

# South Dakota Vulnerability Assessment

## Risk of Opioid Overdose, HIV, and Viral Hepatitis

### Executive Summary

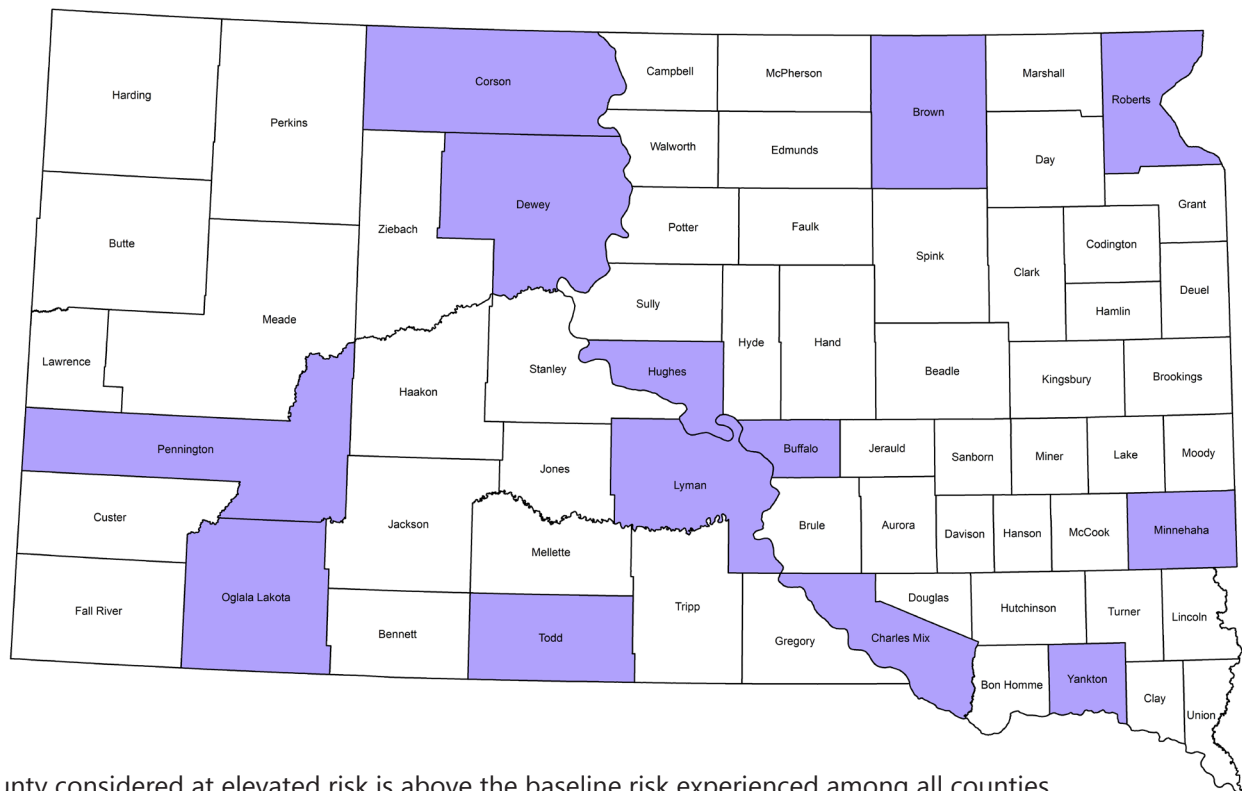
Rural U.S. communities are disproportionately impacted by drug overdose deaths,<sup>1,2</sup> despite having lower drug use rates than urban communities.<sup>3</sup> In 2009, deaths from drug overdose surpassed deaths from motor vehicle accidents in the U.S., and the majority (60%) of drug overdose deaths were due to prescription opioid abuse and misuse.<sup>4,5</sup>

The incidence of deaths from opioid analgesic poisoning quadrupled between 1999 and 2011,<sup>6</sup> followed by a marked increase in cases of acute hepatitis C virus (HCV) between 2010 and 2015—largely associated with an increase in injection drug use (IDU) in rural areas.<sup>7</sup> IDU is a risk factor for HCV, HIV, and other bloodborne infections, and has become an important factor in understanding and responding to the nationwide opioid crisis.<sup>8</sup> Recent clusters of

injection-related HIV and HCV have occurred in rural areas of several states due to increasing use of illicit prescription opioids and heroin.<sup>9,10</sup> These events raise concern for the vulnerability of similar rural communities to the rapid spread of HIV and HCV among networks of persons who inject drugs.<sup>1</sup>

The purpose of this project was to develop and disseminate county-level vulnerability assessments that identify areas in South Dakota at high risk for opioid overdose and injection-related HIV and HCV. Results highlight structural, socioeconomic, and geographic factors potentially important when assessing risk among South Dakota counties for opioid overdose and rapid spread of HIV and HCV. Findings will inform local and state plans to strategically allocate prevention and intervention services to minimize death and disability resulting from the nationwide opioid crisis.

### Elevated Risk Counties



A county considered at elevated risk is above the baseline risk experienced among all counties.

## Assessment Indicators

Socio-economic indicators included percent poverty, percent with no high school diploma, percent unemployed, per capita income, percent single parent households with children under 18, percent elderly aged 65, percent children aged 17 or younger, percent minority, percent crowded households, percent households with no vehicle, percent mobile homes, percent people with disability, percent speaking limited English, and percent with no health insurance. The drug use and abuse indicators included deaths due to unintentional drug overdose, Naloxone Administered for any cause, Opioid prescriptions, Emergency Department (ED) Syndromic Opioid Overdose Visits, total ED visits, nonfatal ED visits,

HIV cases, substance use disorder treatment overall admissions, admissions related to primary Heroin/Opiates use, and admissions related to primary IV drug use. The counts were converted to the rates per 10,000. In addition, we created a binary indicator for High Intensity Drug Trafficking Areas identified by the U.S. Drug Enforcement Administration (DEA). Healthcare access for primary care, emergency care, and behavioral health care were measured as percent county population within 15-minute driving distance of each type of the healthcare providers. The National Center for Health Statistics (NCHS) urban/rural classification identifies 66 counties as three categories: small metro, micropolitan, and noncore counties.

**Population: 869,666<sup>11</sup>**

### Healthcare Access

|                                                            |       |
|------------------------------------------------------------|-------|
| Primary Care Provider within 15 minutes <sup>12,13</sup>   | 80.9% |
| Behavioral Health Provider within 15 minutes <sup>14</sup> | 37.7% |
| Emergency Department within 15 minutes <sup>12,13</sup>    | 65.6% |

### Infectious Disease

|                                                               |    |
|---------------------------------------------------------------|----|
| Reported HIV Cases <sup>15</sup>                              | 40 |
| Reported HCV Cases per 100,000 (aged <40 years) <sup>15</sup> | 87 |

### Drug Related Data

|                                                                                                         |       |
|---------------------------------------------------------------------------------------------------------|-------|
| Unintentional Drug Overdose - Fatal per 100,000 <sup>16</sup>                                           | 5.6   |
| Unintentional Drug Overdose - Non-Fatal per 100,000 <sup>16</sup>                                       | 9.2   |
| Opioid Prescriptions per 100 <sup>17</sup>                                                              | 59.3  |
| Naloxone Administration per 10,000 <sup>18</sup>                                                        | 3.8   |
| Drug Related Hospital Discharges per 100,000 <sup>19</sup>                                              | 31.0  |
| Substance Use Treatment Admissions per 10,000 <sup>20</sup> (Sites with full or partial public funding) | 119.5 |

### Socioeconomic Data

|                                         |          |
|-----------------------------------------|----------|
| Poverty <sup>21</sup>                   | 13.9%    |
| No High School Diploma <sup>21</sup>    | 8.6%     |
| Unemployed <sup>21</sup>                | 2.6%     |
| Single Parent Households <sup>21</sup>  | 8.7%     |
| Persons 65 and Older <sup>21</sup>      | 15.5%    |
| Persons 17 or Younger <sup>21</sup>     | 24.7%    |
| Minority <sup>21</sup>                  | 17.3%    |
| Crowded Household <sup>21</sup>         | 2.3%     |
| Household with No Vehicle <sup>21</sup> | 5.2%     |
| Uninsured <sup>21</sup>                 | 9.7%     |
| Per Capita Income <sup>21</sup>         | \$28,761 |
| Mobile Homes <sup>21</sup>              | 8.7%     |
| People with Disability <sup>21</sup>    | 12.1%    |
| Speak Limited English <sup>21</sup>     | 1.0%     |

## Methods

We used the number of acute and chronic HCV infections of population aged 40 or younger by county as a proxy measure of injection drug use (IDU). We started with a set of indicators identified as potential covariates of the IDU risk and examined the associations using the Poisson Regression model. For each county, we then multiplied the standardized regression coefficient derived from the multivariate regression model to the corresponding observed value of each indicator to construct a final vulnerability score. We ranked the 66 counties by the vulnerability scores and reported the top 20 percentile counties (13 counties) as the counties of relatively high IDU risk. The county-level indicators used in study included measures of demographic, social, and economic characteristics, healthcare access, drug use and abuse conditions, and the NCHS urban/rural classification. The socio-economic data were drawn from the 2013-2017 American Community Survey (ACS) 5-Year Estimates. The population counts were drawn from the 2017 annual population estimates reported by the U.S. Census Bureau. To measure the healthcare accessibility, we used the ArcGIS Network Analyst to conduct the driving time analysis to incorporate the road network dataset, which include road connectivity and speed data. For each facility, we created a 15-minute driving distance service area and overlay the census block population with the service area to calculate the percent population with the defined service area in each county. Access measures do not include physical sites or access via telehealth services, e.g., excludes sites not accredited by Department of Social Services. We obtained the drug use and abuse data from Department of Social Service and Department of Health.

## Prevention Strategies

Evidence-based strategies and the South Dakota Prescription Opioid Abuse Advisory Committee informed the creation of the South Dakota Opioid Abuse Strategic Plan. This plan lays out strategies around these four goals:

- Prevention and Early Detection
- Treatment and Recovery
- Reducing Illicit Supply
- Response to Opioid Misuse and Abuse

View Opioid Abuse Strategic Plan at [www.avoidopioidsd.com/about/strategic-plan](http://www.avoidopioidsd.com/about/strategic-plan)

## Findings

The mean count of acute and chronic HCV infection cases (age < 40) between 2016 and 2018 was 296. Most of the indicators were found to be statistically significant in bivariate analyses. Based on the multivariate Poisson regression model controlling for county population (log base 10), we identified the following indicators that were most significantly associated with the county-level HCV cases: drug overdose mortality per 10,000 (regression coefficient [ $\beta$ ] 0.547;  $p < 0.001$ ), admissions of substance disorder related to primary intravenous drug use per 10,000 ( $\beta$  0.055;  $p = 0.001$ ), naloxone administration per 10,000 ( $\beta$  0.137;  $p = 0.001$ ), overall ED visits per 10,000 ( $\beta$  0.0002;  $p = 0.001$ ), percent minority ( $\beta$  0.137;  $p < 0.001$ ), percent uninsured ( $\beta$  -0.089;  $p = 0.001$ ), percent single parent household ( $\beta$  -0.118;  $p = 0.017$ ), percent mobile homes ( $\beta$  -0.050;  $p = 0.017$ ), and percent of county population in 15-minute driving service area of any behavioral healthcare provider ( $\beta$  0.013;  $p = 0.014$ ).

The top 20% of counties (13 counties listed in alphabetical order) were identified as the most vulnerable in South Dakota for opioid overdose and bloodborne infections:

- Brown
- Buffalo
- Charles Mix
- Corson
- Dewey
- Hughes
- Lyman
- Minnehaha
- Oglala Lakota
- Pennington
- Roberts
- Todd
- Yankton

View county reports at <https://doh.sd.gov/statistics/vulnerabilityassessment.aspx>



## Endnotes

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11. Annual Estimates of the Resident Population: July 1, 2017. The U.S. Census Bureau, Population Division.
12. South Dakota Department of Health (SD DOH), Office of Health Facilities Licensure & Certification, February 2019.
13. Health Resource & Services Administration (HRSA) Data Portal, Health Center Service Delivery and Look-Alike Sites, February 2019.
14. South Dakota Department of Social Services, Division of Behavioral Health Accredited Substance Use Disorder Providers and Community Mental Health Centers, February 2019.
15. SD DOH, Infectious Disease Surveillance, 2016-2018.
16. SD DOH, Hospital Discharge, 2016-2018.
17. SD DOH, South Dakota Prescription Drug Monitoring Program, 2016-2018.
18. SD DOH, Emergency Medical Services, 2018.
19. SD DOH, Syndromic Surveillance, July 2017-December 2018.
20. South Dakota Department of Social Services, Treatment Episode Data, 2016-2018.
21. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

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### Partners and Stakeholders:

- South Dakota Department of Health
- University of South Dakota
- South Dakota State University
- SLM Consulting, LLC
- South Dakota Opioid Advisory Board
- South Dakota Department of Social Services
- South Dakota Division of Criminal Investigations
- Great Plains Tribal Chairmen's Health Board
- South Dakota Association of Healthcare Organizations

