

WORKING PAPER IPP/08¹
Protocol Selection of Missouri Pilot Counties
For Implementation of Regional Resilience Toolkit
Zach Buckler, Zhengting He
March 2017

INTRODUCTION

This paper summarizes work completed as part of the Missouri Transect Project Community Team’s *Integrating Responses to Climate Change within a Regional Resilience Framework*. Team members have created a series of county level indexes to measure resilience and vulnerability relative to other counties in the U.S. Currently, team members are developing tools that can increase community capacity to prepare resilience plans for a range of natural and human-made threats—including climate change.

Multiple Missouri counties will be selected to pilot the tools and county selection will be based on: geographic location, level and type of vulnerabilities, and number of past FEMA Disaster Declarations. Ideally, pilot locations will be distributed throughout the state and will be varied in terms of number and type of disaster declarations, and in terms of levels of vulnerability. This paper includes county profiles for potential pilot partners. These six counties were chosen based on their geographic location in the state, relatively high number of FEMA Disaster Declarations, and their low resilience to potential disasters. Future opportunities for pilot partnerships are not limited to these six counties.

The descriptive information provided on the next page is primarily based on the latest disaster mitigation plan of each county. For Newton County, we referenced the latest two disaster mitigation plans—the 2011 to 2016 plan for Newton County and the 2016 to 2021 plan for the Jasper-Newton bi-county region—for a more comprehensive reference.

¹ This material is based upon work supported by the National Science Foundation under Award Number IIA-1355406. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

COUNTY PROFILES

Boone County, MO

Source: Mid-Missouri Regional Planning Commission. (2015). *Boone County Hazard Mitigation Plan 2015*. Retrieved from <https://www.showmeboone.com/OEM/MitigationRecovery/>

Natural Environment

Boone County lies in Central Missouri with an area of 685 square miles. Half of the county is farmland. The city of Columbia is the county seat and has the largest population density. The Missouri River forms the southwestern border of the county and puts the nearby Missouri River Alluvial Plain at risk of flooding. Because of its location and topography, Boone County is under the impact of northern air pressure and storm systems from the Gulf of Mexico and the Great Plains, making Boone County vulnerable to severe cold and ice storms.

Social Environment

As the home of the state's flagship university, Boone County has very distinct social and economic characteristics. The large number of students living in college residences or near campus increases the population density in the city of Columbia and makes emergency evacuation more challenging.

The influence of higher education on the economy is also evident in different employment sectors. While Boone County reports a lower-than-state average unemployment rate, there still exists a sizable impoverished population that is more vulnerable to the threat of hazardous events (Table 1).

Planning Commission

Boone County, member of the Mid-Missouri Regional Planning Commission (Mid-MO RPC), has collaborated extensively with Mid-Mo RPC on issues including transportation, economic planning, local grant applications, and formulating hazard mitigation plans. Apart from directing a new plan, Mid-MO RPC also facilitates plan maintenance and updates with Boone County including annual monitoring and review. These directives come from the Memorandum of Agreement (MOA) that Mid-MO RPC reached with the Missouri State Emergency Management Agency (SEMA).

Emergency Responders

The Boone County Office of Emergency Management (OEM), located in the city of Columbia, serves the county and almost all jurisdictions in emergency mitigation (not including the villages of McBaine and Pierpont who are not participants in the county's Hazard Mitigation Plan). There are two fire districts that serve the county and two fire departments that serve specific cities. Those four entities constitute the major emergency responders for Boone County, and are as follows: the Boone County Fire Protection District, the Southern Boone County Fire Protection District, the City of Centralia Fire Department, and the City of Columbia Fire Department. The Boone County Fire Protection District is well equipped with a Hazardous Materials Division, a State Homeland Security Regional Response Team, and a FEMA Urban Search and Rescue Team. It can direct OEM in times of

need. The Columbia Fire Department also has a strong team equipped with emergency response facilities and is supported by 126 firefighters. In contrast, the Southern Boone County Fire Protection District and Centralia Fire Department are smaller with limited hazard response capacity. Apart from fire districts and departments, the Centralia Special Road District in Boone County is also responsible for maintaining roads and bridges in Centralia on a daily and emergency basis.

Non-profits have formed a countywide collaborative, Organization and Volunteers Active in Disasters (OVAD), which plays an important role in emergency response. Key partners in OVAD are the American Red Cross, the Columbia Office of Volunteer Services, the Salvation Army, Columbia/Boone County Health Department, churches, and other non-profits. The Boone County Office of the Missouri Division of Family Services coordinates all OVAD activities following the disaster operation plan from OEM.

Table 1: Demographics of Boone County, MO

Category	Description of Indicator	Boone County	Missouri
	Population	174,974	6,083,672
Social Resilience	Percentage of population living in same county as one year prior	77%	84%
	Percentage of housing units that are owner occupied	56%	68%
	Percentage of population with a BS degree or higher	48.50%	26.70%
	Life expectancy	81(f)/77.7(m)	-
Social Vulnerability	County Poverty Rate	18.50%	15.60%
	Percentage of population with a disability	10.30%	14.10%
	Percentage of population without health insurance	9.00%	12.90%
	Percentage of population age 65 and over	10%	14.60%
	Percentage of population under age 18	21%	23.30%
	Number of jurisdictions	47	28 (median)
Economic Vulnerability	Percentage of workers employed in agriculture, forestry, fishing, mining industries	0.88%	1.76%
	Percentage of households spending 30% or more of total income on housing costs (mortgage/rent and utilities)	32.45%	29.58%
	Unemployment rate	3.90%	5.30%
Infrastructure Vulnerability	Percentage of housing units that are mobile homes	3%	7%
Environment Vulnerability	Percentage of population within two miles of a levee	1.12	-

Source: Please find the **Indicator Reference List—Demographics** at the end of this working paper.

Table 2: FEMA Disaster Declaration 2006-2014 for Boone County, MO

Incident Type	Number of Events
Flood	2
Severe Storm(s)	6
Severe Ice Storm	4
Total	12

Source: Please find the **Indicator Reference List – FEMA Disaster Declaration** at the end of this working paper.

Miller County, MO

Source: Biggers, B. (2013). *Miller County Hazard Mitigation Plan 2013*. Retrieved from <http://www.locg.org/millercountyhmp.htm>

Natural Environment

Miller County is located in Central Missouri on the edge of the Ozark Plateau. Its north and south boundaries are on rolling terrain while the Osage River creates deep valleys along the river. The Lake of the Ozarks, the nation’s largest man-made lake and a well-known tourist site, borders Miller County to the southwest. The County’s close proximity to water and geographic diversity increases vulnerabilities to flooding and storms.

Social Environment

Overall, agriculture plays a dominant role in Miller County’s land use and homogenizes the local economy. As a result, new opportunities are restricted and a large proportion of the labor force is forced to find work elsewhere. Many small rural communities have experienced population decline even though the county as a whole has experienced a five percent increase in 10 years. A large number of the permanent residents remaining in the county continue to experience unemployment, live below poverty level, or reside in inadequate homes, which is consistent with the data in Table 3.

Tourism at the Lake of the Ozarks is another significant factor that affects the social environment, as Miller County owns several miles of shoreline. As the popularity of recreation increased in the region, the tourism industry gradually formed in Miller County, attracting investment in large retail centers near the Lake and creating a large number of seasonal jobs. These new factors mitigated social vulnerabilities to an extent, but the prosperity was unstable. Since the industry is highly dependent on weather, severe winter weather can deter tourists and negatively affect the industry, returning the unemployment rate to a high level. The negative impact of severe weather on social and economic stability can last for months.

The scenery of the Lake also makes Miller County a good location for the retirement community. Many shoreline properties are seasonally used as vacation homes by homeowners

from other counties who later become primary residents at the Lake after retirement. This trend increases the potential for a large elderly population in the near future.

Currently, Miller County does not have a countywide building code or zoning regulations, and it appears that the county does not intend to introduce these regulations anytime soon, according to Miller County Hazard Mitigation Plan 2013. This increases the risk of unregulated construction in disaster-prone areas. Only two cities (the city of Eldon and the city of Lake Ozark) in Miller County have building codes within city limits, and the Lake Ozark Fire Protection District plans to enforce building regulation in all areas within its service area.

Planning Commission

The Lake of the Ozarks Council of Local Governments (LOCLG) is an important partner for Miller County in many regional service projects and planning efforts. LOCLG has assisted Miller County with updating their county disaster mitigation plan every five years since 2012, according to their contract with SEMA. LOCLG also supports Miller County with plan implementation, but the leading organization in emergency response is the Miller County Emergency Management Office. Currently, LOCLG is considering incorporating all member counties, Camden, Laclede, Miller, and Morgan, into a united planning system.

Emergency Responders

As a rural county, Miller County has limited resources in emergency response. Many rural community jurisdictions have no staff support, and primarily rely on volunteers or dual-vocational representation of city officials. Major responders are fire protection districts or departments that support each other by mutual aid agreements. Of the nine fire protection districts or departments serving the whole county, eight are completely or mostly volunteer-run and only one, the Lake Ozark Fire Protection District, is mostly career-run. Besides participating in first response, the fire districts also play an important role in disaster preparedness and mitigation by organizing safety trainings, educating the community, and other supportive practices.

According to the MOCA directory (2015), two non-profits—the American Red Cross and the Lions Club – are key players in providing Miller County with disaster relief. Both support local communities by providing urgent supplies for humanitarian needs and aiding in reconstruction after a disaster. The American Red Cross develops networks with other non-profit organizations and identifies their structures as potential emergency shelters. Most shelters are located in the city of Eldon.

Table 3: Demographics of Miller County, MO

Category	Description of Indicator	Miller County	Missouri
	Population	24,905	6,083,672
Social Resilience	Percentage of population living in same county as one year prior	88%	84%
	Percentage of housing units that are owner occupied	78%	68%
	Percentage of population with a BS degree or higher	15.40%	26.70%
	Life expectancy	77.9(f)/74.5(m)	-
	County Poverty Rate	21.50%	15.60%

Category	Description of Indicator	Miller County	Missouri
Social Vulnerability	Percentage of population with a disability	19.00%	14.10%
	Percentage of population without health insurance	15.60%	12.90%
	Percentage of population age 65 and over	16.80%	14.60%
	Percentage of population under age 18	24%	23.30%
	Number of jurisdictions	30	28 (median)
Economic Vulnerability	Percentage of workers employed in agriculture, forestry, fishing, mining industries	2.02%	1.76%
	Percentage of households spending 30% or more of total income on housing costs (mortgage/rent and utilities)	29.84%	29.58%
	Unemployment rate	5.90%	5.30%
Infrastructure Vulnerability	Percentage of housing units that are mobile homes	14%	7%
Environment Vulnerability	Percentage of population within two miles of a levee	0	-

Source: Please find the **Indicator Reference List—Demographics** at the end of this working paper.

Table 4: FEMA Disaster Declaration 2006-2014 for Miller County, MO

Incident Type	Number of Events
Flood	1
Severe Storm(s)	11
Severe Ice Storm	4
Total	16

Source: Please find the **Indicator Reference List – FEMA Disaster Declaration** at the end of this working paper.

Newton County, MO

Source:

Bottom, G., Ross, B., Shaw, S., & Rogers, H. (2011, June). *Newton County Hazard Mitigation Plan (2011-2016)*. Retrieved from <http://www.hstcc.org/past-planning-projects>

Harry S Truman Coordinating Council (HSTCC). (2016, April). *Jasper-Newton Bi-county Natural Hazard Mitigation Plan (2016-2021)*. Retrieved from <http://www.hstcc.org/hazard-mitigation>

Natural Environment

Newton County is located in the southwestern corner of Missouri, bordering Jasper County to the north, and the states of Kansas and Oklahoma to the west. Portions of Newton County, Jasper County, and neighboring counties in Kansas and Oklahoma are rich in lead and zinc mines and are collectively called the Tri-State Mining District (TSMD) (Geel, Bosch, Clark, & Donlan, 2009). For the last century, this area has been mined extensively, which has resulted in a large production of lead, cadmium and zinc, as well as massive amounts of industrial waste that is harmful to the environment (Geel et al., 2009). Consequently, from the 1980s, the EPA began to evaluate the threats to human health that substances from the mining industry

generate (Geel et al., 2009). Overall, the EPA identified three contaminated, hazardous Superfund sites in the 626 square miles of Newton County (Scorecard, 2011). The wide use of private wells creates a serious need to ensure access to clean and safe drinking water.

Social Environment

The majority of the land in Newton County is used for agricultural production and most communities each have less than 500 residents. With the rapid development in the city of Joplin and the county seat of Neosho, urban elements have begun to sprawl to the nearby rural communities and have exerted pressure on their natural and social environment.

Compared to the Missouri average value, Newton County currently has a lower poverty rate, a lower unemployment rate, and its residents have a lower housing cost-burden rate (Table 5). The overall social and economic environment of Newton County is stable.

Planning Commission

The Harry S Truman Coordinating Council (HSTCC) is the regional planning commission supporting Newton County in facilitating community projects and planning implementation through federal and state grants. Due to the rapid urbanization in the city of Joplin over the past five years, Newton County and Jasper County are more closely integrated into a bi-county region. From 2015, HSTCC decided to make regional hazard mitigation plans on this bi-county basis.

Emergency Responders

The Newton County Emergency Management Agency located in Neosho is the leading agency for both emergency preparation and response. A full-staffed 911 Emergency service system serves the entire bi-county region through instant emergency support to fire, police, and ambulance.

Newton County fire districts/departments and ambulance district all respond to emergencies. Of the nine fire districts/departments, six are volunteer-run and three are career-run. The ambulance district provides services that support all emergency transport to medical facilities in Newton County. In the service group, there are 41 paramedics, 25 emergency medical technicians, and two hospitals providing emergency helicopter evacuation services for the whole county.

Table 5: Demographics of Newton County, MO

Category	Description of Indicator	Newton County	Missouri
	Population	58,683	6,083,672
Social Resilience	Percentage of population living in same county as one year prior	84%	84%
	Percentage of housing units that are owner occupied	74%	68%
	Percentage of population with a BS degree or higher	18.80%	26.70%
	Life expectancy	79.2(f)/73.2(m)	-
Social Vulnerability	County Poverty Rate	14.80%	15.60%
	Percentage of population with a disability	15.80%	14.10%

	Percentage of population without health insurance	16.10%	12.90%
	Percentage of population age 65 and over	17%	14.60%
	Percentage of population under age 18	25%	23.30%
	Number of jurisdictions	46	28 (median)
Economic Vulnerability	Percentage of workers employed in agriculture, forestry, fishing, mining industries	2.80%	1.76%
	Percentage of households spending 30% or more of total income on housing costs (mortgage/rent and utilities)	25.77%	29.58%
	Unemployment rate	4.20%	5.30%
Infrastructure Vulnerability	Percentage of housing units that are mobile homes	15%	7%
Environment Vulnerability	Percentage of population within 2 miles of a levee	0	-

Source: Please find the **Indicator Reference List—Demographics** at the end of this working paper.

Table 6: FEMA Disaster Declaration 2006-2014 for Newton County, MO

Incident Type	Number of Events
Flood	2
Severe Storm(s)	8
Severe Ice Storm	4
Total	14

Source: Please find the **Indicator Reference List – FEMA Disaster Declaration** at the end of this working paper.

St. Louis County, MO

Source: East-West Gateway Council of Governments. (2015, June 23). *St. Louis Regional Hazard Mitigation Plan Update for 2015-20: Prepared for Franklin, Jefferson, St. Charles, St. Louis Counties and the City of St. Louis*. Retrieved from http://www.ewgateway.org/ProgProj/Emergency_Response/HazMit/hazmit.htm

Natural Environment

St. Louis County is a fairly level plateau located along the eastern border of Missouri. It's encompassed by floodplains and low hills formed by the confluence of the Missouri River to the north, the Mississippi River to the east, and the Meramec River to the south. The western portion of the area is topographically rugged and thus the least developed region of the County.

Chesterfield Valley, in the northwest portion of St. Louis County, is a major floodplain along the Missouri River. In the summer of 1993, heavy rainfall broke the flood-stage record and caused the failure of the levee that protected Chesterfield Valley from the Missouri River, submerging 4400 acres of land within hours (Stelzer, 2000). The flood caused damage estimated between \$250 and \$500 million (Stelzer, 2000).

Social Environment

Similar to St. Louis City, St. Louis County has a much smaller agricultural population than

other Missouri counties. St. Louis County also has a much lower poverty rate and a large proportion of highly educated people compared to the Missouri average (Table 7).

However, some significant social issues are important to note. St. Louis has a large elderly population that is vulnerable to natural disasters, which is consistent with the data in Table 7. Another factor to consider is the large number of long-term care facilities, which include retirement housing, assisted living, and intermediate and long term continuing care. The individuals living in these types of housing communities can present greater challenges to emergency responders. Additionally, over 70 percent of housing units are over 35 years old, which increases susceptibility to disaster.

Planning Commission

East-West Gateway Council of Governments (EWGCOG) is the regional planning commission responsible for developing, updating, and implementing hazard mitigation plans for the entire St. Louis region. To make the planning and development processes of all levels of government more consistent, EWGCOG encourages local governments to incorporate both hazard mitigation plans and disaster response plans into their local comprehensive plans, and to fit their own comprehensive plans in the framework of *OneSTL: Many Communities, One Future*, the regional strategic plan for sustainable development, approved in 2013.

Emergency Responders

Under the direction of EWGCOG, St. Louis County has built a strong collaborative response team composed of three major groups: the St. Louis Area Regional Response System (STARRS), the St. Louis Area Regional Coalition of COADs (SLARCC), and the Citizen Emergency Response Team (CERT).

STARRS is a division of East-West Gateway that works with Emergency Management Directors (EMDs); public departments such as fire, police and health; and private organizations to coordinate emergency preparedness and response measures.

COAD (or SLARCC) is a community-based partnership of all stakeholders including business, churches, non-profit organizations and government agencies. It aims at enhancing a community’s own abilities in regards to disaster mitigation, preparation, response, and recovery.

CERT is a FEMA program that educates interested citizens to be potential volunteers in emergency preparedness or emergency response when first responders are not readily available. So far, there are at least 10 CERTs active in St. Louis County (FEMA, 2016).

Table 7: Demographics of St. Louis County, MO

Category	Description of Indicator	St. Louis County	Missouri
	Population	1,003,362	6,083,672
Social Resilience	Percentage of population living in same county as one year prior	85%	84%
	Percentage of housing units that are owner occupied	69%	68%
	Percentage of population with a BS degree or higher	41.80%	26.70%
	Life expectancy	81(f)/76.2(m)	-

Social Vulnerability	County Poverty Rate	10.10%	15.60%
	Percentage of population with a disability	11.40%	14.10%
	Percentage of population without health insurance	9.60%	12.90%
	Percentage of population age 65 and over	17%	14.60%
	Percentage of population under age 18	22%	23.30%
	Number of jurisdictions	204	28 (median)
Economic Vulnerability	Percentage of workers employed in agriculture, forestry, fishing, mining industries	0.45%	1.76%
	Percentage of households spending 30% or more of total income on housing costs (mortgage/rent and utilities)	30.48%	29.58%
	Unemployment rate	5.40%	5.30%
Infrastructure Vulnerability	Percentage of housing units that are mobile homes	.01%	7%
Environment Vulnerability	Percentage of population within 2 miles of a levee	18.6	-

Source: Please find the **Indicator Reference List—Demographics** at the end of this working paper.

Table 8: FEMA Disaster Declaration 2006-2014 for St. Louis County, MO

Incident Type	Number of Events
Flood	2
Severe Storm(s)	8
Severe Ice Storm	3
Total	13

Source: Please find the **Indicator Reference List – FEMA Disaster Declaration** at the end of this working paper.

Sullivan County, MO

Source: Green Hills Regional Planning Commission. (2016). *Sullivan County Hazard Mitigation Plan 2016-2021*. Retrieved from Green Hills Regional Planning Commission

Natural Environment

Unlike most plain and plateau areas in Missouri, Sullivan County is an area of hills and valleys shaped by glaciers. The northeastern part of the county is the steepest sloping area while the southwestern part is the most gently sloping area; the elevation difference is nearly 300 feet. The glacial till is thick in both uplands and valleys, causing water from most wells in Sullivan County to have slow and mineralized yields. Except for the County's northwestern corner, most areas are inadequate for drilling wells for irrigation or municipal purpose.

Social Environment

Because of the hilly topography and limited water resources, Sullivan County is not suitable for growing crops, and crop production is only a small proportion of the local economy. More than 85 percent of revenue comes from livestock production, which is dominated by Smithfield

Foods. The dominance of the labor-intensive food industry in the local economy has homogenized the occupational structure and has created a large agricultural population, as shown in Table 9. According to Fennelly and Leitner (2002), these food-processing giants diversified the local demographic structure through the recruitment of low-wage workers, usually from Hispanic and Latino communities. The unusually high percentage of Hispanic and Latino residents—18.59 percent of the county’s population, and the highest in the state—can be attributed to the presence of the food industry in Sullivan County.

Planning Commission

Historically, Sullivan County does not have planning or zoning regulations. There are ordinances in most communities, but most have neither been updated since the 19th century nor ever enforced. A limited budget makes it difficult for Sullivan County to conduct planning on its own. With the support from Green Hills Regional Planning Commission (GHRPC), Sullivan County produces its hazard mitigation plan every five years to meet FEMA requirements for non-emergency assistance.

Emergency Responders

The Sullivan County Emergency Management Director coordinates emergency response activities. Major emergency responders are the American Red Cross, the Salvation Army, veterans’ groups, the Chamber of Commerce, and other community organizations such as the Lions and Kiwanis clubs.

Table 9: Demographics of Sullivan County, MO

Category	Description of Indicator	Sullivan County	Missouri State
	Population	6,551	6,083,672
Social Resilience	Percentage of population living in same county as one year prior	82%	84%
	Percentage of housing units that are owner occupied	69%	68%
	Percentage of population with a BS degree or higher	11.80%	26.70%
	Life expectancy	79.6(f)/74(m)	-
Social Vulnerability	County Poverty Rate	16.20%	15.60%
	Percentage of population with a disability	17.90%	14.10%
	Percentage of population without health insurance	14.10%	12.90%
	Percentage of population age 65 and over	18%	14.60%
	Percentage of population under age 18	23%	23.30%
	Number of jurisdictions	34	28 (median)
Economic Vulnerability	Percentage of workers employed in agriculture, forestry, fishing, mining industries	9.13%	1.76%
	Percentage of households spending 30% or more of total income on housing costs (mortgage/rent and utilities)	26.98%	29.58%
	Unemployment rate	3.50%	5.30%
Infrastructure Vulnerability	Percentage of housing units that are mobile homes	14%	7%

Environment Vulnerability	Percentage of population within 2 miles of a levee	0	-
------------------------------	--	---	---

Source: Please find the **Indicator Reference List—Demographics** at the end of this working paper.

Table 10: FEMA Disaster Declaration 2006-2014 for Sullivan County, MO

Incident Type	Number of Events
Severe Storm(s)	10
Severe Ice Storm	3
Total	13

Source: Please find the **Indicator Reference List – FEMA Disaster Declaration** at the end of this working paper.

Webster County, MO

Source: Southwest Missouri Council of Government. (2016, April). *Webster County Missouri Multi-Jurisdictional Natural Hazards Mitigation Plan*. Retrieved from <http://smcog.missouristate.edu/hazardMitigation.html>

Natural Environment

Webster County lies in the southwest portion of Missouri in the Ozark Highlands. It has six watersheds and several winding streams, which reflect the rich underground water resources within this county. Karst topography (landscapes formed from the dissolution of soluble rocks such as limestone, dolomite, and gypsum) is a typical feature of Webster County.

There are 18 dams in Webster County, all of which are located in unincorporated areas. Ten of them are rated as high hazard dams, and only three have a state regulated Emergency Action Plan (EAP) or are regularly inspected to mitigate potential risks. Although historically there are no records of dam failure, the potential still exists.

Social Environment

Webster County is dominated by rural land. Unlike Sullivan County where the rural landscape has been transformed by huge industrial livestock confinements, most agricultural activities in Webster County still occur on small traditional family farms.

Two-thirds of the county land, housing units, and population are in unincorporated areas of Webster County. Many rural communities have experienced a loss in population in the past fifteen years, but the county as a whole has experienced a small population increase, with half of the increase occurring in unincorporated areas.

Affordable housing and good schools attract young families with school-aged children to Webster County. However, the dominant agricultural economic structure cannot provide more opportunities. As a result, a large quantity of the labor force (mostly young people) have left Webster County to seek employment.

Planning Commission

According to their contract with SEMA, the Southwest Missouri Council of Governments

(SMCOG) is responsible for facilitating the development of hazard mitigation plans and implementation for the entire region, including Webster County.

Emergency Responders

Webster County EMD is the leading agency that coordinates multi-jurisdictional emergency response. The major non-governmental organizations that respond to emergencies are the American Red Cross, the Show Me Power Cooperative, the Amateur Radio Emergency Service (ARES), and Webster Electric Cooperative.

Table 11: Demographics of Webster County, MO

Category	Description of Indicator	Webster County	Missouri
	Population	36,461	6,083,672
Social Resilience	Percentage of population living in same county as one year prior	84.70%	84%
	Percentage of housing units that are owner occupied	74.10%	68%
	Percentage of population with a BS degree or higher	16%	26.70%
	Life expectancy	79.9(f)/75.7(m)	-
Social Vulnerability	County Poverty Rate	16.50%	15.60%
	Percentage of population with a disability	13.90%	14.10%
	Percentage of population without health insurance	21.40%	12.90%
	Percentage of population age 65 and over	13.90%	14.60%
	Percentage of population under age 18	27.40%	23.30%
	Number of jurisdictions	19	28 (median)
Economic Vulnerability	Percentage of workers employed in agriculture, forestry, fishing, mining industries	2.82%	1.76%
	Percentage of households spending 30% or more of total income on housing costs (mortgage/rent and utilities)	23.78%	29.58%
	Unemployment rate	4.60%	5.30%
Infrastructure Vulnerability	Percentage of housing units that are mobile homes	15%	7%
Environment Vulnerability	Percentage of population within 2 miles of a levee	0	-

Source: Please find the **Indicator Reference List—Demographics** at the end of this working paper.

Table 12: FEMA Disaster Declaration 2006-2014 for Webster County, MO

Incident Type	Number of Events
Flood	2
Severe Storm(s)	12
Severe Ice Storm	4
Total	18

Source: Please find the **Indicator Reference List – FEMA Disaster Declaration** at the end of this working paper.

Indicator Reference List – Demographics

- Population: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of population living in same county as one year prior: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of housing units that are owner occupied: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of population with a BS degree or higher: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Life expectancy: Institute for Health Metrics and Evaluation (IHME). (2015). *US County Profile*. Seattle, WA: IHME. Retrieved from <http://www.healthdata.org/us-county-profiles>
- County Poverty Rate: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of population with a disability: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of population without health insurance: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of population age 65 and over: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of population under age 18: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Number of jurisdictions: U.S. Census Bureau. (2012). *2012 Census of Governments: Organization Component Estimates*. Retrieved from <https://www.census.gov/govs/cog/index.html>
- Percentage of workers employed in agriculture, forestry, fishing, mining industries: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of households spending 30% or more of total income on housing costs (mortgage/rent and utilities): U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Unemployment rate: U.S. Census Bureau. (2014). *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of housing units that are mobile homes: *ACS 2014 5-year Estimates*. Retrieved from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Percentage of population within 2 miles of a levee: US Army Corps of Engineers. (2015). (Additional data analysis by CARES). *Proximity to Levees, USACE 2015*. Retrieved from

<https://maps.communitycommons.org/viewer/>

Indicator Reference List – FEMA Disaster Declaration

Federal Emergency Management Agency. (2016). *FEMA Disaster Declarations Summary - Open Government Dataset (last updated on Sep. 19, 2016)*. Retrieved from <https://www.fema.gov/media-library/assets/documents/28318>. (FEMA and the Federal Government cannot vouch for the data or analyses derived from these data after the data have been retrieved from the Agency's website(s) and/or Data.gov.).

References

- FEMA. (2016). *Community Emergency Response Teams*. Retrieved from <https://www.fema.gov/community-emergency-response-teams>
- Fennelly, K. & Leitner, H. (2002, December). How the Food Processing Industry is Diversifying Rural Minnesota. *JSRI Working Paper #59*. East Lansing, MI: The Julian Samora Research Institute, Michigan State University.
- Geel, A. v., Bosch, T., Clark, H., & Donlan, M. (2009, June). *Damage Assessment Plan for Jasper and Newton Counties, Missouri*. Retrieved from <http://dnr.mo.gov/env/hwp/docs/090624finaljaspnewtdap.pdf>
- MOCA (Missouri Ozarks Community Action). (2015, November). *Miller County Resources*. Retrieved from <http://www.mocaonline.org/public/Community%20Services/documents/MillerCounty5-3-16.pdf>
- Scorecard. (2011). *Rank Counties by Superfund Sites*. Retrieved from http://scorecard.goodguide.com/env-releases/land/rank-counties.tcl?fips_state_code=29
- Stelzer, C. D. (2000, November 15). After the Deluge. *RFT Riverfront Times*. Retrieved from <http://www.riverfronttimes.com/stlouis/after-the-deluge/Content?oid=2473331>