

National Study of Treatment and Addiction Recovery Residences Report CALIFORNIA

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 757 recovery residences (1.93 houses per 100,000 population) in California (see Table 1). Compared to other states (which include DC), California ranked 35 in terms of recovery housing availability per capita. However, only 54% of residences in California could be geocoded for these analyses. Del Norte County, a non-adjacent rural county, had the most recovery residences per 100,000 population, and 20 counties had no identified recovery residences, representing a mix of rural-urban classifications; 40 had fewer than 5 recovery residences (see Figure 1).

We used geographic information systems to identify hot and cold spots in California. 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 19.70 in California for the years 2009-2019. California ranked 22 on alcohol- and drug-involved mortality out of the 50 states and DC. Among the counties ranked, Lake County had the highest alcohol- and drug-involved mortality rate and San Mateo County had the lowest alcohol- and drug-involved mortality rate. Of the three counties that had the highest mortality rates in California (i.e., Lake, Humboldt, and Modoc), two 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. Fifteen counties were classified as having very high vulnerability, and nine of those counties were located in areas ranked in the top half of recovery housing availability per capita, suggesting recovery housing is located in communities with greater need (see Table 1 and Figure 4).

757
RESIDENCES
TOTAL

35
NATIONAL
AVAILABILITY
RANKING

20
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
CALIFORNIA	39,283,496		757	1.93	35	19.70	22	
Alameda	1,656,754	Urban	16	0.97	25	25.70	54	High
Alpine	1,039	Adjacent rural	0	0.00	58	Suppressed	-	Moderate
Amador	38,429	Adjacent rural	0	0.00	58	42.60	27	Moderate
Butte	225,817	Urban	3	1.33	16	83.20	4	High
Calaveras	45,514	Adjacent rural	0	0.00	58	44.30	23	Low
Colusa	21,454	Adjacent rural	0	0.00	58	36.20	39	High
Contra Costa	1,142,251	Urban	12	1.05	22	27.70	50	Moderate
Del Norte	27,495	Non-adjacent rural	4	14.55	1	62.70	12	High
El Dorado	188,563	Urban	5	2.65	5	36.80	38	Low
Fresno	984,521	Urban	5	0.51	33	37.20	37	Very high vulnerability
Glenn	27,976	Adjacent rural	0	0.00	58	50.30	14	High
Humboldt	135,940	Non-adjacent rural	2	1.47	14	92.00	2	High
Imperial	180,701	Urban	0	0.00	58	34.10	42	High
Inyo	17,977	Non-adjacent rural	0	0.00	58	63.20	10	Moderate
Kern	887,641	Urban	2	0.23	38	49.30	17	Very high vulnerability
Kings	150,691	Urban	1	0.66	30	31.10	47	Very high vulnerability
Lake	64,195	Adjacent rural	0	0.00	58	111.00	1	High
Lassen	30,818	Non-adjacent rural	0	0.00	58	66.10	9	Low
Los Angeles	10,081,570	Urban	103	1.02	24	27.00	52	Very high vulnerability
Madera	155,433	Urban	0	0.00	58	43.90	25	Very high vulnerability
Marin	259,943	Urban	4	1.54	11	30.40	48	Low
Mariposa	17,420	Adjacent rural	0	0.00	58	44.10	24	Low
Mendocino	87,224	Adjacent rural	1	1.15	20	68.10	8	High
Merced	271,382	Urban	4	1.47	13	50.30	14	Very high vulnerability
Modoc	8,907	Adjacent rural	0	0.00	58	83.50	3	Low
Mono	14,310	Non-adjacent rural	0	0.00	58	23.40	55	Very low vulnerability
Monterey	433,410	Urban	4	0.92	26	30.40	48	Very high vulnerability
Napa	139,623	Urban	2	1.43	15	37.40	35	High
Nevada	99,244	Adjacent rural	2	2.02	6	45.00	21	Low
Orange	3,168,044	Urban	27	0.85	28	26.00	53	High
Placer	385,512	Urban	2	0.52	32	31.80	45	Low
Plumas	18,660	Non-adjacent rural	0	0.00	58	81.60	5	Very low vulnerability
Riverside	2,411,439	Urban	21	0.87	27	37.30	36	High
Sacramento	1,524,553	Urban	18	1.18	19	42.20	28	High
San Benito	60,376	Urban	0	0.00	58	27.30	51	Moderate
San Bernardino	2,149,031	Urban	23	1.07	21	34.80	41	Very high vulnerability
San Diego	3,316,073	Urban	54	1.63	10	35.20	40	High

San Francisco	874,961	Urban	13	1.49	12	43.50	26	Moderate
San Joaquin	742,603	Urban	13	1.75	8	39.20	30	Very high vulnerability
San Luis Obispo	282,165	Urban	8	2.84	4	38.20	34	Moderate
San Mateo	767,423	Urban	6	0.78	29	21.90	57	Moderate
Santa Barbara	444,829	Urban	16	3.60	3	48.60	19	Very high vulnerability
Santa Clara	1,927,470	Urban	7	0.36	37	22.90	56	High
Santa Cruz	273,962	Urban	11	4.02	2	49.30	17	High
Shasta	179,212	Urban	3	1.67	9	69.40	6	Moderate
Sierra	3,040	Adjacent rural	0	0.00	58	63.00	11	Very low vulnerability
Siskiyou	43,468	Adjacent rural	0	0.00	58	60.70	13	Moderate
Solano	441,829	Urban	2	0.45	35	32.80	44	High
Sonoma	499,772	Urban	2	0.40	36	39.50	29	High
Stanislaus	543,194	Urban	3	0.55	31	38.50	32	Very high vulnerability
Sutter	96,109	Urban	1	1.04	23	38.50	32	Very high vulnerability
Tehama	63,912	Adjacent rural	0	0.00	58	46.60	20	High
Trinity	12,700	Adjacent rural	0	0.00	58	68.90	7	Moderate
Tulare	461,898	Urban	6	1.30	18	31.70	46	Very high vulnerability
Tuolumne	54,045	Adjacent rural	1	1.85	7	49.40	16	Low
Ventura	847,263	Urban	4	0.47	34	33.00	43	High
Yolo	217,352	Urban	0	0.00	58	39.10	31	Very high vulnerability
Yuba	76,360	Urban	1	1.31	17	44.70	22	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. Four (4) recovery residences in the state were not successfully geocoded due to lack of adequate address information, and thus were not assigned to a county.

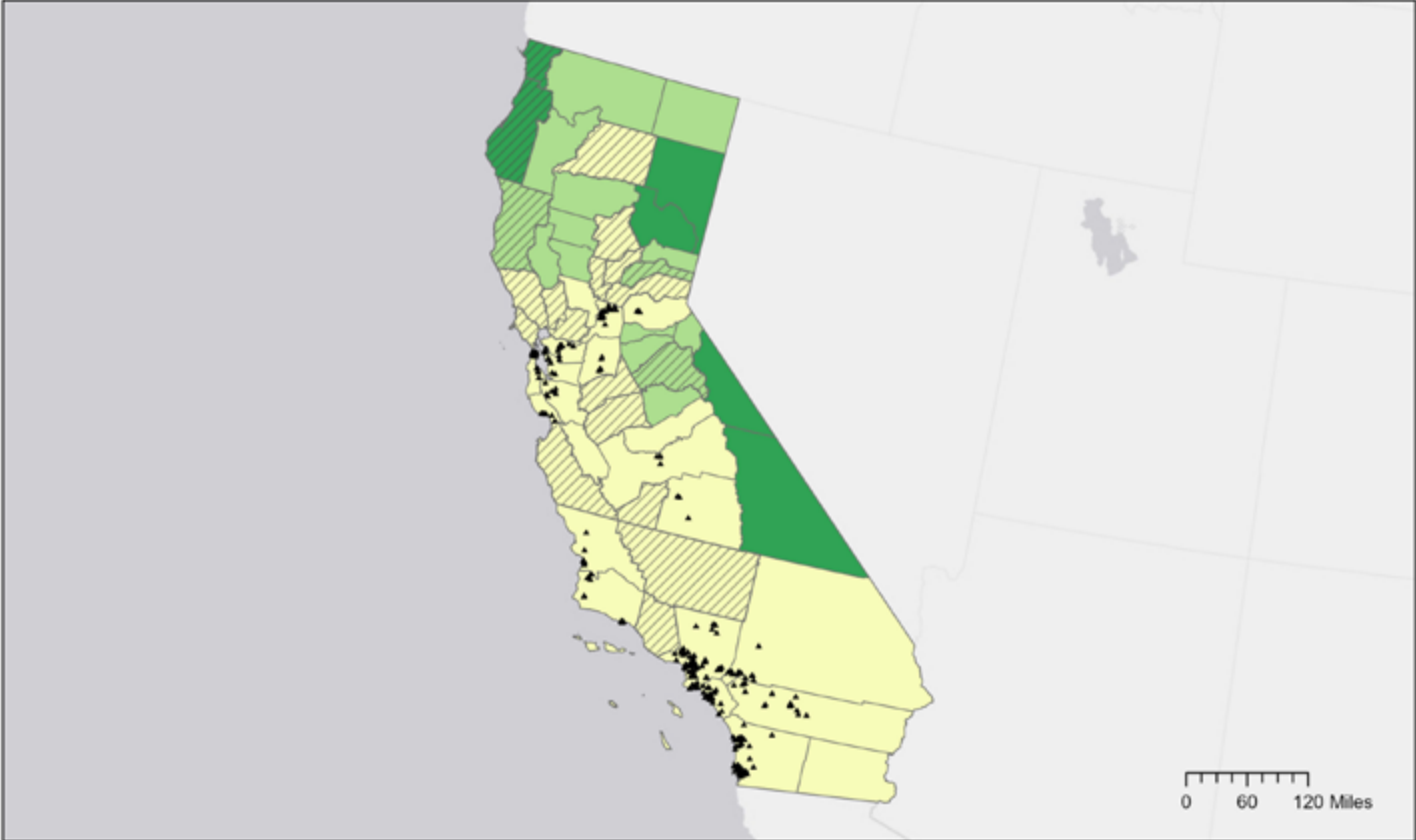
⁴Recovery residences availability per capita is ranked in order of decreasing recovery residence density per 100,000 population per county, with 1 (highest number of residences per 100,000) to 29 (lowest number of residences per 100,000 population). Counties without recovery residences were all assigned a tied rank of 29.

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 19 (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 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](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



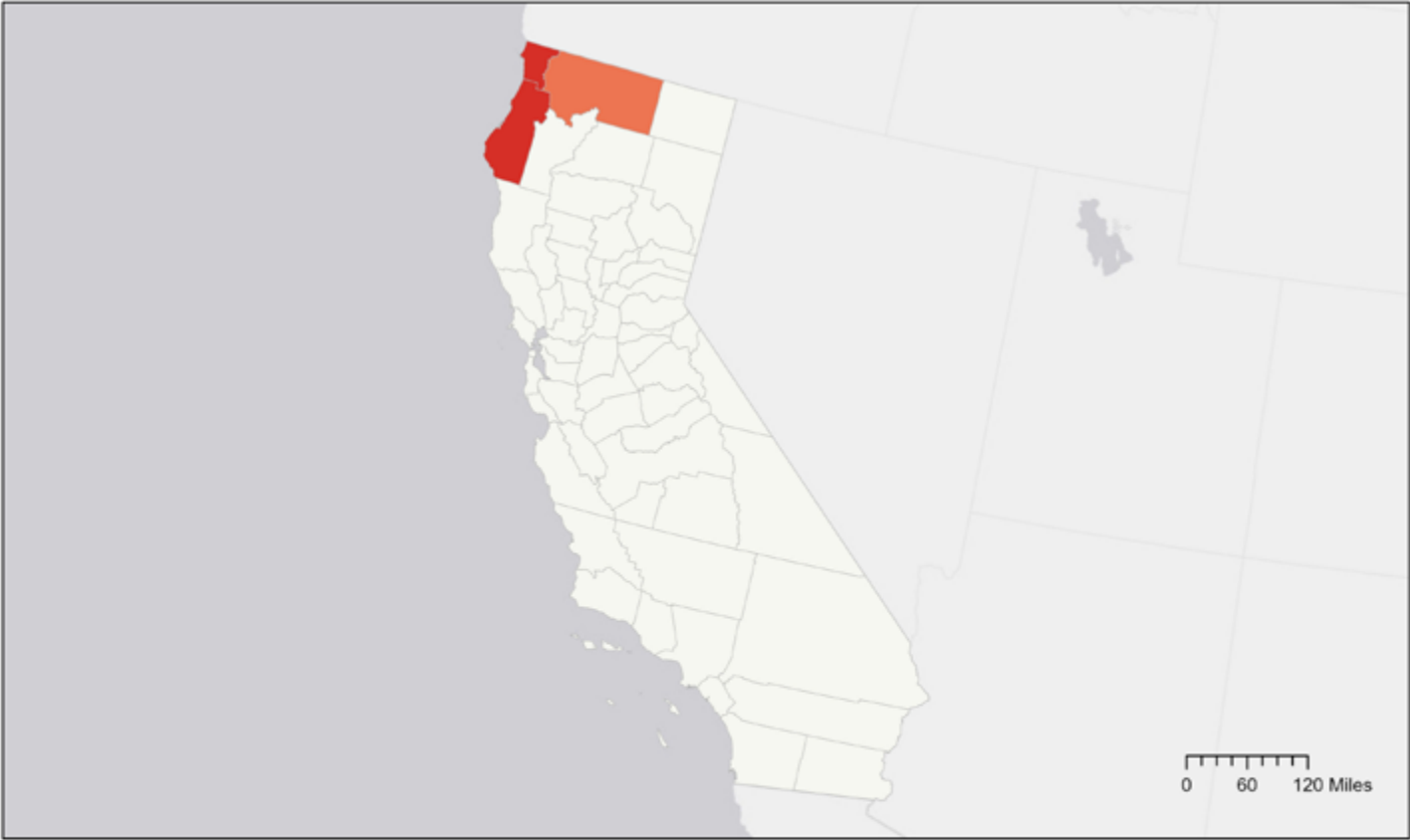
- ▲ Recovery residences
- Rural-Urban Classification Code (RUCC)
 - Urban
 - Adjacent rural
 - Non-adjacent rural
 - Counties with residence locations suppressed (1-4 residences) to protect privacy



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



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



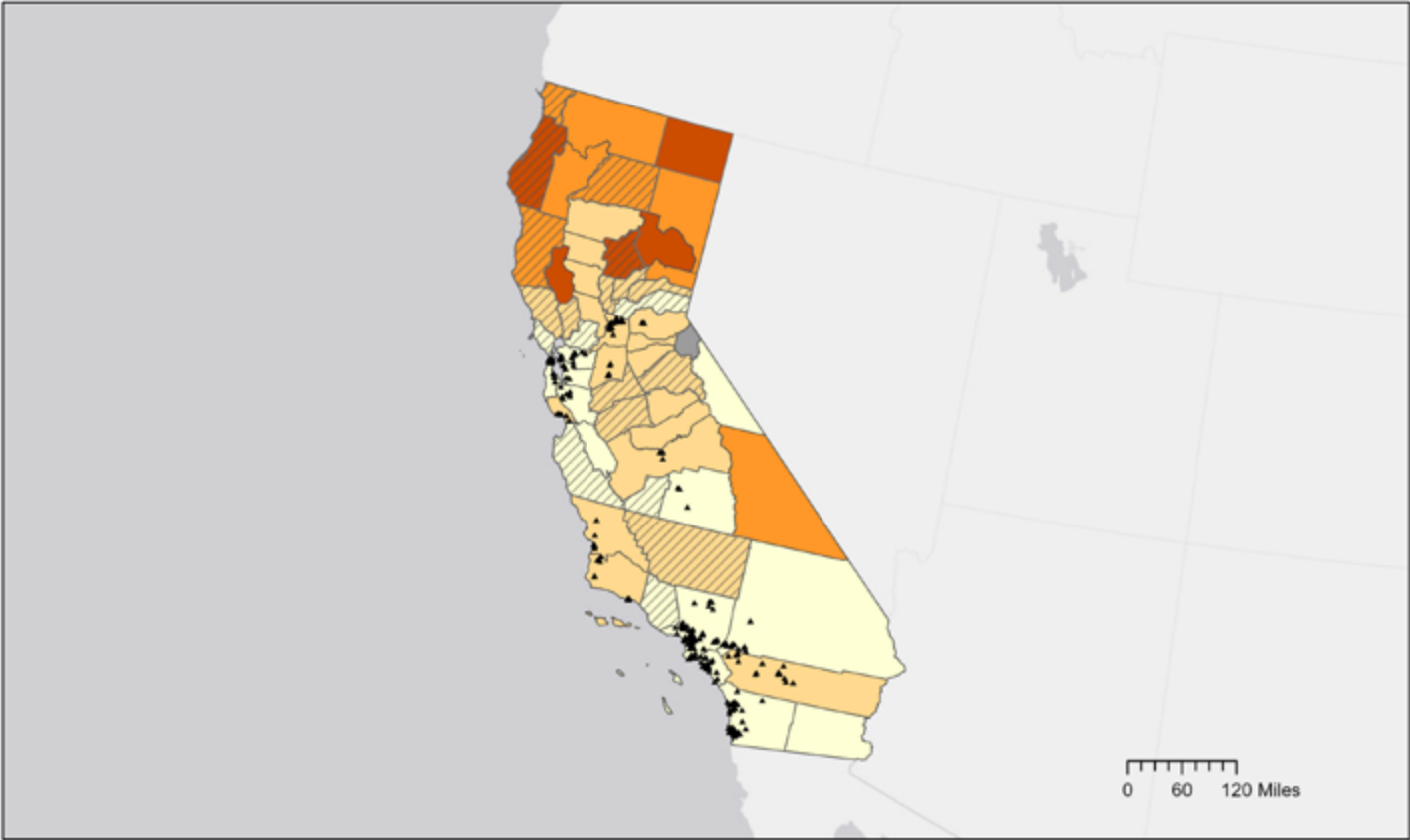
- Hot Spot Analysis (Getis-Ord GI*)**
- Cold Spot with 99% Confidence
 - Cold Spot with 95% Confidence
 - Cold Spot with 90% Confidence
 - Not Significant
 - Hot Spot with 90% Confidence
 - Hot Spot with 95% Confidence
 - Hot Spot with 99% Confidence



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

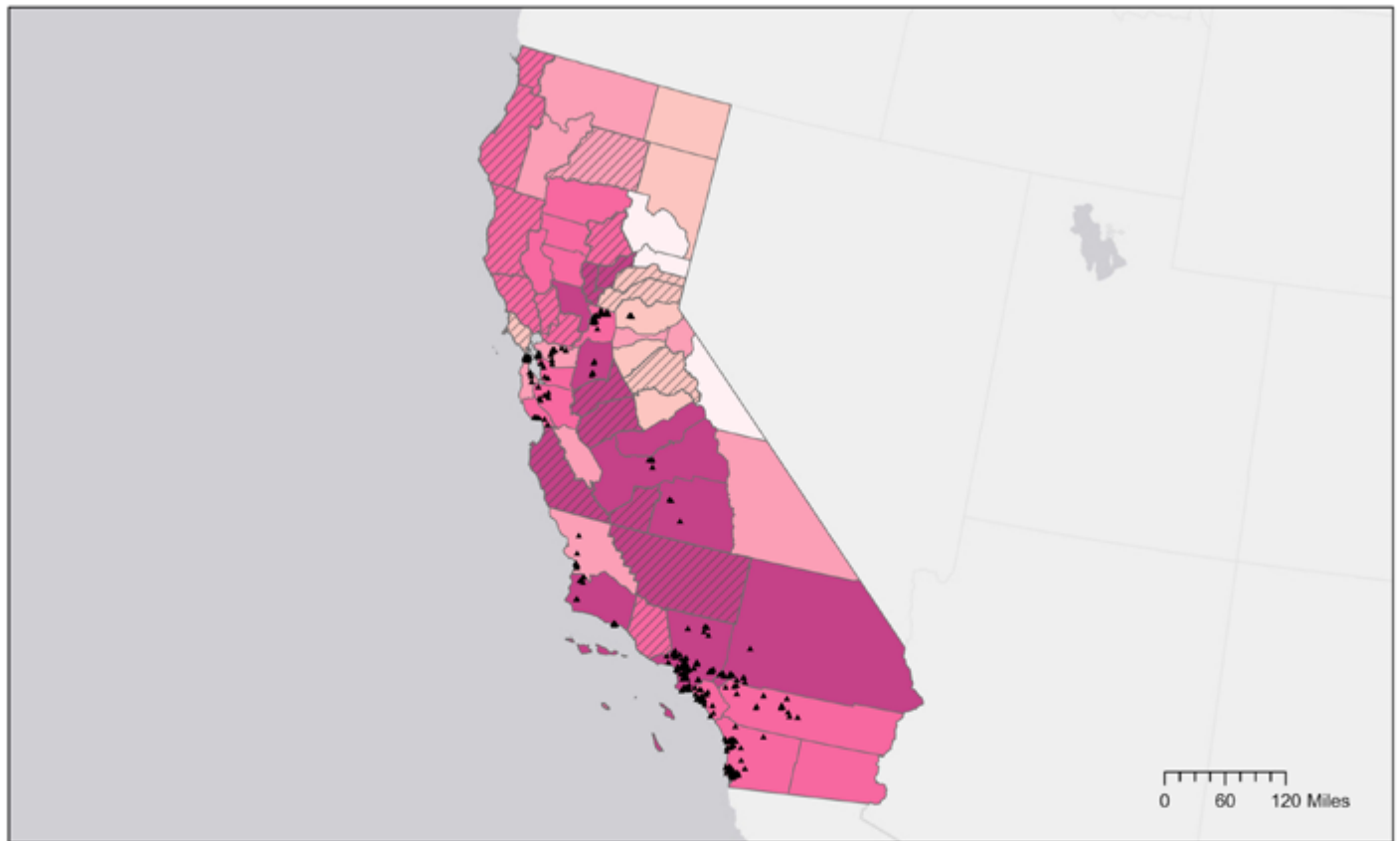


▲ Recovery residences
Age-adjusted alcohol and drug mortality rate per 100,000 population
 9 - 18
 19 - 28
 29 - 52
 53 - 79
 Suppressed/Unreliable
 Counties with residence locations suppressed (1-4 residences) to protect privacy

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 ALCOHOL RESEARCH GROUP National Study of Treatment and Addiction RECOVERY RESIDENCES
 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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