

National Study of Treatment and Addiction Recovery Residences Report Missouri

The National Study of Treatment and Addiction Recovery Residences (NSTARR) constitutes the largest and most diverse study of recovery housing in the US to date. NSTARR compiled data from publicly available sources (e.g., Oxford House, National Alliance for Recovery Residences, and Substance Abuse and Mental Health Services Administration websites) and lists maintained by entities tracking recovery housing. Residences for which locating information was available were geocoded and linked with U.S. Census data on urbanicity, alcohol- and drug-involved mortality, and COVID vulnerability. Data collection began in January 2020 and is ongoing until June 2023. The NSTARR database currently contains information on 10,358 residences operated by 3,628 providers in all 50 states. For a detailed description of methods and national findings, please see Mericle et al., 2022.

KEY FINDINGS

The NSTARR team identified 167 recovery residences (2.74 houses per 100,000 population) in Missouri (see Table 1). Compared to other states (which include DC), Missouri ranked 25 in terms of recovery housing availability per capita. However, only 38% of residences in Missouri could be geocoded for these analyses. St. Louis City, an urban county, had the most recovery residences per 100,000 population, and 97 counties had no identified recovery residences, representing a mix of rural-urban classifications; 111 had fewer than 5 recovery residences (see Figure 1).

We used geographic information systems to identify hot and cold spots in Missouri. A hot spot is a cluster of high values (county with a high number of residences surrounded by other counties with high numbers of residences) and a cold spot is a cluster of low values (county with low counts surrounded by counties also with low counts). Our analyses found hot spots but no cold spots within the state (see Figure 2).

The age-adjusted alcohol- and drug-involved mortality rate (per 100,000 population) was 16.40 in Missouri for the years 2009-2019. Missouri ranked 36 on alcohol- and drug-involved mortality out of the 50 states and DC. Among the counties ranked, St. Louis City had the highest alcohol- and drug-involved mortality rate and Moniteau County had the lowest alcohol- and drug-involved mortality rate. Of the five counties that had the highest mortality rates in Missouri (i.e., St. Louis City, Jefferson, Hickory, Butler, and Franklin), three of them ranked in the bottom half recovery housing availability per capita, suggesting more recovery resources may be needed (see Table 1 and Figure 3).

COVID vulnerability was summarized using the county-level data from the Centers for Disease Control and Prevention's COVID Vulnerability Index (CCVI). The CCVI is a composite measure of seven social determinants of health, encompassing modified themes from the Centers for Disease Control and Prevention's Social Vulnerability Index in combination with COVID risk factors to identify communities in need of additional support during the COVID pandemic. Seventeen counties were classified as having very high vulnerability, and 11 counties were located in areas ranked in the bottom half of recovery housing availability per capita, again suggesting that more recovery resources may be needed (see Table 1 and Figure 4).

167
RESIDENCES
TOTAL

25
NATIONAL
AVAILABILITY
RANKING

97
COUNTIES
WITHOUT
RESIDENCES

Table 1. County-level Descriptive Statistics on Recovery Residences

County Name	Population ¹	RUCC Classification ²	Number of Recovery Residences ³	Recovery Residences Per 100,000 Population	Recovery Residences Availability per Capita (Rank) ⁴	Age-Adjusted Alcohol/Drug Mortality ⁵ Rate per 100,000 Population	Mortality Rate (Rank) ⁶	CCVI Quintile ⁷
MISSOURI	6,104,910		167	2.74	25	16.40	36	
Adair	25,369	Non-adjacent rural	0	0.00	115	31.30	49	Low
Andrew	17,503	Urban	0	0.00	115	16.20	96	Very low vulnerability
Atchison	5,229	Non-adjacent rural	0	0.00	115	Suppressed	-	Very low vulnerability
Audrain	25,644	Adjacent rural	0	0.00	115	24.70	74	High
Barry	35,530	Adjacent rural	0	0.00	115	23.20	81	Very high vulnerability
Barton	11,797	Adjacent rural	0	0.00	115	33.60	35	Moderate
Bates	16,296	Urban	0	0.00	115	46.40	7	Moderate
Benton	19,107	Non-adjacent rural	0	0.00	115	45.90	8	High
Bollinger	12,225	Urban	0	0.00	115	Suppressed	-	Low
Boone	177,651	Urban	7	3.94	3	41.90	14	Moderate
Buchanan	88,460	Urban	3	3.39	6	33.90	34	Very high vulnerability
Butler	42,656	Non-adjacent rural	0	0.00	115	53.20	4	Very high vulnerability
Caldwell	9,039	Urban	0	0.00	115	35.30	32	High
Callaway	44,889	Urban	0	0.00	115	31.00	50	Moderate
Camden	45,466	Non-adjacent rural	0	0.00	115	42.70	12	Moderate
Cape Girardeau	78,491	Urban	2	2.55	9	24.20	76	Moderate
Carroll	8,781	Adjacent rural	0	0.00	115	22.90	83	Moderate
Carter	6,147	Non-adjacent rural	0	0.00	115	27.10	65	High
Cass	103,597	Urban	0	0.00	115	26.40	68	Moderate
Cedar	14,043	Adjacent rural	0	0.00	115	32.60	40	High
Chariton	7,483	Non-adjacent rural	0	0.00	115	Suppressed	-	Low
Christian	85,658	Urban	0	0.00	115	26.10	69	Low
Clark	6,779	Non-adjacent rural	0	0.00	115	Suppressed	-	Moderate
Clay	242,516	Urban	5	2.06	10	28.40	59	Moderate
Clinton	20,500	Urban	0	0.00	115	34.50	33	Low
Cole	76,723	Urban	0	0.00	115	25.10	71	Moderate
Cooper	17,660	Adjacent rural	0	0.00	115	19.40	92	Moderate
Crawford	24,154	Adjacent rural	0	0.00	115	44.20	11	Very high vulnerability
Dade	7,578	Adjacent rural	0	0.00	115	29.40	55	High
Dallas	16,617	Urban	0	0.00	115	29.40	55	High
Daviess	8,295	Adjacent rural	0	0.00	115	Suppressed	-	Moderate
DeKalb	12,526	Urban	0	0.00	115	22.40	84	Moderate
Dent	15,545	Non-adjacent rural	0	0.00	115	41.10	16	Moderate
Douglas	13,306	Adjacent rural	0	0.00	115	17.10	95	Low
Dunklin	30,027	Non-adjacent rural	1	3.33	7	40.40	18	Very high vulnerability

Franklin	103,191	Urban	0	0.00	115	51.60	5	Moderate
Gasconade	14,711	Adjacent rural	0	0.00	115	45.50	9	Low
Gentry	6,616	Adjacent rural	0	0.00	115	Suppressed	-	Low
Greene	289,756	Urban	2	0.69	15	50.90	6	Moderate
Grundy	9,992	Non-adjacent rural	0	0.00	115	31.60	45	High
Harrison	8,491	Non-adjacent rural	0	0.00	115	27.10	65	Moderate
Henry	21,735	Adjacent rural	1	4.60	2	30.10	53	High
Hickory	9,404	Adjacent rural	0	0.00	115	54.90	3	Low
Holt	4,432	Adjacent rural	0	0.00	115	32.20	41	Low
Howard	10,058	Adjacent rural	0	0.00	115	18.10	94	Moderate
Howell	40,104	Non-adjacent rural	0	0.00	115	29.90	54	Moderate
Iron	10,164	Non-adjacent rural	0	0.00	115	41.70	15	High
Jackson	696,216	Urban	13	1.87	11	38.40	21	Very high vulnerability
Jasper	119,920	Urban	1	0.83	14	24.00	77	Very high vulnerability
Jefferson	223,951	Urban	1	0.45	17	55.90	2	Low
Johnson	53,682	Adjacent rural	1	1.86	12	16.10	97	Moderate
Knox	3,947	Non-adjacent rural	0	0.00	115	Suppressed	-	Moderate
Laclede	35,531	Adjacent rural	0	0.00	115	20.90	90	High
Lafayette	32,597	Urban	0	0.00	115	23.80	80	High
Lawrence	38,204	Adjacent rural	0	0.00	115	31.60	45	Very high vulnerability
Lewis	9,955	Non-adjacent rural	0	0.00	115	21.70	89	Low
Lincoln	56,477	Urban	2	3.54	4	36.90	25	Moderate
Linn	12,113	Non-adjacent rural	0	0.00	115	13.60	99	Low
Livingston	15,126	Adjacent rural	0	0.00	115	29.40	55	Moderate
Macon	15,199	Non-adjacent rural	0	0.00	115	14.40	98	Moderate
Madison	12,179	Adjacent rural	0	0.00	115	37.60	23	Moderate
Maries	8,803	Adjacent rural	0	0.00	115	30.40	51	Moderate
Marion	28,608	Non-adjacent rural	1	3.50	5	36.50	29	High
McDonald	22,782	Urban	0	0.00	115	22.40	84	Very high vulnerability
Mercer	3,644	Non-adjacent rural	0	0.00	115	Suppressed	-	Moderate
Miller	25,201	Adjacent rural	0	0.00	115	24.00	77	High
Mississippi	13,574	Adjacent rural	0	0.00	115	23.00	82	Very high vulnerability
Moniteau	16,046	Urban	0	0.00	115	10.70	101	Moderate
Monroe	8,629	Non-adjacent rural	0	0.00	115	Suppressed	-	Moderate
Montgomery	11,487	Adjacent rural	0	0.00	115	36.90	25	High
Morgan	20,271	Adjacent rural	0	0.00	115	33.00	37	High
New Madrid	17,560	Non-adjacent rural	0	0.00	115	28.00	60	Very high vulnerability
Newton	58,180	Urban	0	0.00	115	22.00	86	High
Nodaway	22,359	Adjacent rural	0	0.00	115	11.40	100	Very low vulnerability
Oregon	10,647	Non-adjacent rural	0	0.00	115	20.00	91	Low

Osage	13,615	Urban	0	0.00	115	31.50	47	Very low vulnerability
Ozark	9,207	Non-adjacent rural	0	0.00	115	29.30	58	Low
Pemiscot	16,663	Non-adjacent rural	0	0.00	115	36.70	27	Very high vulnerability
Perry	19,191	Adjacent rural	0	0.00	115	25.30	70	Low
Pettis	42,355	Adjacent rural	0	0.00	115	31.90	43	Very high vulnerability
Phelps	44,630	Non-adjacent rural	0	0.00	115	39.10	20	High
Pike	18,455	Adjacent rural	0	0.00	115	21.80	87	High
Platte	100,682	Urban	3	2.98	8	24.90	72	Moderate
Polk	31,748	Urban	0	0.00	115	35.90	30	Moderate
Pulaski	52,425	Non-adjacent rural	0	0.00	115	40.30	19	Moderate
Putnam	4,781	Non-adjacent rural	0	0.00	115	Suppressed	-	Moderate
Ralls	10,234	Non-adjacent rural	0	0.00	115	18.90	93	Low
Randolph	24,878	Adjacent rural	0	0.00	115	21.80	87	Moderate
Ray	22,875	Urban	0	0.00	115	27.20	64	Moderate
Reynolds	6,290	Non-adjacent rural	0	0.00	115	26.50	67	High
Ripley	13,567	Non-adjacent rural	0	0.00	115	27.80	62	High
Saline	22,976	Adjacent rural	0	0.00	115	27.30	63	High
Schuyler	4,555	Non-adjacent rural	0	0.00	115	Suppressed	-	Low
Scotland	4,902	Non-adjacent rural	0	0.00	115	Suppressed	-	Moderate
Scott	38,633	Adjacent rural	0	0.00	115	30.20	52	Very high vulnerability
Shannon	8,217	Non-adjacent rural	0	0.00	115	24.50	75	Moderate
Shelby	6,013	Non-adjacent rural	0	0.00	115	31.40	48	Moderate
St. Charles	394,290	Urban	2	0.51	16	32.70	39	Low
St. Clair	9,370	Adjacent rural	0	0.00	115	Suppressed	-	Low
St. Francois	66,643	Adjacent rural	1	1.50	13	44.50	10	Very high vulnerability
St. Louis	996,919	Urban	2	0.20	18	37.90	22	Moderate
St. Louis City	308,174	Urban	15	4.87	1	74.00	1	Very high vulnerability
Ste. Genevieve	17,848	Adjacent rural	0	0.00	115	35.60	31	Moderate
Stoddard	29,377	Adjacent rural	0	0.00	115	24.00	77	High
Stone	31,615	Adjacent rural	0	0.00	115	33.50	36	Moderate
Sullivan	6,247	Non-adjacent rural	0	0.00	115	28.00	60	Moderate
Taney	55,114	Adjacent rural	0	0.00	115	32.10	42	High
Texas	25,604	Non-adjacent rural	0	0.00	115	24.90	72	High
Vernon	20,595	Non-adjacent rural	0	0.00	115	32.80	38	Moderate
Warren	34,453	Urban	0	0.00	115	40.50	17	High
Washington	24,860	Adjacent rural	0	0.00	115	37.40	24	High
Wayne	13,195	Non-adjacent rural	0	0.00	115	42.30	13	High
Webster	38,655	Urban	0	0.00	115	31.90	43	Moderate

Worth	2,027	Non-adjacent rural	0	0.00	115	Suppressed	-	Low
Wright	18,203	Adjacent rural	0	0.00	115	36.70	27	Very high vulnerability

¹Population data were downloaded from tables in Social Explorer's ACS five-year estimate (2015-2019). American Community Survey 5-year Estimates, 2015-2019. Social Explorer tables, ACS 2015-2019. Social Explorer.

²The Rural-Urban Continuum Code (RUCC) was used to classify each county as urban, adjacent rural, or non-adjacent rural. Urban counties are counties with codes 1 (Counties in metro areas of 1 million population or more), 2 (Counties in metro areas of 250,000 to 1 million population), and 3 (Counties in metro areas of fewer than 250,000 population). Adjacent rural counties are counties with codes 4 (Urban population of 20,000 or more, adjacent to a metro area), 6 (Urban population of 2,500 to 19,999, adjacent to a metro area), and 8 (Completely rural or less than 2,500 urban population, adjacent to a metro area). Non-adjacent rural counties are the remaining three codes - 5 (Urban population of 20,000 or more, not adjacent to a metro area), 7 (Urban population of 2,500 to 19,999, not adjacent to a metro area), and 9 (Completely rural or less than 2,500 urban population, not adjacent to a metro area). Rural-Urban Continuum Code (RUCC). <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx>

³Recovery residences are from the NSTARR project and are current as of 2020. One hundred and four (104) recovery residences in the state were not successfully geocoded due to lack of adequate address information, and thus were not assigned to a county.

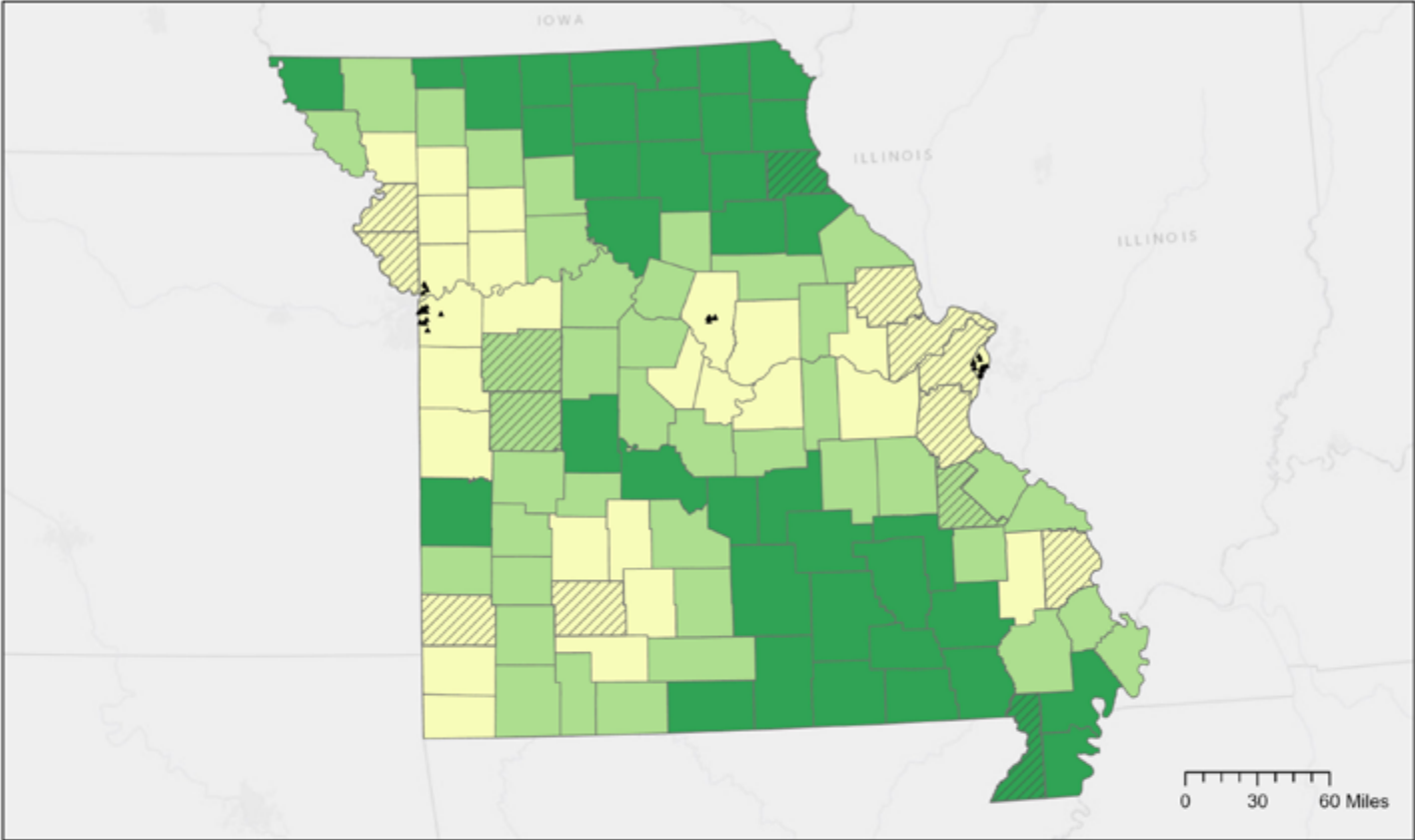
⁴Recovery residences availability per capita is ranked in order of decreasing recovery residence density per 100,000 population per county, with 1 (highest number of residences per 100,000) to 115 (lowest number of residences per 100,000 population). Counties without recovery residences were all assigned a tied rank of 115.

⁵Alcohol- and drug-involved mortality included all deaths as underlying causes of death and selected ICD-10 codes mentioning or attributed to alcohol or drugs as contributing cause of death. Data from the Centers for Disease Control and Prevention, 2020. CDC Wonder (Wide-ranging Online Data for Epidemiologic Research). U.S. Department of Health and Human Services, Atlanta, GA. Available at: <https://wonder.cdc.gov/>. For more information on coding multiple causes of death, see: Centers for Disease Control and Prevention, About Multiple Cause of Death, 1999-2019. <https://wonder.cdc.gov/mcd-icd10.html> accessed on August 9 2021.

⁶Mortality rate is ranked in order of decreasing alcohol- and drug-involved mortality from 1 (highest mortality per 100,000 population) to 101 (lowest mortality per 100,000 population).

⁷COVID-19 Community Vulnerability Index (CCVI) scores range in value from 0 – 1, with 0 being least vulnerable and 1 being the most vulnerable. Each county is ranked relative to all counties across the country, based on seven themes/domains. Each county was grouped into quintiles: very high (score of 0.8-1), high (0.6-0.8), moderate (0.4-0.6), low (0.2-0.4), and very low (0-0.2). For more information on how the CCVI is calculated, see: COVID-19 Community Vulnerability Index (CCVI) methodology. Retrieved from [https://covid-static-assets.s3.amazonaws.com/US-CCVI/COVID-19+Community+Vulnerability+Index+\(CCVI\)+Methodology.pdf](https://covid-static-assets.s3.amazonaws.com/US-CCVI/COVID-19+Community+Vulnerability+Index+(CCVI)+Methodology.pdf)

Figure 1. Distribution of Residences by Rural-Urban Classification



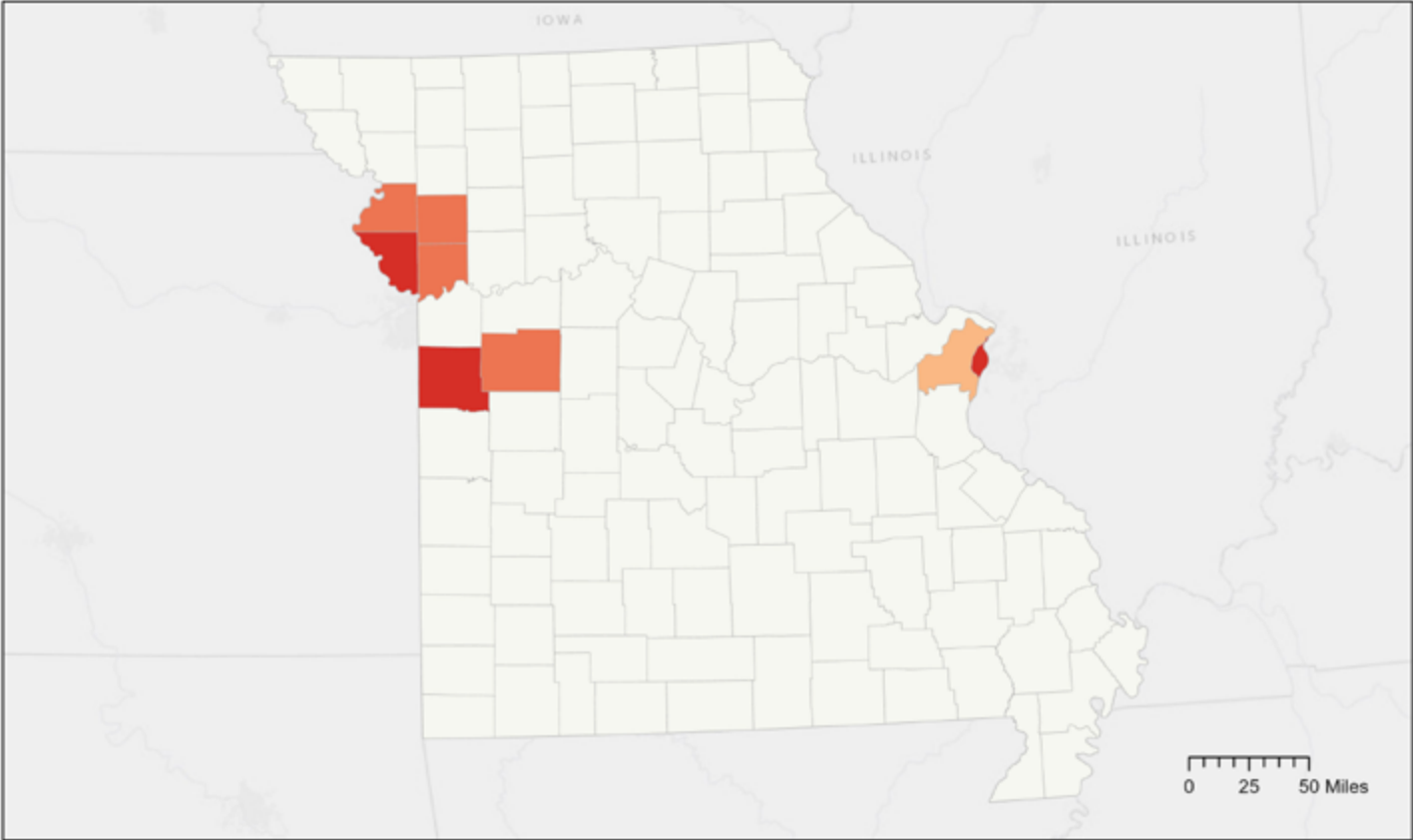
- ▲ Recovery residences
- Rural-Urban Classification Code (RUCC)**
- Urban
- Adjacent rural
- Non-adjacent rural
- Counties with residence locations suppressed (1-4 residences) to protect privacy



Data Credits: Esri, HERE, Garmin, USGS, EPA, NPS
Recovery residence locations: 2020
Created by: NSTARR Project (May 2022)



Figure 2. Hot/Cold Spot Analysis of Recovery Residence Locations



Hot Spot Analysis (Getis-Ord GI*)

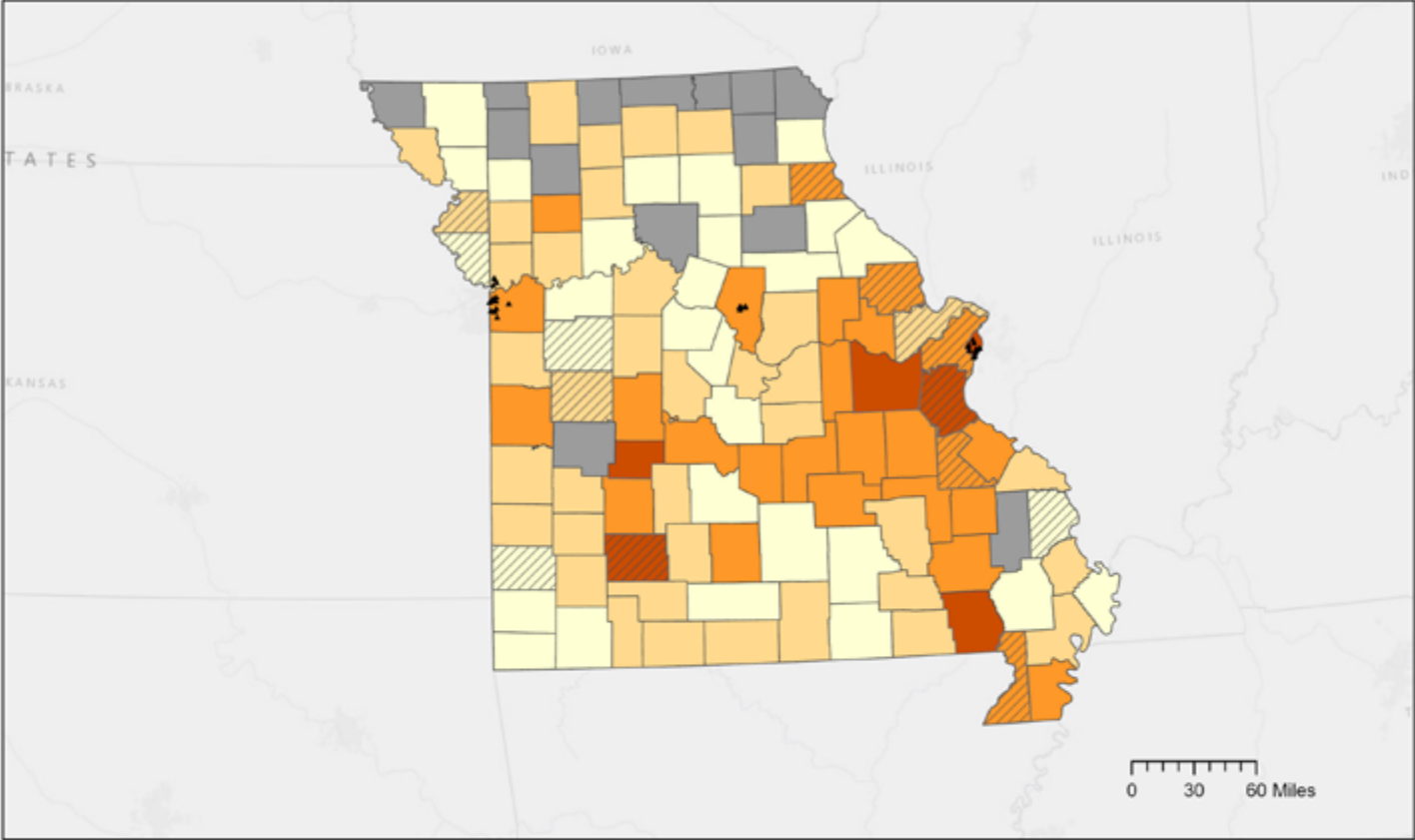
- Cold Spot with 99% Confidence
- Cold Spot with 95% Confidence
- Cold Spot with 90% Confidence
- Not Significant
- Hot Spot with 90% Confidence
- Hot Spot with 95% Confidence
- Hot Spot with 99% Confidence



Data Credits: Esri, HERE, Garmin, USGS, EPA, NPS
 Recovery residence locations: 2020
 Created by: NSTARR Project (May 2022)



Figure 3. Distribution of Residences by Age-adjusted Alcohol- and/or Drug-involved Mortality



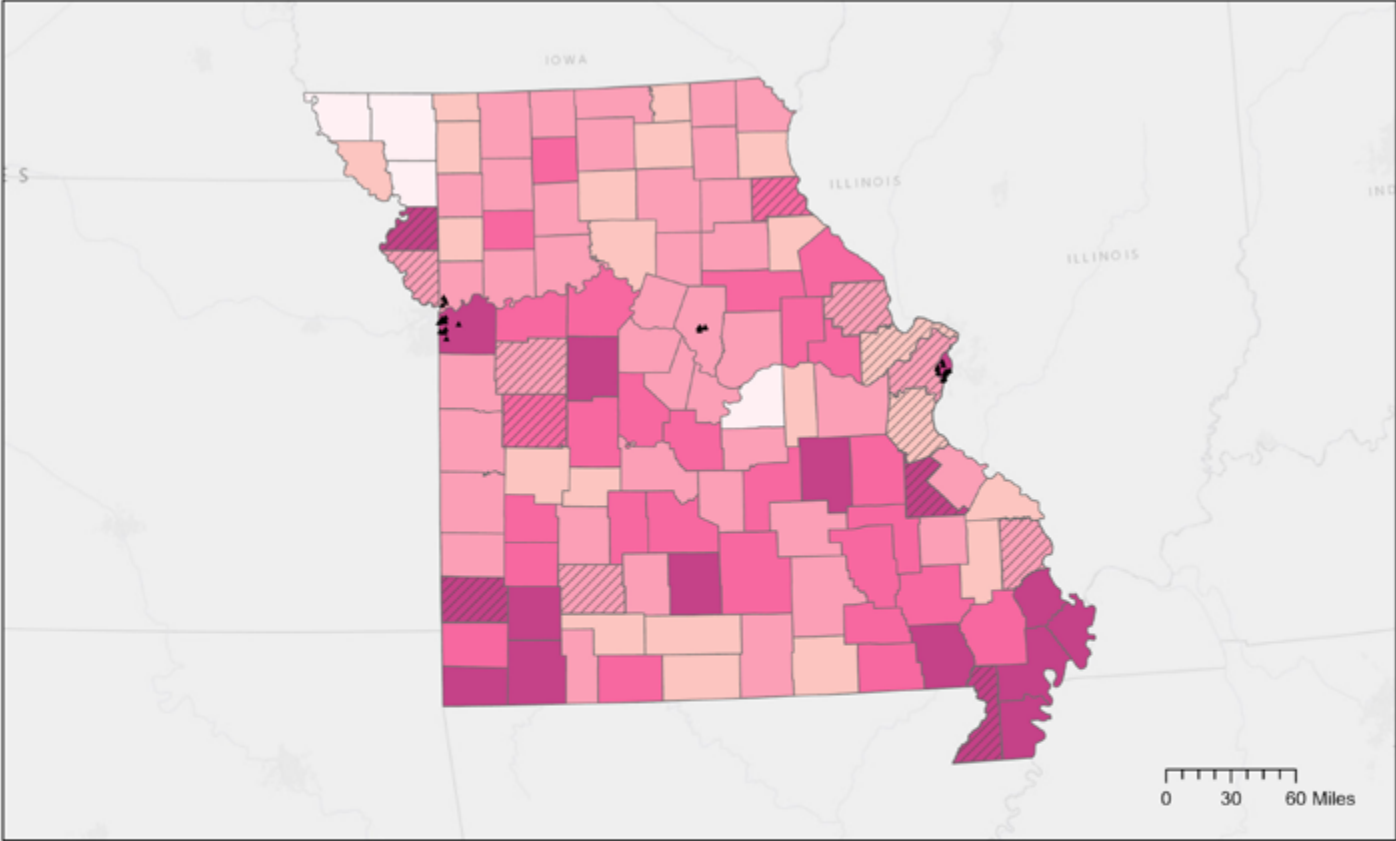
- ▲ Recovery residences
- Age-adjusted alcohol and drug mortality rate per 100,000 population
- 10 - 24
- 25 - 34
- 35 - 46
- 47 - 74
- Suppressed/Unreliable
- Counties with residence locations suppressed (1-4 residences) to protect privacy



Data Credits: Esri, HERE, Garmin, USGS, EPA, NPS
 Recovery residence locations: 2020
 Created by: NSTARR Project (May 2022)



Figure 4. Distribution of Residences by COVID-19 Community Vulnerability Index



- ▲ Recovery Residences
- COVID-19 Community Vulnerability Index (CCVI)
- Very low vulnerability
- Low
- Moderate
- High
- Very high vulnerability
- Courties with residence locations suppressed (1-4 residences) to protect privacy



Data Credits: Esri, HERE, Garmin, USGS, EPA, NPS
 Recovery residence locations: 2020
 Created by: NSTARR Project (May 2022)





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