NSTARR
National Study of Treatment and Addiction
RECOVERY RESIDENCES

National Study of Treatment and Addiciton Recovery Residences Report

South Dakota

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 15 recovery residences (1.72 houses per 100,000 population) in South Dakota (see Table 1). Compared to other states (which include DC), South Dakota ranked 39 in terms of recovery housing availability per capita. All but one residence in the state could be geocoded for these analyses. Dewey County, a non-adjacent rural county, had the most recovery residences per 100,000 population, and 59 had no identified recovery residences, representing a mix of rural-urban classifications; 65 (all but one county in the state) had fewer than 5 recovery residences (see Figure 1).

15
RESIDENCES TOTAL

We used geographic information systems to identify hot and cold spots in South Dakota. 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).

39
NATIONAL AVAILABILITY RANKING

The age-adjusted alcohol- and drug-involved mortality rate (per 100,000 population) was 29.70 in South Dakota for the years 2009-2019. South Dakota ranked 7 on alcohol- and drug-involved mortality out of the 50 states and DC. Among the counties ranked, Buffalo County had the highest alcohol- and drug-involved mortality rate and Lincoln County had the lowest alcohol- and drug-involved mortality rate. Of the three counties that had the highest mortality rates in South Dakota (i.e., Buffalo, Shannon, and Mellette), all three of them also 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. One county was classified as having very high vulnerability, and this county was located in an area 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).

59
COUNTIES WITHOUT RESIDENCES

Literature Cited: Mericle, A. A., Patterson, D., Howell, J., Subbaraman, M. S., Faxio, A., & Karriker-Jaffe, K. J. (2022). Identifying the availability of recovery housing in the U.S.: The NSTARR project. Drug and Alcohol Dependence, 230, 109188.

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]
SOUTH DAKOTA	870,638		15	1.72	39	29.70	7	
Aurora	2,763	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Beadle	18,346	Non-adjacent rural	0	0.00	66	35.80	19	Moderate
Bennett	3,425	Non-adjacent rural	0	0.00	66	85.10	9	High
Bon Homme	6,929	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Brookings	34,601	Non-adjacent rural	0	0.00	66	30.50	26	Very low vulnerability
Brown	38,915	Non-adjacent rural	0	0.00	66	30.50	26	Low
Brule	5,258	Non-adjacent rural	0	0.00	66	44.40	16	Low
Buffalo	2,026	Non-adjacent rural	0	0.00	66	222.50	1	Moderate
Butte	10,225	Adjacent rural	0	0.00	66	35.70	20	Very low vulnerability
Campbell	1,485	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Charles Mix	9,349	Non-adjacent rural	0	0.00	66	66.70	11	High
Clark	3,685	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Clay	13,957	Adjacent rural	0	0.00	66	33.10	24	Very low vulnerability
Codington	28,026	Non-adjacent rural	0	0.00	66	27.60	30	Low
Corson	4,150	Non-adjacent rural	0	0.00	66	166.10	5	Moderate
Custer	8,719	Urban	0	0.00	66	51.20	15	Very low vulnerability
Davison	19,871	Non-adjacent rural	0	0.00	66	24.40	34	Very low vulnerability
Day	5,486	Non-adjacent rural	0	0.00	66	36.10	18	Very low vulnerability
Deuel	4,318	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Dewey	5,833	Non-adjacent rural	1	17.14	1	136.70	6	Moderate
Douglas	2,929	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Edmunds	3,909	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Fall River	6,747	Adjacent rural	1	14.82	2	65.40	12	Low
Faulk	2,312	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Grant	7,149	Non-adjacent rural	0	0.00	66	26.80	31	Very low vulnerability
Gregory	4,186	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Haakon	2,018	Adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability

Hamlin	6,025	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Hand	3,256	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Hanson	3,399	Adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Harding	1,306	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Hughes	17,608	Non-adjacent rural	0	0.00	66	22.20	35	Low
Hutchinson	7,308	Adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Hyde	1,319	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Jackson	3,290	Adjacent rural	0	0.00	66	75.90	10	Moderate
Jerauld	2,018	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Jones	793	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Kingsbury	4,944	Non-adjacent rural	0	0.00	66	28.70	29	Very low vulnerability
Lake	12,717	Adjacent rural	0	0.00	66	19.30	37	Very low vulnerability
Lawrence	25,478	Adjacent rural	0	0.00	66	31.20	25	Very low vulnerability
Lincoln	56,826	Urban	1	1.76	7	16.20	38	Very low vulnerability
Lyman	3,848	Non-adjacent rural	0	0.00	66	61.60	13	Low
Marshall	4,891	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
McCook	5,548	Urban	0	0.00	66	Suppressed	-	Very low vulnerability
McPherson	2,297	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Meade	27,717	Urban	1	3.61	5	26.40	32	Very low vulnerability
Mellette	2,052	Non-adjacent rural	0	0.00	66	178.30	3	Very high vulnerability
Miner	2,211	Adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Minnehaha	188,674	Urban	7	3.71	4	35.50	21	Moderate
Moody	6,507	Adjacent rural	0	0.00	66	30.30	28	Low
Pennington	110,685	Urban	2	1.81	6	41.30	17	Low
Perkins	2,897	Adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Potter	2,315	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Roberts	10,287	Non-adjacent rural	1	9.72	3	88.20	8	High
Sanborn	2,379	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Shannon	14,335	Adjacent rural	0	0.00	66	193.40	2	Moderate
Spink	6,483	Non-adjacent rural	0	0.00	66	35.30	22	Very low vulnerability
Stanley	3,017	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Sully	1,305	Non-adjacent rural	0	0.00	66	Suppressed	-	Very low vulnerability
Todd	10,195	Non-adjacent rural	0	0.00	66	173.50	4	Moderate
Tripp	5,458	Non-adjacent rural	0	0.00	66	Suppressed	-	Low

Turner	8,300	Urban	0	0.00	66	22.00	36	Very low vulnerability
Union	15,368	Urban	0	0.00	66	26.30	33	Very low vulnerability
Walworth	5,457	Non-adjacent rural	0	0.00	66	55.60	14	Low
Yankton	22,717	Non-adjacent rural	0	0.00	66	33.90	23	Low
Ziebach	2,791	Adjacent rural	0	0.00	66	97.40	7	High

[1]Population 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.

[2]The 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

[3]Recovery residences are from the NSTARR project and are current as of 2020. One (1) recovery residence in the state was not successfully geocoded due to lack of adequate address information, and thus were not assigned to a county.

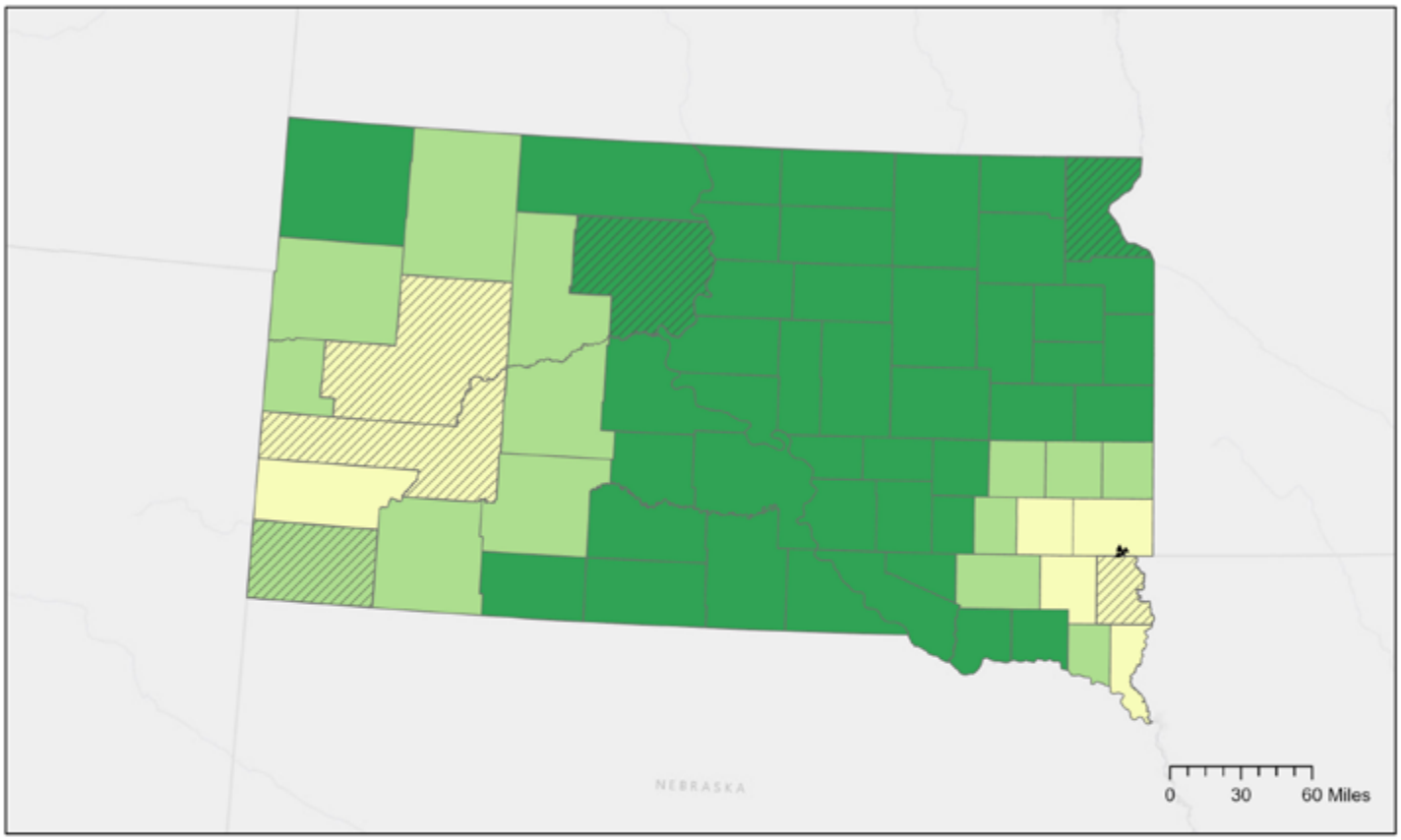
[4]Recovery residences availability per capita is ranked in order of decreasing recovery residence density per 100,000 population per county, with 1 (highest number of residences per 100,000) to 66 (lowest number of residences per 100,000 population). Counties without recovery residences were all assigned a tied rank of 66.

[5]Alcohol- 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.

[6]Mortality rate is ranked in order of decreasing alcohol- and drug-involved mortality from 1 (highest mortality per 100,000 population) to 38 (lowest mortality per 100,000 population).

[7]COVID-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 I 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

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

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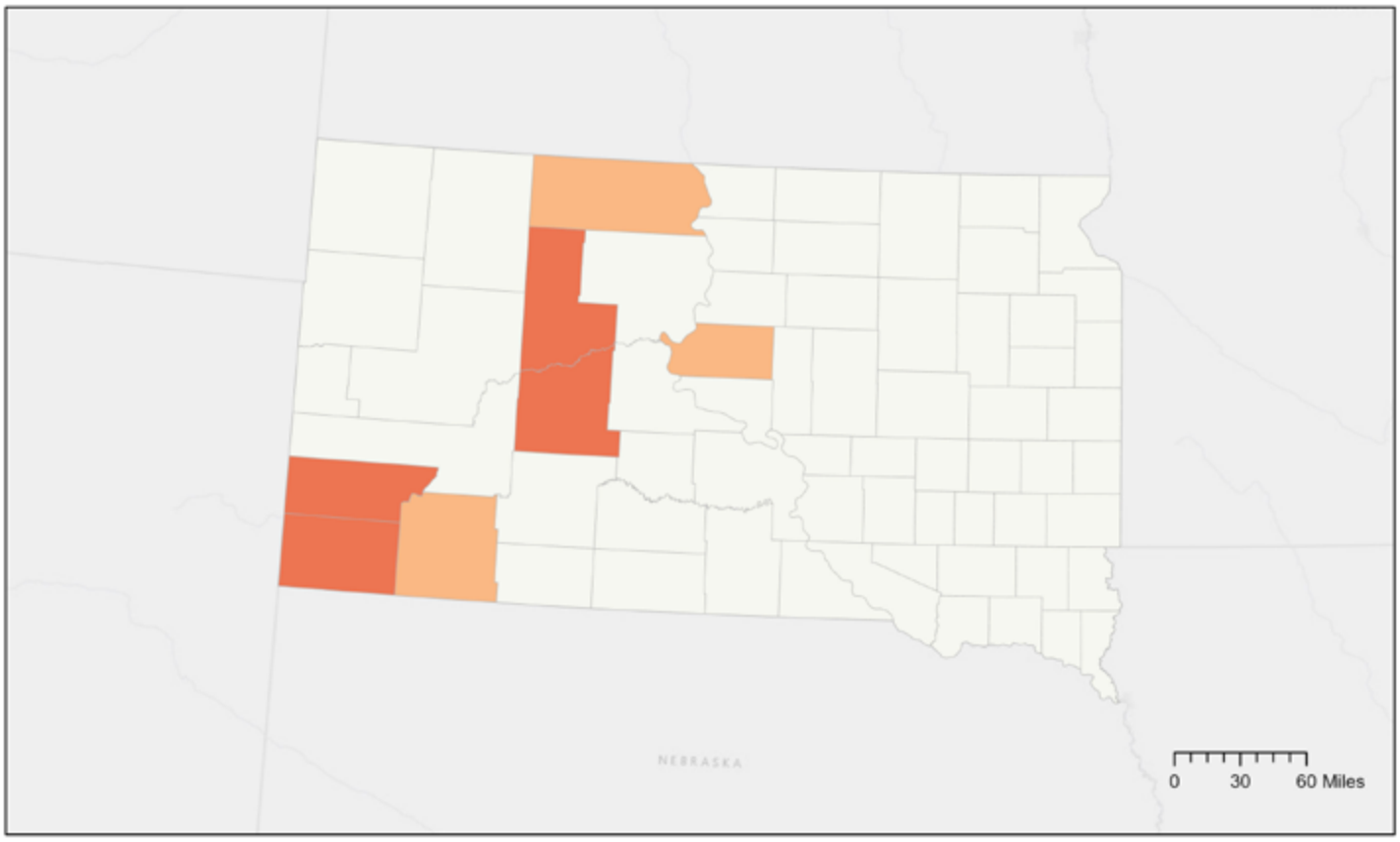
Data Credits: Esri, HERE, Garmin, USGS, EPA, NPS
Recovery residence locations: 2020
Created by: NSTARR Project (May 2022)

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

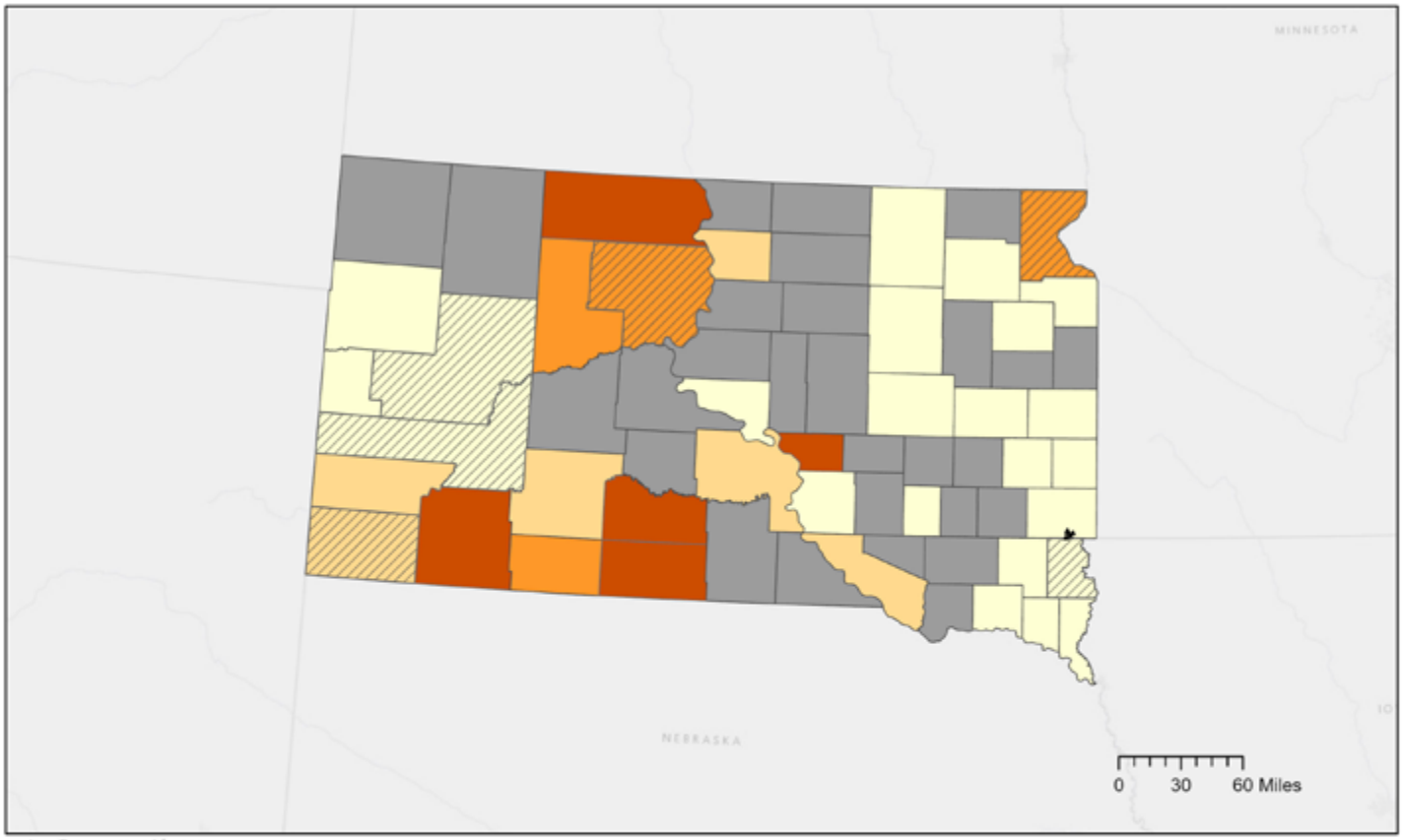
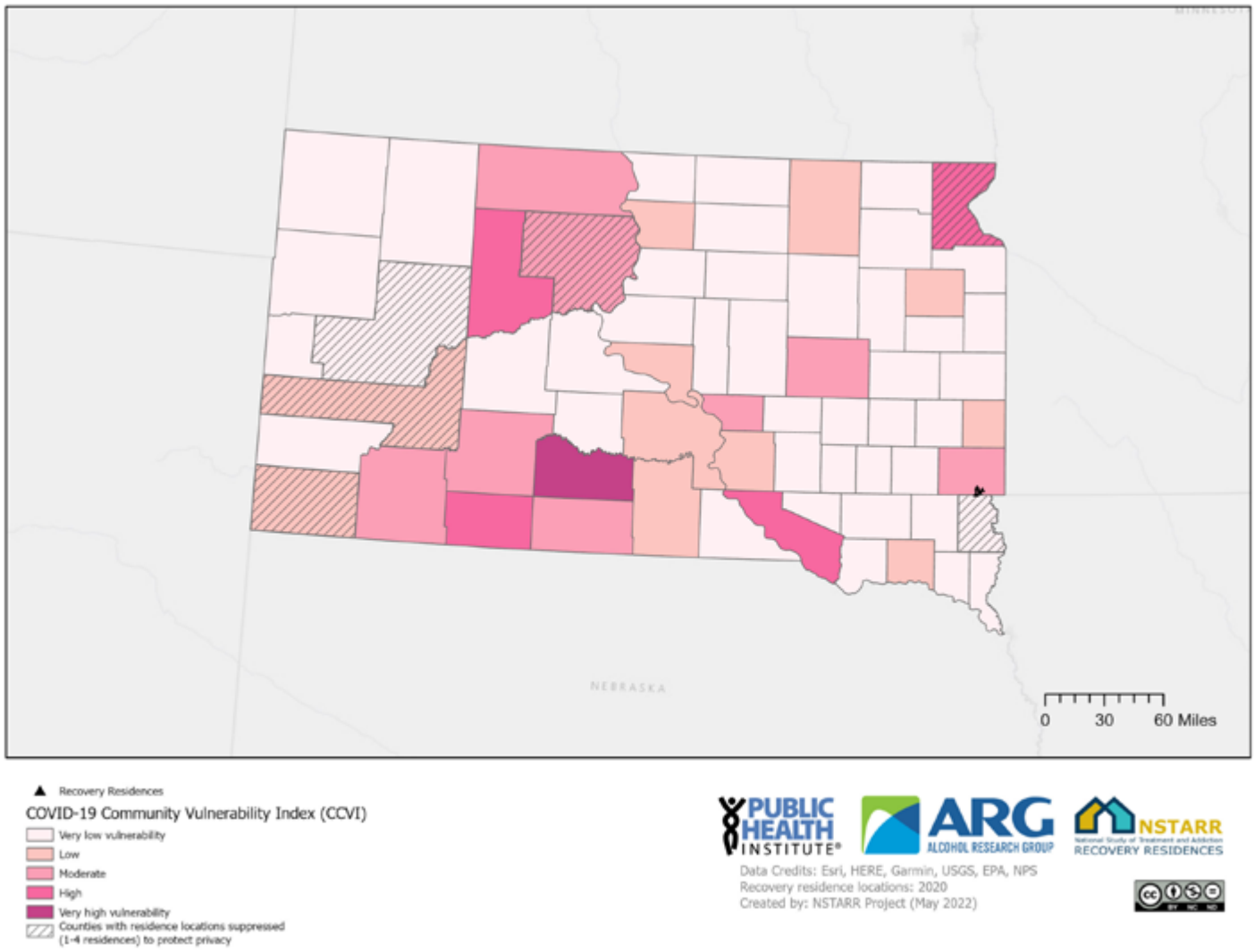


Figure 4. Distribution of Residences by COVID-19 Community Vulnerability Index



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National Study of Treatment and Addiction Recovery Residences
6001 Shellmound Street, Suite 450
Emeryville, CA 94608

nstarr.arg.org nstarr@arg.org @NSTARRStudy @arg_nstarr

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