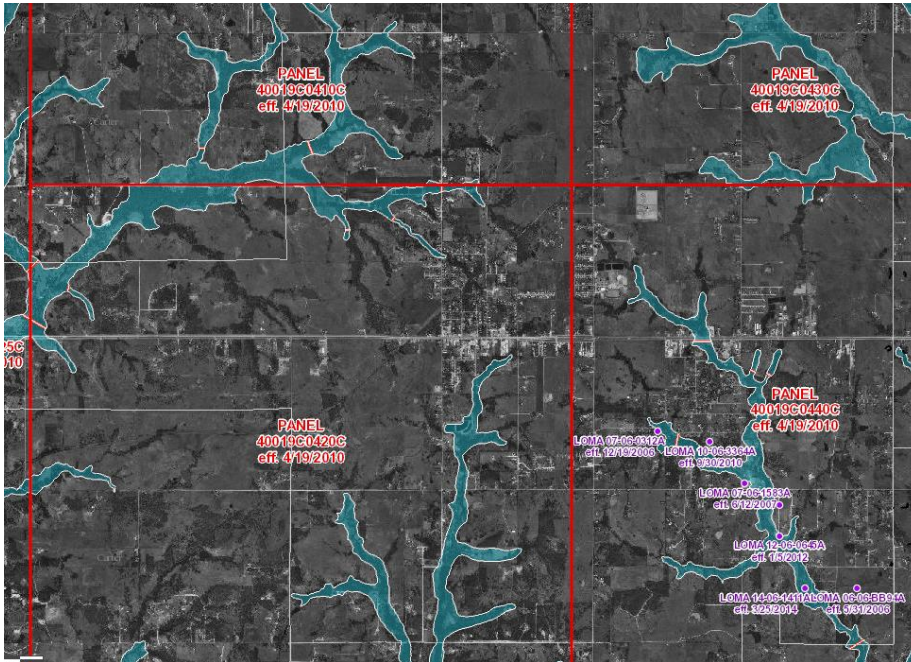
Wilson



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

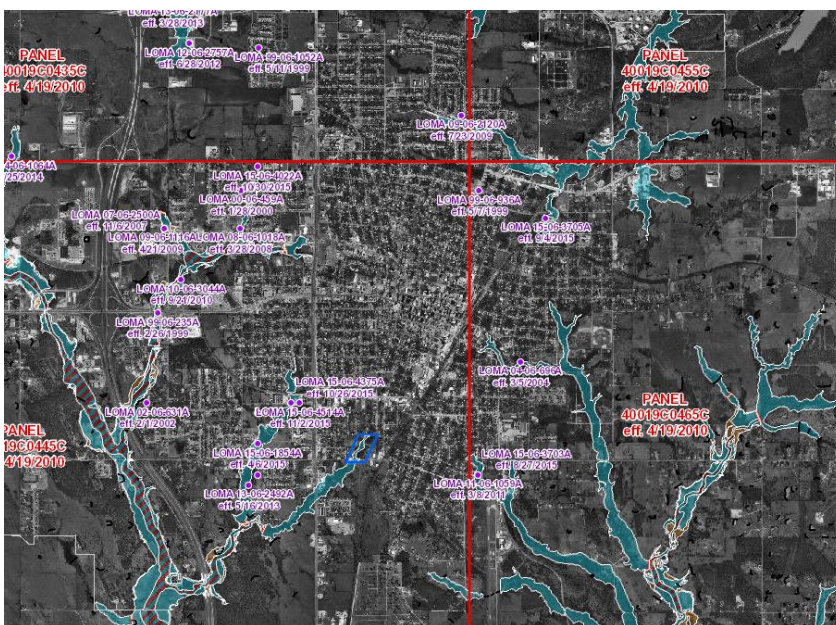
Lone Grove



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Ardmore



- 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/>



Dickson



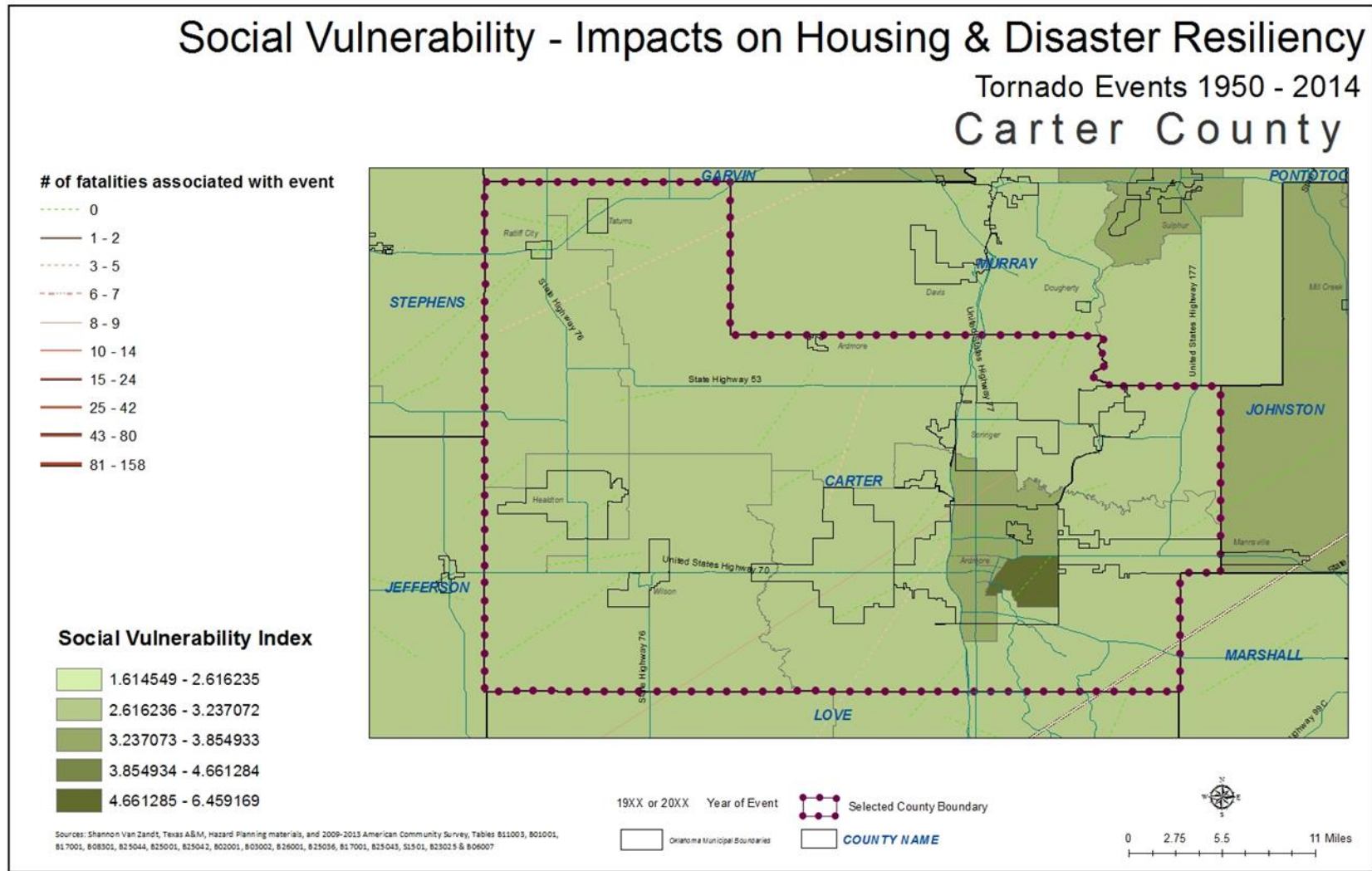
FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

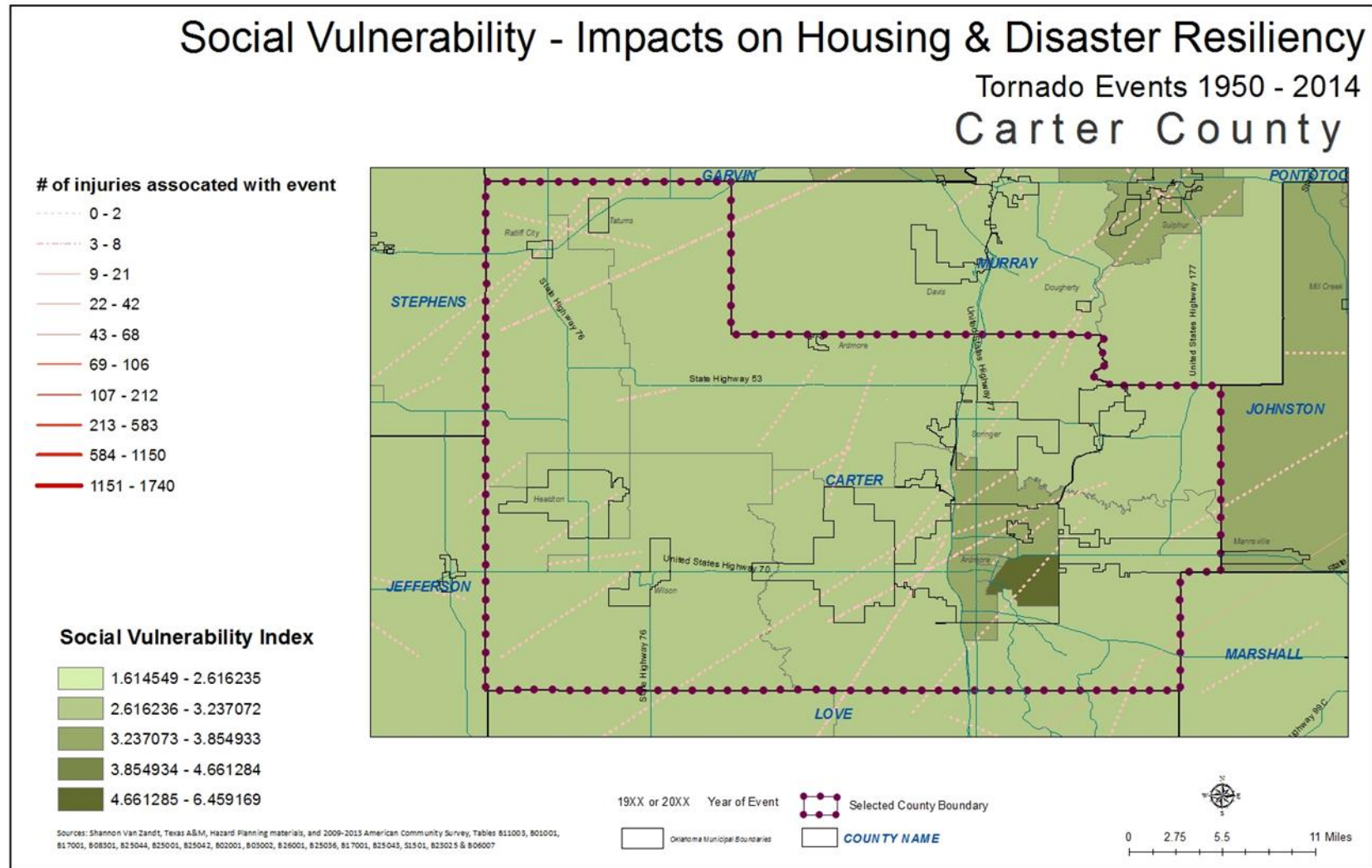
Flood Hazard Zones

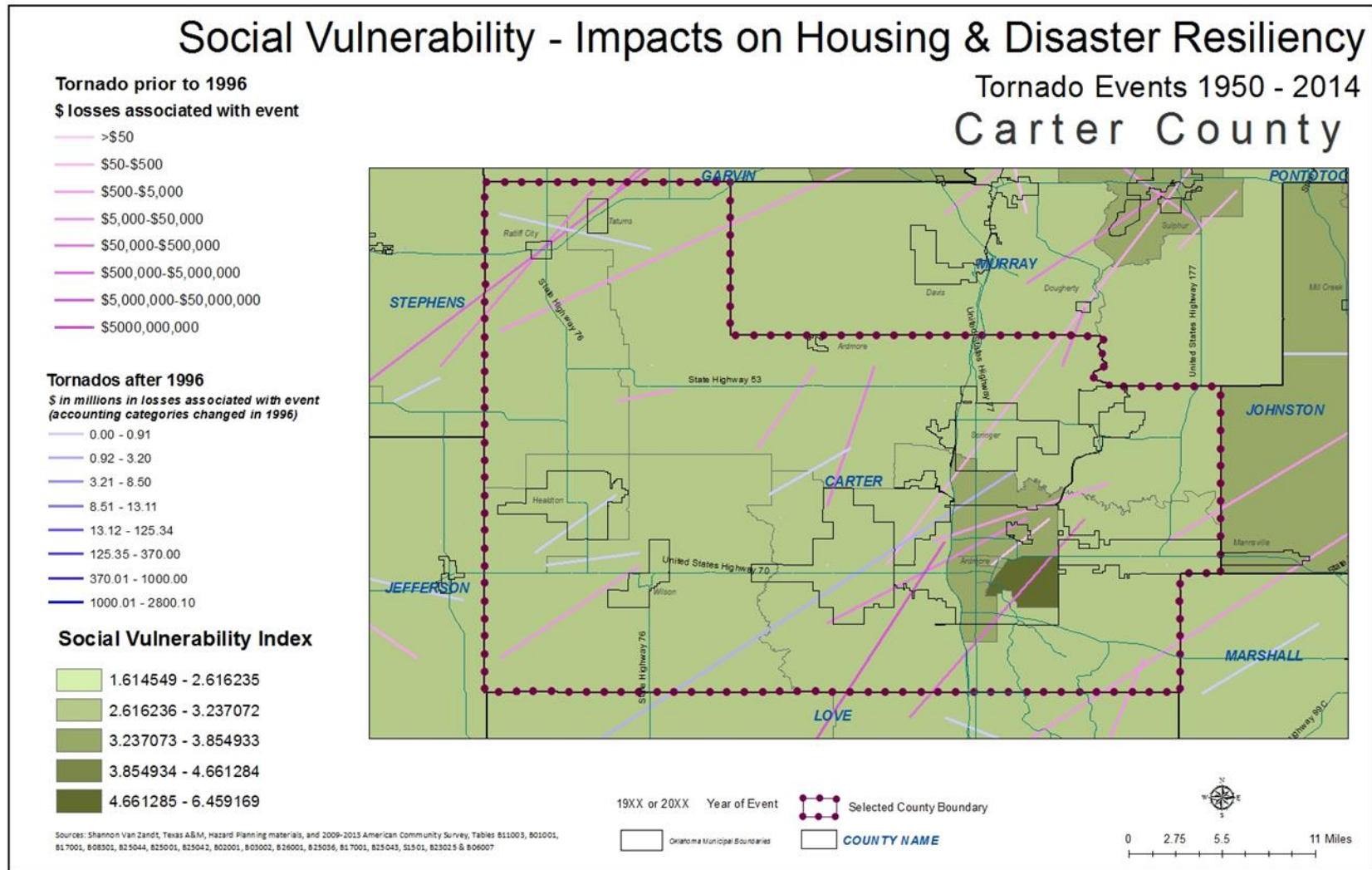
■ 1% Annual Chance Flood Hazard

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

Historic data on tornados between 1950-2014 there are 55 tornados documented. There were 54 injuries that occurred connected to these tornados, with 6 of those injuries happening in the 1995 tornado. There were 21 fatalities connected to tornadoes during this time period, 8 of which occurred in 2009. Property losses between 1950-1996 ranged from \$51,771,106.00 to \$517,711,300.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was \$3,150,000.00.







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

The City of Ardmore has an online Severe Weather Shelter Registry. No public shelters were identified.

Based on the limited information available it is difficult to determine approximate needs for additional shelters or public shelters in the county. However searches produced no results for public shelters. This may be indicative that either there are no public shelters listed online or they do not exist.

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

The 2015 Ardmore Comprehensive Plan identifies many goals the city has for managing storm water runoff and protecting its water resources. The plan also identifies the efforts the city is currently taking to protect against fire hazards.

C.2.1.4 Local Emergency Response Agency Structure

Information not available.

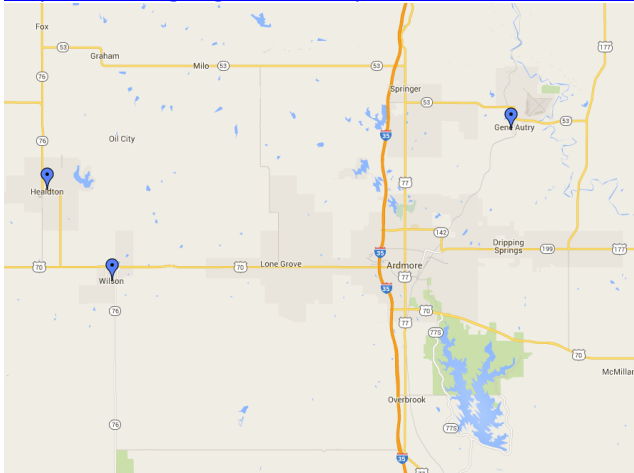
C.2.1.5 Threat & Hazard Warning Systems

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

- Sirens
- Phone notification (Text message alerts.)
- Emergency Broadcast System (Carter County encourages NOAA Weather Radios. The FIPS Code to utilize the automatic alerts for Carter County is FIPS code: 019 & transmitter frequency 165.525.)

Google Mapped sirens in Oklahoma:

<https://www.google.com/maps/d/u/0/viewer?mid=zkgp3PmLxLzg.kXQeGF45FpQg&hl=en>



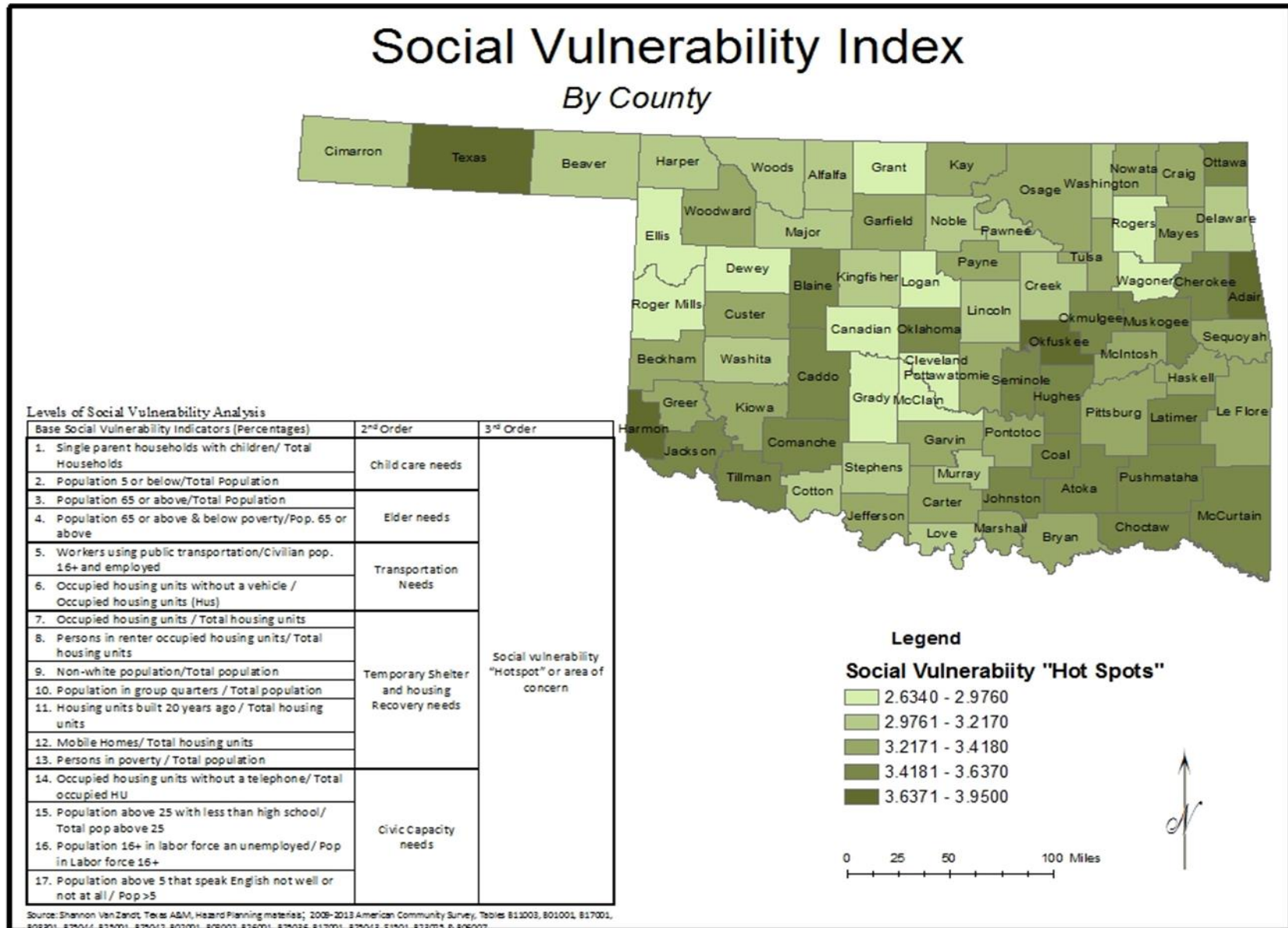
Social Vulnerability

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.

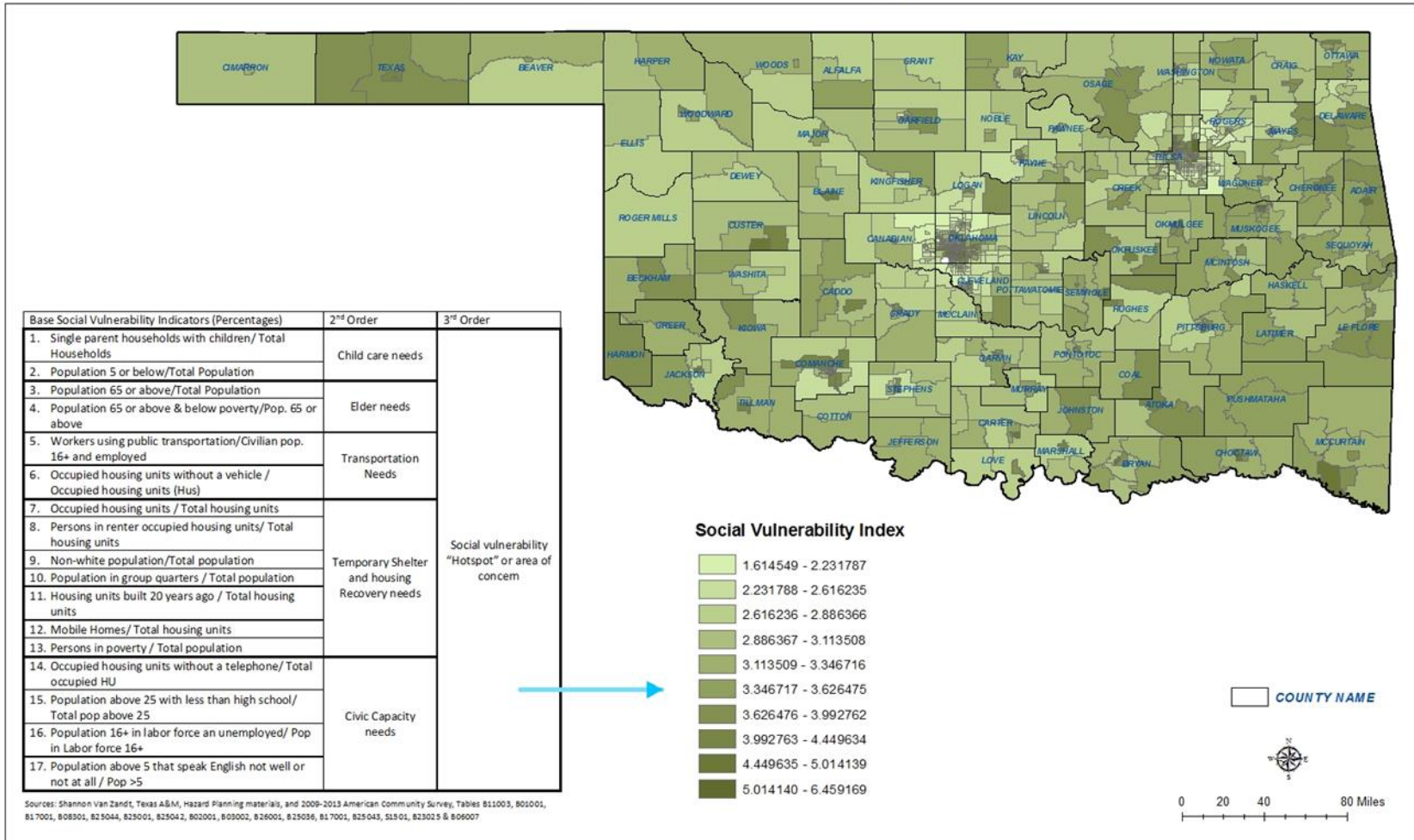
Social Vulnerability Analysis - Carter County

Base Social Vulnerability Indicators (%)	2nd Order	3rd Order
1.) Single Parent Households	15.68%	3.311 Social Vulnerability 'Hotspot' or Area of Concern
2.) Population Under 5	6.94%	
3.) Population 65 or Above	15.20%	
4.) Population 65 or Above & Below Poverty Rate	12.29%	
5.) Workers Using Public Transportation	0.56%	
6.) Occupied Housing Units w/o Vehicle	5.94%	
7.) Housing Unit Occupancy Rate	82.01%	
8.) Rental Occupancy Rate	31.00%	
9.) Non-White Population	27.94%	
10.) Population in Group Quarters	1.74%	
11.) Housing Units Built Prior to 1990	76.90%	
12.) Mobile Homes, RVs, Vans, etc.	12.06%	
13.) Poverty Rate	16.28%	
14.) Housing Units Lacking Telephones	3.61%	
15.) Age 25+ With Less Than High School Diploma	14.20%	
16.) Unemployment Rate	6.94%	
17.) Age 5+ Which Cannot Speak English Well or Not At All	1.79%	

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

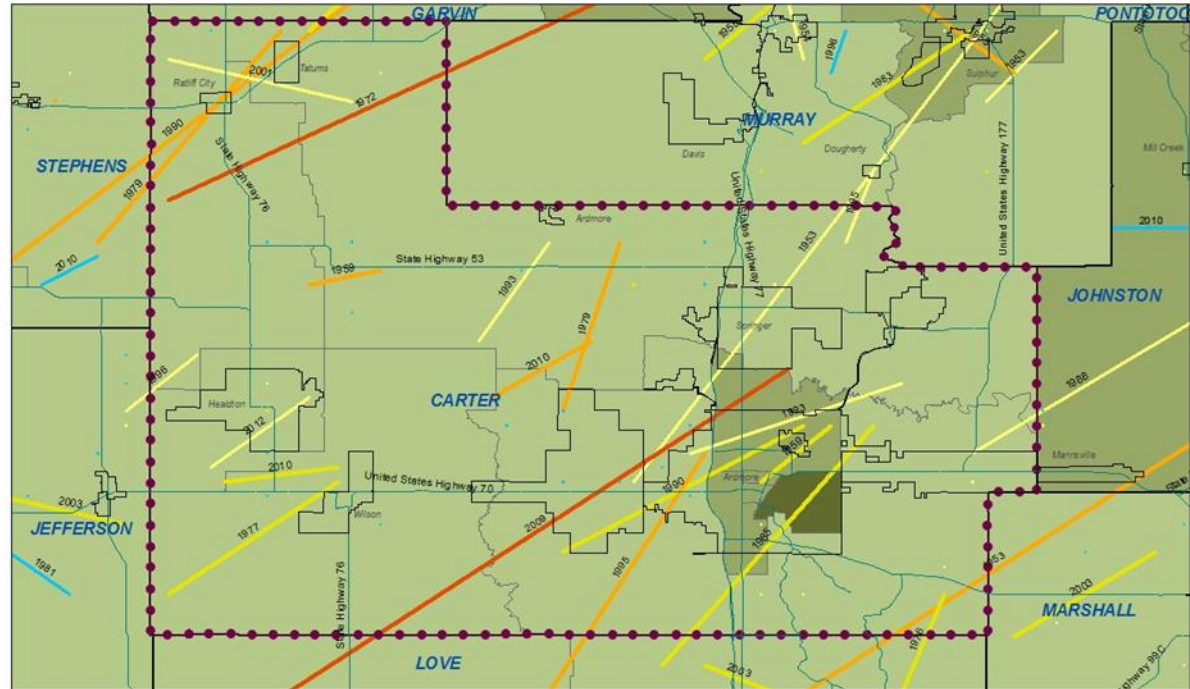
Tornado Events 1950 - 2014

Carter 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, B25036, B17001, B25043, S1501, B23023 & B06007

19XX or 20XX Year of Event

○ Oklahoma Municipal Boundaries

■ Selected County Boundary

□ COUNTY NAME



0 2.75 5.5 11 Miles

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).

This county falls about average per this index for social vulnerability when comparing as a county to other counties in the state. The census tracts around Ardmore have increased social vulnerability, particularly the southeast portion of the city area.

Recommendations for this county:

- Develop 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.
- Continue to apply for grants and pursue funding for more public emergency shelters.