Special Topics

Roger Mills 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 4 key cities within the county (Cheyenne, Hammon, Reydon, Strong City). The total population for the county is under 4,000, and the county seat of Cheyenne is under 1,000 population. Typically comprehensive plans are not prepared for areas with low population as grow issues are not the top concern.

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.

Roger Mills County does have 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.

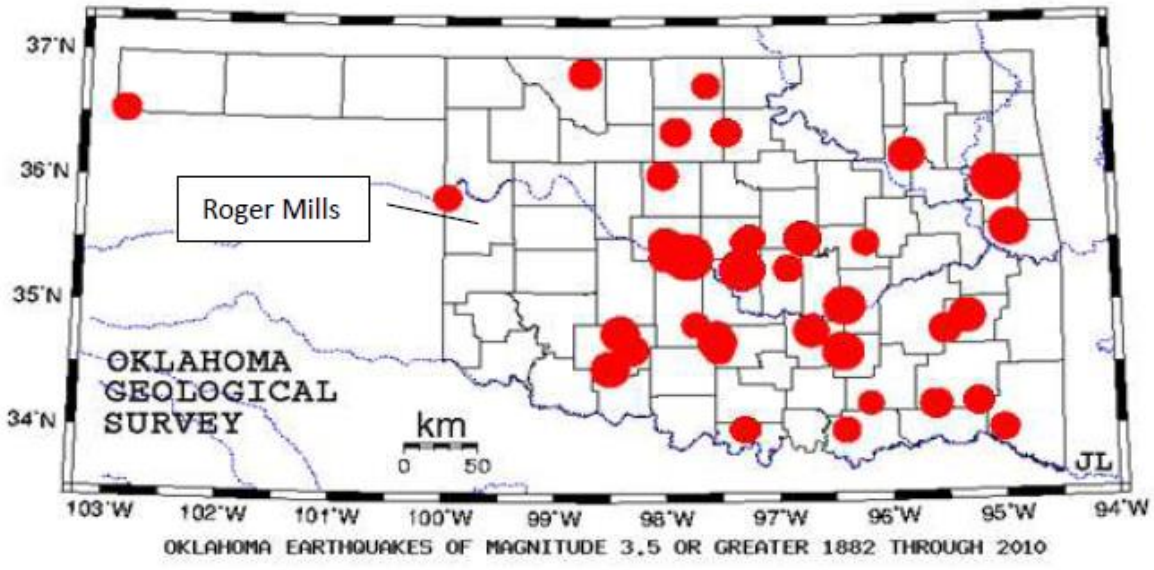
HAZARD VULNERABILITY BY JURISDICTION

	DAM FAILURE	DROUGHT	EARTHQUAKE	EXTREME HEAT	FLOOD	HAIL	HIGH WINDS	LIGHTNING	TORNADO	WILDFIRE	WINTER STORM
COUNTY											
Roger Mills	X	X	X	X	X	X	X	X	X	X	X
SCHOOLS											
Cheyenne		X	X	X	X	X	X	X	X	X	X
Hammon		X	X	X		X	X	X	X		X
Reydon		X	X	X		X	X	X	X		X
Sweetwater		X	X	X		X	X	X	X	X	X
CITIES/ TOWNS											
Cheyenne	X	X	X	X	X	X	X	X	X	X	X
Hammon	X	X	X	X	X	X	X	X	X	X	X
Reydon	X	X	X	X	X	X	X	X	X	X	X
Strong City		X	X	X	X	X	X	X	X	X	X
Sweetwater		X	X	X		X	X	X	X	X	X

(Rogers County HMP, p. 16)

Dam Failures
There are 181 dams, with 13 listed with significant risk and eight at high risk. To date there have been no dam failures (p. 23).

Earthquakes
Increases in earthquakes in the state may have implications on building practices as more is understood. Roger Mills County has only experienced one notable earthquake and at present does not anticipate this is a high level of risk to the area.



(Roger Mills County, p 30)

Flooding
"There are two types of floods, both which can occur in Roger Mills County and participating jurisdictions. First, flash floods, which result from localized heavy rain falls. Flash floods occur rapidly with little warning. Dam failures are a unique form of flash flood. Flash flooding is the most common cause of death by natural disaster in the United States. Second, riverine floods, occur after extended periods of rain over several days of weeks. Riverine floods generally can be forecast in advance and proper precautions taken to save lives and mitigate some, though certainly not all, property losses." (Roger Mills HMP, p.33)

"National Climatic Data Center storm event statistics record 5 flooding events in Roger Mills County and participating jurisdictions during 2000 – 2013 with $40,000 estimated property and $45,000 crop damage." (Roger Mills HMP, p.34)

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

Historic data on tornados between 1950-2014 there are 41 tornados documented. There were 23 injuries that occurred connected to these tornados, with 18 of those injuries happening in the 1955

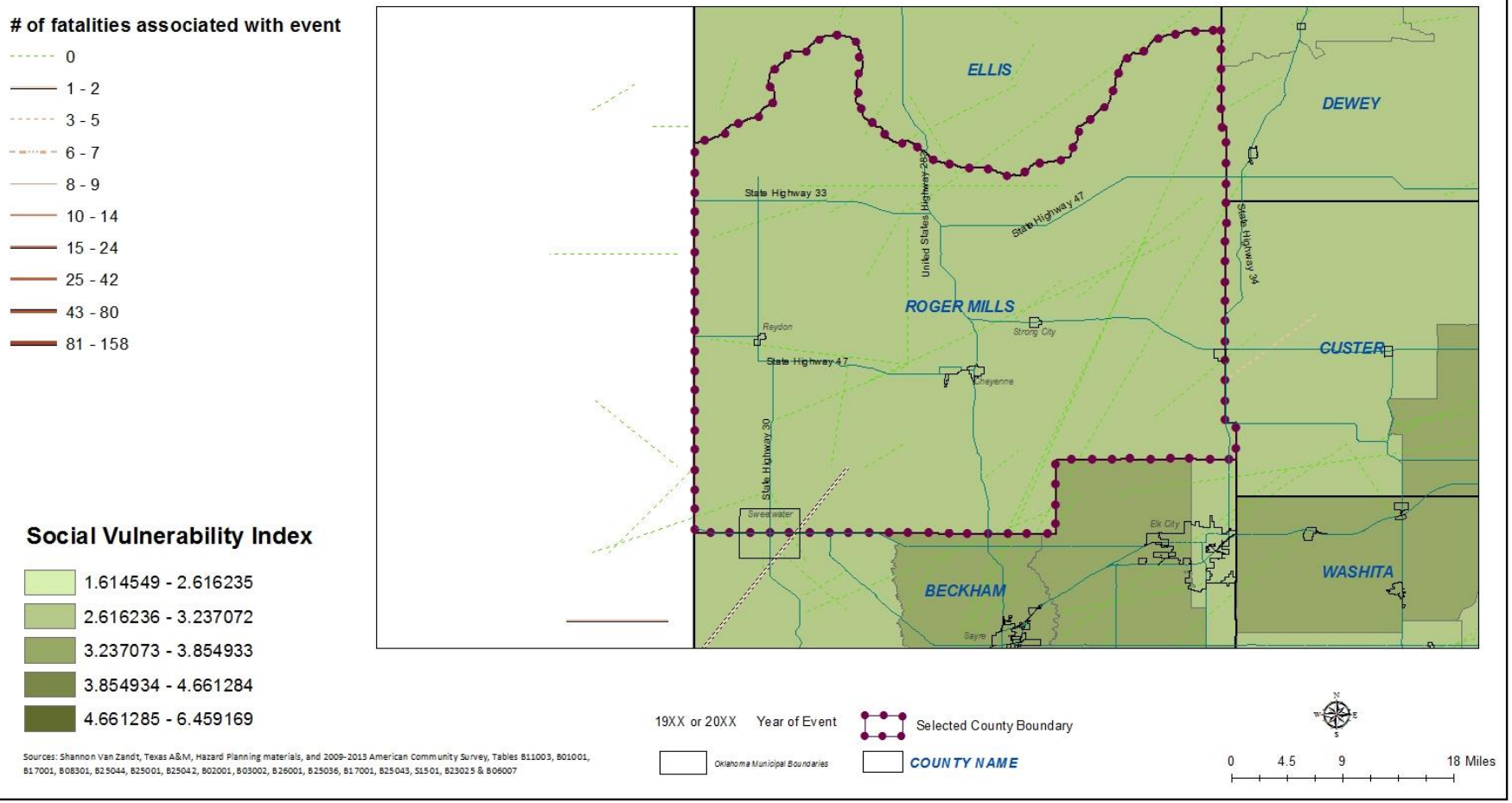
tornado. There were 2 fatalities connected to tornadoes during this time period, both of which occurred in the 1955 tornado. Property losses between 1950-1996 ranged from $781,604.00 to $7,816,200.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was $7,120,000.00.

For all the county profiles for this study we are providing maps of the historic tornados mapped over the developed social vulnerability index. This is in addition to the data prepared and summarized from the HMP in this section

Social Vulnerability - Impacts on Housing & Disaster Resiliency

Tornado Events 1950 - 2014

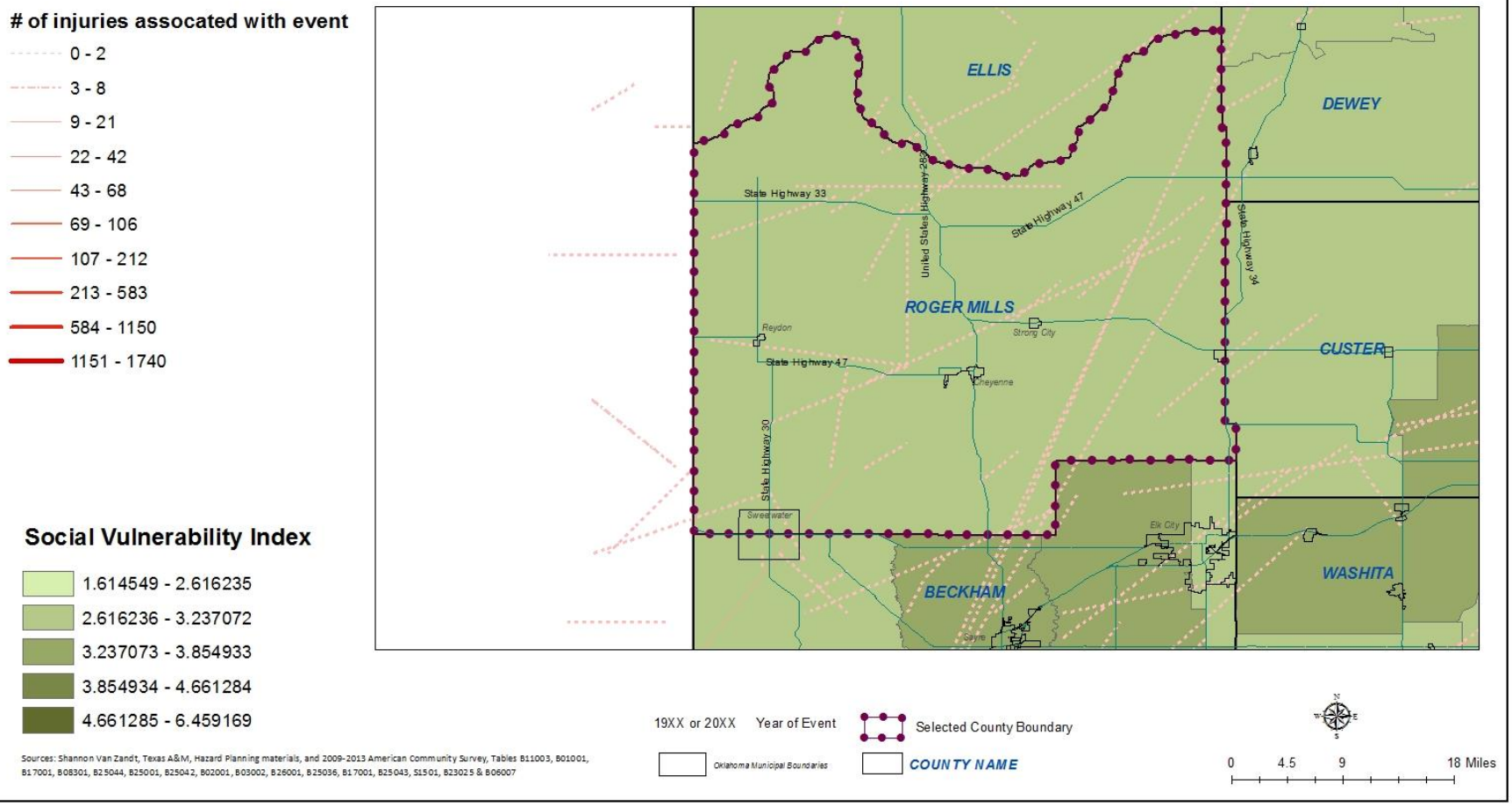
Roger Mills County



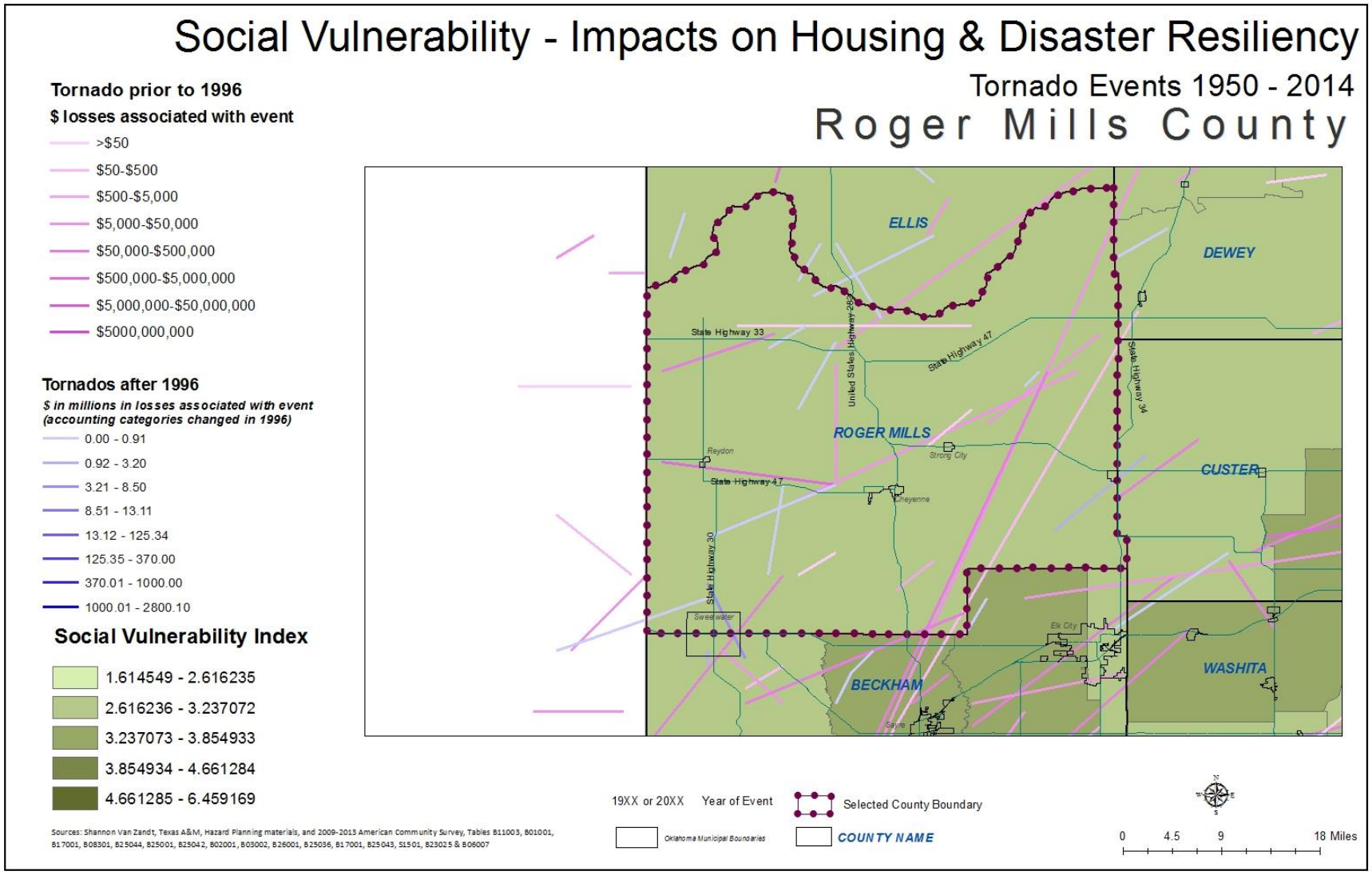
Social Vulnerability - Impacts on Housing & Disaster Resiliency

Tornado Events 1950 - 2014

Roger Mills County



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
Roger Mills 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
$5000,000,000
Tornados 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
ELLIS
DEWEY
ROGER MILLS
CUSTER
BECKHAM
WASHITA
State Highway 33
State Highway 47
State Highway 34
State Highway 30
United States Highway 283
Reydon
Strong City
Cheyenne
Sweetwater
Elk City
Sayre
19XX or 20XX Year of Event
Selected County Boundary
Oklahoma Municipal Boundaries
COUNTY NAME
0 4.5 9 18 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

The Rogers Mills County notes in the HMP for mitigation are needed:

- Create database on citizens with existing storm shelters.
- Build safe rooms/storm shelters to protect from tornados and high winds (p.62)

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

Information not available

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 Rogers Mills County include:

- ☐ Sirens
- ☐ Emergency Broadcast System

The Rogers Mills County notes in the HMP for mitigation are needed:

- Generators for emergency back-up power.
- Improve Warning Systems (storm sirens, cell phone notification, fire alert, etc.) (p.62)

Cheyenne has purchased 3 storm sirens. Hammon intends to purchase storm sirens in 2014.

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

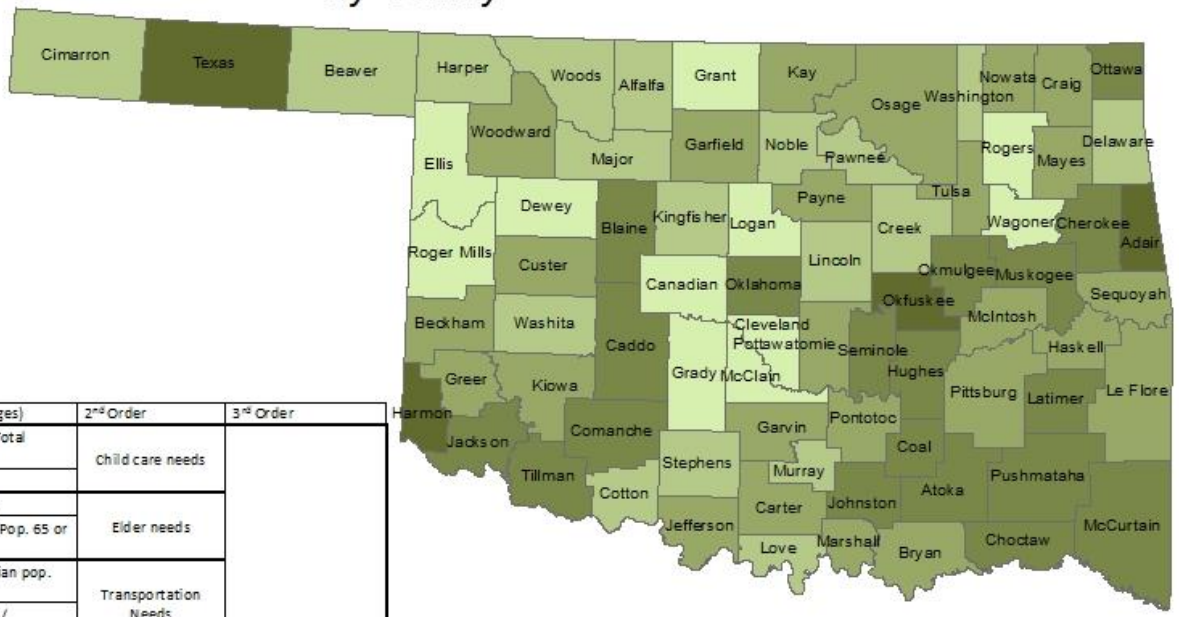
Social Vulnerability

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 - Roger Mills County			
Base Social Vulnerability Indicators (%)		**2nd Order**	**3rd Order**
1.) Single Parent Households	8.34%	0.143 (Child Care Needs)	**2.732 Social Vulnerability 'Hotspot' or Area of Concern**
2.) Population Under 5	5.98%		
3.) Population 65 or Above	17.99%	0.289 (Elder Needs)	
4.) Population 65 or Above & Below Poverty Rate	10.93%		
5.) Workers Using Public Transportation	0.19%	0.023 (Transportation Needs)	
6.) Occupied Housing Units w/o Vehicle	2.07%		
7.) Housing Unit Occupancy Rate	68.83%	2.153 (Temporary Shelter and Housing Recovery Needs)	
8.) Rental Occupancy Rate	21.23%		
9.) Non-White Population	13.60%		
10.) Population in Group Quarters	0.97%		
11.) Housing Units Built Prior to 1990	81.61%		
12.) Mobile Homes, RVs, Vans, etc.	15.88%		
13.) Poverty Rate	13.20%		
14.) Housing Units Lacking Telephones	0.69%	0.124 (Civic Capacity Needs)	
15.) Age 25+ With Less Than High School Diploma	8.70%		
16.) Unemployment Rate	2.58%		
17.) Age 5+ Which Cannot Speak English Well or Not At All	0.46%		
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; 2008-2013 American Community Survey, Tables B11003, B01001, B17001,

Legend

Social Vulnerabiity "Hot Spots"

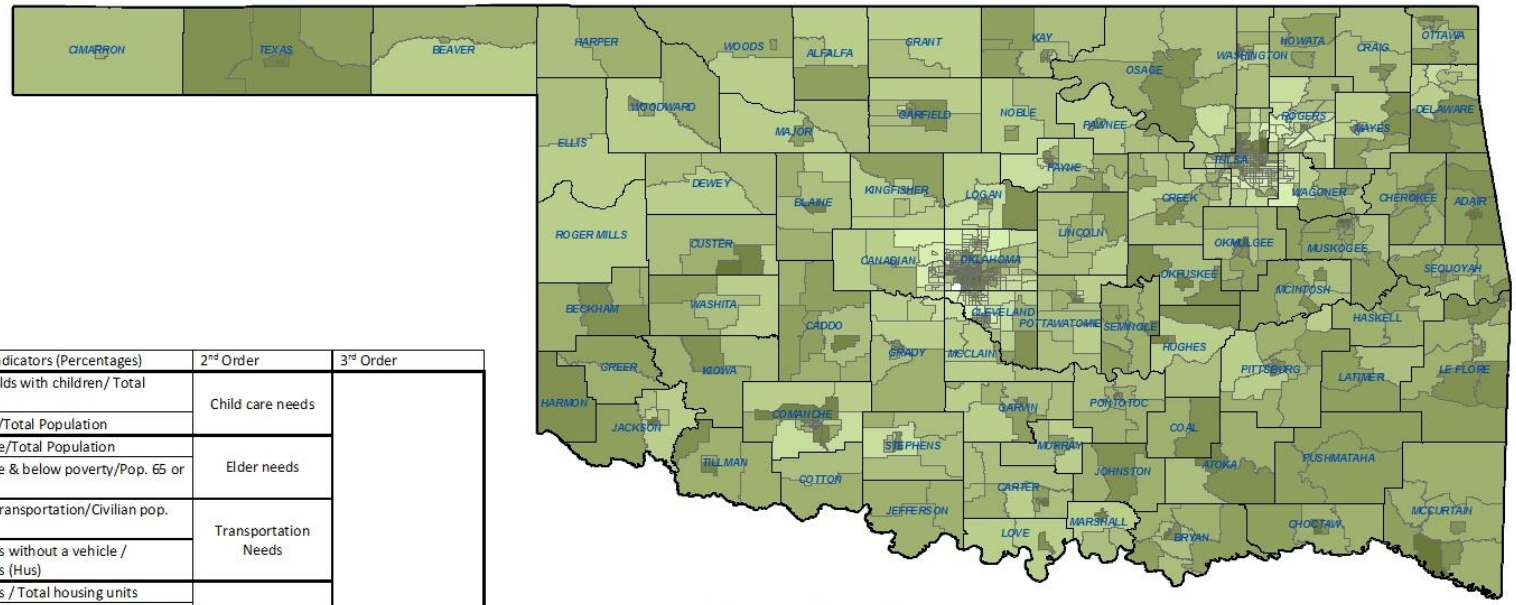
- 2.6340 - 2.9760
- 2.9761 - 3.2170
- 3.2171 - 3.4180
- 3.4181 - 3.6370
- 3.6371 - 3.9500

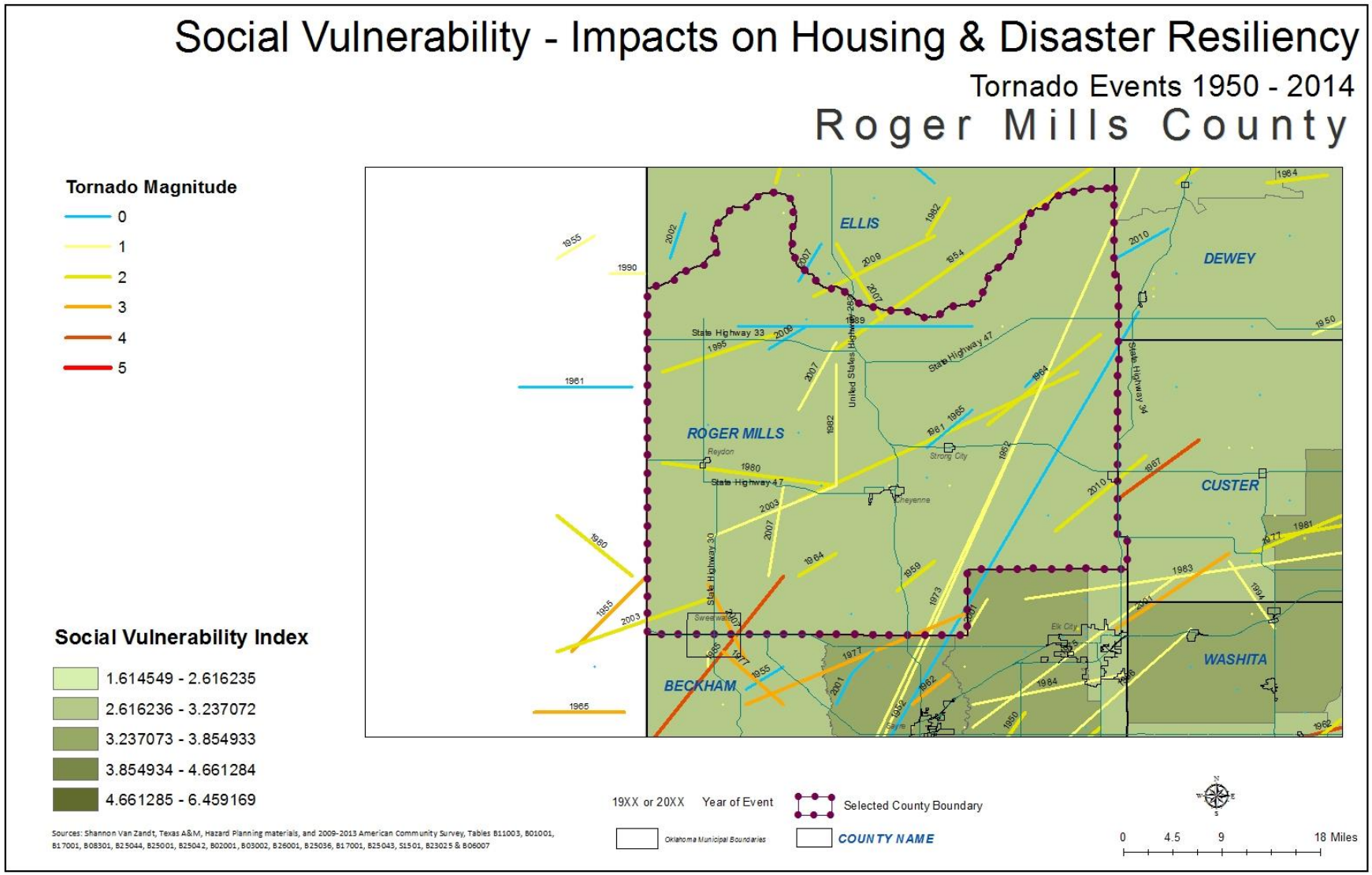
0 25 50 100 Miles

Social Vulnerability - Impacts on Housing & Disaster Resiliency

Base Social Vulnerability Indicators (Percentages)	2nd Order	3rd Order
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		

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
Roger Mills County
Tornado Magnitude
0
1
2
3
4
5
ELLIS
DEWEY
ROGER MILLS
CUSTER
BECKHAM
WASHITA
Reydon
Strong City
Cheyenne
Sweetwater
Elk City
State Highway 33
State Highway 47
State Highway 30
State Highway 34
United States Highway 283
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 4.5 9 18 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 great gap or disadvantage prior to the event (Shannon Van Zandt, Texas A&M, Hazard Planning).

This county falls below the state score (may be due to low population) per this index for social vulnerability when comparing as a county to other counties in the state. There are no particularly elevated census tracts within the county where increased social vulnerability is notable.

Recommendations for this county:

- 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.