

# Ready or Not?

## Assessing Social Vulnerability, Community Resilience, and Adaptive Capacities to Hazards in East Central Wisconsin

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The Whitburn Center conducts practical applied research focused on evaluating and improving governance, professional management, and public policy in Wisconsin and beyond.

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Our vision is to build local government, nonprofit, and community capacity to promote the common good. We will bring people together across ideological divides to discover nonpartisan solutions. The Whitburn Center will share innovative, research-based knowledge, equipping our partners to address their most pressing needs, while utilizing equitable, efficient, and effective strategies.

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## Executive Summary

**The Issue:** Global environmental change has come to the forefront of public discourse in recent years. Most recently, 2023 was logged as the hottest year in the history of the temperature record (National Oceanic and Atmospheric Administration, 2024). Impacts were felt on an international scale. For instance, the Wisconsin Department of Natural Resources issued [statewide air quality advisory multiple times](#) due to wildfire smoke from Western Canada, asking residents to stay indoors due to unprecedented pollution levels. Multiple Mid-western cities reported the worst air quality in the world due to the wildfires, from Minneapolis to Milwaukee to Chicago.

Socially vulnerable groups are the most likely to suffer in such times of environmental threat. Vulnerability levels are highest for historically disadvantaged groups based on characteristics such as race, age, socioeconomic status, ability, and English proficiency (Cutter et al., 2003; Flanagan et al., 2018). This report assesses the extent to which emergency management hazard mitigation plans in East Central Wisconsin strategize to reduce risk for such groups – and the extent to which local leaders can adapt when emergencies affect their communities..

**The Methods:** Assessment of these issues took place across 14 East Central Wisconsin counties, including:

- Determining social vulnerability levels for each county based on secondary data.
- Determining community resilience levels for each county based on secondary data.
- Content analysis of Hazard Mitigation Plans (HMP) to determine the extent to which socially vulnerable groups are (or are not) considered in planning of all 14 counties.
- Focus groups with professionals involved in preparing HMPs (e.g. emergency management, fire, public safety, and public health officers) in four diverse counties.

### The Findings

1. Vulnerability levels were Low in 11 counties and Low-Moderate in three counties.
2. Community Resilience levels were High in five counties, Medium High in five counties, Medium in two counties, and Medium Low in two counties.
3. County HMPs infrequently mention socially vulnerable groups. Elderly and Disabled groups were most mentioned in plans. Counties with higher levels of social vulnerability tend to mention vulnerable groups in their HMPs to a greater degree.
4. HMP professionals noted Community Competence (political partnerships, problem-solving) as their strongest capacity and Information & Communication (trusted information, skills and infrastructure) as their weakest capacity for ensuring resilience.

### The Lessons

1. Although vulnerability is lower at the county level in East Central Wisconsin, examining neighborhood level data shows that vulnerability is much higher in specific areas.
2. There is a moderately strong negative association between vulnerability and resilience across all 14 counties. Green Lake and Waushara Counties have the highest vulnerability and lowest resilience, putting them at greatest risk to natural hazards.
3. Developing 1) trusted sources of information and 2) more advanced communication plans, mediums, and infrastructure are vital next steps to build community resilience.

## Project Background

*Social vulnerability* is defined as: “a measure of both the sensitivity of a population to natural hazards and its ability to respond to and recover from the impacts of hazards” (Cutter & Finch, 2008, p. 2301). Socially vulnerable groups are the most likely to suffer negative consequences when disaster strikes, whether it be in the form of environmental hazards such as extreme heat, storms, flooding, or public health crises like COVID-19.

Numerous studies have shown that vulnerability is associated with demographic characteristics such as race, ethnicity, age, gender, socio-economic status, disability, and residents who are Limited-English Proficient (LEP), amongst other factors (Cutter et al., 2003; Flanagan et al., 2018). Such groups tend to be at greater risk of adverse impacts. Creating emergency management plans that promote social equity, which is defined as the fair, just and equitable management and distribution of public services and implementation of public policy, can help to promote a more equitable emergency response for these socially vulnerable groups (National Academy of Public Administration, 2021).

Emergency management departments create plans to mitigate and respond to such hazardous events. For instance, Hazard Mitigation Plans (HMPs) aim to reduce loss of life and property through minimizing disaster impacts, identifying vulnerabilities within a certain jurisdiction, and developing strategies to reduce future disaster destruction (FEMA, 2021). These plans address specific emergency situations that are unique to the local jurisdictions, such as flood prone regions. HMPs are a foundational document of local emergency management. However, such plans have historically not taken the most socially vulnerable, highest risk populations into consideration (Gooden et al. 2009). This impacts a community’s resilience, or lack thereof.

Norris et al. (2008) define community resilience as a process that requires adaptive capacities (i.e. a network of community resources) in order to adapt after a disturbance. Their research has shown: “To build collective resilience, communities must reduce risk and resource inequities, engage local people in mitigation, create organizational linkages, boost and protect social supports, and plan for not having a plan, which requires flexibility, decision-making skills, and trusted sources of information that function in the face of unknowns” (p. 127). Thus, oversight of socially vulnerable groups in emergency management plans and limited adaptive capacities can exacerbate adverse impacts amongst historically disadvantaged groups.

This project assesses these issues in 14 counties in the East Central Wisconsin Region. This report details each county’s level of social vulnerability, level of resilience, the extent to which socially vulnerable groups are (or are not) considered in hazard mitigation plans, and the adaptive capacities of each county. In other words, this project examines if counties are ready to reduce risk to their most vulnerable, or not.

Furthermore, case studies of four diverse counties provide insight into how emergency management professionals understand vulnerability and areas where greater resources are needed to build resilience. In closing, this report summarizes key findings and offers recommendations for how to build adaptive capacities in future planning efforts.

## Emergency Management in East Central Wisconsin

Figure 1 provides a map of each of the six regions as designated by the State of Wisconsin Emergency Management Office. This study focuses on the East Central Region of Wisconsin, highlighted in yellow. The region is made up of 14 counties, ranging from as far north as Door County, to as far south as Dodge County. The Region borders Lake Michigan on the eastern side.

Various disasters have impacted areas throughout the East Central region, wreaking havoc on infrastructure, livelihoods, and economic conditions. Some examples are noted below. These instances reflect how communities have been impacted, and how the effects have been exacerbated in more recent years. This demonstrates

the urgency to take action to build resilience by adapting and responding more appropriately to reduce loss of life and property.

### Major Flooding in Winnebago County

In the summer of 2008, Winnebago County received nearly 10 inches of rainfall over the span of a few days, creating catastrophic flooding, impacting an estimated 50% of homes, and causing \$29 million in property damages (Carson, 2018). This event had detrimental impacts not only due to the sheer amount of rainfall, but also in part due to aging, inefficient stormwater infrastructure. This led to sewage backup and contaminated homes, creating unlivable conditions. The devastation left behind from the 2008 Winnebago County flooding is a part of the costliest natural disaster in Wisconsin history.

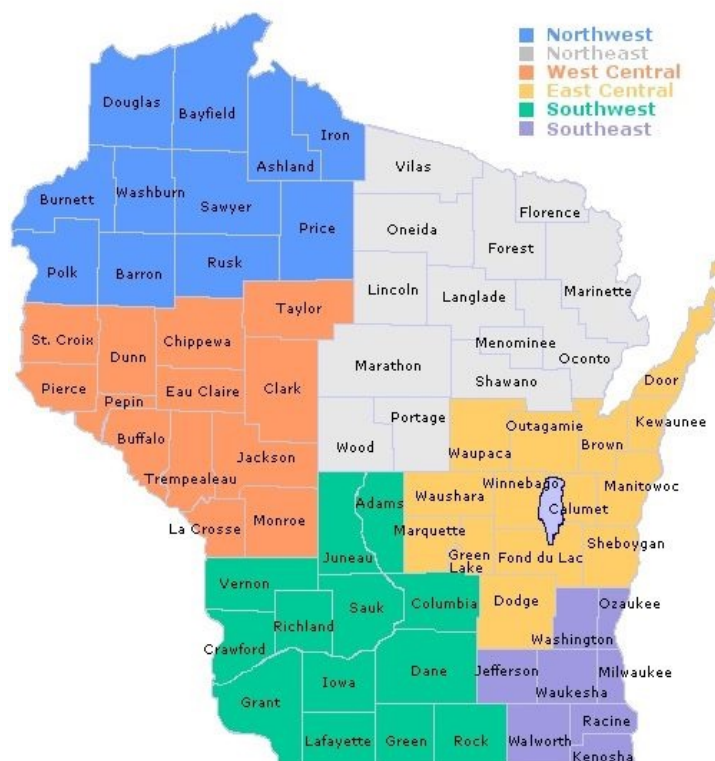


Figure 1. Wisconsin Emergency Management Region Map



*Residents push a car out of the flooding street in Winnebago County on June 12, 2008. File/USA TODAY NETWORK-Wisconsin*

### *Blizzard Evelyn in Brown County*

Over three days in April of 2018, communities received between 15-35 inches of snowfall. Winds gusted up to 50 mph. The blizzard also posed a significant danger on the shores of Lake Michigan, where large waves developed, causing coastal flooding. Aside from this being one of the greatest snowstorms in Wisconsin history, it occurred in the spring, when weather conditions are typically associated with mild temperatures and rainfall. The storms led to building collapses and untenable roadways. Businesses to this day have yet to reopen due to the damages.

### *Tornadoes and Torrential Flooding in Marquette County*

In August of 2018, severe storms hit rural Marquette County, with tornadoes bringing 90 mph winds, and massive rainstorms, totaling 20 inches of rainfall (Carson, 2018). The rain lasted for multiple days, flooding major county highways, leaving community members stranded with no access to tenable roadways. First responders traveled to these homes on foot through standing water, to ensure fresh water and electricity were available to storm-isolated citizens. Marquette County is largely agricultural land, and the farm industry suffered \$2 million in crop damage, and over 150 buildings

in the county seat of Montello were impacted by flooding (Carson, 2018). Infrastructure is still being revived after the destruction that occurred.

These adverse weather events continue to grow in size, scope, and frequency. According to the U.S. Climate Resilience Toolkit (2018), which was created by the National Oceanic and Atmospheric Administration (NOAA), the main concerns associated with global environmental change in East Central Wisconsin include: extreme temperature changes, specifically more hotter days; changing seasonal weather patterns, including seasonality of rainfalls; and increasing dry spells. In addition, East Central Wisconsin is bordered to the east by Lake Michigan, and recent heavy rainfall episodes have greatly impacted shore lined communities, resulting in flooding, soil erosion, and water quality issues due to nutrient runoff. These issues are affecting infrastructure as well, such as drinking water, stormwater collection, and water treatment effectiveness.



*Barn damage caused by tornado in Marquette County on August 28, 2018. [Source](#)*

### **What do Social Vulnerability and Community Resilience look like in the East Central Region?**

Consequences to human health that come along with such hazardous conditions noted above include clean water crises, heat related diseases, respiratory-related illness due to mold and air contamination, and mental

health stress, amongst many others. It is important for communities must respond accordingly, especially for the most socially vulnerable groups in their region. This section begins by examining the extent to which such groups are present in the East Central Wisconsin region. Then, it provides a snapshot of the level of resilience in each county.

Table 1 outlines the demographic characteristics of each county. The largest county is Brown, with a population of 268,740 residents as of 2020. The smallest county by total population is Marquette

with 15,592 residents.

The [Social Vulnerability Index \(SVI\)](#) is a measure of the degree of social vulnerability in each county. It provides a comprehensive metric of the groups that may suffer negative consequences at a greater magnitude. This measures the potential negative effects that communities may suffer due to disaster, on a scale of 0-1, with 0 being the lowest vulnerability and 1 being the highest (CDC, 2018). In East Central Wisconsin, counties fall into the following categories:

County	Population (2020)	% Languages other than English spoken at home	% People w/ disability under 65	% 65 & older	% Non-White Alone	% Hispanic	% Foreign Born Persons	% Population below poverty level	% Households w/o Vehicle
Brown	268,740	10.5	13.0	14.8	19.9	9.0	5.8	9.8	5.3
Calumet	52,442	5.2	9.6	14.9	9.5	4.4	2.6	5.8	3.4
Dodge	89,396	4.8	12.2	17.7	10.4	5.0	2.1	8.3	5.1
Door	30,066	4.4	15.5	29.8	6.5	3.3	3.3	7.6	3.6
Fond Du Lac	104,154	5.3	13.4	18.4	11.4	5.4	3.3	8.4	6.6
Green Lake	19,018	8.1	18.7	22.0	8.0	5.1	2.0	11.7	6.7
Kewaunee	20,563	3.1	14.3	20.6	5.8	3.2	2.4	7.8	5.1
Manitowoc	81,359	5.4	14.3	20.4	10.1	4.3	2.9	10.0	6.0
Marquette	15,592	3.3	21.8	24.6	6.8	3.6	1.8	10.7	4.3
Outagamie	190,705	6.4	12.0	14.8	12.9	4.4	3.7	7.8	4.2
Sheboygan	118,034	9.4	11.1	17.9	16.5	6.6	5.9	7.2	6.0
Waupaca	51,812	4.2	15.3	20.6	5.9	3.2	2.0	10.4	4.6
Waushara	24,520	7.5	16.9	24.3	10.9	6.5	2.5	11.2	5.3
Winnebago	171,730	6.1	14.7	16.2	12.2	4.2	3.5	11.3	5.6

Table 1. Vulnerable Population Characteristics by County

- **Low Vulnerability:** Calumet, Dodge, Door, Fond du Lac, Kewaunee, Manitowoc, Marquette, Outagamie, Sheboygan, Waupaca, Winnebago (11 counties)

- **Low-Moderate Vulnerability:** Brown, Green Lake, Waushara (3 counties)

Along with vulnerability comes a community’s ability to respond to and recover from natural disaster, which can be referred to as their level of resilience. This study utilized the [Baseline Resilience Indicators for Communities \(BRIC\) Index](#) to determine levels in East Central Wisconsin compared to the rest of the state. This composite indicator includes measures of social, economic, housing/infrastructure, community capital, institutional, and environmental resilience. Counties range in their resiliency level as follows:

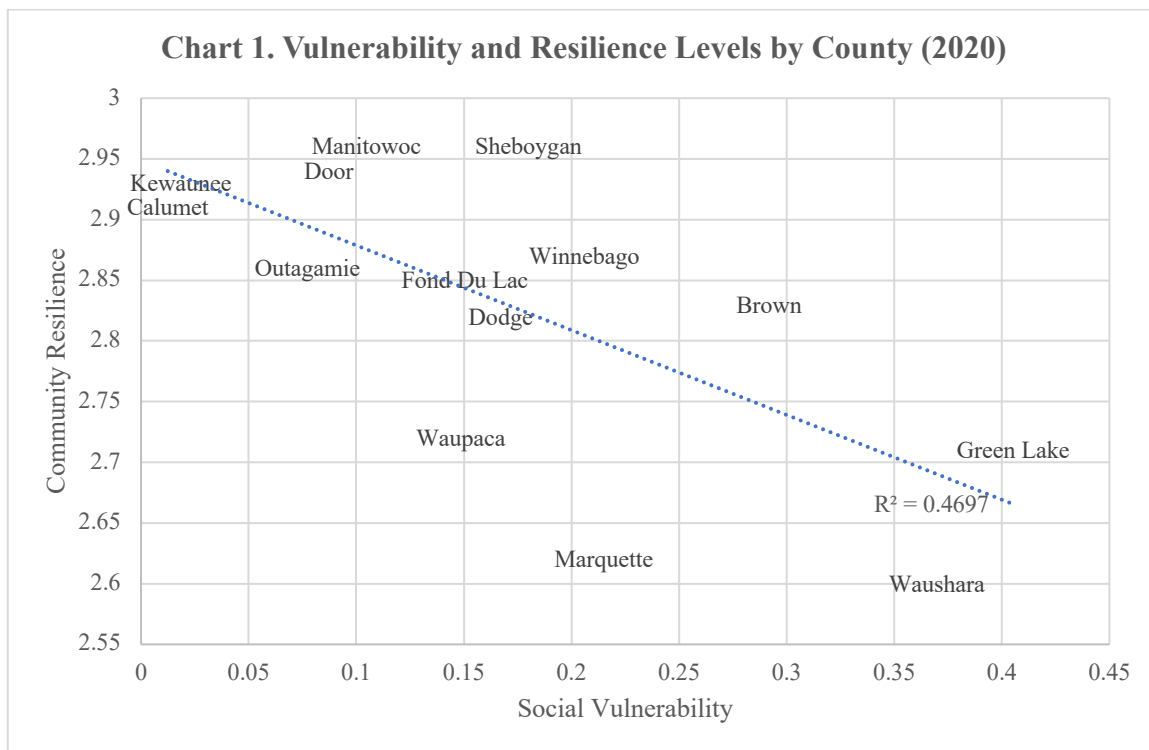
- **Medium-Low:** Marquette and Waushara (2 counties)
- **Medium:** Green Lake, Waupaca (2 counties)

- **Medium-High:** Brown, Dodge, Fond du Lac, Outagamie, Winnebago (5 counties)
- **High:** Calumet, Door, Kewaunee, Manitowoc, Sheboygan (5 Counties)

Chart 1 plots the degree of social vulnerability and community resilience for each county. The Pearson correlation coefficient (-0.68) demonstrates a moderately strong degree of correlation between these two variables. As county vulnerability increases, the level of community resilience decreases. The downward regression line on the chart indicates this negative relationship. It is important to note that Waushara and Green Lake Counties have two of the highest levels of social vulnerability and the lowest levels of community resilience in this region. In other words, they are at the greatest risk of harm out of all 14 counties.

Although county-level measures of vulnerability are Low to Low-Moderate, vulnerability is higher when scanning down to the neighborhood (census tract) level. For instance, Figure 2 provides a snapshot of vulnerability levels in Winnebago County at the census tract level. As shown, areas in light yellow have Low vulnerability, which is the rating at the county level. However, several areas marked in darker green and blue have high rates of vulnerability, such as the north side of the City of Oshkosh and the northeastern side of the Menasha.

Four additional subcategories of social vulnerability are also provided at the neighborhood (census tract) level in Figure 3. These include the four categories listed below, based on multiple metrics that fall under each subcategory, which are listed. An example location is noted at the neighborhood level in Winnebago County for each.





### Socioeconomic Status

**Metrics:** Below 150% Poverty, Unemployed, Housing Costs Burden, No High School Diploma, No Health Insurance.

**Example Vulnerable Neighborhood:** Central core of the City of Oshkosh.

### Household Characteristics

**Metrics:** Aged 65 and Older, Aged 17 and Younger, Civilian with a Disability, Single-Parent Household, English Language Proficiency (ELP).

**Example Vulnerable Neighborhood:** Western ru-

ral areas of Winnebago County.

### Racial and Ethnic Minority Status

**Metrics:** Hispanic of Latino (of any race), Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino.

**Example Vulnerable Neighborhood:** South of the river in central City of Oshkosh.

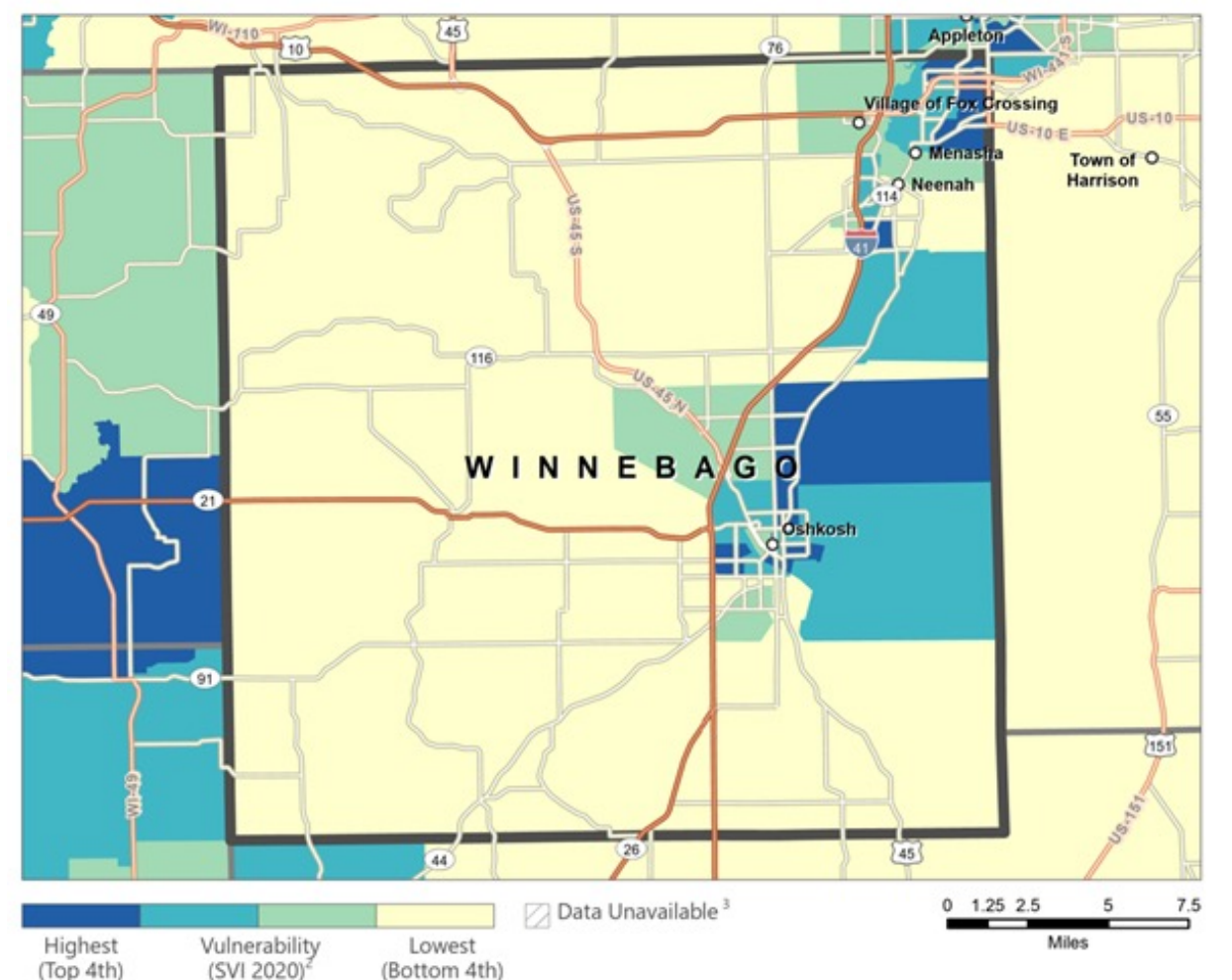


Figure 2. Social Vulnerability - Winnebago County (Neighborhood Level)

*Housing Type/Transportation*

Metrics: Multi-Unit Structures, Mobile Homes, Crowding, No Vehicles, Group Quarters.

Example Vulnerable Neighborhood: Areas near the Village of Fox Crossing.

**How Is Vulnerability Addressed in Hazard Mitigation Plans?**

Hazard mitigation plans (HMPs) are prepared by local government committees to identify, assess, and prioritize risk and minimize potential loss (FEMA, 2021). HMPs included long-term strategies to protect people, property, and infrastructure from natural hazards. They are paramount in

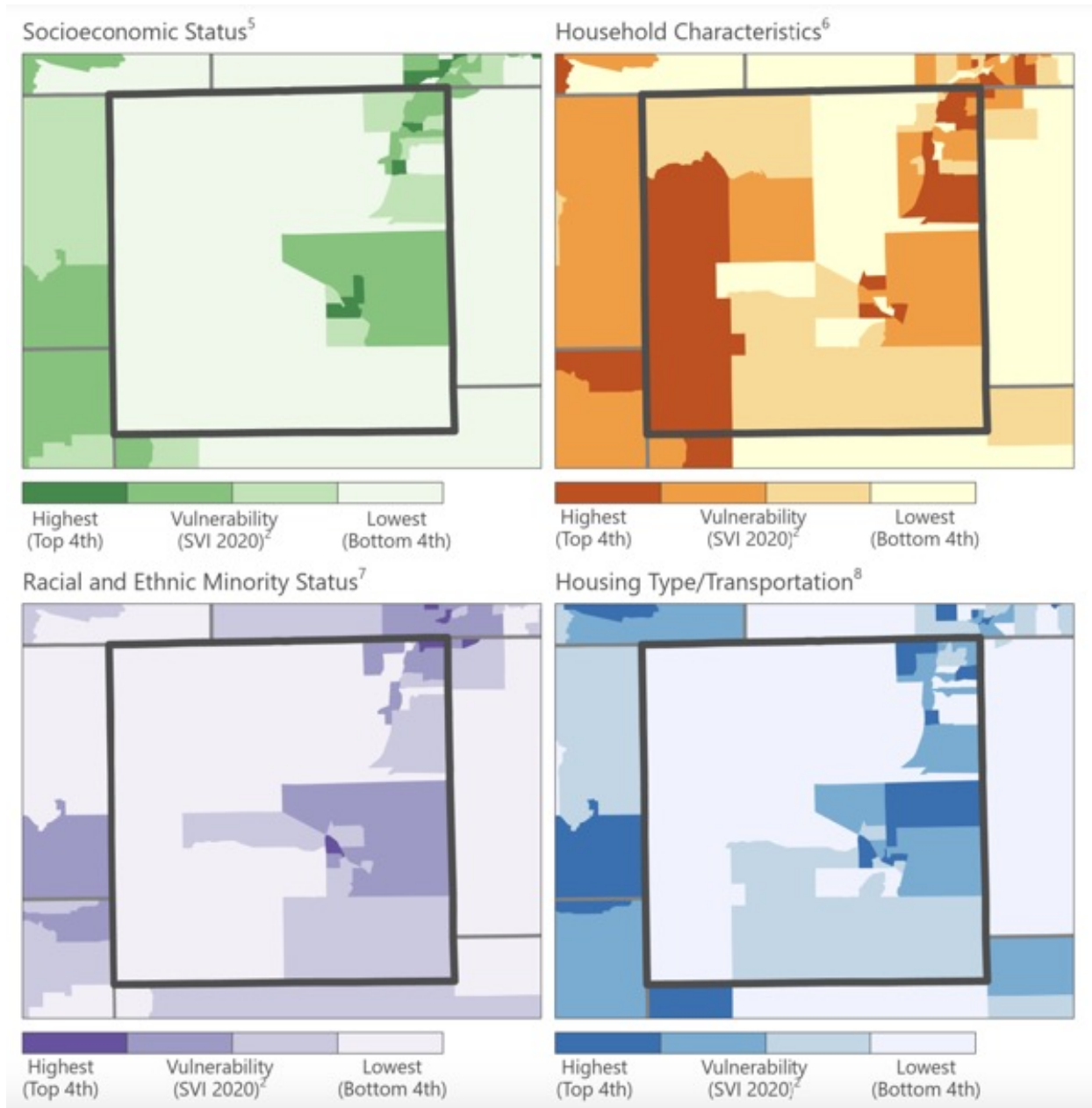


Figure 3. Four Vulnerability Subcategories - Winnebago County (Neighborhood Level)

providing a roadmap for response and recovery efforts to minimize damage, and support community regeneration post disaster. When efforts are made to reduce loss of life and property through hazard mitigation, people within a community are more appropriately prepared to endure disastrous events.

To understand how East Central Wisconsin counties plan for natural disaster events, a content analysis was performed using their Hazard Mitigation Plans. With the exception of Green Lake County, 13 of the counties had plans that were publicly accessible on their website. The goal of the content analysis was to utilize a word search to identify key terms that are associated with socially vulnerable people groups, to gain a better understanding of how these groups are factored into the hazard preparedness processes. Results are presented in Table 2.

Overall, HMPs infrequently mentioned social-

ly vulnerable groups. All counties (100%) mentioned the Elderly, Disabled, and Ethnic Minorities to some degree. To a much lesser degree, a proportion of the counties also mentioned vulnerable groups with Limited English Proficiency – LEP (50%), those Living in Poverty (50%), Immigrants (43%), Racial Minorities (43%) and Women (14%). Refugees and LGBTQIA+ populations were not mentioned in any of the county plans (0%).

Chart 2 provides a finding of further interest. It includes the SVI level of each county compared to the number of times each county mentioned one of the socially vulnerable groups in their HMP based on the content analysis. The regression line again demonstrates a positive association. The Pearson’s correlation coefficient (0.39) was moderate. This shows counties with higher vulnerability have discussed socially vulnerable groups in their HMPs to a greater degree.

County	Disability	Elderly	Ethnicity	Gender	Immigrant	LEP	LGBTQIA	Poverty	Race	Refugee
Brown	14	13	3	0	2	1	0	0	0	0
Calumet	3	7	1	0	0	2	0	2	1	0
Dodge	3	7	3	0	0	2	0	2	1	0
Door	4	2	2	0	0	0	0	0	0	0
Fond Du Lac	2	3	1	0	0	0	0	0	0	0
Kewaunee	3	7	1	0	4	2	0	2	2	0
Manitowoc	8	3	1	3	0	0	0	5	0	0
Marquette	1	7	1	0	2	2	0	2	5	0
Outagamie	2	5	1	3	0	0	0	0	3	0
Sheboygan	3	2	1	0	0	0	0	0	0	0
Waupaca	3	7	1	0	0	0	0	2	1	0
Waushara	3	19	1	0	0	0	0	0	0	0
Winnebago	11	19	2	0	4	10	0	0	0	0
<b>Mean</b>	<b>4.6</b>	<b>7.8</b>	<b>1.6</b>	<b>0.5</b>	<b>0.9</b>	<b>1.5</b>	<b>0.0</b>	<b>0.5</b>	<b>1.0</b>	<b>0.0</b>
<b>Median</b>	<b>3</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Table 2. HMP Content Analysis of Socially Vulnerable Groups Mentioned by County

## How do HMP Professionals Address Vulnerability and Resilience?

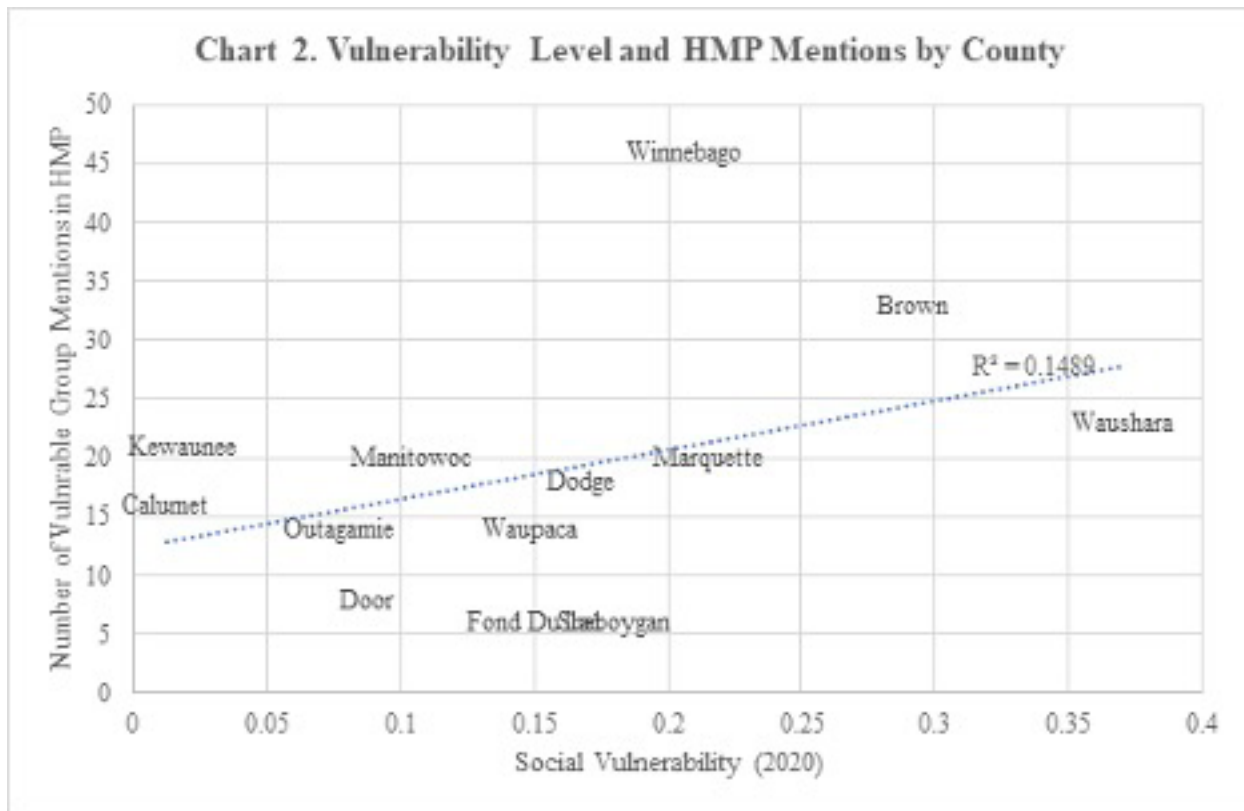
In early 2023, focus groups with professionals who had worked on their county’s hazard mitigation planning efforts were held. Four counties were selected for the focus groups: Winnebago, Brown, Marquette, and Sheboygan. Participants came from a diverse array of organizations and departments (emergency management, law enforcement, communications, county administration, healthcare, public health, fire, and corrections). The total sample included 28 individuals from the four counties. Notably, while these individuals did not represent the county’s concerns for vulnerability or adaptive capacities for resilience, the discussion of these groups are likely representative of the concerns of county leaders responsible for preparing for, mitigating, and responding to hazardous events. The following section provides key findings.

## Resiliency Rankings and Priorities by County

All focus group participants were given a survey worksheet that asked them to rank different six facets of their county in terms of vulnerability: *People, Economic, Infrastructure, Cultural/Historic, Environmental, and Governance*. Each area was rated on a range of 1-6, with higher numbers reflecting perceptions of higher resilience, and lower numbers reflecting higher vulnerability.

Figure 4 provides the results by county and overall. Some of the main findings from this exercise showed:

- The most vulnerable area overall amongst these four counties was *Infrastructure*, including damage/loss of roads, bridges, utilities, schools, etc. Many of the participants spoke at length about how when natural disasters interrupt major roads or their electrical grid, it is often a scramble to first ensure that the individuals impacted by this dis-



ruption are taken care of and then repairing or replacing the impacted infrastructure.

- The second most vulnerable area overall was *People*; however, Sheboygan County ranked this as their least vulnerable area.
- The most resilient area overall was *Cultural/Historic* institutions such as libraries, museums, his-

toric properties.

- The second most resilient area overall was *Governance*, which includes the ability to maintain order and/or provide public amenities and services when hazards occur. Winnebago County ranked *Governance* as their most resilient area to a higher degree than the other three counties.

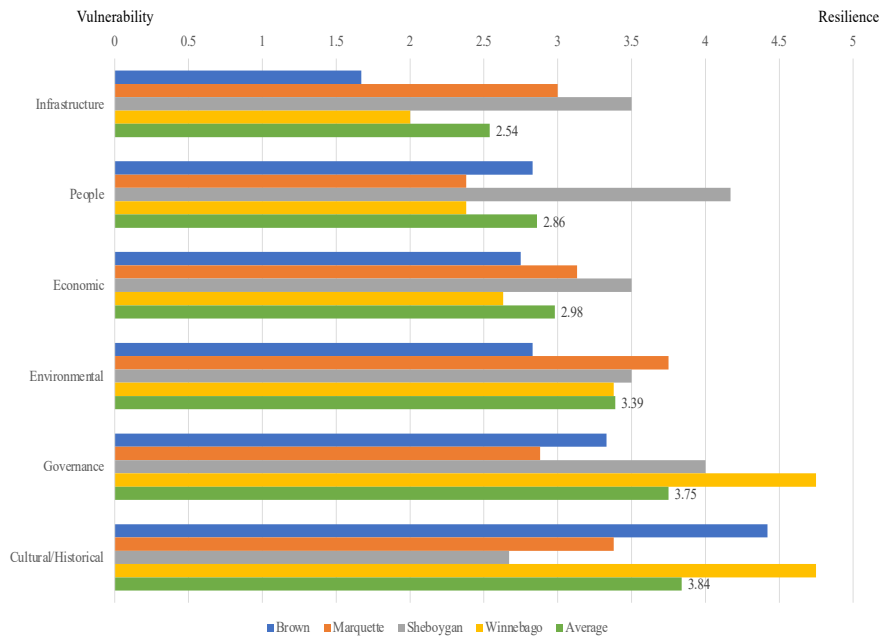


Figure 4. Focus Group Resilience Ratings

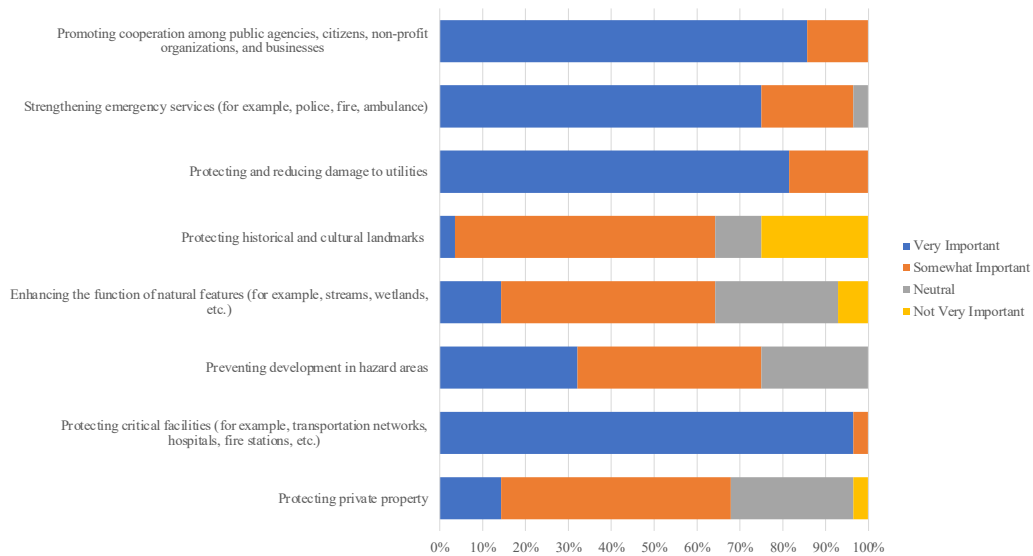


Figure 5. County Hazard Mitigation Priority Areas

Next, Figure 5 includes the results of all participants ranking eight priority areas, from *Very Important* to *Not Very Important*. Considering that *Infrastructure* was the most vulnerable area in Figure 4, nearly all participants felt that protecting critical facilities and reducing damage to major utilities was *Very Important*. Furthermore, cooperation and coordination between the public, private, and non-profit sectors was also *Very Important* to participants. They frequently discussed how cooperation, rather than competition, during disaster events was key.

#### *General Hazard Mitigation Planning and Implementation*

First, although the group discussions were not focused on the COVID-19 pandemic, participants largely drew on their most recent experiences with that hazardous event. Yet, each county had a specific natural disaster to speak of as a case example for the questions. Thus, while the coronavirus was disruptive, other catastrophes continued to occur and the participants were responsible for dealing with those events as well. With implementation, it

seemed that most counties were confident in the HMP as a guidebook.

#### *Perceptions of Social Vulnerability*

Participants were aware of some vulnerable groups in their county, partly due to the COVID-19. It might be said that a silver lining to the pandemic was the revelation of who was most negatively impacted and in need of care. Overall, the elderly, young dependents, and people experiencing poverty were most often identified as vulnerable. For instance, elderly individuals unable to leave their homes after a crisis were described at higher risk of harm. This leads to a need for strategies to deliver essential items (such as food and medications) to such populations. Notably, a new vulnerable population was identified through the focus groups that was not specific to a demographic identity. Rather, the group could be described as “People Vulnerable to Misinformation” which was especially prevalent during COVID-19.

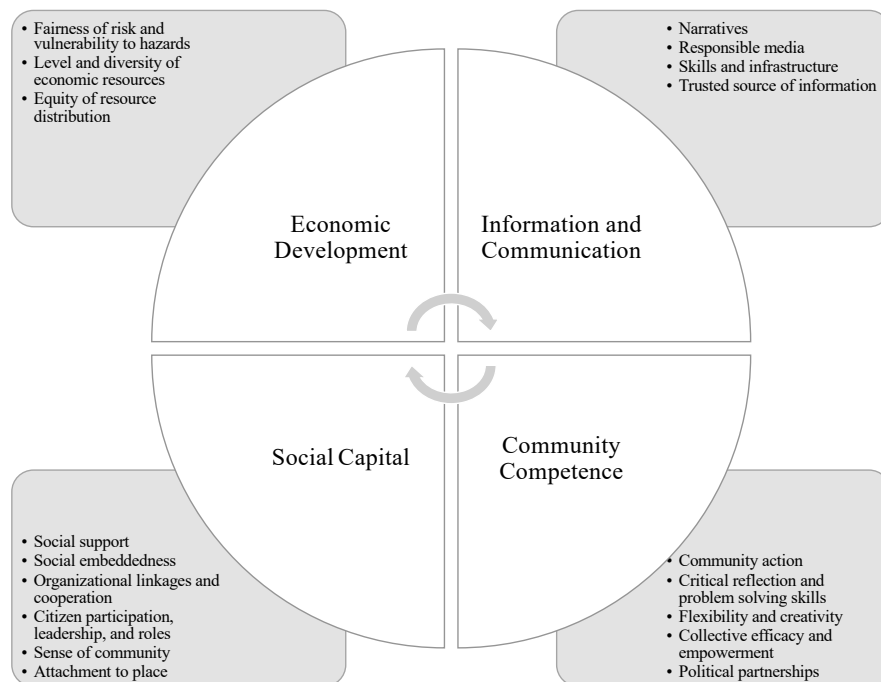


Figure 6. Adaptive Capacities Framework

## *Adaptive Capacities*

The extent to which counties exhibit four adaptive capacities for community resilience were also examined. Figure 6 provides a representation of each capacity dimension and examples of variables that fall under each category. The main findings for each area are noted in further detail below. The four areas are listed based on the prevalence of discussion and greatest need for development, beginning with improved *Information and Communication*.

### Information and Communication

This section yielded the most discussion by far across all four focus groups. Many participants were frustrated with how information was getting out to the public and the public's response to information. The issue seems to be two-fold. First, there are challenges in how to communicate and get correct information to all residents in the county. One participant noted that the internet is a great way to communicate alerts or messages to the public, but they were still missing 10 to 20 percent of their population. Another participant noted that, especially for the elderly, phone calls are still essential because this vulnerable population may not have access to the internet or may not understand how to use it.

The second issue is a lack of faith in the messaging. For instance, simple tips on how to stop the spread of COVID-19, areas to avoid, and even inclement weather announcements all seem to be up for debate with certain members of the public. One public health participant shared that they knew most residents did not trust information coming out of their office during COVID-19. The solution was to coordinate messaging through the county sheriff's office, which was regarded as a more legitimate and trusted source of information. As technology continues to advance and ac-

cess to information increases exponentially, emergency management professionals will need more advanced technology platforms, while retaining previous forms of communication, to provide updated information to everyone in the county to reduce vulnerabilities to disaster.

### Social Capital

In a similar spirit as the collaboration between public and private sector organizations discussed above, it was clear that when one sector needed assistance, another sector would step in. For instance, non-profits also serve a vital role in this capacity. In many instances, a community need was identified, and a non-profit would rise to the challenge and provide the service. Whether it was delivering meals to the elderly or helping fill sandbags to avoid additional flooding – individuals working in non-profit organizations take up the call to assist in many ways when disasters happen.

In addition, stories of “ordinary citizens” stepping up was common. Many participants referenced examples of neighbors helping neighbors when storms caused roads to close due to fallen trees, showing up with chainsaws and skid loaders to remove debris. One participant talked about the motivations for this help “[if] my fields are on fire, yours are going [to be next] that person is coming to put my fire out on my farm before it gets to their farm.” While this may not be the altruistic motivation some would wish for, the outcome is the same. It was clear from this section that when really bad things happen in a community, people step up and help as they are able.

### Economic Development

This section of the discussion was often brief; however, the major finding was that when catastrophic events happen, the public and private sector typically find a way to work together to

avoid further disruption, whether it is the county setting up special transportation for an employer or a business donating space or supplies to aid the county during a natural disaster. Many participants discussed the effect COVID-19 had on small businesses, some regretting having not done more to protect and listen to their challenges. Other participants noted that working with employers in the county was in some ways a responsibility of county government, with businesses often providing different kinds of assistance when natural disasters occurred.

### Community Competence

One major strength shared by focus groups was that the individuals involved in the HMP process were seasoned and had learned from their predecessors, while also passing on information and strategies with their successors. In this sense, collaboration is both inter and intra-agency; keeping record and sharing information between and within an agency impacts resiliency to keep natural hazards at bay. Yet, arguably one of the most important findings was that sufficient employee capacity and experience is quickly eroding, especially in hospitals and assisted living facilities. Whether it is turnover, retirements, or a flood of new employees, participants spoke at length about how it can sometimes feel like they are constantly starting over.

### **Summary**

In closing, the following findings are important to highlight from this project:

First, Social Vulnerability levels were *Low* in 11 counties and *Low-Moderate* in three counties. In comparison, Community Resilience levels were *High* in five counties, *Medium High* in five counties, *Medium* in two counties, and *Medium Low* in two counties. As vulnerability increases, resilience decreases across the 14 counties. Furthermore, although vulnerability is lower at the coun-

ty level in East Central Wisconsin, examining neighborhood level data shows that vulnerability is much higher in specific areas.

Second, county HMPs infrequently mention socially vulnerable groups. *Elderly and Disabled* groups were most mentioned in plans. Notably, counties with higher levels of social vulnerability tend to mention vulnerable groups in their HMPs to a greater degree.

Finally, HMP professionals noted *Community Competence* (such as political partnerships, problem-solving, and leadership) as their strongest capacity for resilience to hazards. On the other hand, *Information and Communication* was noted as the weakest capacity for ensuring resilience, such as sources of trusted information, skills, and infrastructure. This is especially important to consider given that the focus groups revealed “People Vulnerable to Misinformation” as a new group at greatest risk in times of crisis.

Based on these findings, a few general recommendations include:

1. Counties may find data and further geographic information on where the most socially vulnerable groups are in their jurisdictions utilizing the [CDC/ATSDR Social Vulnerability Index](#) at the neighborhood (census tract) level. Profiles for all 14 counties in East Central Wisconsin are also available on the Whitburn Center website. [The FEMA National Risk Index](#) is another valuable tool that provides detailed information on levels of vulnerability, resilience, expected annual loss (in dollars) resulting from specific hazards, and more. Both of these tools offer a trusted source of information that committees can incorporate into hazard mitigation planning efforts in the future.

2. Emergency management professionals may be able to address misinformation by collectively working to determine the most trusted sources of information amongst their residents. For instance, law enforcement may be the most trusted



source of information in some communities, and nonprofits that serve historically excluded communities may be the most trusted source in other instances.

3. Strategic investments in more advanced, user-friendly public information technologies and methods are necessary for effective crisis communication. For instance, messaging must be provided in multiple languages (such as Spanish and Hmong) to ensure residents with limited English proficiency receive the same information. In addition, providing information in multiple formats, including telephone calls to those without access to online platforms and social media updates, remains vital to equitable hazard mitigation planning.

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