WV Social Vulnerability Index
(WV SVI)

West Virginia University
WV GIS Technical Center

January 2024

WV Social Vulnerability Index

Major Category	Detailed Category	Code	Indicator	Short Description	Unit
People/ Social Risk	Social Vulnerability	**WV_SVI**	**WV Social Vulnerability Index**	Social vulnerability index developed for West Virginia based on eight socioeconomic and demographic indicators	%

Rationale	Recommendations	Data Source
A community with a higher social vulnerability is less likely to be able to recover from a flood disaster quickly and fully. The WV Socioeconomic Index is a combination of eight social and economic indicators to measure a population's vulnerability to flood hazards. The select indicators are economic factors (Poverty Rate Unemployment Rate), population characteristics (Vulnerable Ages Rate, Disability Rate, Population without a High School Education, Population Change), and housing (Median Housing Unit Value, Mobile Homes as Percentage of Housing).	Flood disaster planning and preparedness should evaluate socioeconomic and individual factors such as age, disability, education, employment, and housing can influence the risk of flood deaths and damage loss. Source: NIH. A wide range of federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work, are available for disadvantaged populations and communities.	Census Bureau's American Community Survey (ACS) 5-year estimate of 2021; Census Bureau's Decennial Census (DEC) of 2010 & 2020 (For population change)

WV Social Vulnerability Index; Top 20% Rankings

RANK	All Communities	INDEX_SC	Incorporated Communities	INDEX_SC	Unincorporated Areas	INDEX_SC	Counties	INDEX_SC	Regions	INDEX_SC
1	Anawalt	100.0%	Anawalt	100.0%	McDowell County*	100.0%	McDowell County, West Virginia	100.0%	1	100%
2	War	99.6%	War	99.6%	Wyoming County*	98.1%	Wyoming County, West Virginia	98.1%	4	90%
3	McDowell County*	99.3%	Smithfield	99.1%	Mingo County*	96.3%	Mingo County, West Virginia	96.3%	2	80%
4	Smithfield	98.9%	Auburn	98.7%	Webster County*	94.4%	Clay County, West Virginia	94.4%		
5	Lester	98.6%	Lester	98.2%	Clay County*	92.6%	Webster County, West Virginia	92.6%		
6	Auburn	98.2%	Reedy	97.8%	Braxton County*	90.7%	Calhoun County, West Virginia	90.7%		
7	Reedy	97.9%	Matewan	97.4%	Logan County*	88.9%	Logan County, West Virginia	88.9%		
8	Matewan	97.5%	Clay	96.9%	Calhoun County*	87.0%	Braxton County, West Virginia	87.0%		
9	Wyoming County*	97.2%	Pax	96.5%	Boone County*	85.2%	Ritchie County, West Virginia	85.2%		
10	Mingo County*	96.8%	Delbarton	96.0%	Lincoln County*	83.3%	Lincoln County, West Virginia	83.3%		
11	Delbarton	96.5%	Keystone	95.6%	Roane County*	81.5%	Roane County, West Virginia	81.5%		
12	Clay	96.1%	Fort Gay	95.2%						
13	Fort Gay	95.7%	Northfork	94.7%						
14	Pax	95.4%	Quinwood	94.3%						
15	Keystone	95.0%	Iaeger	93.8%						
16	Northfork	94.7%	Harman	93.4%						
17	Quinwood	94.3%	Cowen	93.0%						
18	Iaeger	94.0%	Richwood	92.5%						
19	Webster County*	93.6%	Elizabeth	92.1%						
20	Harman	93.3%	Cameron	91.6%						
21	Richwood	92.9%	Grantsville	91.2%						
22	Logan County*	92.6%	Gary	90.7%						
23	Cowen	92.2%	Junior	90.3%						
24	Cameron	91.8%	Oceana	89.9%						
25	Clay County*	91.5%	West Hamlin	89.4%						
26	Grantsville	91.1%	Bradshaw	89.0%						
27	Elizabeth	90.8%	Anmoore	88.5%						
28	Oceana	90.4%	Kermit	88.1%						
29	Sophia	90.1%	Sophia	87.7%						
30	West Hamlin	89.7%	Gilbert	87.2%						
31	Gary	89.4%	Chesapeake	86.8%						
32	Braxton County*	89.0%	Hillsboro	86.3%						
33	Kermit	88.7%	Harrisville	85.9%						
34	Junior	88.3%	Danville	85.5%						
35	Calhoun County*	87.9%	Spencer	85.0%						
36	Hillsboro	87.6%	Rainelle	84.6%						
37	Gilbert	87.2%	Bramwell	84.1%						
38	Bradshaw	86.9%	Pennsboro	83.7%						
39	Anmoore	86.5%	Cairo	83.3%						
40	Spencer	86.2%	Womelsdorf (Coalton)	82.8%						
41	Chesapeake	85.8%	Pineville	82.4%						
42	Harrisville	85.5%	Hartford	81.9%						
43	Boone County*	85.1%	Hinton	81.5%						
44	Danville	84.8%	Rowlesburg	81.1%						
45	Pennsboro	84.4%	Ansted	80.6%						
46	Womelsdorf (Coalton)	84.0%	Alderson**	80.2%						
47	Pineville	83.7%								
48	Hartford	83.3%								
49	Rowlesburg	83.0%								
50	Hinton	82.6%								
51	Bramwell	82.3%								
52	Alderson**	81.9%								
53	Lincoln County*	81.6%								
54	Rainelle	81.2%								
55	Sutton	80.9%								
56	Davy	80.5%								
57	Beverly	80.1%								

Colors:

Black --> Incorporated areas

Brown --> Unincorporated areas

Green --> Counties (Total)

Red --> Split communities

Blue --> Incorporated communities participating in the National Flood Insurance Program (NFIP) with no regulatory Special Flood Hazard Area (SFHA)

Purple --> Incorporated communities with no regulatory Special Flood Hazard Area (SFHA) not participating in the National Flood Insurance Program (NFIP) (not mentioned in the FEMA's Community Status Book Report)

Black on blue: Six incorporated communities included in the detailed risk study (Camden-on-Gauley, Clendenin, Rainelle, Richwood, White Sulphur Springs, and Marlinton)
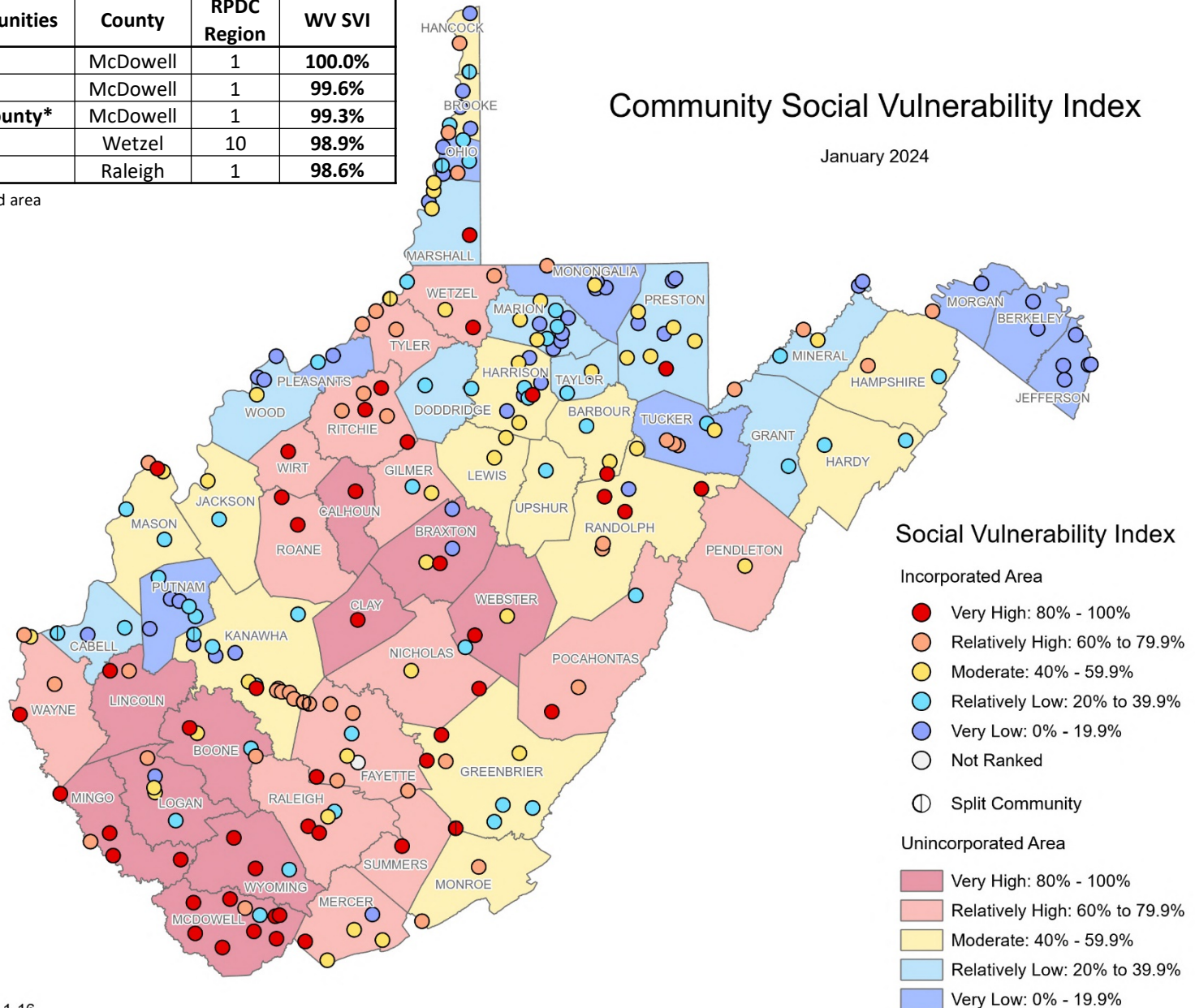
Top 5 Communities	County	RPDC Region	WV SVI
Anawalt	McDowell	1	**100.0%**
War	McDowell	1	**99.6%**
McDowell County*	McDowell	1	**99.3%**
Smithfield	Wetzel	10	**98.9%**
Lester	Raleigh	1	**98.6%**

* Unincorporated area

Community Social Vulnerability Index

January 2024

Social Vulnerability Index

Incorporated Area

- 🔴 Very High: 80% - 100%
- 🟠 Relatively High: 60% to 79.9%
- 🟡 Moderate: 40% - 59.9%
- 🔵 Relatively Low: 20% to 39.9%
- 🟣 Very Low: 0% - 19.9%
- ⚪ Not Ranked

- ◐ Split Community

Unincorporated Area

- Very High: 80% - 100%
- Relatively High: 60% to 79.9%
- Moderate: 40% - 59.9%
- Relatively Low: 20% to 39.9%
- Very Low: 0% - 19.9%

WVGISTC 2024-1-16

WV Social Vulnerability Index; Maps

Top 5 Incorporated Communities	County	RPDC Region	WV SVI
Anawalt	McDowell	1	100.0%
War	McDowell	1	99.6%
Smithfield	Wetzel	10	99.1%
Auburn	Ritchie	5	98.7%
Lester	Raleigh	1	98.2%

Incorporated Area Social Vulnerability Index

January 2024

Social Vulnerability Index

Incorporated Area

- 🔴 Very High: 80% - 100%
- 🟠 Relatively High: 60% to 79.9%
- 🟡 Moderate: 40% - 59.9%
- 🔵 Relatively Low: 20% to 39.9%
- 🟣 Very Low: 0% - 19.9%
- ⚪ Not Ranked

- ◐ Split Community

WVGISTC 2024-1-16
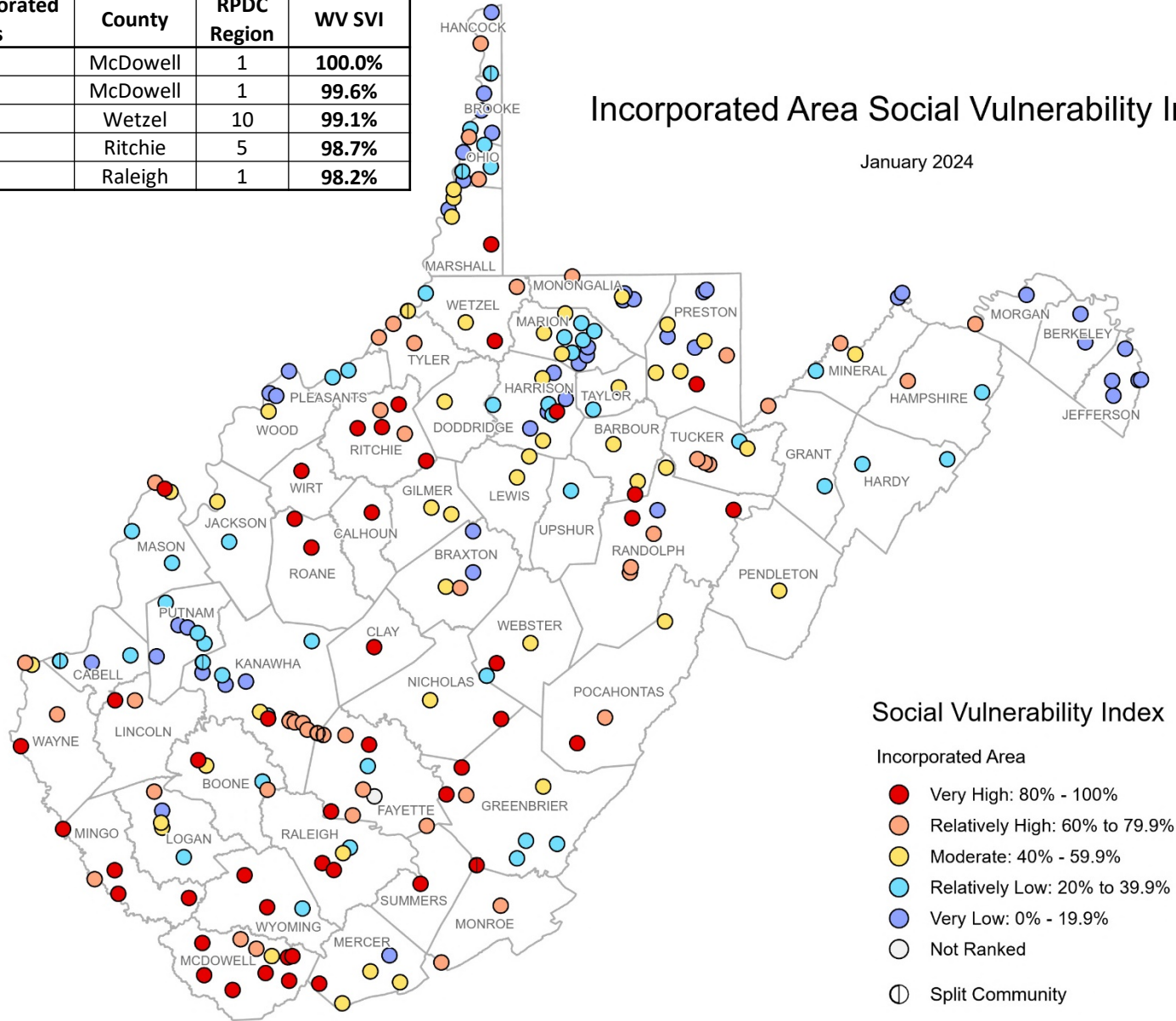
WV Social Vulnerability Index; Maps

Top 5 Unincorporated Communities	RPDC Region	WV SVI
McDowell	1	100.0%
Wyoming	1	98.1%
Mingo	2	96.3%
Webster	4	94.4%
Clay	3	92.6%

Unincorporated Area Social Vulnerability Index

December 2023

Social Vulnerability Index

Unincorporated Area

- Very High: 80% - 100%
- Relatively High: 60% to 79.9%
- Moderate: 40% - 59.9%
- Relatively Low: 20% to 39.9%
- Very Low: 0% - 19.9%

WVGISTC 2023-12-14
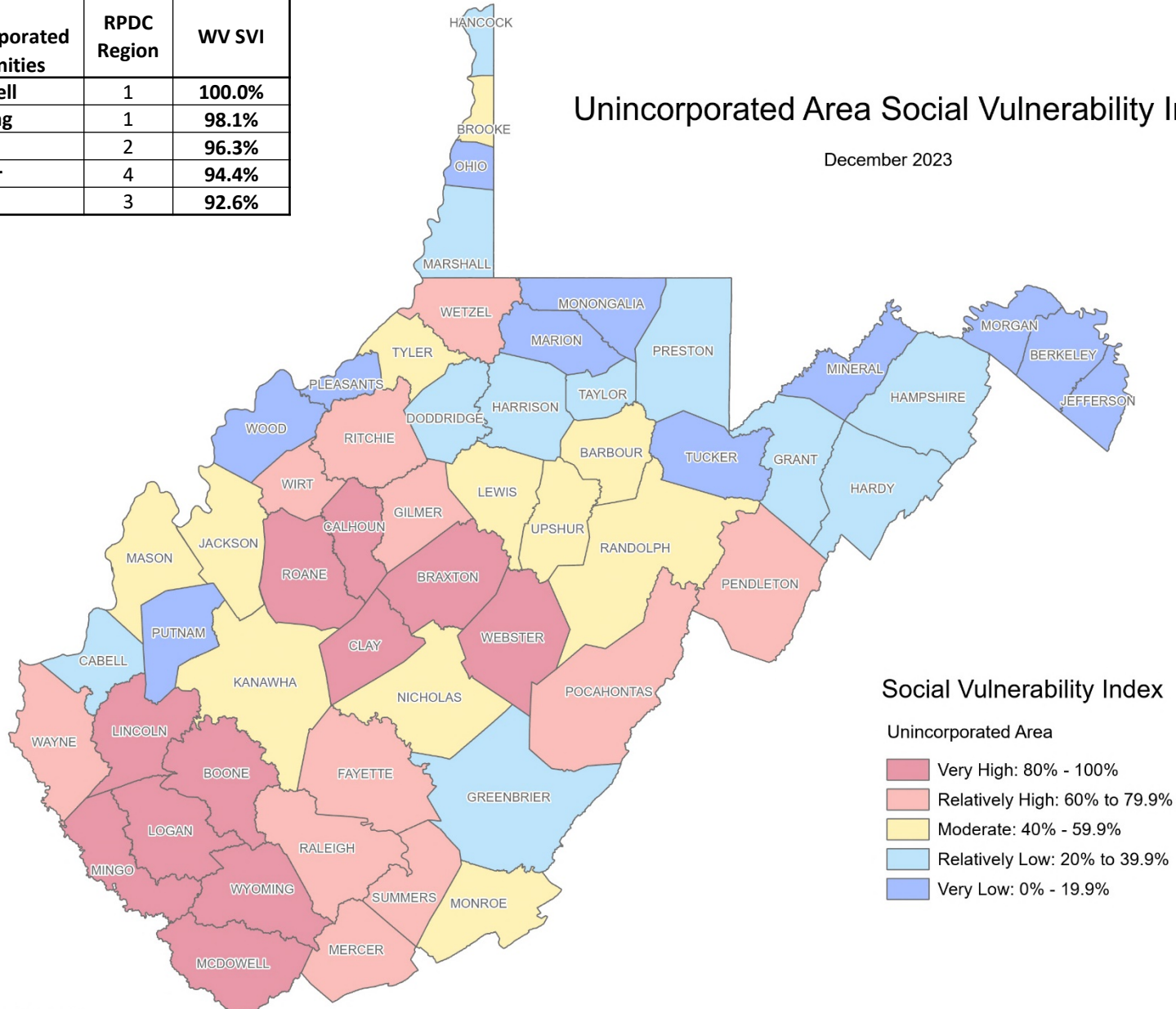
WV Social Vulnerability Index; Maps

Top 5 Counties	RPDC Region	WV SVI
McDowell	1	100.0%
Wyoming	1	98.1%
Mingo	2	96.3%
Clay	3	94.4%
Webster	4	92.6%

County Social Vulnerability Index

December 2023

Social Vulnerability Index

County

- Very High: 80% - 100%
- Relatively High: 60% to 79.9%
- Moderate: 40% - 59.9%
- Relatively Low: 20% to 39.9%
- Very Low: 0% - 19.9%

WVGISTC 2023-12-14
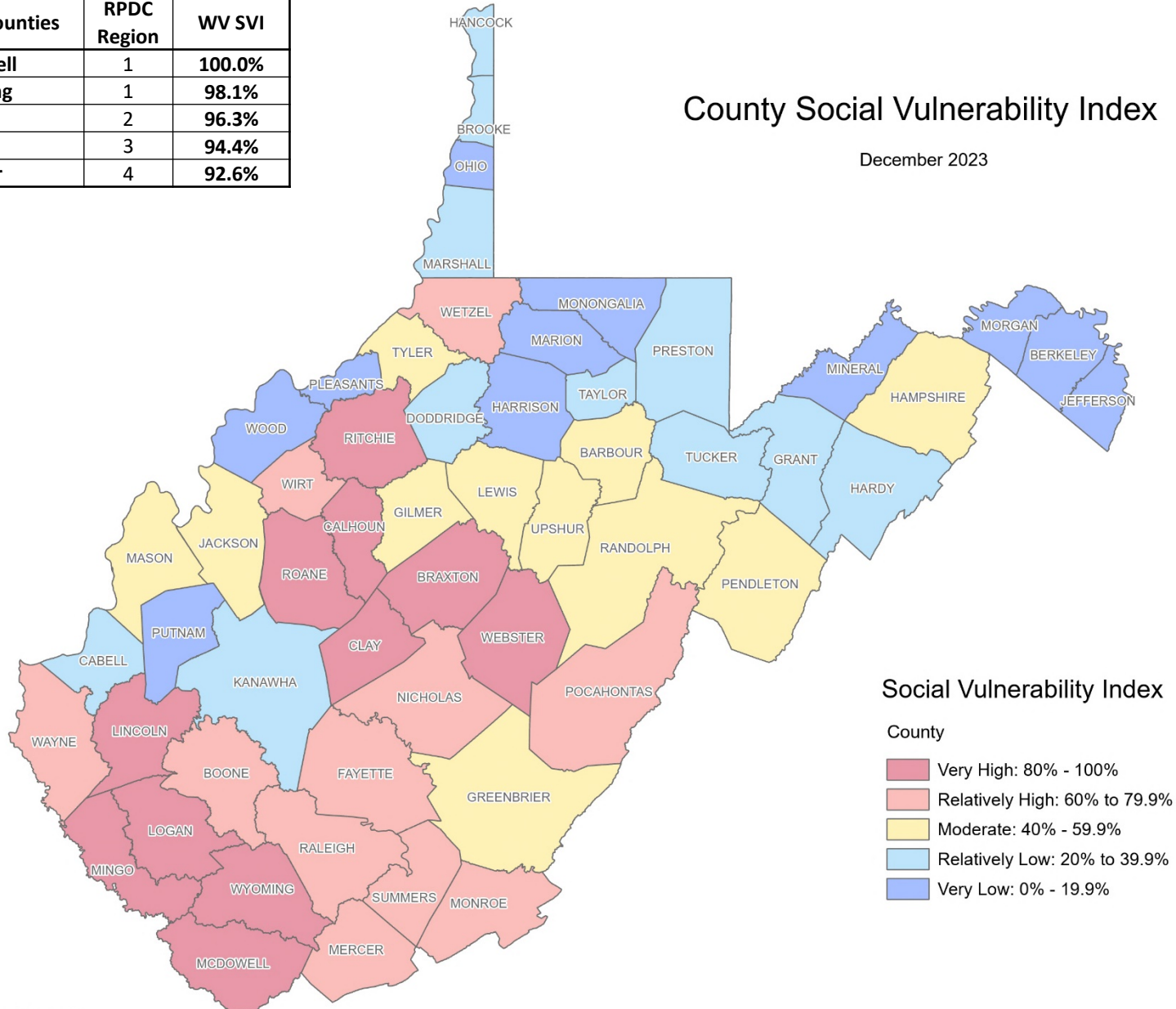
WV Social Vulnerability Index; Maps

Top 3 Regions	WV SVI
1	100%
4	90%
2	80%

Planning and Development Council Region
Social Vulnerability Index

December 2023

Social Vulnerability Index

PDC Region

- Very High: 80% - 100%
- Relatively High: 60% to 79.9%
- Moderate: 40% - 59.9%
- Relatively Low: 20% to 39.9%
- Very Low: 0% - 19.9%

WVGISTC 2023-12-14
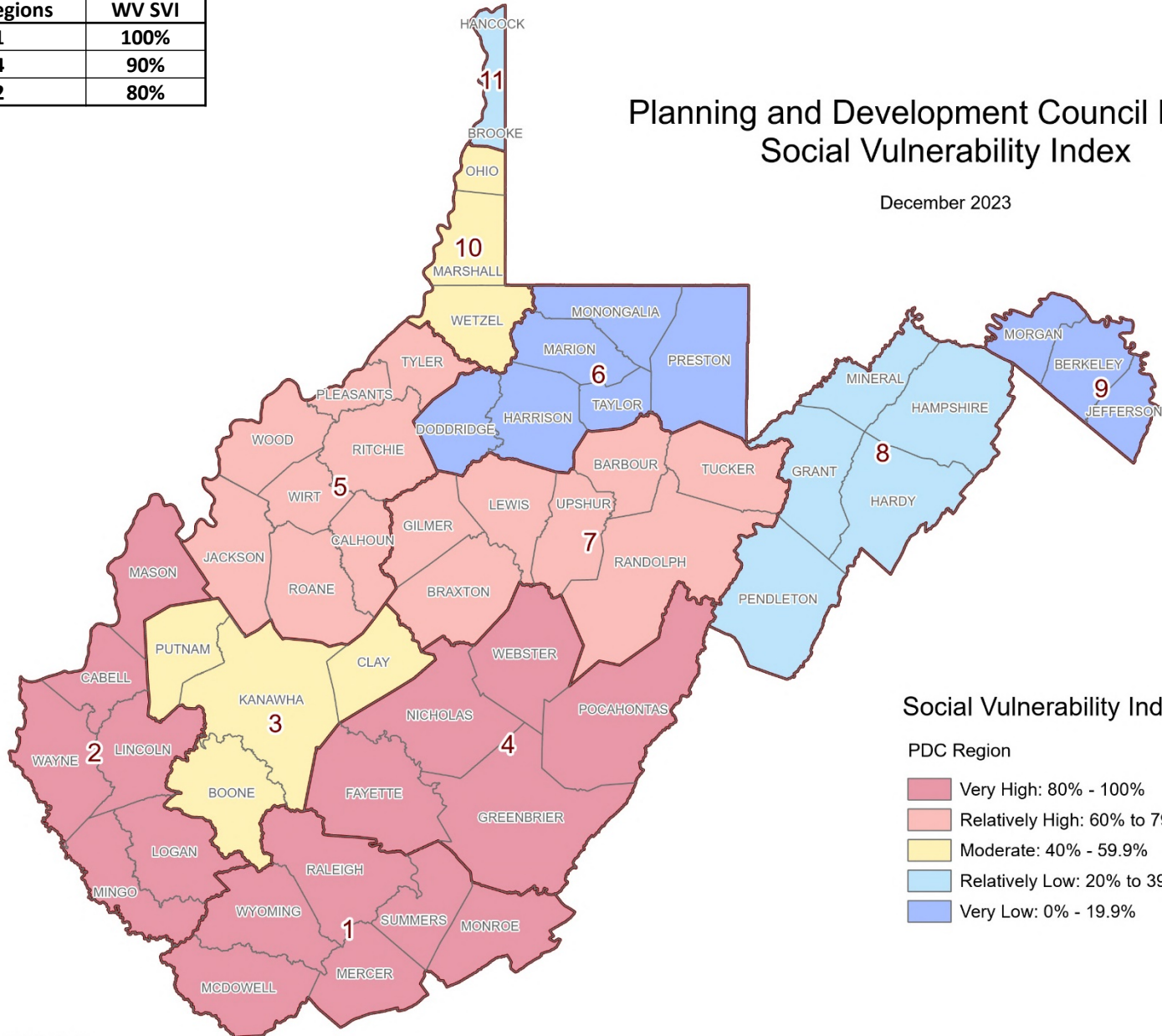
WV Social Vulnerability Index; Focus Communities

Vulnerability Indicators	White Sulphur Springs	Rainelle	Clendenin	Richwood	Marlinton	Camden-on-Gauley	State Ratio/Value	National Ratio/Value
Poverty Rate	**21.9%**	**27.7%**	9.2%	**26.1%**	**25.7%**	14.3%	17.0%	12.4%
Unemployment Rate	13.0%	22.1%	7.3%	**39.8%**	16.3%	8.3%	23.7%	14.6%
Vulnerable Ages Ratio	37.5%	36.0%	**45.4%**	**43.1%**	37.6%	33.0%	36.7%	34.6%
Disability Ratio	**20.5%**	**31.9%**	11.2%	**29.9%**	**27.6%**	9.7%	19.3%	12.6%
No High School Diploma Ratio	8.3%	**15.4%**	10.1%	**13.2%**	**16.1%**	4.8%	11.9%	11.1%
Population Change Ratio	**-9.1%**	**-20.9%**	**-30.4%**	**-19.1%**	**-5.3%**	**-25.4%**	-3.2%	7.4%
Median Housing Value	**$121,000**	**$59,100**	**$70,300**	**$68,300**	**$79,700**	**$73,800**	$128,800	$244,900
Mobile Homes Ratio	0.0%	9.3%	3.9%	7.5%	4.9%	11.1%	14.0%	5.9%
WV Social Vulnerability Index Score (Among incorporated communities)	21.1% (Relatively Low)	84.6% (Very High)	36.6% (Relatively Low)	92.5% (Very High)	60.4% (Relatively High)	27.3% (Relatively Low)	-	-

The indicator values in red show more than a 5% difference, toward vulnerability, compared to the state ratios.

Index Legend: Very High: 80% to 100%   Relatively High: 60% to 79.9%   Moderate: 40% to 59.9%   Relatively Low: 20% to 39.9%   Very Low: 0% to 19.9%
Red: 90% to 100%

WV Social Vulnerability Indicators; Description, Rationale, and Data Sources

Vulnerability Indicator	Description	Rationale	Data Source
Poverty Rate	Percentage of households with incomes below poverty level	The poor are less likely to have the income or assets needed to prepare for a possible disaster or to recover after it occurs (Cutter et al., 2003; Flanagan et al., 2011; Morrow, 1999; Thomas, 2017).	Census 2021 ACS 5-Year Estimates
Unemployment Rate	Percentage of families (two or more people residing together and related by birth, marriage, or adoption) with no workers in the past 12 months (from 2021)	In addition to income problems, unemployed persons lack benefit plans providing health cost assistance when injuries or deaths occur due to disasters (Brodie et al., 2006; Flanagan et al., 2011).	Census 2021 ACS 5-Year Estimates
Vulnerable Ages Ratio	Percentage of population in two groups of "younger than 15" or "65 and older"	Children and the elderly are generally more vulnerable to disasters such as flooding due to the lack of experience or physical and cognitive limitations to protect themselves (Cutter et al., 2003; Flanagan et al., 2011; Morrow, 1999).	Census 2021 ACS 5-Year Estimates
Disability Ratio	Percentage of civilian noninstitutionalized population with disabilities of independent living, self-care, ambulatory, cognitive, vision, or hearing difficulties	Disabled people are more vulnerable to natural hazards such as flooding and may require special assistance to evacuate (Cutter et al., 2003; Flanagan et al., 2011; Morrow, 1999).	Census 2021 ACS 5-Year Estimates
No High School Diploma Ratio	Percentage of population 25 years and older with no high school diploma	Highly educated individuals and societies are reported to have better preparedness and response to disasters, suffered lower negative impacts, and can recover faster (Muttarak & Lutz, 2014).	Census 2021 ACS 5-Year Estimates
Population Growth Ratio	Percentage of population change from 2010 to 2020	Although rapid population growth in dense urban areas can contribute to the risk (Cutter et al., 2003) we believe population decrease can be a factor of social vulnerability in WV communities.	Decennial Census (DEC) of 2010 & 2020
Housing Median Value	Median dollar values of owner-occupied residential units	The value can be an indicator of building quality. Buildings of low quality cannot withstand flooding adequately and are more vulnerable. Residents in communities with higher median housing values may be more likely to carry flood insurance policies, as their properties represent substantial investments. This can enhance financial preparedness and resilience (Flanagan et al., 2011; Morrow, 1999; Thieken et al., 2008).	Census 2021 ACS 5-Year Estimates
Mobile Homes Ratio	Percentage of manufactured homes in the whole community	Light-weight manufactured homes are not designed for withstanding floods and are more vulnerable to flood damage. Communities with a higher prevalence of manufactured homes often encounter more obstacles in achieving resilience, as these structures typically do not offer the same level of security as traditionally constructed homes. Moreover, these homes are often situated in regions beyond the urban core, where access to major roadways and public transit systems may be less available.	Census 2021 ACS 5-Year Estimates

WV Social Vulnerability Index; Findings

Top 10 communities with the highest social vulnerability:

WV SVI, Top 10 Communities

Rank	Community	County	RPDC Region	POV_RT	UNEMP_RT	V_AGE_RT	DISABL_RT	NOHSDP_RT	POP_CH_RT	MED_HU_VAL	MOBILE_H_RT	INDEX_SC
INCORPORATED												
1	Anawalt	McDowell	1	25.8%	51.4%	46.8%	45.6%	64.9%	-27.0%	$20,700	33.0%	100.0%
2	War	McDowell	1	44.6%	68.2%	43.9%	36.1%	28.3%	-27.7%	$35,100	15.0%	99.6%
3	Smithfield	Wetzel	10	60.4%	70.6%	53.0%	41.0%	31.3%	-29.0%	$90,000	8.7%	99.1%
4	Auburn	Ritchie	5	36.0%	57.1%	35.5%	41.9%	32.5%	-18.6%	$36,300	13.3%	98.7%
5	Lester	Raleigh	1	56.0%	42.9%	53.2%	30.2%	22.8%	-2.9%	$75,200	31.3%	98.2%
6	Reedy	Roane	5	29.8%	46.2%	53.3%	29.2%	17.9%	-17.6%	$55,800	8.8%	97.8%
7	Matewan	Mingo	2	38.3%	41.4%	40.7%	43.4%	19.4%	-17.4%	$90,100	18.9%	97.4%
8	Clay	Clay	3	63.0%	26.3%	50.3%	23.3%	23.1%	-19.3%	$71,400	9.6%	96.9%
9	Pax	Fayette	4	32.7%	69.7%	22.3%	43.7%	20.3%	-18.6%	$47,100	16.7%	96.5%
10	Delbarton	Mingo	2	30.4%	32.4%	31.3%	46.0%	28.5%	-27.1%	$82,700	34.4%	96.0%

Rank	Community	RPDC Region	POV_RT	UNEMP_RT	V_AGE_RT	DISABL_RT	NOHSDP_RT	POP_CH_RT	MED_HU_VAL	MOBILE_H_RT	INDEX_SC
UNINCORPORATED											
1	McDowell	1	27.4%	54.6%	40.8%	28.7%	29.3%	-18.8%	$43,700	30.6%	100.0%
2	Wyoming	1	24.2%	40.4%	39.0%	36.6%	24.9%	-11.7%	$75,500	31.6%	98.1%
3	Mingo	2	27.4%	38.4%	38.3%	31.5%	25.3%	-12.5%	$83,000	36.7%	96.3%
4	Webster	4	20.8%	38.7%	41.1%	25.0%	20.7%	-8.3%	$75,900	27.3%	94.4%
5	Clay	3	23.2%	34.3%	38.2%	27.4%	19.7%	-13.9%	$87,700	29.4%	92.6%
6	Braxton	7	21.8%	30.8%	39.6%	20.9%	19.3%	-14.1%	$88,700	32.1%	90.7%
7	Logan	2	24.9%	40.1%	38.3%	31.9%	20.2%	-11.1%	$92,100	23.1%	88.9%
8	Calhoun	5	26.0%	35.8%	39.4%	22.2%	15.1%	-18.8%	$103,700	28.9%	87.0%
9	Boone	3	18.9%	37.2%	36.5%	25.2%	17.1%	-12.4%	$80,100	31.6%	85.2%
10	Lincoln	2	19.3%	31.7%	37.4%	27.4%	19.7%	-4.6%	$82,900	34.0%	83.3%

INDEX_SC: Cumulative index score for WV SVI (0% to 100%)

Socioeconomic Status:
POV_RT: Poverty rate
UNEMP_RT: Unemployment rate

Population Characteristics:
V_AGE_RT: Vulnerable ages ratio
DISABL_RT: Disability ratio
NOHSDP_RT: No high school diploma ratio
POP_CH_RT: Population change rate

Housing Characteristics:
MED_HU_VAL: Median housing value
MOBILE_H_RT: Percentage of mobile homes

WV Social Vulnerability Index; Findings

Top 5 counties with the highest social vulnerability:

Rank	County	RPDC Region	POV_RT	UNEMP_RT	V_AGE_RT	DISABL_RT	NOHSDP_RT	POP_CH_RT	MED_HU_VAL	MOBILE_H_RT	INDEX_SC
1	MCDOWELL	1	27.5%	51.2%	38.5%	30.4%	25.4%	-13.6%	$43,700	23.5%	**100.0%**
2	WYOMING	1	23.9%	38.5%	38.6%	35.2%	22.6%	-10.1%	$75,500	29.2%	**98.1%**
3	MINGO	2	29.9%	37.2%	38.2%	32.8%	24.2%	-12.2%	$83,000	30.7%	**96.3%**
4	CLAY	3	25.9%	33.8%	39.1%	27.0%	19.9%	-14.2%	$87,700	28.0%	**94.4%**
5	WEBSTER	4	25.7%	36.6%	39.8%	23.2%	21.3%	-8.5%	$75,900	23.4%	**92.6%**

Socioeconomic Status:
POV_RT: Poverty rate
UNEMP_RT: Unemployment rate

Population Characteristics:
V_AGE_RT: Vulnerable ages ratio
DISABL_RT: Disability ratio
NOHSDP_RT: No high school diploma ratio
POP_CH_RT: Population change rate

Housing Characteristics:
MED_HU_VAL: Median housing value
MOBILE_H_RT: Percentage of mobile homes

INDEX_SC: Cumulative index score for WV SVI (0% to 100%)

Social Vulnerability Spatial Distribution:

- Counties classified as **"Very High"** or **"Relatively High"** are mostly clustered in the **Southwestern** and **central parts** of the state.
- Counties classified as **"Very Low"** or **"Relatively Low"** are mostly clustered in the **Northeastern part** of the state and its **panhandles**.

Focus Communities Highlights:

- **Richwood** has the most critical situation in terms of *overall social vulnerability* (among the top 10%) followed by **Rainelle** (among the top 20%).
- **Rainelle** has the highest *Poverty Rate* (27.7%) and highest *Disability Ratio* (31.9%) among the focus communities.
- **Richwood** has the highest *Unemployment Rate* (39.8%).
- **Clendenin** has the highest *Vulnerable Ages Ratio* (45.4%).
- **Marlinton** has the highest *No High School Diploma Ratio* (16.1%).
- **Clendenin** has the highest rate of *Population Decrease* among these communities (-30.4%).
- **Rainelle** has the lowest *Median Housing Value* ($59,100).
- **Camden-on-Gauley** has the highest *Mobile Home Percentage* (11.1%).