Assessing Vulnerability of South Dakota Counties for Opioid Overdose, HIV & HCV

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CDC Partners Webinar

SLM Consulting, LLC
Data Driven Public Health Solutions

UNIVERSITY OF
SOUTH DAKOTA
SCHOOL OF HEALTH SCIENCES

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Learning Objectives

- Understand syndemic of opioid overdose, HCV, and HIV in South Dakota
- Identify the role of partners involved in project
- Outline the methods and findings of the project
- Highlight important findings for tribal communities
- Share strategies for project success
- Next steps in South Dakota (OD2A)

Purpose of Vulnerability Assessment

Opportunity

- **Funding:** CDC Cooperative Agreement for Emergency Response: Public Health Crisis Response. 2018 Opioid Overdose Crisis Cooperative Agreement Supplemental Guidance
- **Project Period:** September 2018-August 2019

Project Activities

1. Develop a jurisdiction-level vulnerability assessments that identify sub-regional (e.g., county) areas at high risk for (1) opioid overdoses and (2) blood-borne infections (i.e., HIV, hepatitis C) associated with nonsterile injection drug use.
2. Disseminate vulnerability assessment findings
3. Develop plan to address prevention and intervention gaps
4. Initiate implementation of plan

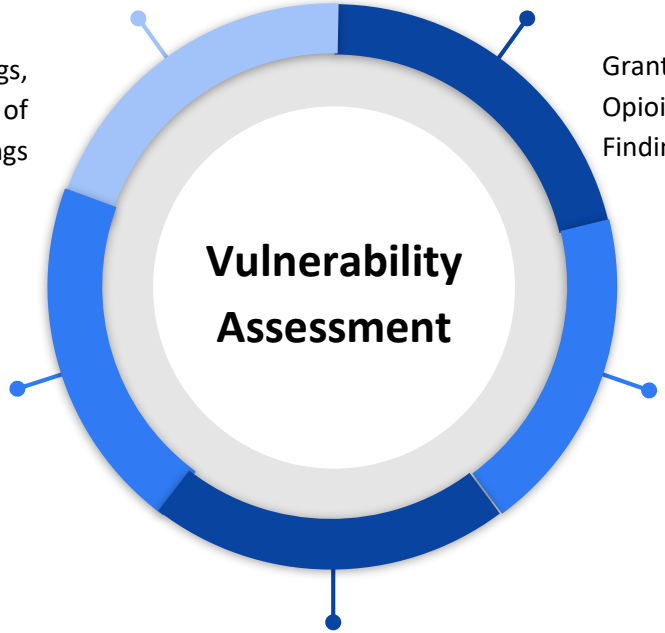
Project Roles & Partners

South Dakota State University

Methods, Data analysis, Findings, Manuscript, Dissemination of Findings

South Dakota Department of Health

Grantee, Fiscal Agent, Epidemiology, Opioid Advisory Board, Dissemination of Findings



SLM Consulting, LLC

Project Coordination, Partner Outreach & Collaboration, Manuscript, Dissemination of Findings,

University of South Dakota

Data, Manuscript, County Report Cards, Data Indicators, Dissemination of Findings

Partners

Data, Community Outreach

Partners and Stakeholders

- South Dakota Opioid Abuse Advisory Committee
- South Dakota Department of Social Services
- South Dakota Division of Criminal Investigations
- Great Plains Tribal Chairmen's Health Board, Great Plains Tribal Epi Center
- South Dakota Association of Healthcare Organizations
- South Dakota Board of Pharmacy
- South Dakota Department of Health
- University of South Dakota
- South Dakota State University
- SLM Consulting, LLC
- And MANY other stakeholders

Multi-Sector Collaboration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Methods

Methods

- Outcome: heavy drug use (HCV cases aged <40 years as proxy)
- Compile county-level surveillance and socioeconomic data
- Perform drive time analysis (ArcGIS Network Analyst)
- Use a Poisson Regression model to assess county factors
- Construct a rank for each county based on the model

County-level Indicators

Indicator Variables	Socioeconomic Data (2013-2017 5-Year ACS)	
Unintentional drug overdose (fatal and non-fatal)	% Mobile homes	% children aged 17 or younger
Opioid prescription rate (PDMP)	% People with disability	% minority
Reported HIV cases	% Speaking limited English	% crowded households
Naloxone administration by EMS	% poverty	% households with no vehicle
Syndromic emergency dept visit for opioid overdose	% with no high school diploma	% uninsured
Substance use disorder treatment admission (heroin or opioid)	% unemployed	% single parent households with children under 18
Access to primary care, emergency care, and behavioral health (drive time analysis incorporating road network data)	per capita income	% elderly aged 65 or above
High Intensity Drug Trafficking (DEA)		
Urban/Rural status (USDA Urban/Rural continuum classification)		

Construct Access to Care (Drive Time)

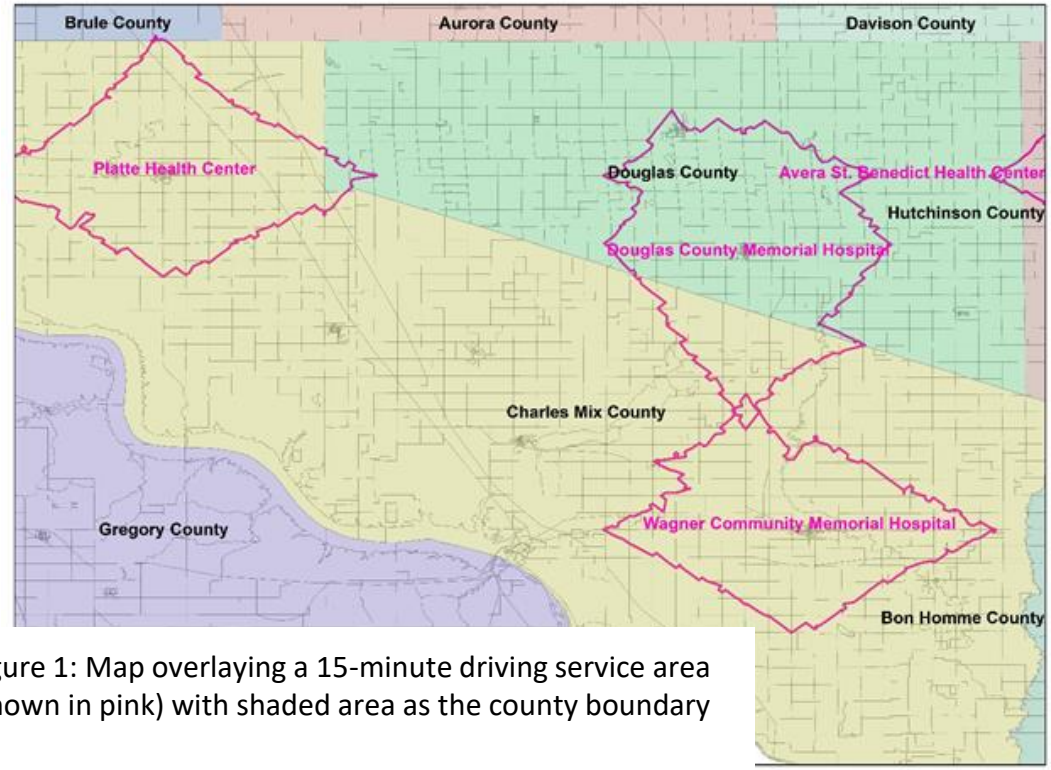
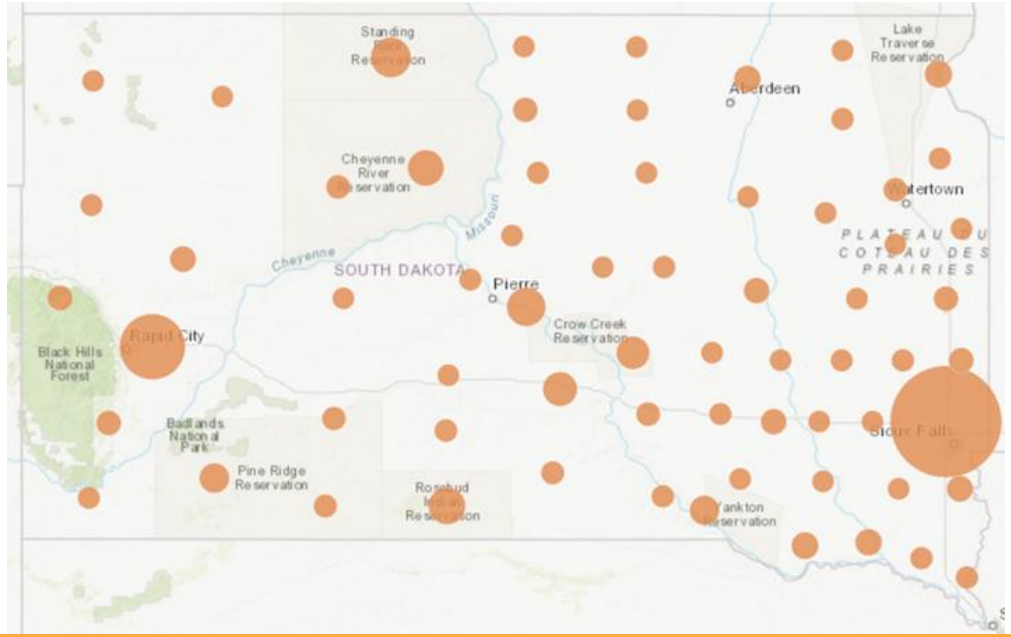


Figure 1: Map overlaying a 15-minute driving service area (shown in pink) with shaded area as the county boundary

Findings

Descriptive Results

- 296 HCV infection cases (acute & chronic aged <40 years) annually, 2016-2018
- Most indicators were individually found to be associated with heavy drug use



Poisson Regression Model Results

The following indicators were significantly associated with county vulnerability:

- Unintentional drug overdose mortality per 10,000 (β 0.627; $p<0.000$)
- Nonfatal overdose ED visit per 10,000 (β -0.825; $p<0.000$)
- SUD treatment admissions related to primary IDU per 10,000 (β -0.071; $p=0.006$)
- Naloxone administration per 10,000 (β 0.177; $p<0.000$)
- Access to behavioral health provider (β 0.033; $p<0.000$)
- Access to primary care provider (β -0.017; $p=0.009$)
- % county considered minority (β 2.090; $p=0.022$)

Poisson Regression Model Results

- % pop without insurance
  - Minority County (β 0.437; p<0.000)
  - Non-minority County (β -0.239; p<0.000)
- % pop unemployed (β 0.070; p=0.019)
- % pop with no high school diploma (β 0.288; p<0.000)
- % pop with disability (β -0.189; p<000)
- % pop speaking English less than well (β -0.644; p<0.000)
- % households with no vehicle (β .096; p=0.035)

County Vulnerability Ranking

13 counties (top 20%) were identified as vulnerable in SD:

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

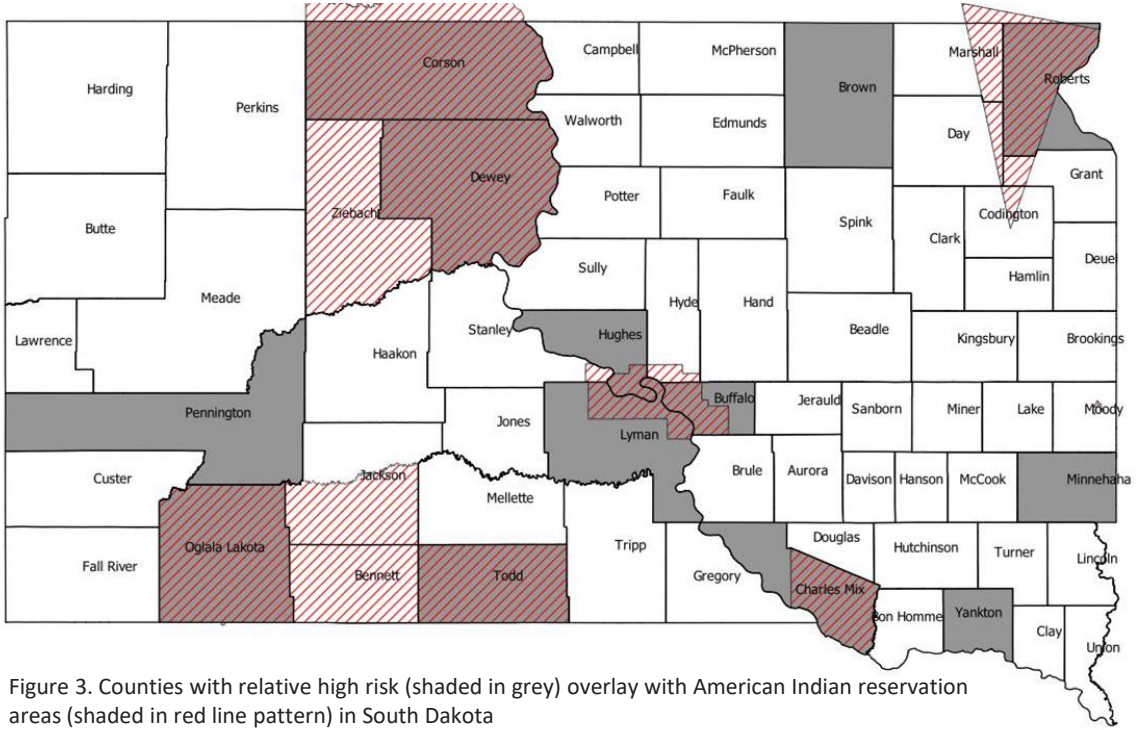


Figure 3. Counties with relative high risk (shaded in grey) overlay with American Indian reservation areas (shaded in red line pattern) in South Dakota

Discussion & Public Health Implications

- 13 most vulnerable counties
  - 69% (n=9) reservation counties
  - 46% (n=6) frontier counties
- County vulnerability is 800% higher for minority vs non-minority counties
- Nearly all significant predictors of county-level vulnerability were structural and are potentially modifiable
- Non-structural indicators (% minority) highlight need for culturally grounded prevention and treatment interventions

Discussion & Public Health Implications

- Fatal Drug Overdose: For every 1% increase in drug overdose mortality per 10,000, county vulnerability increases by 87%.
- Protective Factors: SUD treatment admission and non-fatal overdose ED visits
  - May support efforts to improve access to and utilization of MAT
- Minority vs non-minority counties
  - % Uninsured
    - Risk factor in minority counties; protective in non-minority counties
  - % Mobile Homes
    - Protective factor in minority counties

Discussion & Public Health Implications

- Our findings give context to the sydemic in rural reservation counties
- Overdose
  - Between 1999 and 2015, rural AI/ANs (+519%) represented the largest increase in number of drug overdose deaths (Mack, Jones & Ballesteros, 2017).
  - Between 2017 and 2017, AI/ANs had the second (Scholl et al, 2018):
    - Highest overdose death rates involving all opioids
    - Largest relative increase (58.5%) in rates
- HCV
  - Between 2002 and 2016, AI/ANs had highest incidence rate of HCV; largest increase between 2015-2016.
- HIV
  - AI/ANs have twice the rate of HIV infection and AIDS compared to white population and were the only racial/ethnic group between 2012 and 2016 in which rate of AIDS increased.

Dissemination of Findings

Methods

- Executive Summary, County Report Cards & Interactive Maps
  - South Dakota Department of Health
  - Avoid Opioid SD
- Partners
- Webinars
- Conference Presentations
  - 2019 South Dakota Public Health Association Conference
  - 2019 Chronic Disease Partners & Better Choices Better Health Conference
- Manuscript: Journal of Infectious Disease - Submitted September 2019

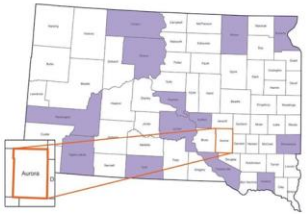
Emergency Response Vulnerability Assessment

Risk of Opioid Overdose, HIV, and Viral Hepatitis

Aurora County

Population: 2,738[1]

Vulnerability Level: Average



South Dakota	Healthcare Access	Aurora County
80.9%	Primary Care Provider within 15 minutes[2,4]	71.5%
48.2%	Behavioral Health Provider within 15 minutes[3]	0%
65.6%	Emergency Department within 15 minutes[2,4]	0%

South Dakota	Infectious Disease	Aurora County
40	Reported HIV Cases[5]	0
3.4	Reported HCV Cases per 100,000[5]	12.2*

South Dakota	Drug Related Data	Aurora County
0.6	Unintentional Drug Overdose - Fatal per 100,000[6]	0
0.9	Unintentional Drug Overdose - Non-Fatal per 100,000[6]	18.3*
53.6	Opioid Prescriptions per 100[7]	57.5
3.8	Naloxone Administration per 10,000[8]	3.7*
3.1	Drug Related Hospital Discharges per 100,000[9]	0
119.5	Substance Use Treatment Admissions per 10,000[10]	49.9*
N/A	High Intensity Drug Trafficking Area [11]	No

*Rate is based on count of less than 20.

South Dakota	Socioeconomic Data	Aurora County
13.9%	Poverty[12]	6.2%
8.6%	No High School Diploma[12]	12.4%
2.6%	Unemployed[12]	1%
8.7%	Single Parent Households[12]	6%
15.5%	Persons 65 and Older[12]	20.1%
24.7%	Persons 17 or Younger [12]	26.1%
17.3%	Minority[12]	11.2%
2.3%	Housing Unit with More People than Rooms[12]	1.1%
5.2%	Household with No Vehicle[12]	1.3%
9.7%	Uninsured[12]	5%
8.7%	Mobile Homes[12]	8.8%
12.1%	People with Disability[12]	12.8%
1.0%	Speak Limited English[12]	2.2%
$28,761	Per Capita Income[12]	$30,872

Recommendations

Build Capacity for Response to Opioid Misuse and Abuse
- Increase Education and Awareness about 911 Good Samaritan Law
- Targeted Naloxone Distribution

Prevention and Early Detection
- Expand Use of South Dakota Prescription Monitoring Program (PDMP)
- Amplify Public Health Messaging focused on Prevention of Opioid Misuse
- Support Implementation of Models to Engage Rural Communities in Addressing Opioid Misuse
- Strengthen public health data collection, reporting, and sharing
- Evidence-Based Community Prevention and Education Programs

Expand Treatment and Recovery
- Expand telehealth and teleconsultation to increase access to substance use treatment
- Expand Quality of Pain Management
- Expand access to Medication-Assisted Treatment (MAT)
- Enhance Workforce Capacity
- Increase Public Health Engagement to Address Opioid and Related HIV and HCV Issues
- Expand Access to Social Service Resources and Services

Full report available at doh.sd.gov.

Acknowledgments

Findings were supported by the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) of the CDC under award number NU90TP921980. The findings and conclusions in this project are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Endnotes

1. Annual Estimates of the Resident Population: July 1, 2017. The U.S. Census Bureau, Population Division.
2. South Dakota Department of Health (SD DOH), Office of Health Facilities Licensure & Certification, February 2019
3. South Dakota Department of Social Services, Division of Behavioral Health, Inpatient Treatment Services, Day Treatment Services, and Clinically Managed Low-Intensity Residential Services, February 2019
4. Health Resource & Services Administration (HRSA) Data Portal, Health Center Service Delivery and Look-Alike Sites, February 2019
5. SD DOH, Infectious Disease Surveillance, 2016-2018
6. SD DOH, Hospital Discharge, 2016-2018
7. SD DOH, South Dakota Prescription Drug Monitoring Program, 2016-2018
8. SD DOH, Emergency Medical Services, 2018
9. SD DOH, Syndromic Surveillance, July 2017-December 2018
10. South Dakota Department of Social Services, Treatment Episode Data, 2016-2018
11. U.S. Drug Enforcement Administration, High Intensity Drug Trafficking Area (HITDA) Programs County Data, May 2018
12. Census, American Community Survey (ACS), 2012-2016, Table B19301

Resources

South Dakota Opioid Resource Hotline
The Resource Hotline is available 24 hours a day, 7 days a week and will be answered by trained crisis workers to assist in finding local resources for you or a loved one. **Call 1-800-920-4343.**

Opioid Texting Support
Connect with local resources that best fit your needs. Answer a few questions and get help for yourself or a loved one who is struggling. **Text OPIOID to 898211.**

Helpline Center: Opioid Prevention Resources
The Helpline Center provides opioid prevention resources including an online local and statewide database search that will connect you to opioid support services in your area and printable community guides. **Visit www.helplinecenter.org.**

Dakota Counseling Institute
Designated community mental health center for Aurora County. **Call 605-996-9686 or visit www.dakotacounseling.net.**

Horizon Health Services Aurora County Clinic
Comprehensive primary care including mental health/substance abuse services. **Call 605-942-7711.**

Learn more at
www.avoidopioidsd.com

SOUTH DAKOTA DEPARTMENT OF HEALTH

Emergency Response Vulnerability Assessment

Risk of Opioid Overdose, HIV, and Viral Hepatitis

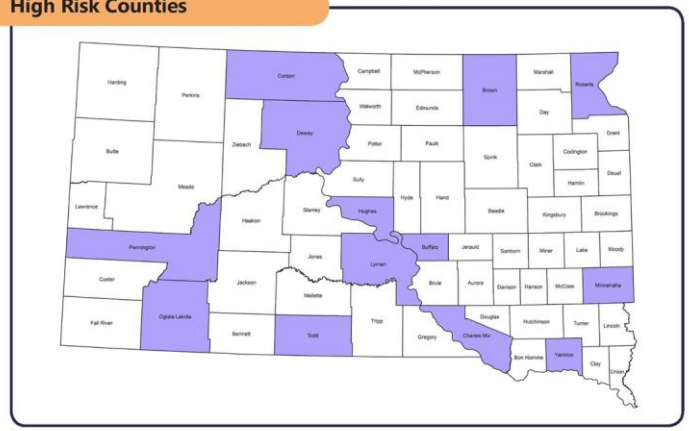
Executive Summary

Rural U.S. communities are disproportionately impacted by drug overdose deaths,[1,2] despite having lower drug use rates than urban communities.[3] 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.[4,5]

The incidence of deaths from opioid analgesic poisoning quadrupled between 1999 and 2011,[6] 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.[7] 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.[8] 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.[9,10] 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.[1]

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.

High Risk 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[28]

Healthcare Access

Primary Care Provider within 15 minutes[15,19]	80.9%
Behavioral Health Provider within 15 minutes[20]	48.2%
Emergency Department within 15 minutes[15,19]	65.6%

Infectious Disease

Reported HIV Cases[21]	40
Reported HCV Cases per 100,000[21]	34.0

Drug Related Data

Unintentional Drug Overdose - Fatal per 100,000[22]	5.6
Unintentional Drug Overdose - Non-Fatal per 100,000[22]	9.2
Opioid Prescriptions per 100[23]	53.6
Naloxone Administration per 10,000[24]	3.8
Drug Related Hospital Discharges per 100,000[25]	31.0
Substance Use Treatment Admissions per 10,000[26]	119.5

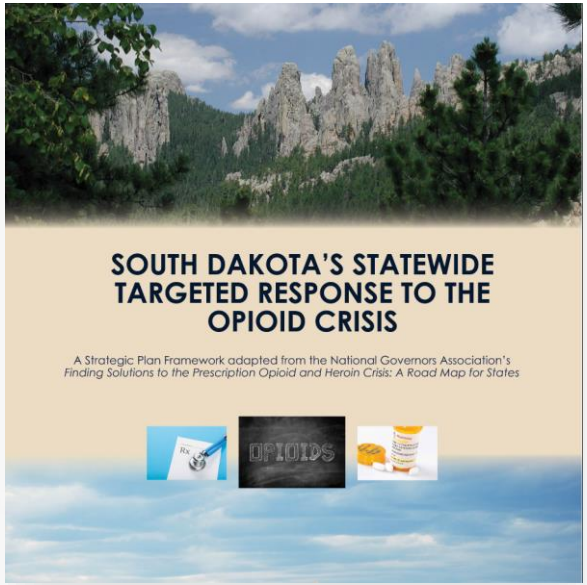
Socioeconomic Data

Poverty[27]	13.9%
No High School Diploma[27]	8.6%
Unemployed[27]	2.6%
Single Parent Households[27]	8.7%
Persons 65 and Older[27]	15.5%
Persons 17 or Younger[27]	24.7%
Minority[27]	17.3%
Crowed Household[27]	2.3%
Household with No Vehicle[27]	5.2%
Uninsured[27]	9.7%
Per Capita Income[27]	$28,761
Mobile Homes[27]	8.7%
People with Disability[27]	12.1%
Speak Limited English[27]	1.0%

Next Steps

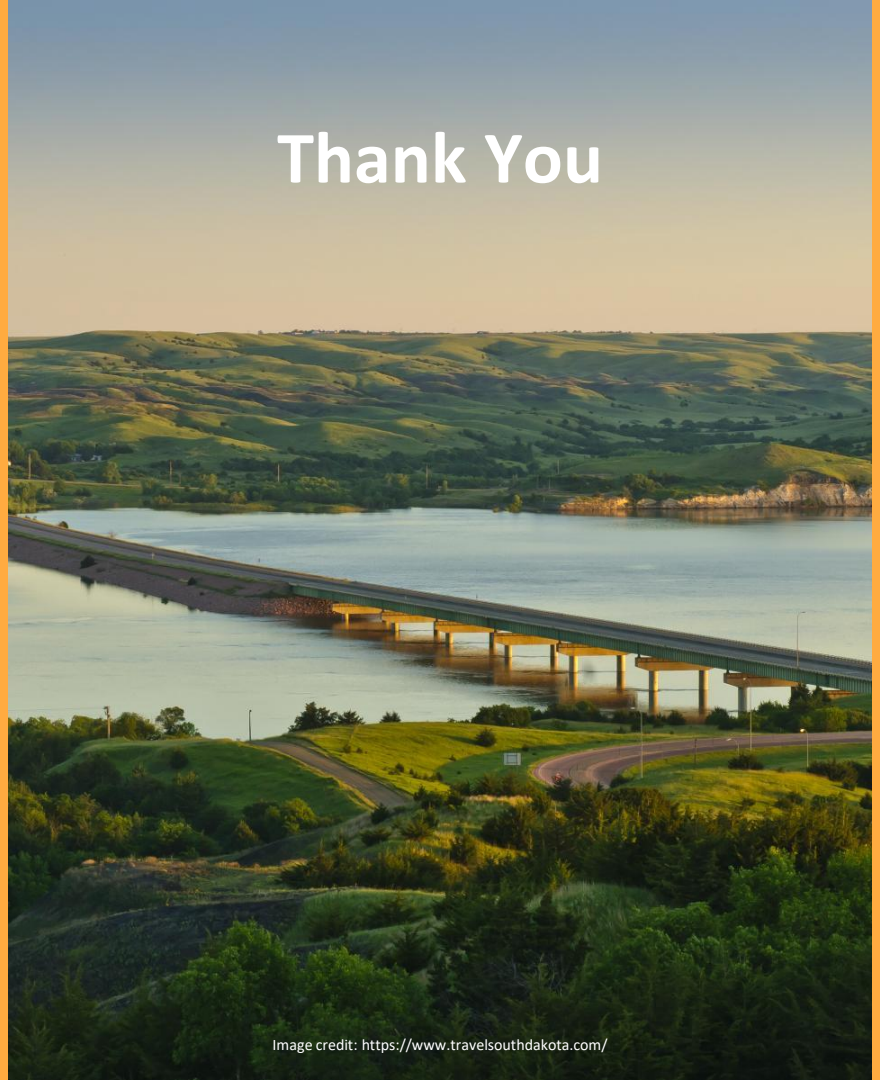
South Dakota Opioid Abuse Strategic Plan

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



South Dakota OD2A

Thank You



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