

## Special Topics

## Lincoln 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 13 key cities within the county (Chandler, Stroud, Prague, Wellston, Meeker, Agra, Davenport, Carney, Sparks, Tryon, Kendrick, Fallis, Warwick).

**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.

Lincoln County does have a Hazard Mitigation Plan, but was not available for use in this study.

#### 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.

## Chandler



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

## Tryon



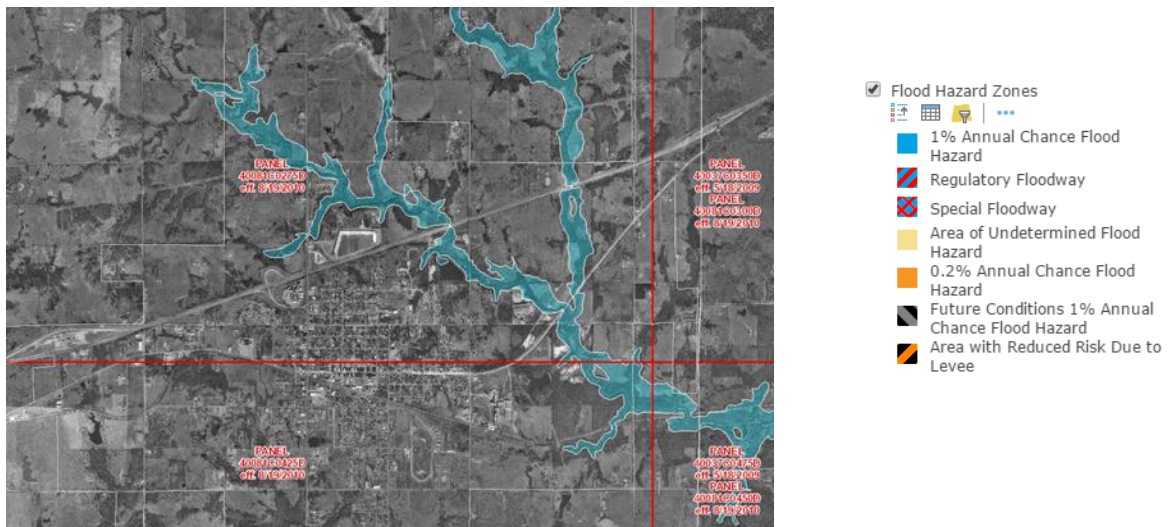
FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

## Agra



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

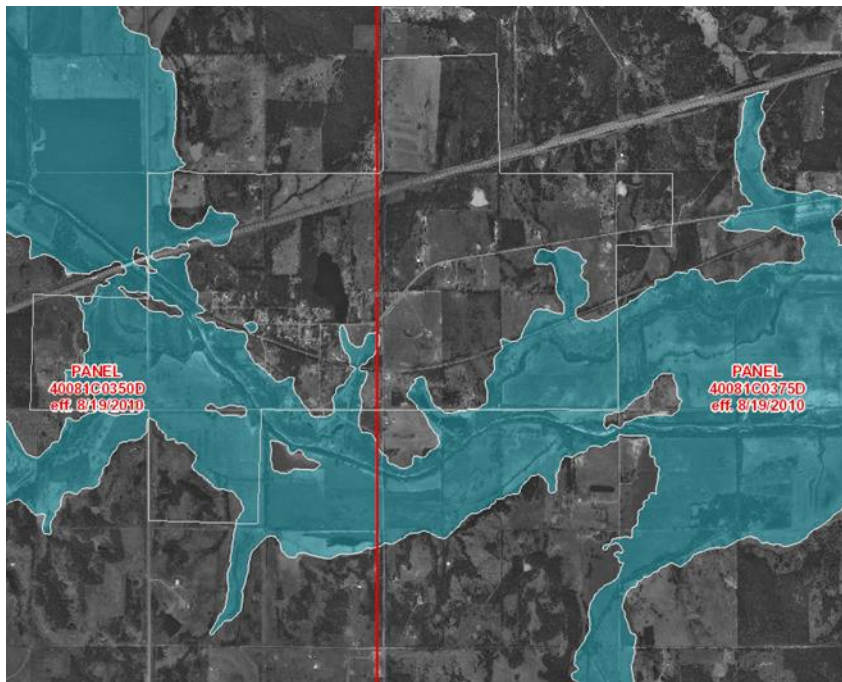
## Stroudt



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



## Warwick



- ☒ 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/>

## Wellston



- ☒ 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/>

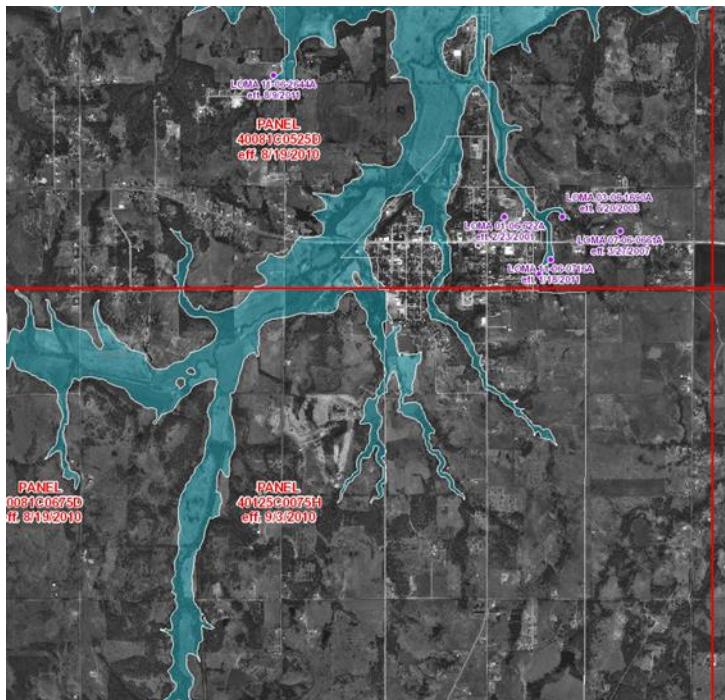
## Prague



- ☒ 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/>

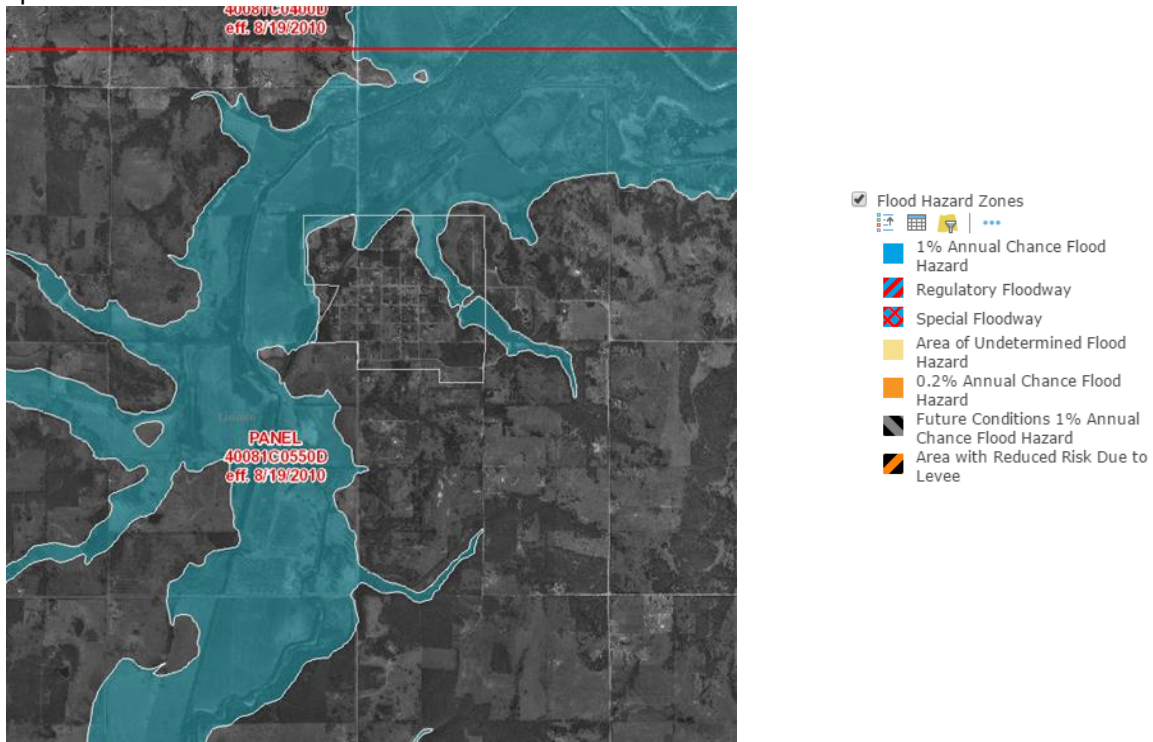
## Meeker



- ☒ 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/>

## Sparks

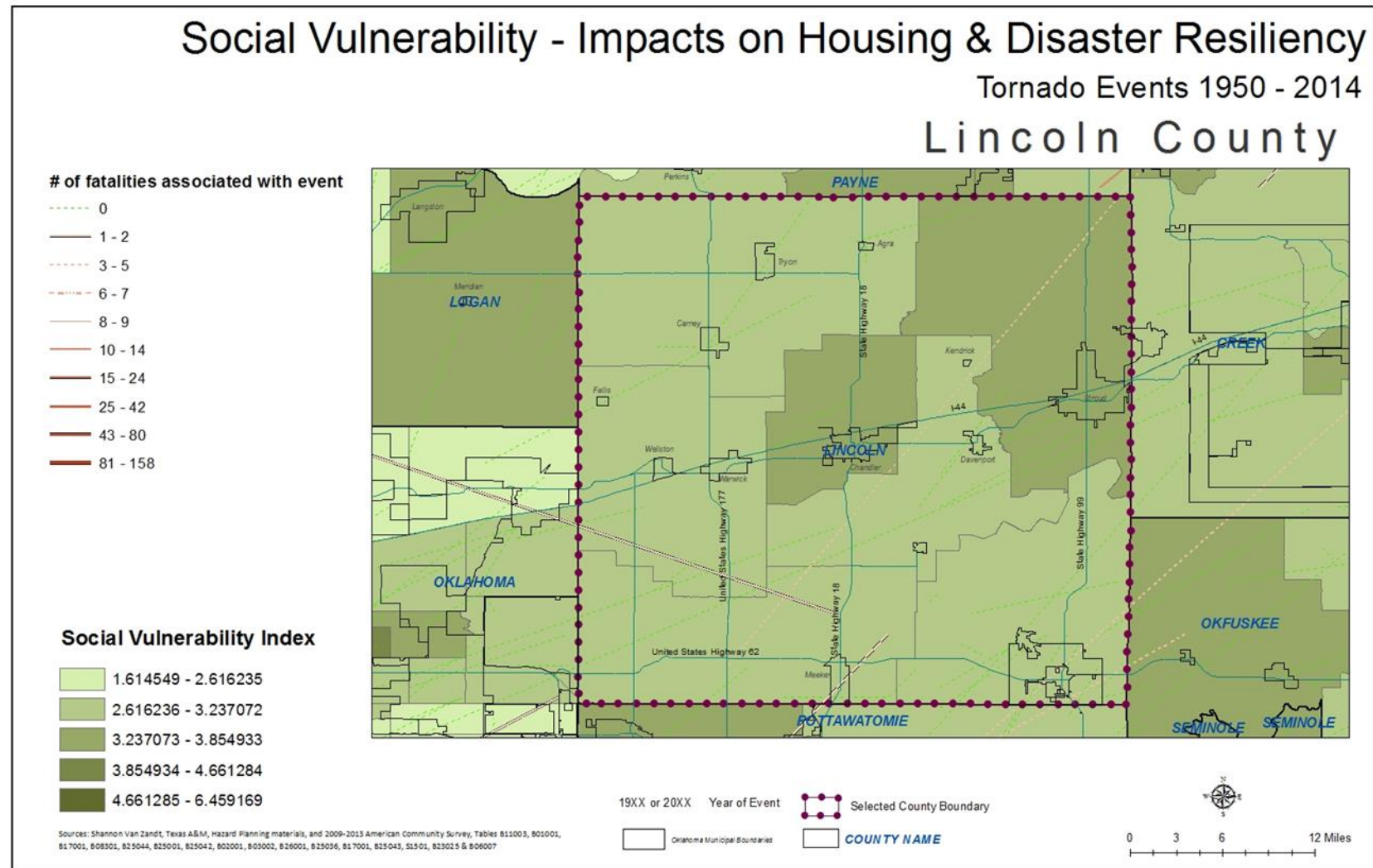


FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

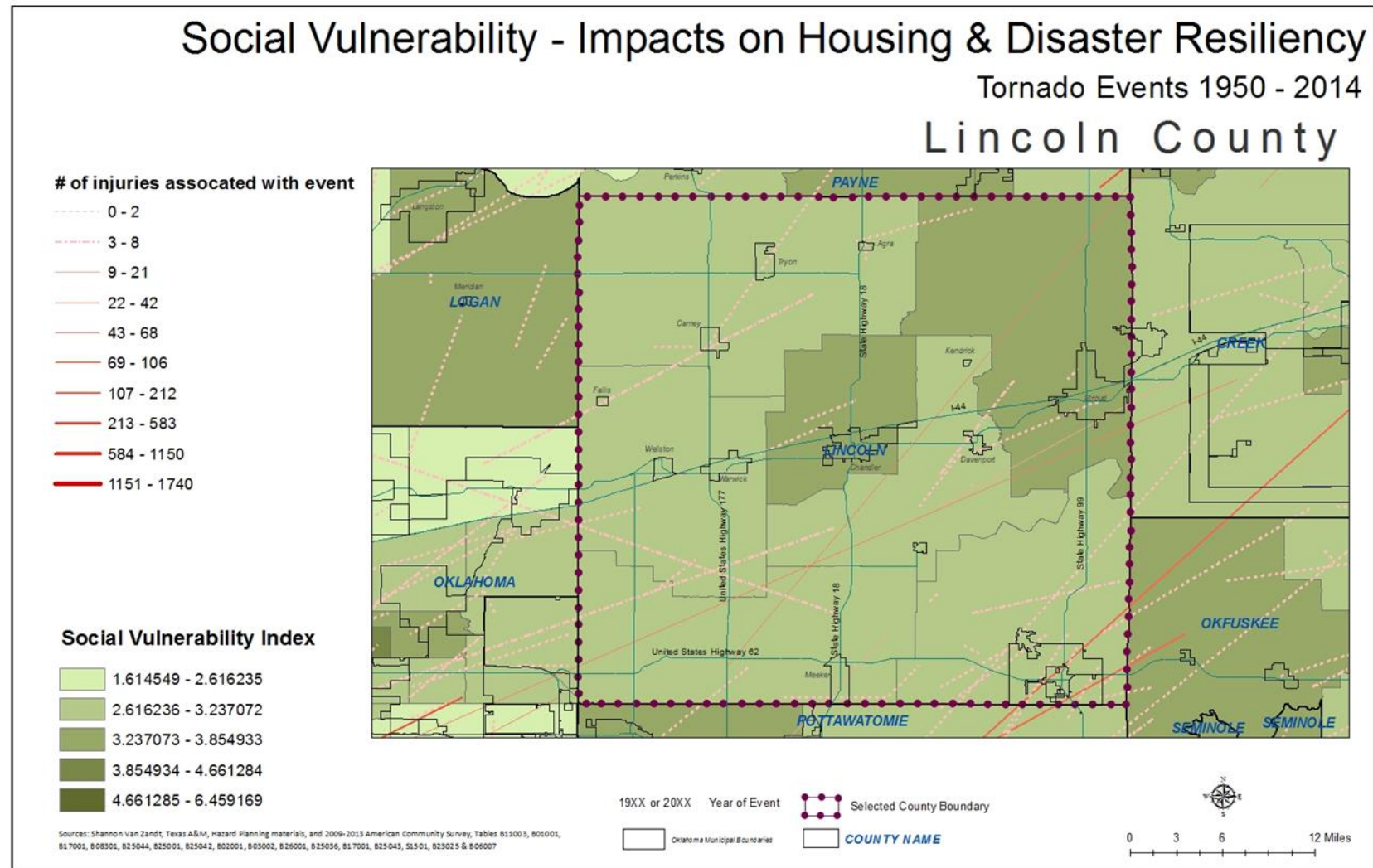
NOAA data shows the following historic data on disaster events for the county:

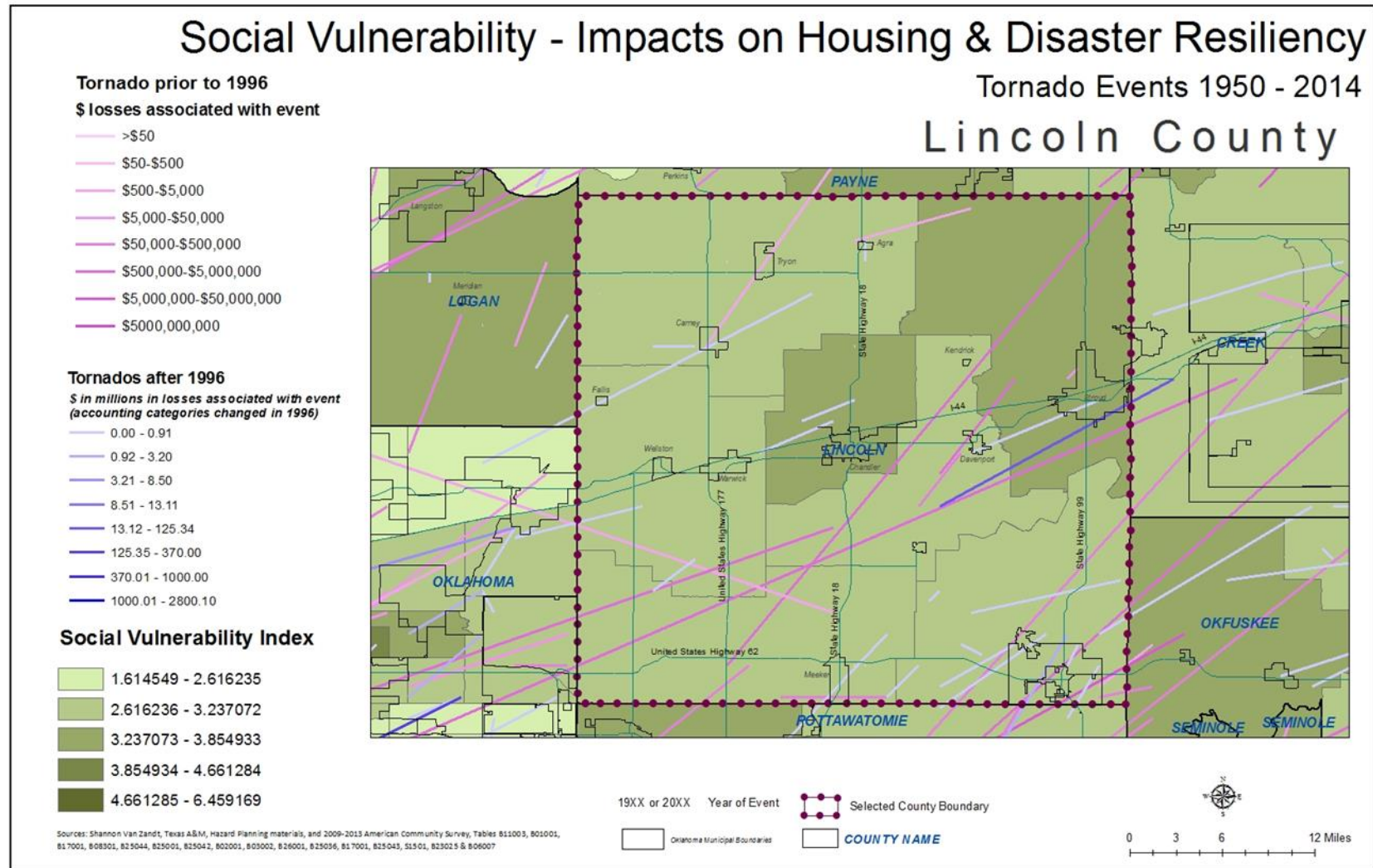
Historic data on tornados between 1950-2014 there are 68 tornados documented. There were 355 injuries that occurred connected to these tornados, with 4 of those injuries happening in the 2013 tornado, 23 occurred in the 1999 tornado. There were 16 fatalities connected to tornadoes during this time period, 4 of which occurred in 1970. Property losses between 1950-1996 ranged from \$8,099,555.00 to \$80,995,750.00. (The accounting methods used for losses changed in 1996.) The losses estimated between 1996-2014 was \$63,970,000.00.











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

No online registry for storm shelters was found.

**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.

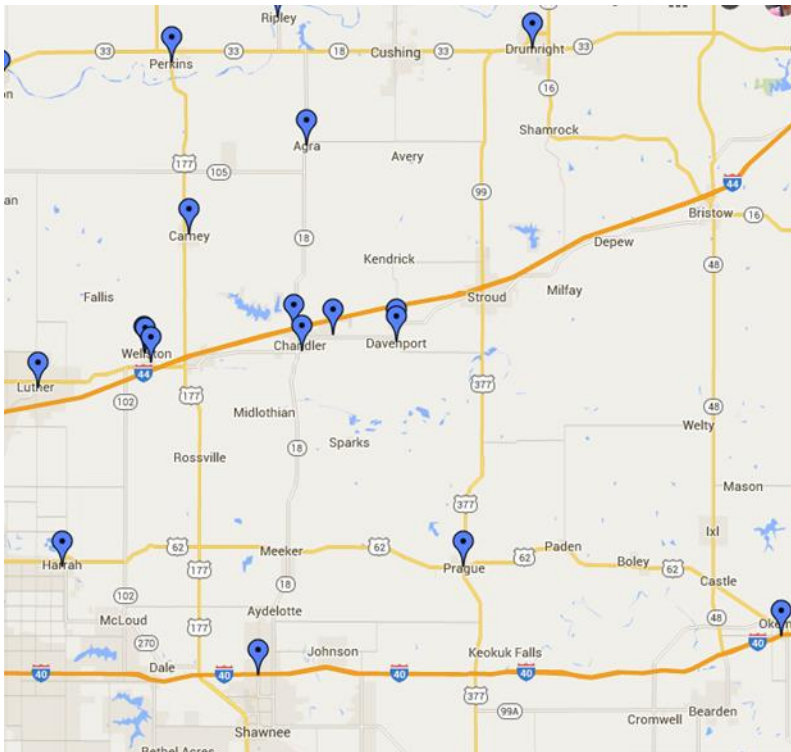
**C.2.1.5 Threat & Hazard Warning Systems**

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

- ☐ Sirens
- ☐ Phone notification
- ☐ Emergency Broadcast System
- ☐ Lincoln County Emergency Management a smart phone app
- ☐ Facebook

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 - Lincoln County			
Base Social Vulnerability Indicators (%)		2nd Order	3rd Order
1.) Single Parent Households	10.86%	0.172	3.082 Social Vulnerability 'Hotspot' or Area of Concern
2.) Population Under 5	6.32%	(Child Care Needs)	
3.) Population 65 or Above	16.05%	0.242	
4.) Population 65 or Above & Below Poverty Rate	8.16%	(Elder Needs)	
5.) Workers Using Public Transportation	0.03%	0.044	
6.) Occupied Housing Units w/o Vehicle	4.34%	(Transportation Needs)	
7.) Housing Unit Occupancy Rate	87.33%	2.364 (Temporary Shelter and Housing Recovery Needs)	
8.) Rental Occupancy Rate	23.38%		
9.) Non-White Population	15.78%		
10.) Population in Group Quarters	1.12%		
11.) Housing Units Built Prior to 1990	70.01%		
12.) Mobile Homes, RVs, Vans, etc.	22.85%		
13.) Poverty Rate	15.93%	0.26 (Civic Capacity Needs)	
14.) Housing Units Lacking Telephones	3.22%		
15.) Age 25+ With Less Than High School Diploma	14.80%		
16.) Unemployment Rate	7.50%		
17.) Age 5+ Which Cannot Speak English Well or Not At All	0.47%		
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)	2 <sup>nd</sup> Order	3 <sup>rd</sup> 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		
4. Population 65 or above & below poverty/Pop. 65 or above	Elder needs	
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		
8. Persons in renter occupied housing units/ Total housing units	Temporary Shelter and housing Recovery needs	
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	Civic Capacity needs	
14. Occupied housing units without a telephone/ Total occupied HU		
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		

## Legend

### Social Vulnerability "Hot Spots"

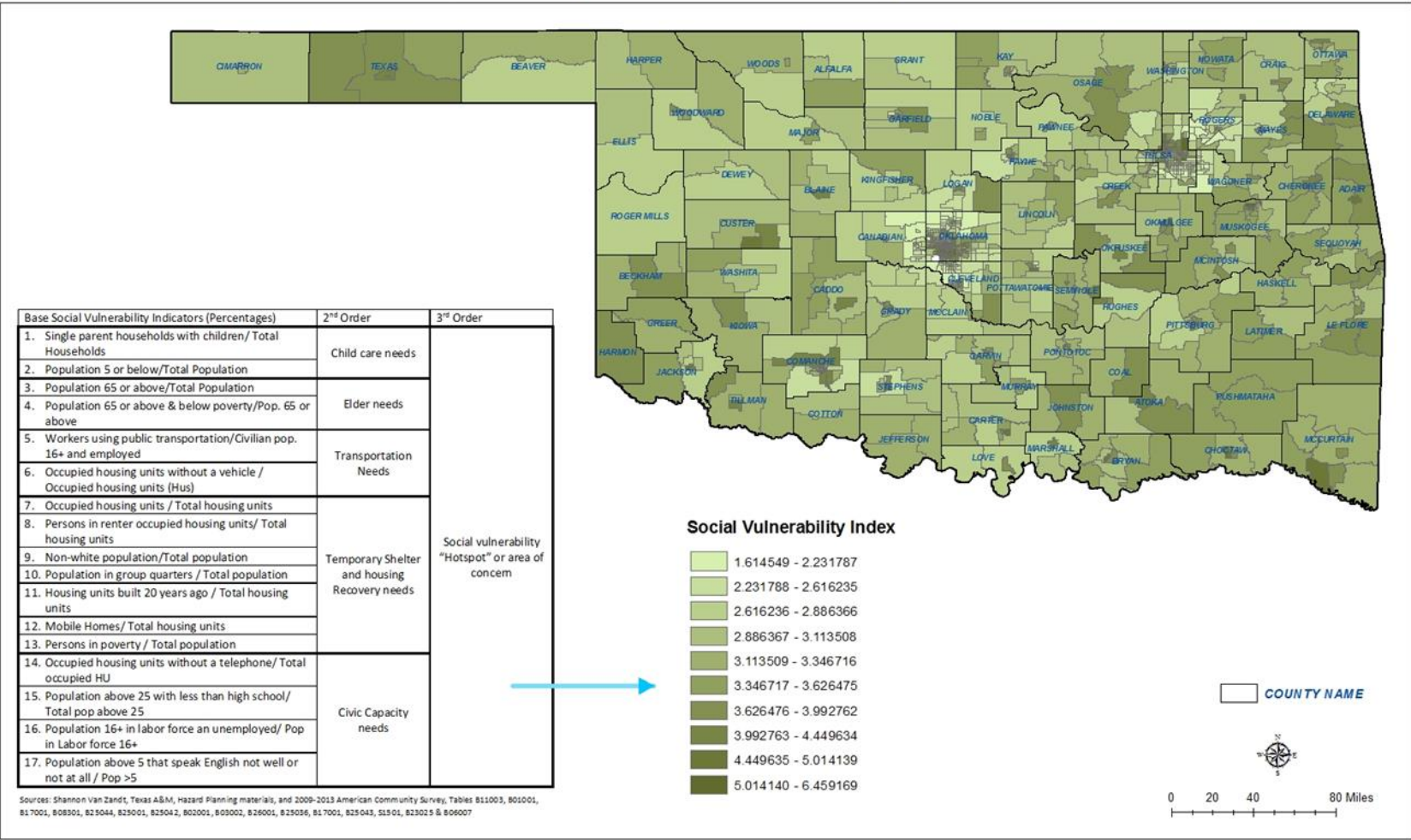


0 25 50 100 Miles

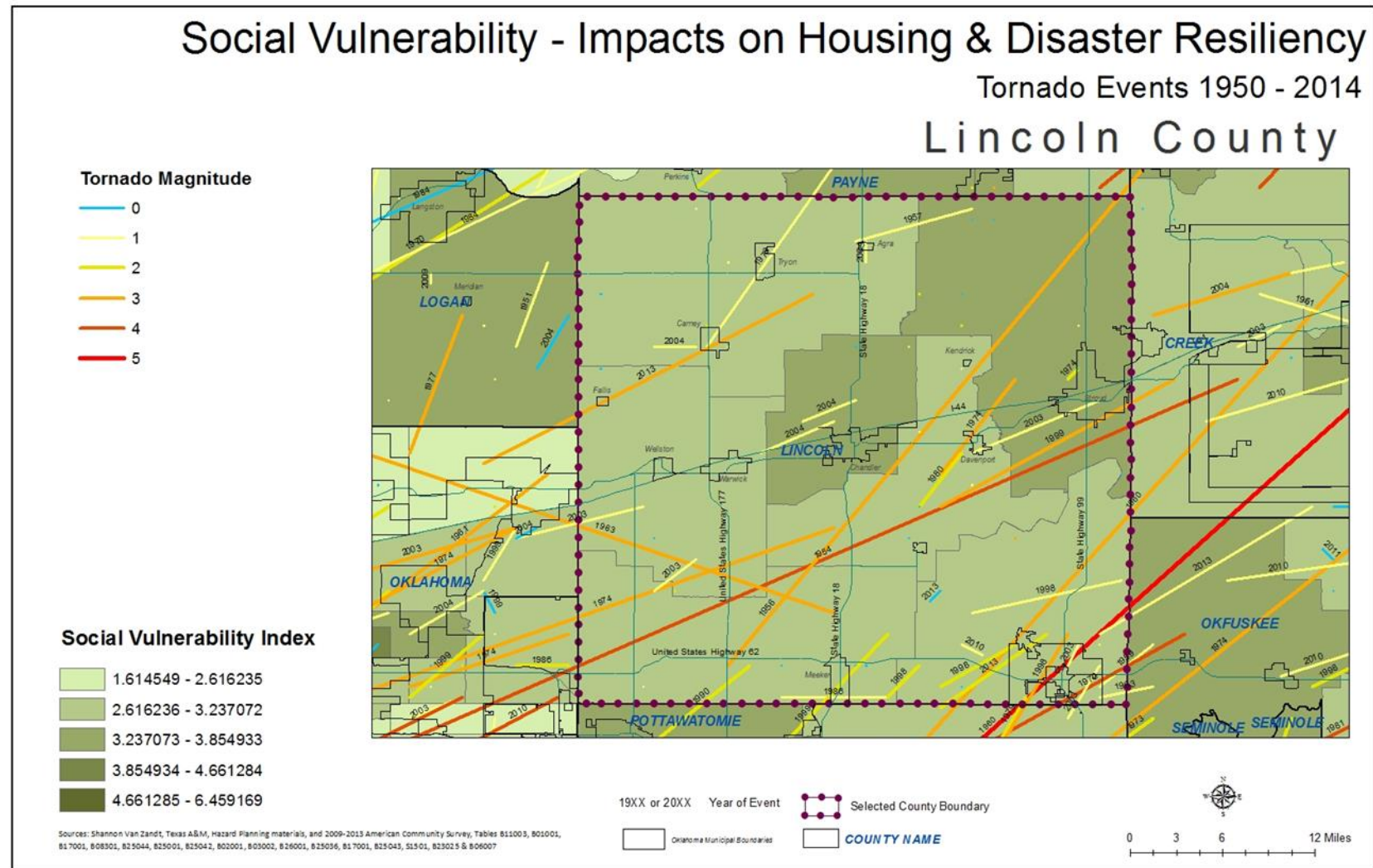


Source: Shannon Van Zandt, Texas A&M, Hazard Planning materials; 2008-2013 American Community Survey, Tables B13003, B01001, B17001, B02001, B25001, B27001, B28001, B29001, B30001, B31001, B32001, B33001, B34001, B35001, B36001, B37001, B38001, B39001, B40001, B41001, B42001, B43001, B44001, B45001, B46001, B47001, B48001, B49001, B50001, B51001, B52001, B53001, B54001, B55001, B56001, B57001, B58001, B59001, B60001, B61001, B62001, B63001, B64001, B65001, B66001, B67001, B68001, B69001, B70001, B71001, B72001, B73001, B74001, B75001, B76001, B77001, B78001, B79001, B80001, B81001, B82001, B83001, B84001, B85001, B86001, B87001, B88001, B89001, B90001, B91001, B92001, B93001, B94001, B95001, B96001, B97001, B98001, B99001, B10001, B101001, B102001, B103001, B104001, B105001, B106001, B107001, B108001, B109001, B110001, B111001, B112001, B113001, B114001, B115001, B116001, B117001, B118001, B119001, B120001, B121001, B122001, B123001, B124001, B125001, B126001, B127001, B128001, 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# Social Vulnerability - Impacts on Housing & Disaster Resiliency









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. Populations near Chandler and Stroud, per census tract level map, show higher indicators for social vulnerability.

**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.