

Special Topics

Woodward 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 5 key cities within the county (Woodward, Mooreland, Fort Supply, Mutual, Sharon).

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.

Woodward has an adopted comprehensive plans. Woodward created their future land use map and decisions for development by excluding land within the floodplain (Envision Woodward, p. 73-74). 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.

Related to flooding and managing water resources the Envision Woodward plan contains strategies (p24-26):

Chapter : Natural Framework

7. Work to protect and enhance our watersheds,

9. Promote regional stormwater management systems and cooperate with local agencies regarding watershed issues and the creation of regional stormwater management plan.

12. Plan and construct (or restore) drainageways as amenities by incorporating a system of detention ponds in conjunction with natural drainageways (creeks) wherever possible. (NOTE: past practice was to pave, current best practices is to restore natural elements for filtration and flood control)

Chapter: Built Environment – City Strategies

1. Floodplain: Pursue a detailed study of the floodplain and make necessary physical and policy improvements.

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.

Woodward County does not have a current Hazard Mitigation Plan.

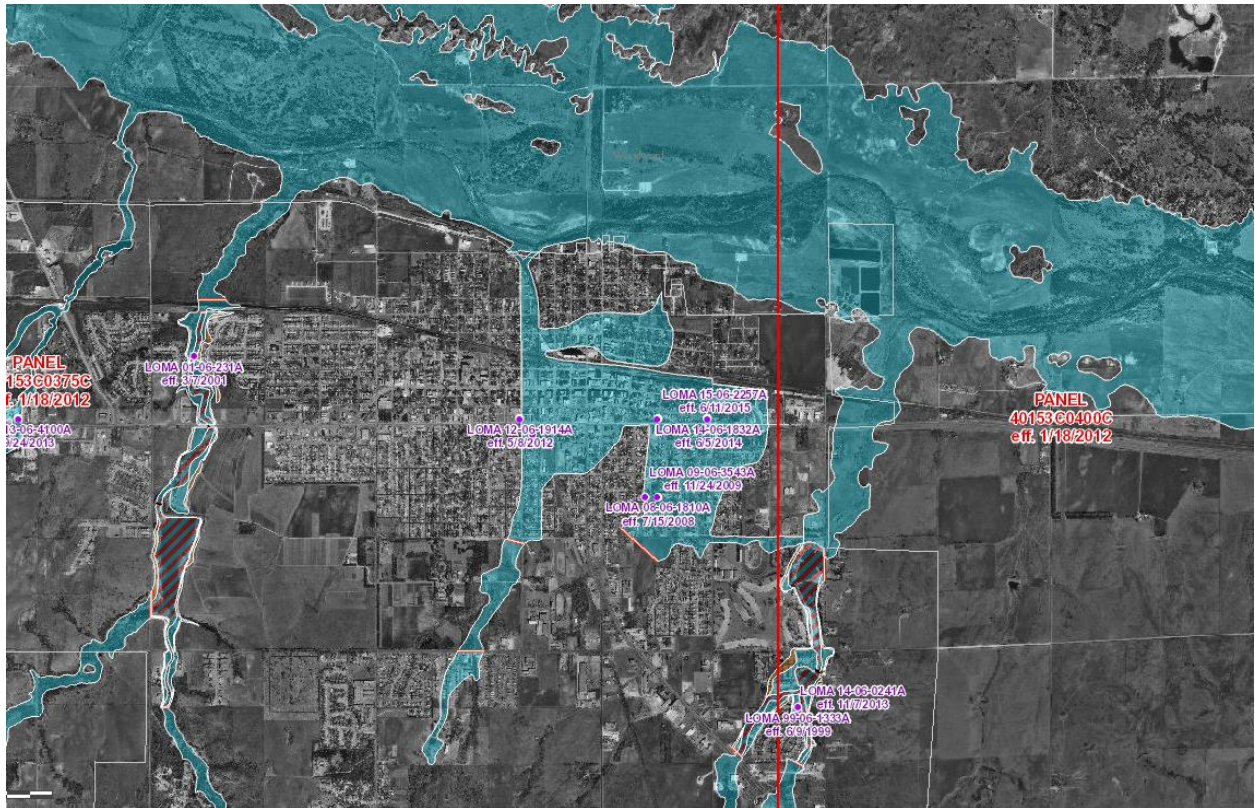
C.2.1.1. Historical Data on Natural Disasters and Other Hazards

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

FEMA has issued updates to floodplains (LOMA and LOMR) which impacts the populated areas of Woodward

Woodward

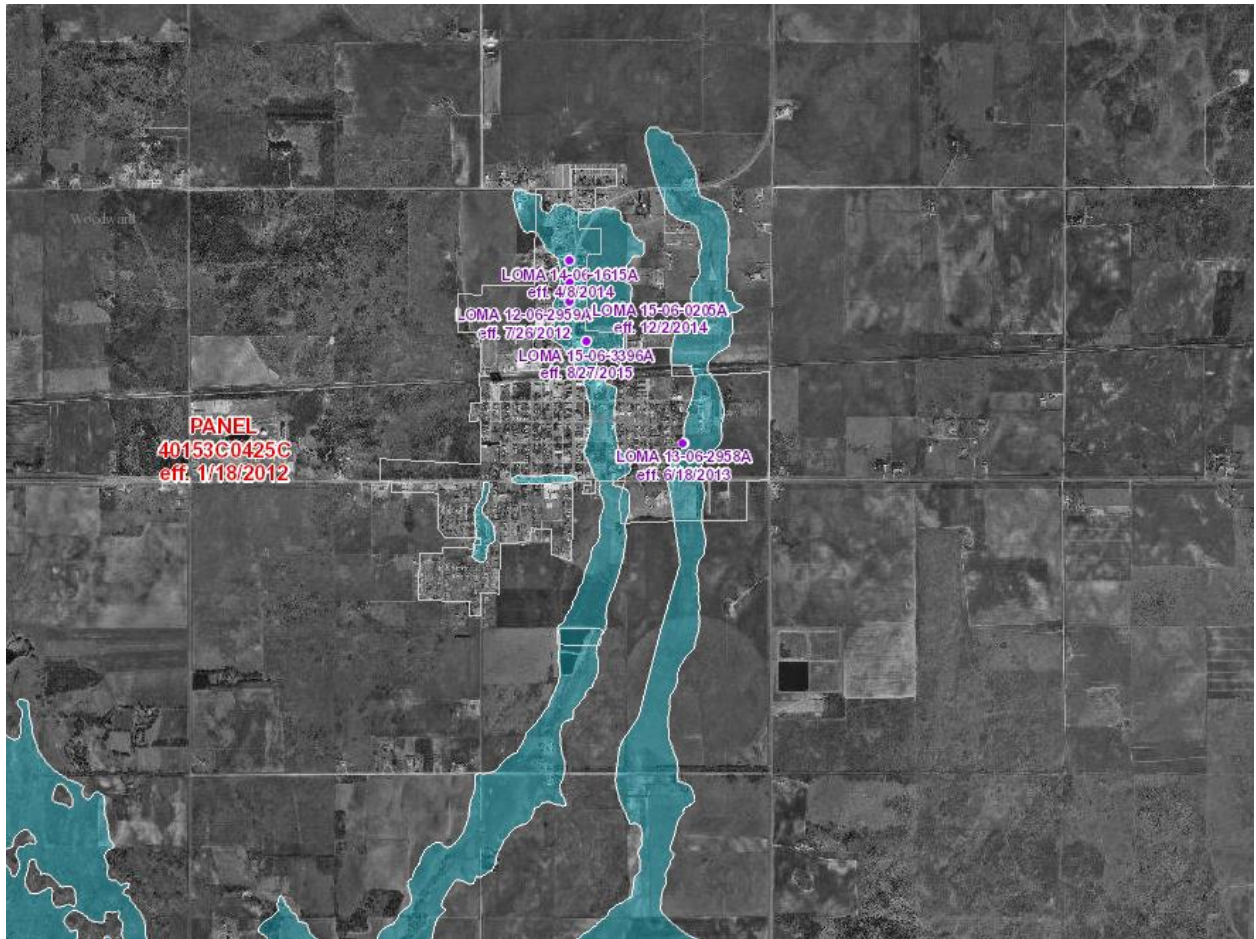


FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Flood Hazard Zones

■ 1% Annual Chance Flood Hazard

Mooreland



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Sharon



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

Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

Mutual



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:

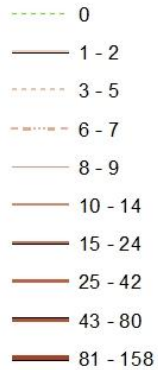
Historic data on tornados between 1950-2014 there are 60 tornados documented. There were 32 injuries that occurred connected to these tornados, with 29 of those injuries happening in the 2012 tornado. There were 6 fatalities connected to tornadoes during this time period, all of which occurred in the same 2012 tornado. Property losses between 1950-1996 ranged from \$142,101.00 to \$1,421,050.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was \$410,000.00.

Social Vulnerability - Impacts on Housing & Disaster Resiliency

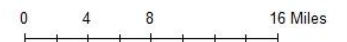
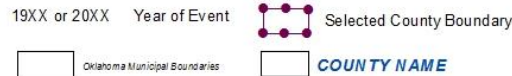
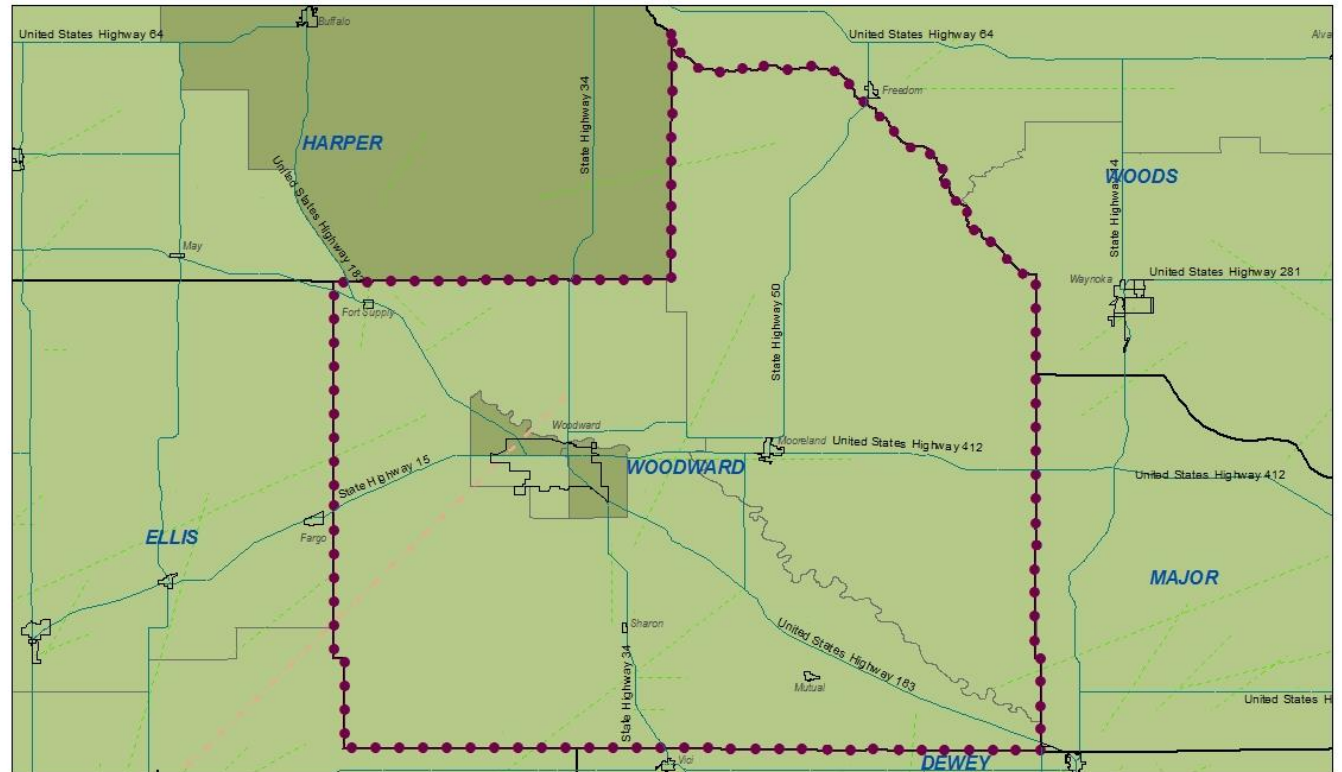
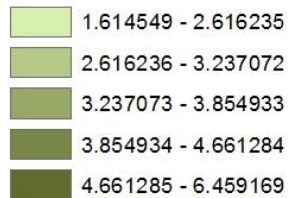
Tornado Events 1950 - 2014

Woodward County

of fatalities associated with event



Social Vulnerability Index



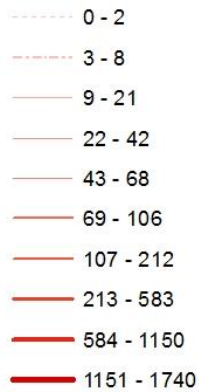
Sources: Shannon Van Zandt, Texas A&M, Hazard Planning materials, and 2009-2013 American Community Survey, Tables B11003, B01001, B17001, B08301, B25044, B25001, B25042, B02001, B03002, B26001, B25036, B17001, B25043, S1501, B23025 & B06007

Social Vulnerability - Impacts on Housing & Disaster Resiliency

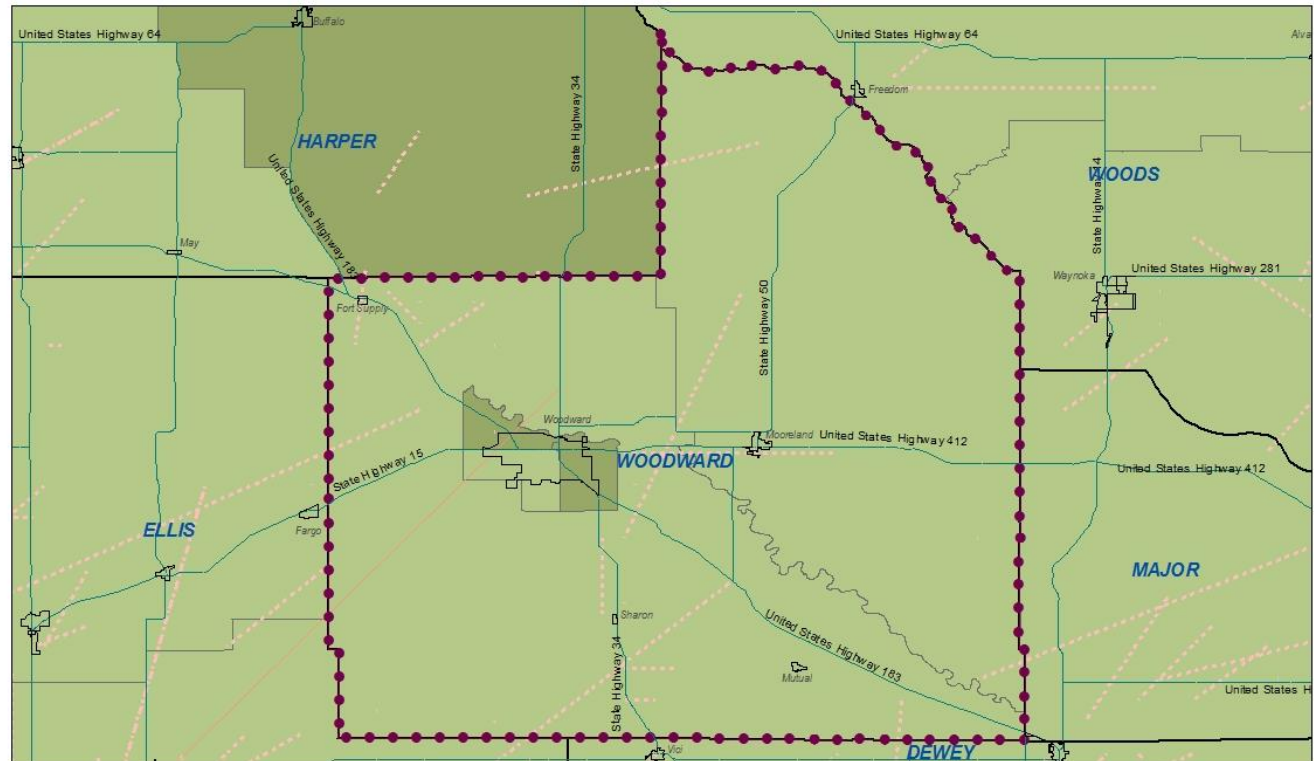
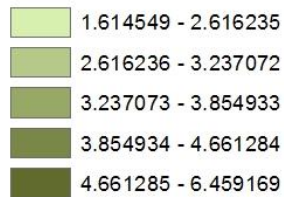
Tornado Events 1950 - 2014

Woodward County

of injuries associated with event



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, B23025 & B06007

19XX or 20XX Year of Event

Oklahoma Municipal Boundaries

Selected County Boundary

COUNTY NAME



Social Vulnerability - Impacts on Housing & Disaster Resiliency

Tornado Events 1950 - 2014 Woodward County

Tornado prior to 1996 \$ losses associated with event

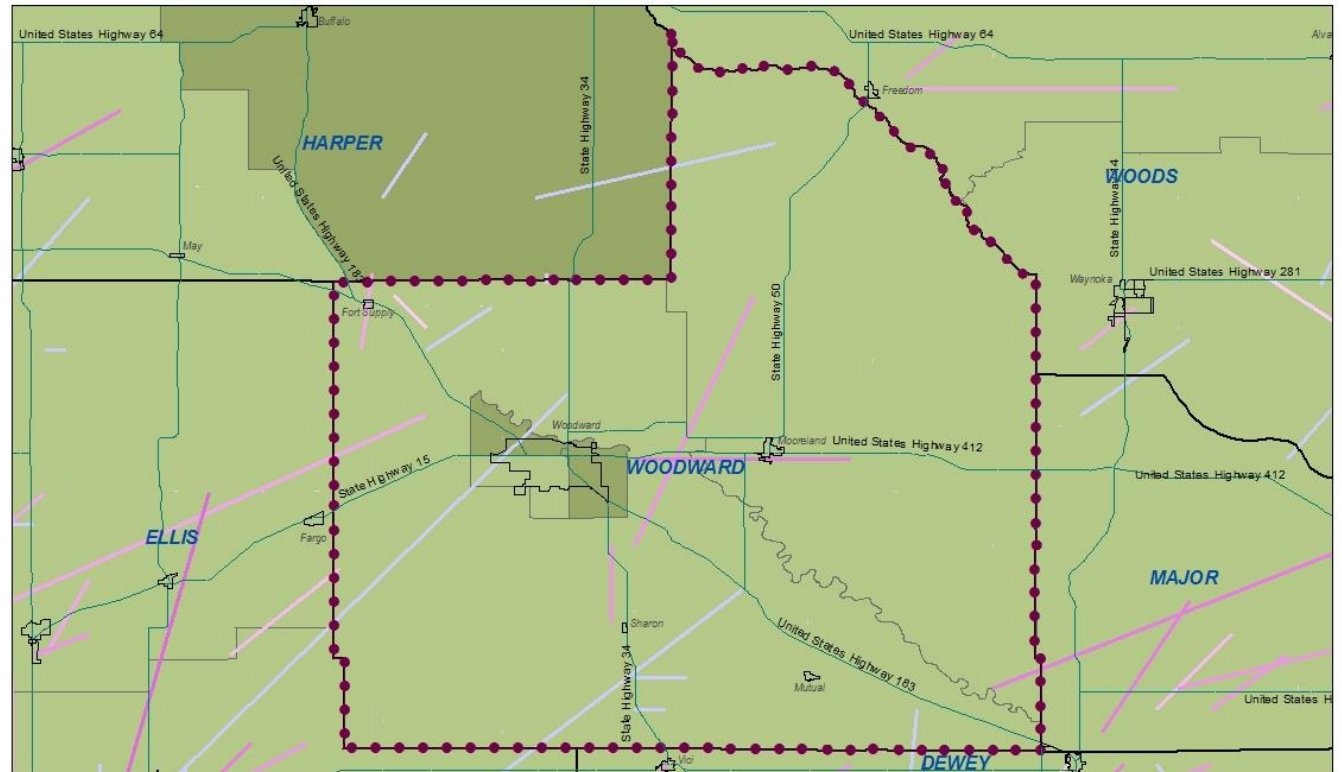
- >\$50
- \$50-\$500
- \$500-\$5,000
- \$5,000-\$50,000
- \$50,000-\$500,000
- \$500,000-\$5,000,000
- \$5,000,000-\$50,000,000
- \$50,000,000

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 4 8 16 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

Online storm shelter registration:

<https://docs.google.com/forms/d/1j7gs0kr9fMxYaFjOpX7NpKYgI5JcUCrwOk9MFwjLoCQ/viewform>

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

Information not available.

C.2.1.4 Local Emergency Response Agency Structure

If no Hazard Mitigation Plan/Disaster Recovery Plan / Action Plan/Disaster Resilience Plan/Emergency Management Plan are prepared, updated, and monitored the recommendation for this county is to apply for funding and complete a Hazard Mitigation Plan with FEMA.

The structure for response and to address any perceived vulnerabilities in the county is included in the Hazard Mitigation Plan. [Cite section in the plan that are relevant]

C.2.1.5 Threat & Hazard Warning Systems

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

- 18 outdoor sirens (installed after 2012 tornado to replace older sirens)
- National Weather Service's NOAA Weather Radio program
- Emergency Notification System <http://www.readywoodward.com/>

<http://www.koco.com/news/oklahomanews/around-oklahoma/Woodward-gets-18-new-outdoor-warning-sirens/14340226>

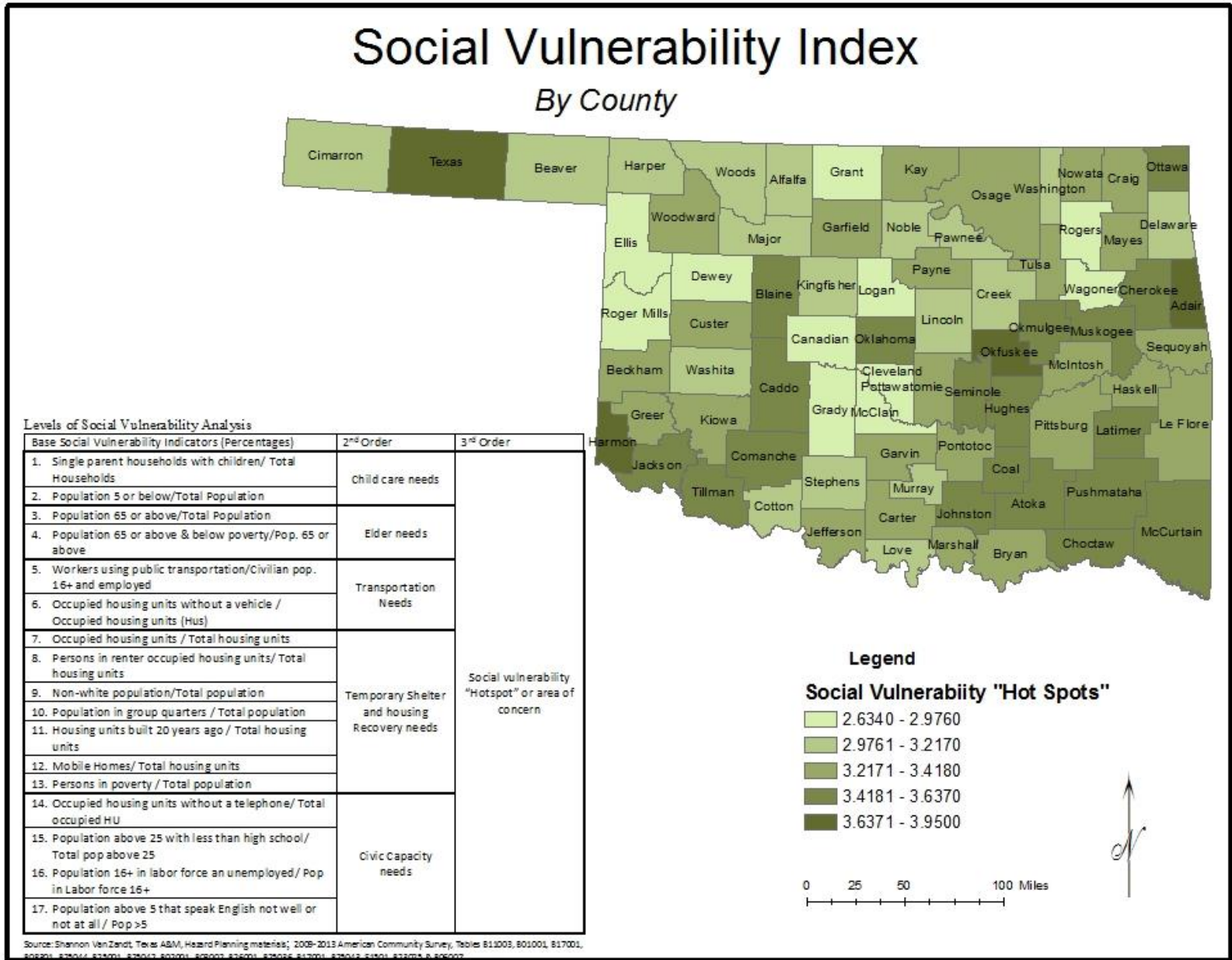
Social Vulnerability

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.

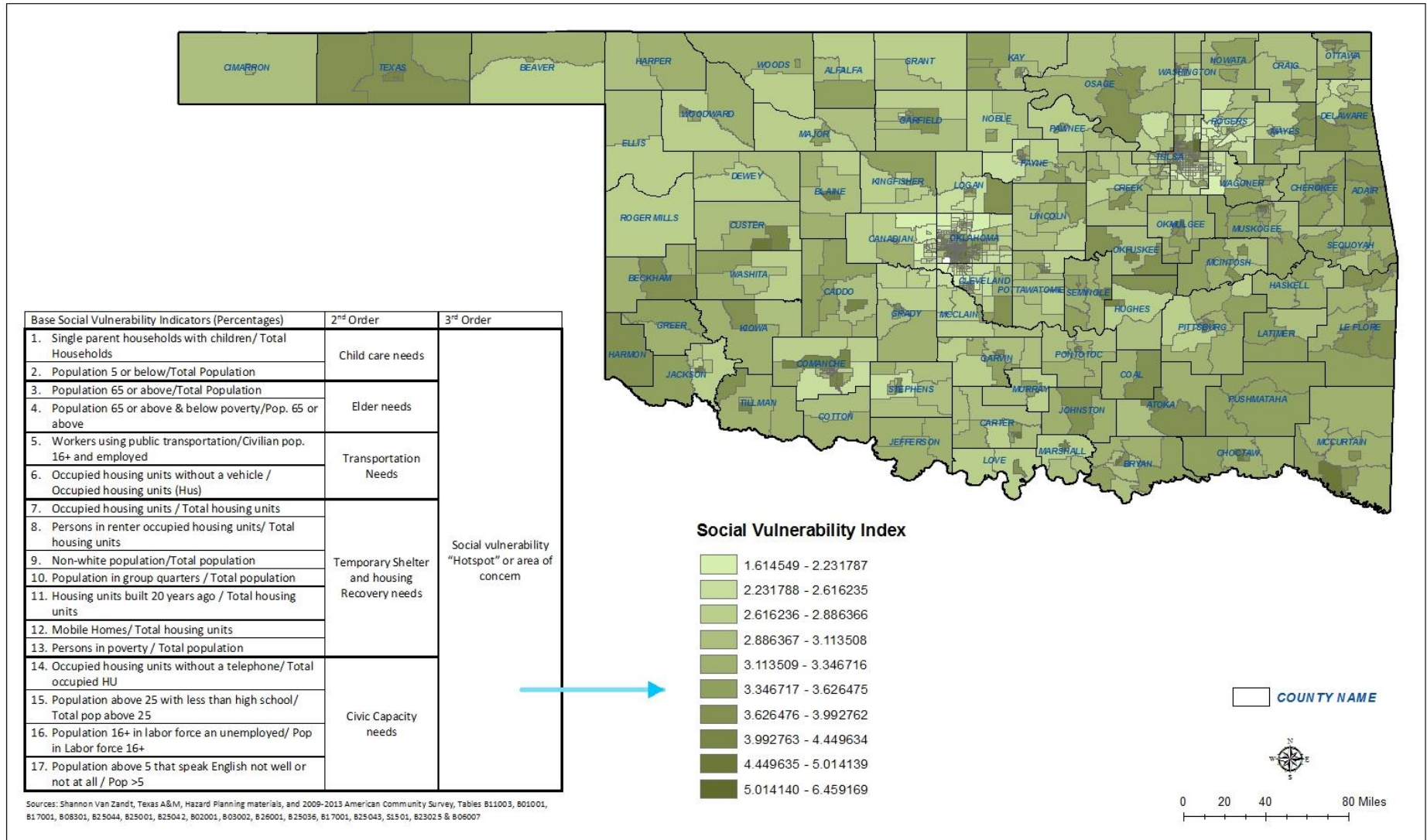
Social Vulnerability Analysis - Woodward County

| Base Social Vulnerability Indicators (%) | | 2nd Order | 3rd Order |
|--|--------|------------------------|--|
| 1.) Single Parent Households | 10.93% | 0.18 | 3.256 Social Vulnerability 'Hotspot' or Area of Concern |
| 2.) Population Under 5 | 7.10% | (Child Care Needs) | |
| 3.) Population 65 or Above | 14.26% | 0.278 | |
| 4.) Population 65 or Above Poverty Rate | 13.54% | (Elder Needs) | |
| 5.) Workers Using Public Transportation | 0.47% | 0.054 | |
| 6.) Occupied Housing Units w/o Vehicle | 4.89% | (Transportation Needs) | |
| 7.) Housing Unit Occupancy Rate | 83.65% | | |
| 8.) Rental Occupancy Rate | 28.24% | 2.473 | |
| 9.) Non-White Population | 17.51% | (Temporary Shelter | |
| 10.) Population in Group Quarters | 5.06% | and Housing | |
| 11.) Housing Units Built Prior to 1990 | 82.70% | Recovery Needs) | |
| 12.) Mobile Homes, RVs, Vans, etc. | 14.92% | | |
| 13.) Poverty Rate | 15.23% | | |
| 14.) Housing Units Lacking Telephones | 5.87% | | |
| 15.) Age 25+ With Less Than High School Diploma | 14.70% | 0.271 | |
| 16.) Unemployment Rate | 3.91% | (Civic Capacity | |
| 17.) Age 5+ Which Cannot Speak English Well or Not At All | 2.60% | Needs) | |

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

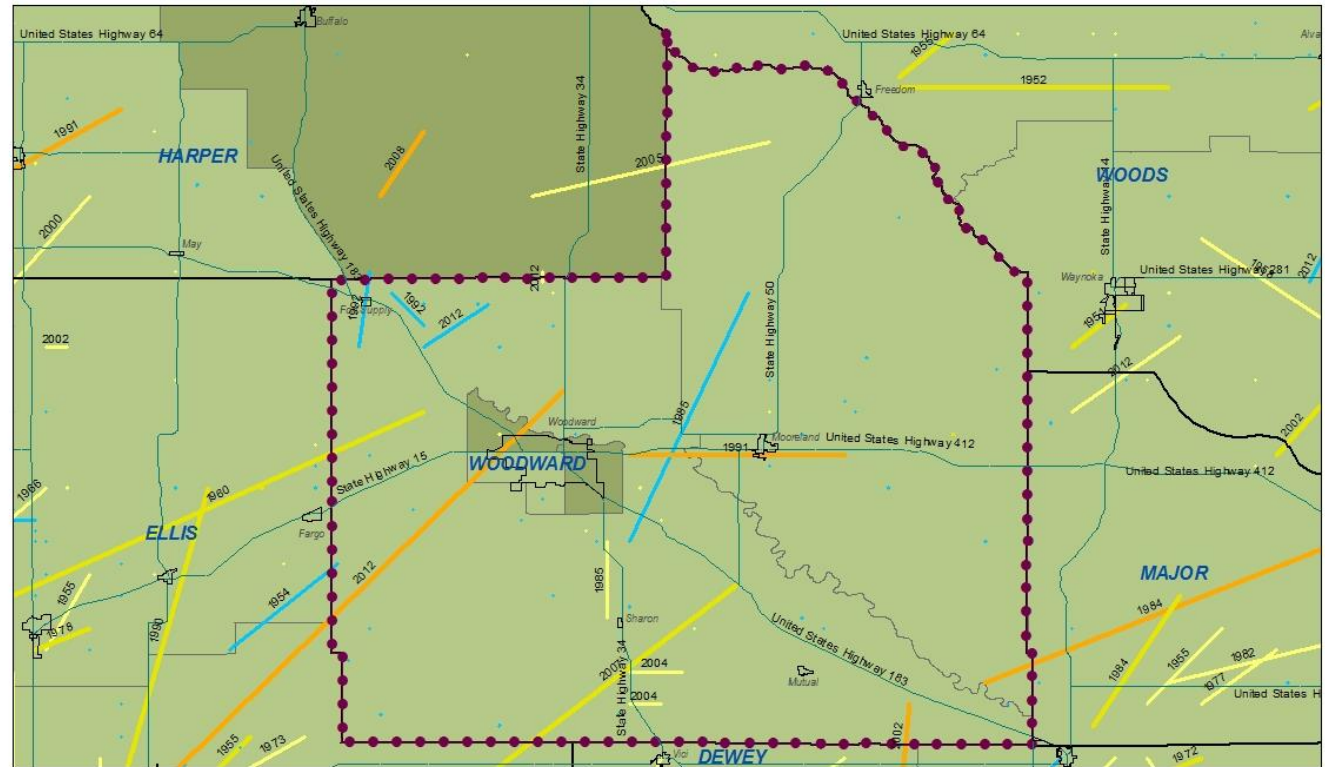
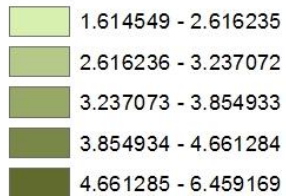
Tornado Events 1950 - 2014

Woodward County

Tornado Magnitude



Social Vulnerability Index



19XX or 20XX Year of Event Selected County Boundary

Oklahoma Municipal Boundaries

COUNTY NAME



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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 Woodward.

Recommendations for this county:

- 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.