

National Study of Treatment and Addiction Recovery Residences Report Tennessee

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 278 recovery residences (4.14 houses per 100,000 population) in Tennessee (see Table 1). Compared to other states (which include DC), Tennessee ranked 17 in terms of recovery housing availability per capita. Ninety-four percent of residences in Tennessee could be geocoded for these analyses. Cannon County, an urban county, had the most recovery residences per 100,000 population, and 62 counties had no identified recovery residences, representing a mix of rural-urban classifications; 86 (91% of counties) had fewer than 5 recovery residences (see Figure 1).

We used geographic information systems to identify hot and cold spots in Tennessee. 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 18.00 in Tennessee for the years 2009-2019. Tennessee ranked 27 on alcohol- and drug-involved mortality out of the 50 states and DC. Among the counties ranked, Roane County had the highest alcohol- and drug-involved mortality rate and Williamson County had the lowest alcohol- and drug-involved mortality rate. Of the three counties that had the highest mortality rates in Tennessee (i.e., Roane, Clay, and Benton), two of them also ranked in the bottom half recovery housing availability per capita (they had no recovery housing at all), 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. Thirty-one counties were classified as having very high vulnerability, and 19 of these counties were ranked in the bottom half of recovery housing availability per capita (they had no recovery housing at all), again suggesting that more recovery resources may be needed (see Table 1 and Figure 4).

278
RESIDENCES
TOTAL

17
NATIONAL
AVAILABILITY
RANKING

62
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 |
|-------------------|-------------------------|----------------------------------|--------------------------------------------|--------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------|----------------------------|
| TENNESSEE | 6,709,356 | | 278 | 4.14 | 17 | 18.00 | 27 | |
| Anderson | 76,061 | Urban | 2 | 2.63 | 24 | 63.60 | 7 | Very high vulnerability |
| Bedford | 48,292 | Adjacent rural | 1 | 2.07 | 27 | 41.90 | 51 | Very high vulnerability |
| Benton | 16,140 | Non-adjacent rural | 1 | 6.20 | 12 | 65.20 | 3 | High |
| Bledsoe | 14,836 | Adjacent rural | 0 | 0.00 | 95 | 30.20 | 80 | High |
| Blount | 129,927 | Urban | 0 | 0.00 | 95 | 44.80 | 45 | High |
| Bradley | 105,749 | Urban | 2 | 1.89 | 28 | 38.70 | 60 | Very high vulnerability |
| Campbell | 39,797 | Urban | 0 | 0.00 | 95 | 64.00 | 6 | Very high vulnerability |
| Cannon | 14,178 | Urban | 3 | 21.16 | 1 | 57.80 | 13 | Moderate |
| Carroll | 27,886 | Adjacent rural | 0 | 0.00 | 95 | 29.50 | 82 | High |
| Carter | 56,433 | Urban | 2 | 3.54 | 19 | 47.00 | 35 | High |
| Cheatham | 40,181 | Urban | 0 | 0.00 | 95 | 62.50 | 8 | Moderate |
| Chester | 17,190 | Urban | 0 | 0.00 | 95 | 28.00 | 85 | High |
| Claiborne | 31,732 | Adjacent rural | 0 | 0.00 | 95 | 58.40 | 12 | High |
| Clay | 7,654 | Non-adjacent rural | 0 | 0.00 | 95 | 75.30 | 2 | Moderate |
| Cocke | 35,552 | Adjacent rural | 0 | 0.00 | 95 | 48.90 | 24 | High |
| Coffee | 55,209 | Adjacent rural | 1 | 1.81 | 30 | 45.30 | 39 | High |
| Crockett | 14,399 | Urban | 1 | 6.94 | 11 | 32.00 | 76 | Very high vulnerability |
| Cumberland | 59,216 | Adjacent rural | 0 | 0.00 | 95 | 49.60 | 22 | High |
| Davidson | 687,488 | Urban | 87 | 12.65 | 4 | 48.60 | 26 | Very high vulnerability |
| DeKalb | 19,847 | Adjacent rural | 1 | 5.04 | 16 | 53.90 | 16 | High |
| Decatur | 11,686 | Non-adjacent rural | 0 | 0.00 | 95 | 45.00 | 43 | High |
| Dickson | 52,680 | Urban | 4 | 7.59 | 10 | 47.90 | 30 | High |
| Dyer | 37,416 | Non-adjacent rural | 1 | 2.67 | 23 | 25.50 | 89 | Very high vulnerability |
| Fayette | 40,164 | Urban | 0 | 0.00 | 95 | 19.90 | 93 | High |
| Fentress | 18,213 | Non-adjacent rural | 0 | 0.00 | 95 | 42.40 | 48 | High |
| Franklin | 41,725 | Adjacent rural | 0 | 0.00 | 95 | 38.90 | 59 | Moderate |
| Gibson | 49,228 | Adjacent rural | 0 | 0.00 | 95 | 34.10 | 72 | Very high vulnerability |
| Giles | 29,285 | Adjacent rural | 0 | 0.00 | 95 | 45.10 | 42 | High |
| Grainger | 23,101 | Urban | 0 | 0.00 | 95 | 53.20 | 18 | High |
| Greene | 68,834 | Adjacent rural | 0 | 0.00 | 95 | 47.60 | 33 | High |
| Grundy | 13,344 | Adjacent rural | 0 | 0.00 | 95 | 64.90 | 5 | Very high vulnerability |
| Hamblen | 64,132 | Urban | 2 | 3.12 | 20 | 56.60 | 15 | Very high vulnerability |
| Hamilton | 360,919 | Urban | 22 | 6.10 | 14 | 36.10 | 67 | High |
| Hancock | 6,587 | Adjacent rural | 0 | 0.00 | 95 | 65.10 | 4 | High |

| | | | | | | | | |
|-------------------|---------|--------------------|----|-------|----|------------|----|-------------------------|
| Hardeman | 25,443 | Adjacent rural | 1 | 3.93 | 18 | 22.10 | 92 | Very high vulnerability |
| Hardin | 25,715 | Adjacent rural | 5 | 19.44 | 2 | 56.70 | 14 | Very high vulnerability |
| Hawkins | 56,611 | Urban | 0 | 0.00 | 95 | 48.00 | 29 | High |
| Haywood | 17,623 | Adjacent rural | 0 | 0.00 | 95 | 25.90 | 88 | Very high vulnerability |
| Henderson | 27,977 | Adjacent rural | 0 | 0.00 | 95 | 45.00 | 43 | Very high vulnerability |
| Henry | 32,284 | Non-adjacent rural | 2 | 6.20 | 13 | 39.90 | 55 | High |
| Hickman | 24,813 | Urban | 2 | 8.06 | 9 | 37.20 | 65 | High |
| Houston | 8,164 | Adjacent rural | 1 | 12.25 | 5 | 37.60 | 63 | High |
| Humphreys | 18,435 | Adjacent rural | 2 | 10.85 | 6 | 42.20 | 49 | High |
| Jackson | 11,682 | Adjacent rural | 0 | 0.00 | 95 | 59.30 | 11 | Moderate |
| Jefferson | 53,679 | Urban | 1 | 1.86 | 29 | 41.80 | 52 | High |
| Johnson | 17,753 | Adjacent rural | 0 | 0.00 | 95 | 33.30 | 73 | High |
| Knox | 461,104 | Urban | 23 | 4.99 | 17 | 60.20 | 10 | Moderate |
| Lake | 7,401 | Non-adjacent rural | 0 | 0.00 | 95 | 22.60 | 91 | Very high vulnerability |
| Lauderdale | 25,989 | Adjacent rural | 0 | 0.00 | 95 | 25.30 | 90 | Very high vulnerability |
| Lawrence | 43,390 | Adjacent rural | 0 | 0.00 | 95 | 39.70 | 56 | Very high vulnerability |
| Lewis | 12,027 | Adjacent rural | 1 | 8.31 | 8 | 35.90 | 68 | Moderate |
| Lincoln | 33,924 | Adjacent rural | 0 | 0.00 | 95 | 27.80 | 86 | Very high vulnerability |
| Loudon | 52,340 | Urban | 0 | 0.00 | 95 | 49.80 | 21 | High |
| Macon | 23,842 | Urban | 0 | 0.00 | 95 | 32.30 | 75 | Very high vulnerability |
| Madison | 97,625 | Urban | 13 | 13.32 | 3 | 31.70 | 77 | Very high vulnerability |
| Marion | 28,538 | Urban | 0 | 0.00 | 95 | 40.00 | 54 | High |
| Marshall | 32,965 | Adjacent rural | 1 | 3.03 | 21 | 38.20 | 61 | Very high vulnerability |
| Mauy | 91,976 | Urban | 2 | 2.17 | 26 | 34.60 | 70 | High |
| McMinn | 53,053 | Adjacent rural | 0 | 0.00 | 95 | 48.10 | 28 | Very high vulnerability |
| McNairy | 25,844 | Adjacent rural | 0 | 0.00 | 95 | 39.40 | 57 | Very high vulnerability |
| Meigs | 12,104 | Adjacent rural | 0 | 0.00 | 95 | 48.60 | 26 | Moderate |
| Monroe | 46,064 | Adjacent rural | 0 | 0.00 | 95 | 45.20 | 41 | Very high vulnerability |
| Montgomery | 200,180 | Urban | 6 | 3.00 | 22 | 40.40 | 53 | Moderate |
| Moore | 6,378 | Non-adjacent rural | 0 | 0.00 | 95 | Suppressed | - | Moderate |
| Morgan | 21,545 | Urban | 0 | 0.00 | 95 | 51.00 | 19 | High |
| Obion | 30,365 | Non-adjacent rural | 0 | 0.00 | 95 | 27.00 | 87 | Very high vulnerability |
| Overton | 22,068 | Non-adjacent rural | 0 | 0.00 | 95 | 49.10 | 23 | Moderate |
| Perry | 7,962 | Adjacent rural | 0 | 0.00 | 95 | 47.80 | 31 | High |
| Pickett | 5,079 | Non-adjacent rural | 0 | 0.00 | 95 | 39.20 | 58 | Moderate |
| Polk | 16,814 | Urban | 0 | 0.00 | 95 | 44.40 | 46 | Moderate |
| Putnam | 77,447 | Adjacent rural | 0 | 0.00 | 95 | 42.10 | 50 | High |
| Rhea | 32,719 | Adjacent rural | 0 | 0.00 | 95 | 47.10 | 34 | Very high vulnerability |

| | | | | | | | | |
|------------|---------|--------------------|----|------|----|-------|----|-------------------------|
| Roane | 53,075 | Urban | 0 | 0.00 | 95 | 75.50 | 1 | High |
| Robertson | 70,280 | Urban | 1 | 1.42 | 32 | 35.80 | 69 | High |
| Rutherford | 315,815 | Urban | 8 | 2.53 | 25 | 31.20 | 78 | High |
| Scott | 21,969 | Adjacent rural | 0 | 0.00 | 95 | 47.70 | 32 | Very high vulnerability |
| Sequatchie | 14,816 | Urban | 0 | 0.00 | 95 | 45.30 | 39 | High |
| Sevier | 97,068 | Adjacent rural | 0 | 0.00 | 95 | 53.90 | 16 | High |
| Shelby | 936,374 | Urban | 48 | 5.13 | 15 | 34.60 | 70 | Very high vulnerability |
| Smith | 19,740 | Urban | 0 | 0.00 | 95 | 50.70 | 20 | Moderate |
| Stewart | 13,427 | Adjacent rural | 0 | 0.00 | 95 | 46.10 | 36 | Low |
| Sullivan | 157,050 | Urban | 0 | 0.00 | 95 | 42.90 | 47 | High |
| Sumner | 183,437 | Urban | 2 | 1.09 | 33 | 28.60 | 83 | High |
| Tipton | 61,447 | Urban | 0 | 0.00 | 95 | 33.30 | 73 | High |
| Trousdale | 10,231 | Urban | 0 | 0.00 | 95 | 38.10 | 62 | Very high vulnerability |
| Unicoi | 17,811 | Urban | 0 | 0.00 | 95 | 48.80 | 25 | Very high vulnerability |
| Union | 19,488 | Urban | 0 | 0.00 | 95 | 61.30 | 9 | High |
| Van Buren | 5,760 | Non-adjacent rural | 0 | 0.00 | 95 | 37.40 | 64 | High |
| Warren | 40,702 | Adjacent rural | 0 | 0.00 | 95 | 30.90 | 79 | Very high vulnerability |
| Washington | 127,805 | Urban | 11 | 8.61 | 7 | 46.10 | 36 | High |
| Wayne | 16,693 | Adjacent rural | 0 | 0.00 | 95 | 28.20 | 84 | High |
| Weakley | 33,510 | Non-adjacent rural | 0 | 0.00 | 95 | 29.70 | 81 | Moderate |
| White | 26,800 | Non-adjacent rural | 0 | 0.00 | 95 | 45.70 | 38 | High |
| Williamson | 225,389 | Urban | 0 | 0.00 | 95 | 19.60 | 94 | Low |
| Wilson | 136,666 | Urban | 2 | 1.46 | 31 | 37.10 | 66 | Moderate |

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. Sixteen (16) recovery residences in the state were not successfully geocoded due to lack of adequate address information, and thus were not assigned to a county.

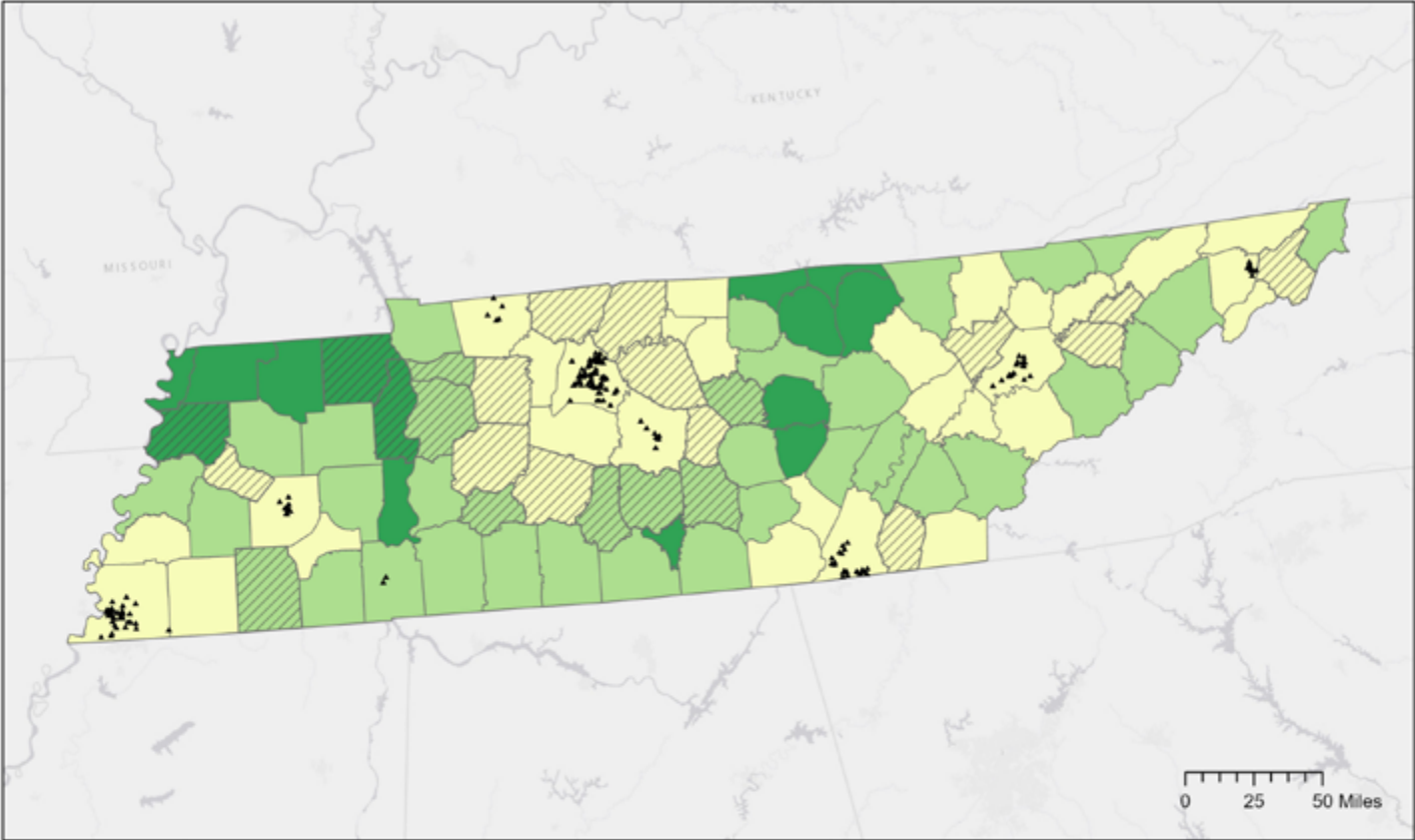
⁴Recovery residences availability per capita is ranked in order of decreasing recovery residence density per 100,000 population per county, with 1 (highest number of residences per 100,000) to 95 (lowest number of residences per 100,000 population). Counties without recovery residences were all assigned a tied rank of 95.

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 94 (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



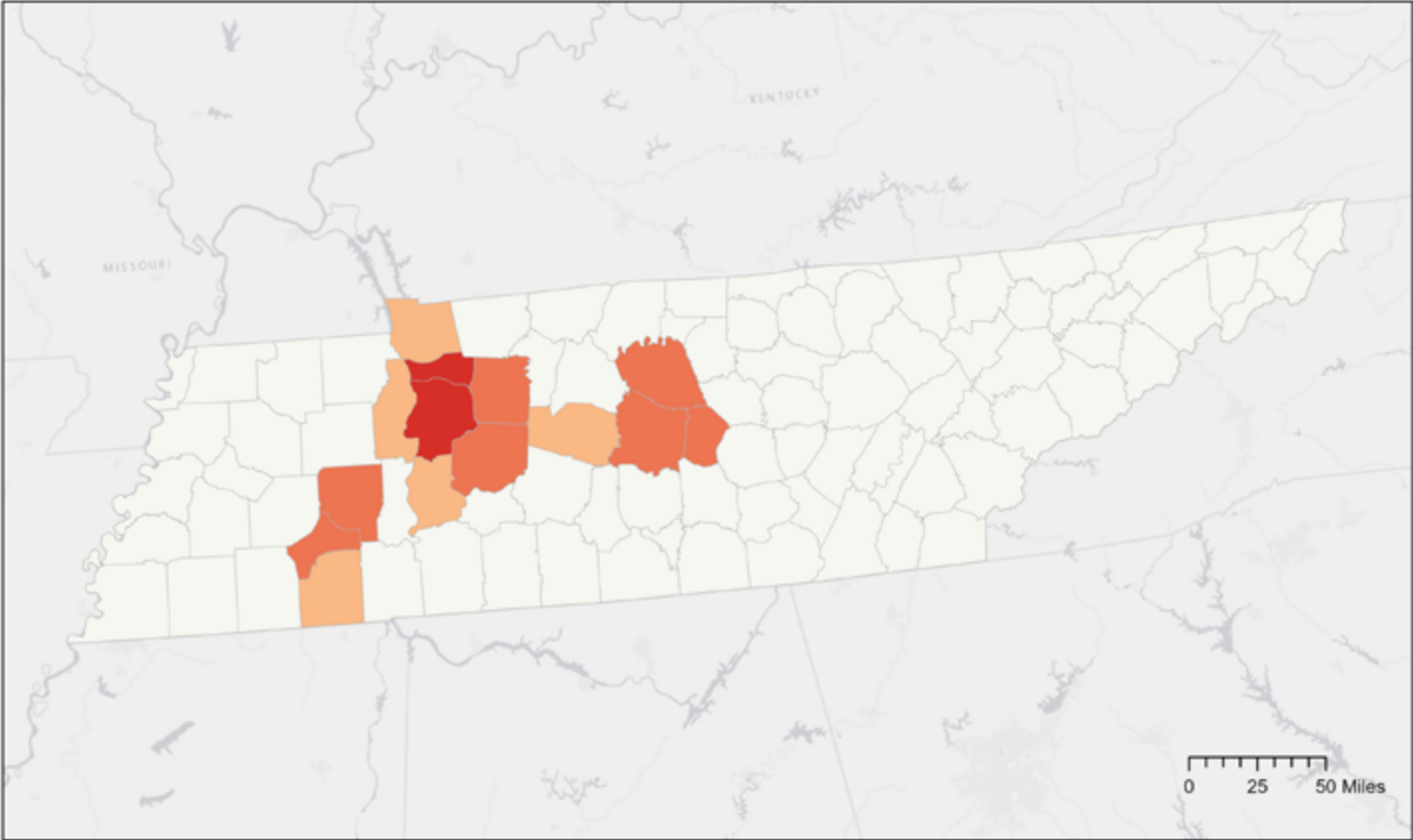
- ▲ Recovery residences
- Rural-Urban Classification Code (RUCC)**
- Urban
- Adjacent rural
- Non-adjacent rural
- Counties with residence locations suppressed (1-4 residences) to protect privacy



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*)

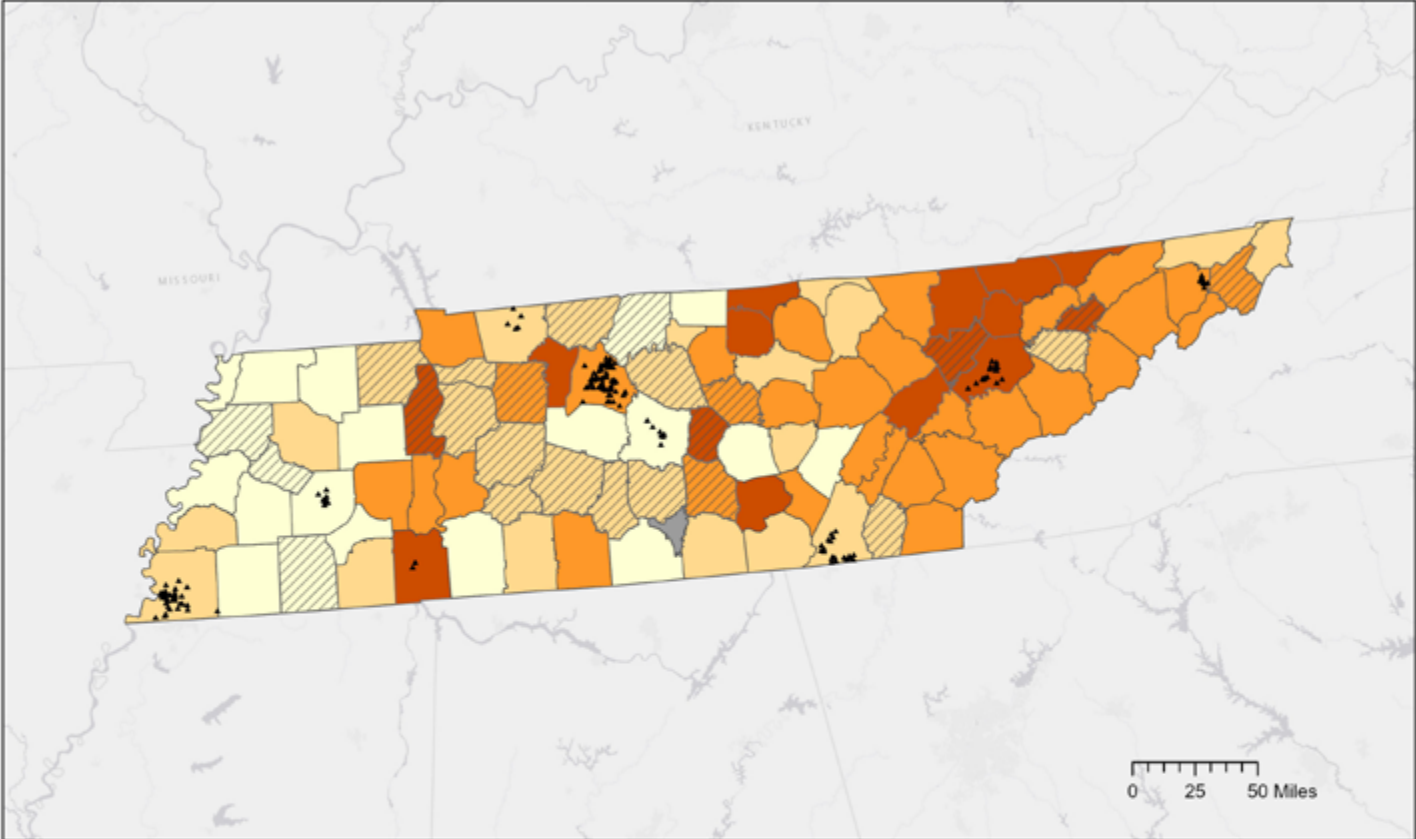
- Cold Spot with 99% Confidence
- Cold Spot with 95% Confidence
- Cold Spot with 90% Confidence
- Not Significant
- Hot Spot with 90% Confidence
- Hot Spot with 95% Confidence
- Hot Spot with 99% Confidence



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



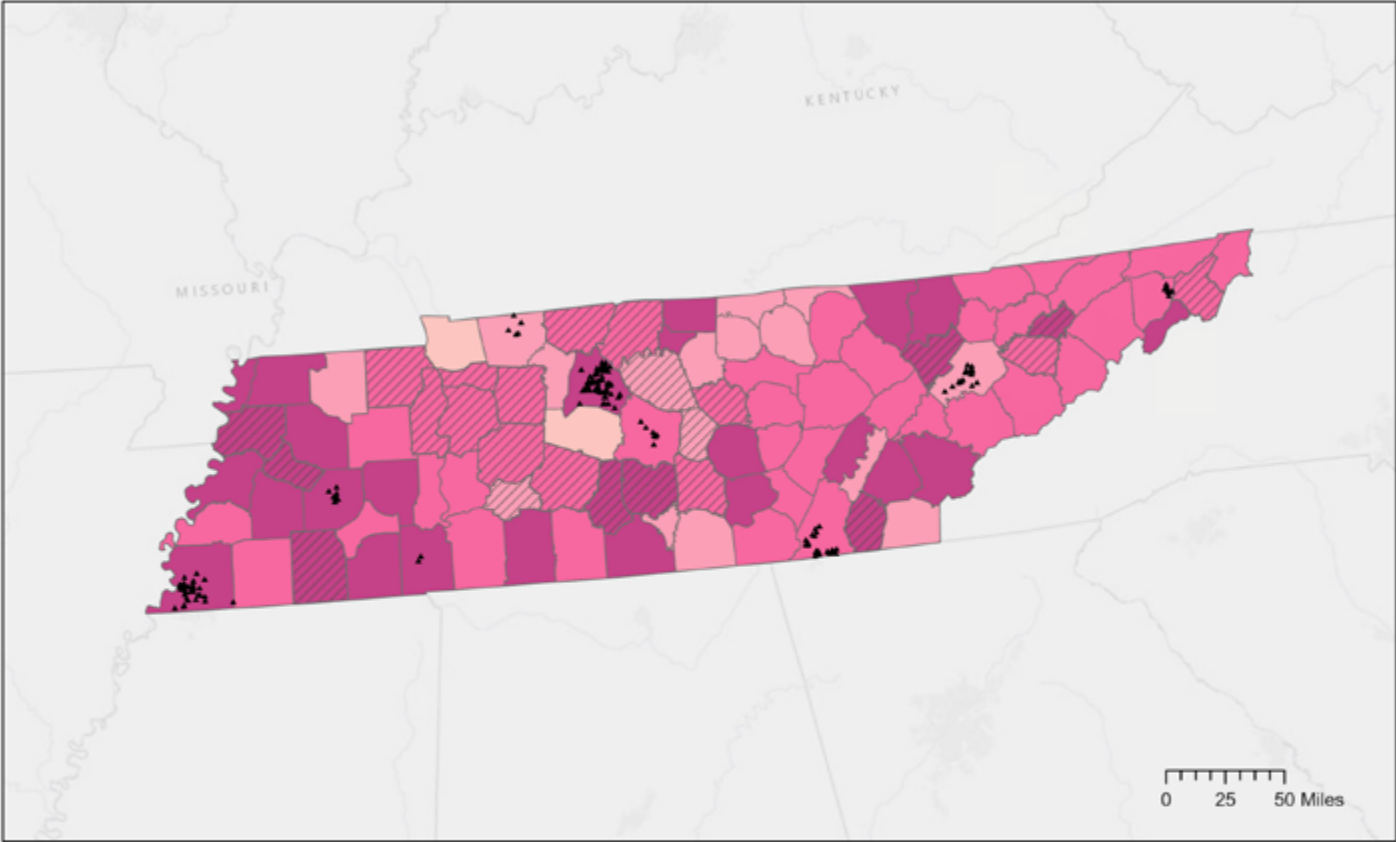
- ▲ Recovery residences
- Age-adjusted alcohol and drug mortality rate per 100,000 population
- 19 - 32
- 33 - 42
- 43 - 53
- 54 - 75
- Suppressed/Unreliable
- Counties with residence locations suppressed (1-4 residences) to protect privacy



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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