COMMUNITY HEALTH NEEDS ASSESSMENT

Osmond General Hospital

NCDHD North Central District Health Department

Nebraska Counties:

Antelope, Boyd, Brown, Cherry, Holt, Keya Paha, Knox, Pierce, and Rock

2019	Osmond General Hospital

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Data Contracting

NCDHD contracted with Juan-Paulo Ramirez, Ph.D. Dr. Ramirez is the owner of GIS and Human Dimensions, L.L.C. and is an Independent Contractor. Dr. Ramirez has previously held a position working at Nebraska Department of Health and Human Services compiling different data sets for the Division of Public Health.

Supporting Sponsors and Contributors (are and not limited to):

North Central District Health Department, Antelope Memorial Hospital, Avera Creighton Hospital, Avera Saint Anthony's Hospital (O'Neill), Brown County Hospital, Cherry County Hospital, CHI Plainview (Hospital), Niobrara Valley Hospital, Osmond General Hospital, Rock County Hospital and West Holt Memorial Hospital.

Overview of the Comprehensive Community Health Needs Assessment

Under the direction of the North Central District Health Department (NCDHD), the 2019 Community Health Needs Assessment has been devised to monitor health status and understand health issues facing the community in the NCDHD, Nebraska. This assessment, and previous assessments, will serve as a reference document for the health care facilities and community agency partners in the NCDHD to assist in strategic planning and continue working on the Community Health Improvement Plan (CHIP). See pages 11-16 for details.

It is the purpose of this assessment to inform all interested parties about the health status of the population within the Health District and to provide community partners with a wide array of data that can be used to educate and mobilize the community and its resources to improve the health of the population.

The Community Health Needs Assessment process is collaborative and is intended to serve as a single data report for multiple coalitions, organizations, and health care facilities in the Health Department. It is the goal of the Community Health Needs Assessment to describe the health status of the population, identify areas for health improvement, determine factors that contribute to health issues, and identify assets and resources that can be mobilized to address public health improvement. This assessment will be updated and revised every three years, thus providing communities with up to date data to evaluate progress made towards identified health priorities, and for the selection of new ones.

GIS and Human Dimensions, LLC., assembled this assessment of public health and community well-being under the provision of the North Central District Health Department, based largely upon data collected through the process of Mobilizing for Action through Planning and Partnerships (MAPP), behavioral health, and census data.

Coordination

As a local public health department, one of the core functions of North Central District Health Department is to assess the health needs of the community. This involves systematically collecting and assembling information on the public health status of the community, in cooperation with others, including statistics on health status, community health needs,

environmental health, epidemiologic, and other studies of health, and making the information available to the public.

Non-profit, tax-exempt hospitals are required by the 2010 Patient Protection and Affordable Care Act to conduct a Community Health Needs Assessment (CHNA) every three years. To meet requirements, impacted hospitals must analyze and identify the health needs of their communities and develop and adopt an implementation strategy to meet the identified needs.

The health department functionality and the IRS requirement for hospitals serve to form a natural platform for coordination of completing the community health assessment. Therefore, NCDHD and the district hospitals partner together to complete a joint community health assessment and community health improvement plan.

There are seven district hospitals subject to the IRS requirement:

Antelope Memorial Hospital, Antelope County

Avera Creighton Hospital, Knox County

Avera Saint Anthony's Hospital, Holt County

Osmond General Hospital, Pierce County

Plainview Community Hospital, Pierce County

Niobrara Valley Hospital, Boyd County

West Holt Memorial Hospital, Holt County

While the other three district hospitals are not required to complete a Community Health Needs Assessment or Community Health Improvement Plan, working with them to create community-specific plans serves to make NCDHD's overall Community Health Improvement Plan more meaningful and enhances service the hospitals provide to the community. Those hospitals are:

Brown County Hospital, Brown County

Cherry County Hospital, Cherry County
Rock County Hospital, Rock County

Background: NCDHD

North Central District Health Department (NCDHD) is a state-approved district health department that serves nine rural Nebraska counties—Antelope, Boyd, Brown, Cherry, Holt, Keya Paha, Knox, Pierce, and Rock. NCDHD has been state-approved as a multi-county public health department, a government body at the county level, since December 2001, providing education and services to the nine-county area.

Nebraska Statute 71-1628.04 provides guidance on the role public health departments must play and provides the following required elements, which align with NCDHD's role in the community health assessment and community health improvement plan process.

> *Each local public health department shall include the essential elements in carrying out the core public health functions to the extent applicable within its geographically defined community and to the extent funds are available. The essential elements include, but are not limited to, (a) monitoring health status to identify community health problems, (b) diagnosing and investigating health problems and health hazards in the community, (c) informing, educating, and empowering people about health issues, (d) mobilizing community partnerships to identify and solve health problems*

North Central Community Care Partnership (NCCCP), a community grassroots effort that served as the local public health coalition prior to the formation of NCDHD, set the groundwork for public health assessment in our nine counties by completing the first district Community Health Needs Assessment and developing a community health improvement plan in 1999. Through that process, NCCCP worked collaboratively with many public health partners, including our local hospitals, to complete a random sample community health needs assessment. In 2007, the NCDHD Board of Health voted to recognize NCCCP as the official strategic planning partner of NCDHD and its nine counties.

To further support efforts committed to the assessment and planning process, NCDHD is preparing to pursue local public health department accreditation. All local health departments must have completed a Community Health Assessment (CHA) and Community Health Improvement Plan (CHIP) as a prerequisite to applying for accreditation. Accreditation standards require the health department to:

- *Participate in or lead a collaborative process resulting in a comprehensive community health assessment*
- *Collect and maintain reliable, comparable and valid data that provide information on conditions of public health importance and on the health status of the population*
- *Analyze public health data to identify health problems, environmental public health hazards, and social and economic factors that affect the public's health*
- *Provide and use the results of the health data analysis to develop recommendations regarding public health policy, processes, programs or interventions*
- *Conduct a comprehensive planning process resulting in a community health improvement plan*

Engagement with the public health system and the community in identifying and addressing health problems through collaborative processes is a standard of NCDHD.

Background: District Hospitals

The Patient Protection and Affordable Care Act (PPACA) has called on non-profit hospitals to increase their accountability to the communities they serve. PPACA creates a new Internal Revenue Code Section 501(r) clarifying certain responsibilities for tax-exempt hospitals. Although tax exempt hospitals have long been required to disclose their community benefits, PPACA adds several new requirements.

Section 501(r) requires a tax-exempt hospital to:

- Conduct a Community Health Needs Assessment (CHNA) at least once every three years and adopt an implementation strategy to meet the community health needs identified through the CHNA
- Define the community it serves and assess the health needs of that community
- Take into account input from persons who represent the broad interests of the community served by the hospital facility, including those with special knowledge of or expertise in public health
- Make the CHNA widely available to the public
- Document the CHNA in a written report ("CHNA report") that is adopted for the hospital facility by an authorized body of the hospital facility

Hospitals have been providing community benefits for many years in a variety of ways. In return, hospitals receive a variety of local, state, and federal tax exemptions. The activities listed under "community benefit" are reported on the hospital's IRS 990 report.

Community benefit has now been defined by the Internal Revenue Service (IRS) as "the promotion of health for a class of persons sufficiently large so the community as a whole benefits." Simply put, community benefit is composed of programs and services designed to address identified needs and improve community health. To qualify as community benefit, initiatives must respond to an identified community need and meet at least one of the following criteria:

- *Improve access to healthcare services*
- *Enhance health of the community*
- *Advance medical or health knowledge*
- *Relieve or reduce the burden of government or other community efforts*

OSMOND GENERAL HOSPITAL : SERVICE AREA AND FACILITY INFORMATON

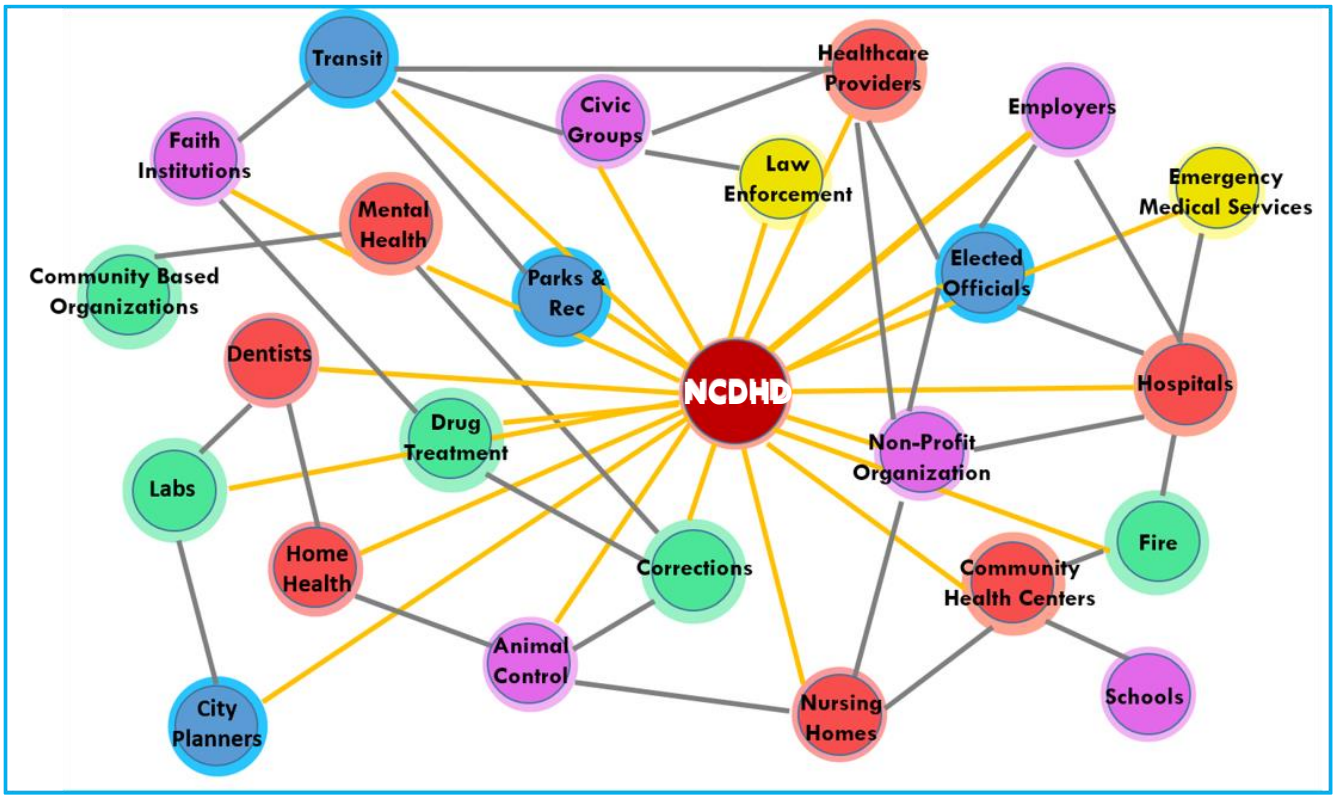
Osmond General Hospital is a 20-bed critical access hospital which serves the residents of Northeast Nebraska with medical facilities located in Osmond, Randolph and Wausa. Direct Services offer include: Acute and Skilled inpatient care, 24/7 Emergency Services, Radiology, CT Scan, MRI, Lab, Cardiac Rehab, Geriatric Group Psychiatry, Physical and Occupational Therapy and minor surgery. Osmond General Hospital is committed to improving the health of Osmond and the surrounding communities by providing patient centered, high quality care in a cost effective and safe manner. While some residents of surrounding counties utilize Osmond General Hospital services, this assessment and subsequent interventions will be targeted primarily at Pierce County, Nebraska with some data supporting Knox County, Nebraska.

Community Health and the Local Public Health System

Community health includes a broad array of issues addressed by numerous agencies. Topics that fall under community health include such things as access to health care, health literacy, perceptions of the well-being of the community, utilization of social programs, child welfare, crime, alcohol and tobacco use, drug use, poverty, obesity, diabetes, teen pregnancy, teen sexual activity, healthy children, environmental factors affecting health, cancer, heart disease, and a broad array of other epidemiological topics.

Addressing needs of community health goes far beyond the work of hospitals and the public health department. A broad network of agencies must work in collaboration to meet the diverse health needs of the community. An example of the local public health system network is shown in Figure 1 in which over 20 agencies collaborate in various ways in order to form a multi-connected network of public, private, faith based, non-profit, and for-profit agencies that effectively addresses the health needs of the community.

Figure 1: The Local Public Health System



Source: National Public Health Performance Standards. Modified by GIS and Human Dimensions, LLC

Mobilizing for Action through Planning and Partnerships (MAPP)

Mobilizing for Action through Planning and Partnerships (MAPP) is the strategy used by the North Central District Health Department to gather data, select public health priorities, and foster collaboration among multiple health care providers. MAPP is a community-driven strategic planning tool for improving community health. Facilitated by public health leaders, this tool helps communities apply strategic thinking to prioritize public health issues and identify resources to address them. MAPP is not an agency-focused assessment tool; rather, it is an interactive process that can improve the efficiency, effectiveness, and ultimately the performance of local public health systems. Figure 2.

Timeline

July – September 2018 Organize, coordinate participants & prepare for process

October 2018 – February 2019 Community Health Needs Assessment data collection

February – March 2019	Community Themes & Strengths, forces of change & local public health system assessment
March 2019	Community Health Assessment (CHA) Data Presentation
April – May 2019	CHA report completed, adopted by hospital group and community partners, priority areas selected by partnership members, goals and strategies made for the community health improvement plan

Beginning in July 2018 a core team of NCDHD staff members working with key partners from participating hospitals began preparing for the next round of community health assessment activities. Work during this phase involved thoroughly reviewing and using MAPP guidance resources on the National Association for City and County Health Officials (NACCHO) website.

As the participant element of the process is critically important for building commitment, engaging community members, and achieving a plan that is truly community-owned and community-driven, several initiatives were undertaken to achieve significant progress in this arena. Key activities included a brainstorming session with NCDHD staff members and NCCCP members using public health sector categories, frequent requests to current participants – via email at least monthly and at in-person meetings – to identify and contact potential participants, research by a core team of NCDHD Staff to identify people serving in key roles within public health sectors, and phone or email contact with identified individuals to extend requests for participation in the CHA/CHIP process.

Due to the importance of participation from a wide range of community members, efforts to identify and contact potential participants continue to be an ongoing area of focus.

The essential building blocks of MAPP are four assessments which provide critical insights into the health challenges and opportunities confronting the community. These four assessments and the issues they address are described below.

Figure 2: The MAPP Conceptual Model

Source: National Association of County and City Health Officials

The "Four Assessments"

1. *The Community Health Status Assessment* identifies community health and quality of life issues. Questions answered by this assessment include: "How healthy are our residents?" and "What does the health status of our community look like?" The Community Health Status Assessment contains a comprehensive data collection process. It includes public health data collected by Nebraska DHHS, as well as data from the Behavioral Risk Factor Surveillance System (BRFSS), Youth Risk Behavior Survey (YRBS), and Nebraska Risk and Protective Factor Student Survey (NRPFSS), among other data sources. The *Community Health Status Assessment* provides the majority of data in this report.

2. *The Community Themes and Strengths Assessment* provides a deep understanding of the issues that residents feel are important by answering questions such as: "What is important to our community?" "How is quality of life perceived in our community" and "What assets do

we have that can be used to improve community health?" This assessment includes community surveys (i.e., Special Population Needs Assessment, 2016; 2018 Community Health Assessment). See Appendix A. Additional Themes and Strengths were identified at the March 27, 2019 Data Presentation Meeting.

3. *The Forces of Change Assessment* focuses on identifying forces such as legislation, technology, and other impending changes that affect the context in which the community and its public health system operate. This answers the questions: "What is occurring or might occur that affects the health of our community or the local public health system?" and "What specific threats or opportunities are generated by these occurrences?" See Appendix B (focus group in Knox County held at the Creighton Library on March 7, 2019). Additional Forces of Change were identified at the March 27, 2019 Data Presentation Meeting.

4. *The Local Public Health System Assessment* focuses on all of the organizations and entities that contribute to public health. The LPHSA answers questions such as: "What are the components, activities, competencies, and capacities of our local public health system?" and "How are the Essential Services being provided to our community?"

The Ten Essential Public Health Services

The ten essential services of public health provide a working definition of the public health system and a guiding framework for the responsibilities of local public health partners (Figure 3). These functions and services are specifically referenced in the Neb.Rev.Stat. §71-1628.04. The ten essential services include:

1. Monitor health status to identify and solve community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships into action to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.

6. Enforce laws and regulations that protect health and ensure safety.

7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable.

8. Assure competent public and personal health care workforce.

9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.

10. Research for new insights and innovative solutions to health problems.

Figure 3: The ten essential public health services

Source: Nebraska DHHS, Division of Public Health (2017)

COMMUNITY HEALTH IMPLEMENTATION PLAN (CHIP)

2017 EXECUTIVE SUMMARY

COALITION PRIORITIES

1. **PHYSICAL WELLNESS**
2. **AGING POPULATION AND RELATED ISSUES**
3. **MENTAL HEALTH**
4. **SUBSTANCE ABUSE**

COALITION GOALS

1. **Improve community physical health and wellness.**
2. **Improve health, wellness, and quality of life for older adults (65+).**
3. **Mental health will be a universally accepted part of healthcare in our region.**
4. **Adolescents will be aware of advantages of being free from abusive substances.**

CURRENT STATUS OF YEAR 3 OBJECTIVES & STRATEGIES

Objectives & Strategies	Achieved	On Going	Carried over to Next Year	Other
Physical Wellness: Objective 1: Reduce the proportion of district residents who are obese or overweight from 72% to 70% by 2019.				
Physical Wellness: Objective 2: Reduce the proportion of district residents who are physically inactive from 31% to 29% by 2019.				
1. Develop resource directory of programs and services available throughout the district	X			
2. Develop and strengthen community partnerships to increase awareness of services/programs throughout the district	X			
3. Ensure a strategic focus on populations at greater risk	X			
4. Explore the feasibility of an online resource document that is available for all community members of the district	X			
Aging Population and Related Issues Objective 1: Implement two initiatives district wide to improve health, wellness, and a quality of life of older adults.				
1. Develop resource directory of programs and services available throughout the district.	X			
2. Develop and strengthen community partnerships to enhance provision of services.	X			
3. Support existing community programs and services.	X			
4. Ensure a strategic focus on population at greater risk.	X			
Mental Health Objective 1: Promote use of mental health screening tool to 100% of primary care providers and schools across the nine counties by July 1, 2017.				
1.Find/develop a tool to be utilized by primary care providers and schools	X			

2.Disseminate medically appropriate tool to primary care providers	X			
3.Disseminate school appropriate tool to schools	X			
Mental Health Objective 2: Utilize existing partnerships among community organizations / agencies / individuals to connect mental health needs to mental health resources by August 2017.				
Add a focus on mental health to NCCCP and at least one other partnership	X			
Mental Health Objective 3: Develop a strategy(s) to address barriers and stigmas of mental health by 5/31/2018.				
Implement a mental health awareness campaign, to include: presentation / partnerships / resource document; traditional media; and social media.	X			
Substance Abuse Objective 1: Increase school participation in Student Health and Risk Prevention (SHARP) surveys by 10% by fall 2018.				
Increase the schools' recognition of importance of completion of survey	X			
Substance Abuse Objective 2: Partner with at least three youth organizations that implement strategies to promote a substance-free culture by May 2018.				
1 Utilize Life of an Athlete (LOA) resources to create a substance-free environment.	X			
2 Expand LOA resources beyond athletics.	X			
Substance Abuse Objective 3: Raise awareness of substance abuse in the nine counties by December 31, 2018.				
3.1 Create a substance abuse message	X			
3.2 Disseminate substance abuse message	X			
Substance Abuse Objective 4: Make prescription drug lock boxes available to hospitals in the nine counties by December 31, 2018.				
4.1 Provide prescription drug lock boxes to medical facilities, or other pertinent locations	X			

SUMMARY OF COALITION PRIORITY EFFORTS

(JANUARY 2018 - DECEMBER 2018)

1. PRIORITY 1- PHYSICAL WELLNESS

The workgroup was quite active in improving lifestyle choices, which hinder wellness, and increasing screening opportunities in the area. Around 11,800 people were touched by the coalition efforts. Also notable is the collaborative effort between area partners, allowing the group to pool its resources and not relying on one organization to conduct most of the work. In 2017 a physical wellness survey was created and distributed with poor completion rates. The group distributed a revised survey to increase completion rates. Based on the survey results, a resource directory outlining nine-county resources was created and distributed to partners. NCDHD and hospitals placed the resource directory on their websites.

2. PRIORITY 2- AGING POPULATION AND RELATED ISSUES

The Nebraska Area Agency on Aging attended a meeting in May 2017 to present their resources to the group. The group was able to list all the existing area resources addressing the aging population. A document outlining resources will be created in 2018. A Dropbox was created to share resources with partners and create a platform to document organization efforts. A resource directory outlining nine-county resources was created and distributed to partners. NCDHD and hospitals placed the resource directory on their websites.

3. PRIORITY 3 –MENTAL HEALTH

OBJECTIVE 1: 2018 SUMMARY

In 2017, CHIP partners selected a mental health screening tool to recommend to area medical providers, religious organizations, schools, etc. A letter, with the screening tool, was sent to 403 selected organizations encouraging consideration for mental health to be incorporated in everyday examination, counseling, and guidance.

OBJECTIVE 1: 2018 SUMMARY

Discussion within the work group began with a concept of a letter to community organizations, agencies or individuals that would attempt to connect those with mental health needs to available mental health resources. Instead of a letter being created, the group was made aware of a community program attempting to incorporate its existence for the benefit of families in need of mental health services. With this awareness, the work group involved itself with NCCCP, NCDHD, O'Neill St. Mary's, O'Neill Public School, and other entities to research the feasibility of partnering with this community effort – eventually to be called "Tend My Flock" Ministry. Contacts were initiated with Avera St. Anthony's Hospital, O'Neill Ministerial Association, and

O'Neill Public School to which verbal, physical and financial supportive agreements were made. Connections were formed with NCCCP, Pinnacle Bank, United Way, West Holt Ministries, Counseling & Enrichment Center, OASIS Counseling, and KBRX Radio Station. With 10 partnerships/connections formed, progression of multiple efforts stalled and eventually impeded due to limitations of physical and financial support and future direction of sustainment. This initiative is on-going and will progress past the life of the 2016-2018 CHIP workgroup. The original intent of a "letter to invite and engage" was re-directed to be an included component of the screening tool and thereby sent out to the district entities describing available mental health resources. Educational opportunities were fostered through the workgroup's leadership and development of mental health forums via media outlets that channeled awareness of mental health barriers and stigmas.

OBJECTIVE 1: 2018 SUMMARY

A campaign document was discussed though not created as an individual item. Following multiple ideas, efforts to promote mental health awareness within communities were directed through Public Service Announcements (PSAs) and the resource document included within the Screening Tool. Planning would be documented through the minutes of the workgroup and the Annual Reports regulated by the NCDHD. Antelope Memorial Hospital and Avera St. Anthony's each created a video reducing stigma associated with mental health and apprising community members of available mental health services. CHIP partners then shared the videos on various platforms. Thirteen Mental Health First Aid and/or Youth Mental Health First Aid trainings were held in the nine-county area and 7 more were scheduled, but not held. The following action items were executed:

Action item #1 – Formulate desired message of mental wellness, develop verbal script and invite participants to offer a personal/work environment in delivery of message through audio/visual recording capacities. Share completed video product with various social media and internet outlets.

Action item #2 – Connect with local radio stations to develop the concept of a broadcasted mental health forum that addresses mental health issues, CHIP efforts and resources for community listeners.

Action item #3 – Offer opportunities to repeatedly share mental health video messages when appropriate.

Action item #4 – Offer and promote Mental Health First Aid trainings throughout the district.

4. SUBSTANCE ABUSE

OBJECTIVE 1: 2018 SUMMARY

The workgroup drafted and mailed several letters from NCDHD and partners to encourage area schools to encourage their participation in the SHARP surveys conducted by the University of Nebraska.

OBJECTIVE 2: 2018 SUMMARY

Initiatives to partner with youth-focused organization to create a substance free environment were conducted by CHIP partners and area schools. North Central District Health Department, through the Area Substance Abuse Prevention coalition, sent three students and one adult to the Human Performance Project/ *Life of an Athlete* Summer Camp in Lincoln, NE in July 2018. In addition to thing training, NCDHD also sent four students and two adults to the Lake Placid Summer Training in July 2018. The CHIP workgroup believes Objective 2 has been satisfied and continues to encourage and provide support for schools interested in Human Performance Project/ *Life of an Athlete.*

OBJECTIVE 3: 2018 SUMMARY

It is important to note this objective was added to the original CHIP in early 2018, due to the workgroup's perception that not enough was being done to address substance abuse. Antelope Memorial helped fund Antelope County Does Care speaker, Tony Hoffman, to speak to Neligh High, Elgin Public, Elgin Pope-John, Clearwater, Orchard, and Creighton High School students. A summer alcohol media campaign was implemented addressing, drinking and driving, binge drinking, and locking up your alcohol by NCDHD and Area Substance Abuse Prevention Coalition. Region 4 ran an opioid prevention media message throughout the nine counties through radio media outlets.

OBJECTIVE 4: 2018 SUMMARY

It is important to note this objective was added to the original CHIP in early 2018, due to the workgroup's perception that not enough was being done to address substance abuse. 66 prescription drug lock boxes were dispersed by Region 4 to area hospitals and partners. Plainview CHI Hospital received grant from Region 4 to purchase and install a permanent drug drop box in Plainview, NE. A drug drop-off event was also held in Plainview and collected around 7 pounds of unwanted prescription education. The workgroup feels it has adequate met this objective and is actively working to build upon its success.

SUMMARY OF MAJOR COALITION ACTIVITIES (JANUARY 2018 - DECEMBER 2018)

Community Coalition	➢ 6 coalition meeting were conducted, with an average of 6 coalition members in attendance
Training/Education	➢ Life of an Athlete Lake Placid Summer Training: 2 adults and 4 Youth ➢ Human Performance Project/ Life of an Athlete Lincoln Summer Training: 1 adult 3 Youth
Programs Implemented	☐
Resource Awareness	➢ A resource directory was created by the Aging Population and Wellness workgroups. The resource directory was placed on NCDHD's website and provided area hospitals to place on their website
Assessments and Planning	☐
Sustainability	☐

Visioning for 2019 – 2022

Visioning phase was conducted at the community meeting held on March 27, 2019. Due to the geographic nature of our district and travel time required for participants to meet in a central location, meeting structure and arrangement of activities to be completed at each meeting was organized in an attempt to maximize the time available with community participants. Fortunately, a fundamental component of the MAPP model is to tailor the process to the unique needs and characteristics of the community. The vision of "Healthy People in Healthy Communities" remains as the chosen vision statement.

Prior to the data presentation, participants were given strategic issue identification worksheets and instructed to record potential strategic issues they noticed during the presentation, as well as the specific significant health need data that caused them to identify it as a potential strategic issue. Definitions and criteria for strategic issues were also provided. Following the data presentation, participants broke up into small groups and completed strategic issue consolidation worksheets by reviewing the strategic issues recorded on the identification worksheet, ensuring the issues are strategic using the definitions and criteria provided, eliminating duplicates, and grouping the remaining

issues by topic or theme. Finally, the grouped areas of strategic issues were given headings to describe the general health category of that topic area. Each workgroup presented their information to the larger group and strategic issue categories were documented on flip charts, which were subsequently posted around the room. To prioritize the significant health needs, attendees were given three colored stickers and instructed to vote for the three categories they identified as the most important priorities to address by placing their colored stickers on the flip chart sheet for that category. Participants were also advised to consider whether the issues are within our scope of control, realistic/achievable, and whether resources were available to address the issues. Once all votes were placed, a spirited discussion took place in an effort to achieve consensus on the top three or four priority areas that would be chosen for the implementation plan phase of the process. The group was aiming for three or four focus areas in order to make the plan more realistic, manageable, and achievable.

The initial priority areas selected by the community partnership work group was identified as: 1) Mental Health, 2) Chronic Disease Management and 3) Issues across the Lifespan. These priority issues will be worked on for the Community Health Improvement Plan in workgroups designated. All information was placed into a meeting minutes document and sent out to all community partnership members for confirmation and for seeking of additional information and feedback.

Data Sources

Description of Data Sources

A broad array of primary and secondary sources provide data for this report.

Primary data sources: consisted of community health assessment surveys conducted by the North Central District Health Department in 2016 and 2018. In addition, a focus group was conducted in January 2019 to address the main barriers to healthcare faced by community members, and how the Health Department could help to overcome these barriers. Transcripts of the focus group are available in the Appendix.

Secondary data sources: consisted of federal (DHHS; American Community Survey), state (DHHS: Nebraska Behavioral Risk Factor Surveillance System; Vital Statistics), community health rankings, CDC Community Health Status Indicators, US Census American FactFinder, US Census Small Area Income and Poverty Estimates (SAIPE), USDA (Economic Research Service), Rural Health Information Hub (Rural Data Explorer), Measure of America (Social Science Research Council), and Integrated Public Use Microdata Series – IPUMS-USA (University of Minnesota).

Following is a summary of the more frequently cited sources:

Frequently Cited Data Sources	
Data Source	Description
Behavioral Risk Factor Surveillance System (BRFSS)	- A comprehensive, annual health survey of adults ages 18 and over on risk factors such as alcohol use, tobacco use, obesity, physical activity, health screening, economic stresses, access to health care, mental health, physical health, cancer, diabetes, and many other areas impacting public health.
NCDHD Community Health Assessments and Surveys	- Community surveys conducted by the North Central District Health Department (NCDHD) in 2016 ("Special populations") and 2018 around issues such as health concerns, health risk factors, perceived quality of life, access to medical care, and community well-being. - 2016 NCDHD Community Health Assessment.
Nebraska Department of Education	- Data contained in Nebraska's annual State of the Schools Report, including graduation and dropout rates, student characteristics, and student achievement scores.
Nebraska Department of Health and Human Services (DHHS)	- A wide array of data around vital statistics.

Nebraska Risk and Protective Factor Student Survey (NRPFSS)	- A survey of youth in grades 6, 8, 10, and 12 on risk factors such alcohol, tobacco, and drug use, and bullying. The survey was conducted most recently in 2017.
Youth Risk Behavior Survey (YRBS)	- A public health survey of youth in grades 9 through 12.
U.S. Census/American Community Survey	- U.S. Census Bureau estimates on demographic elements such as population, age, race/ethnicity, household income, poverty, health insurance, single parent families, and educational attainment. Annual estimates are available through the American Community Survey (the most recent 5-years estimates from the American Community Survey (ACS, 2013-2017) were used for this report.

Statistical data limitations

It was not always possible to analyze health outcomes, or health and social disparities by "special populations", such as low income, minorities, and elderly residents. This is due to inherent statistical limitations of small sample sizes, as it is common to encounter throughout the communities of the North Central District Health Department. For this reason, instead of providing annual health outcome indicators, it was decided to use – "Five Year Moving Averages Combined" (i.e., 2001-2005 years combined to 2013-2017 year combined) to increase the accuracy of the data.

When available, health indicators were analyzed by special populations based on gender, age, race/ethnicity, and geographic location (county level, and Health District vs. State). In the case of gender, significant statistical differences were noted by specific health indicators. These segmented data elements come from the Nebraska Behavioral Risk Factor Surveillance System (BRFSS, 2011-2017) and Vital Statistics information provided by the Nebraska Department of Health and Human Services.

Social Determinants of Health

Social Determinants of Health Definition

The Centers for Disease Control and Prevention (CDC) defines Social Determinants of Health as "the complex, integrated, and overlapping social structures and economic systems that are responsible for most health inequities. These social structures and economic systems include the social environment, physical environment, health services, and structural and societal factors. Social determinants of health are shaped by the distribution of money, power, and resources throughout local communities, nations, and the world." The following indicators are some examples to depict social determinants of health:

- 18-24 Year Olds Without a High School Diploma
- Low Access to Healthy Food

- Median Household Income
- Personal Income $100K and Over
- Personal Income Under $ 25K
- Population Without a High School Diploma
- Poverty
- Unemployment Rate

Health Disparities

Health Disparities Definition

Healthy People 2020 defines health disparities as “a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion."

North Central District Health Department: Demographic and Public Health Data

Overview

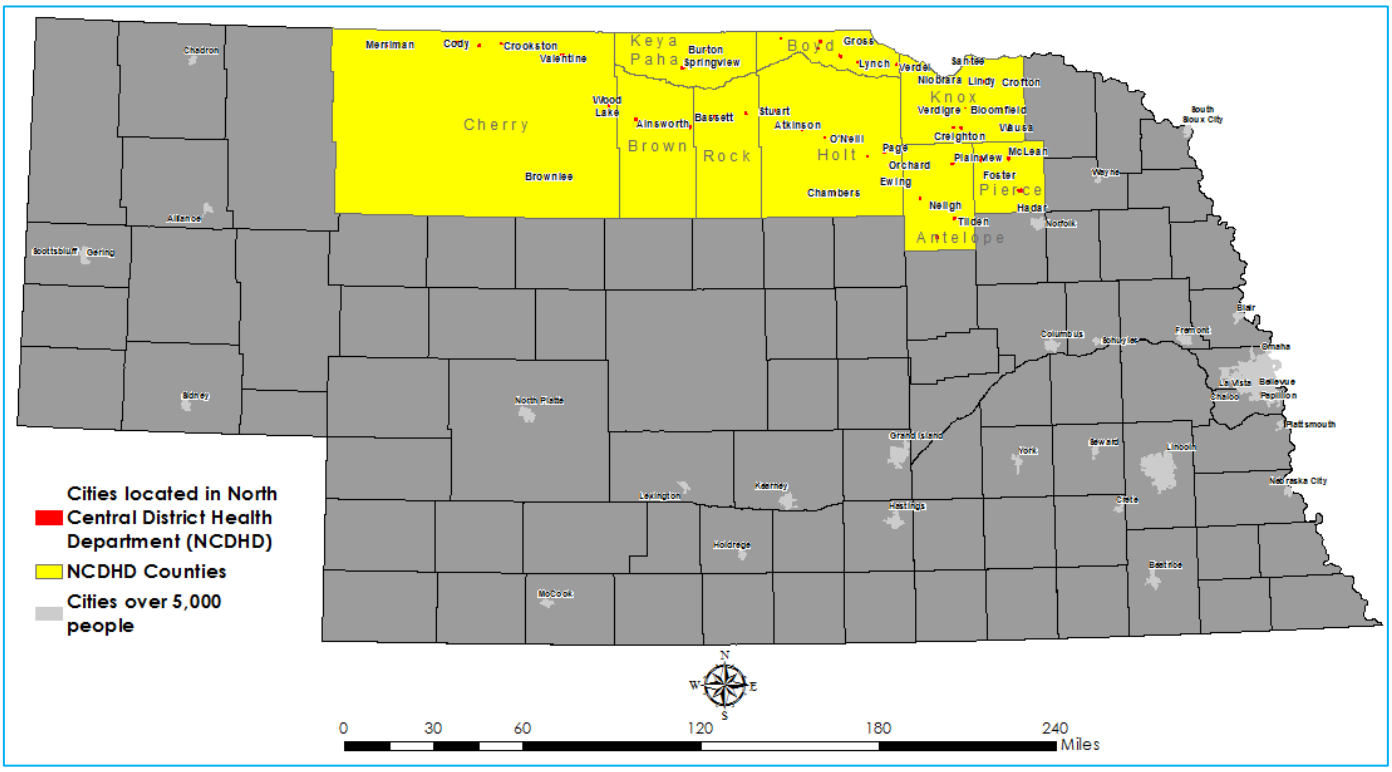
NCDHD services the counties of Antelope, Boyd, Brown, Cherry, Holt, Keya Paha, Knox, Pierce, and Rock.

Quick Facts from US Census Bureau

Population (2017 estimate)	45,370
Population Change in NCDHD (2010-2017)	-3.0%*
Unemployment Rate (December 2018)	2.5%** (Nebraska: 2.8%)
Total Land Area	14,549.2 sq. miles

*US Census data (2010 and 2017 estimates)

** Nebraska Department of Labor, Labor Market Information, Local Area Unemployment Statistics (December 2018)

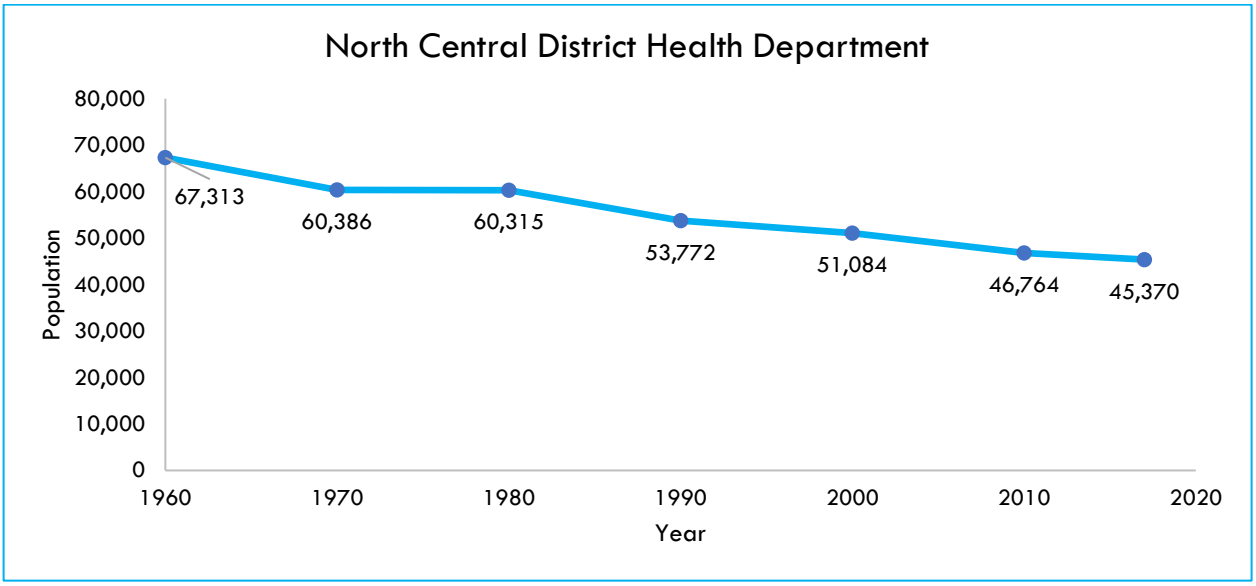


Population Characteristics

Demographics

According to the U.S. Census, there were an estimated 45,370 persons living in the NCDHD in 2017, a decrease of 3.0% from the population in 2010 (Table 1, page 24). During the same time period, Nebraska's population grew by 5.0%. Figure 1 shows the total population decline in the NCDHD from 1960 to 2017, which is similar to state and national trends experienced in rural areas, whereas total populations in urban areas have steadily increased since the 1950's. See Figure 4.

Figure 4: North Central District Health Department Population, 1960-2017

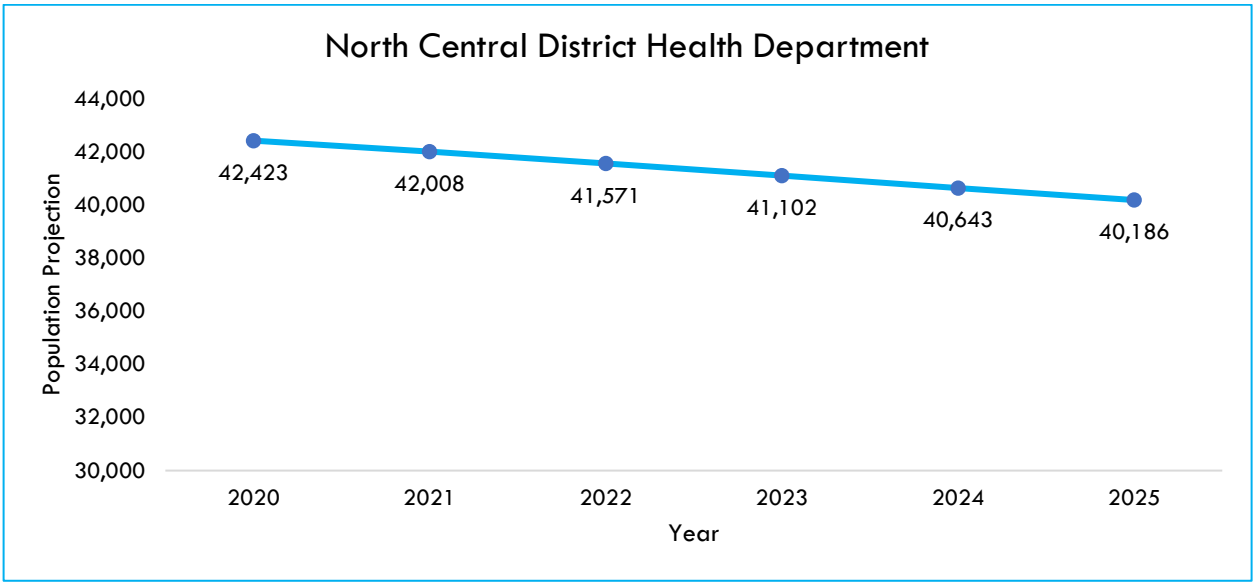


Source: US Census Bureau: Population of Counties by Decennial Census: 1900 to 1990 (Compiled and edited by Richard L. Forstall), and U.S. Census Bureau FactFinder 2000 to 2017.

Figure 5 shows population projections from 2020 to 2025 for the North Central District Health Department using the 2010 Census as a starting point (Center for Public Affairs Research, UNO, 2015). These projections are based on current population structure by birth, death, and net migration rates, and how they change for various age groups. These population projections show a similar trend as observed in previous census data for NCDHD since 1960.

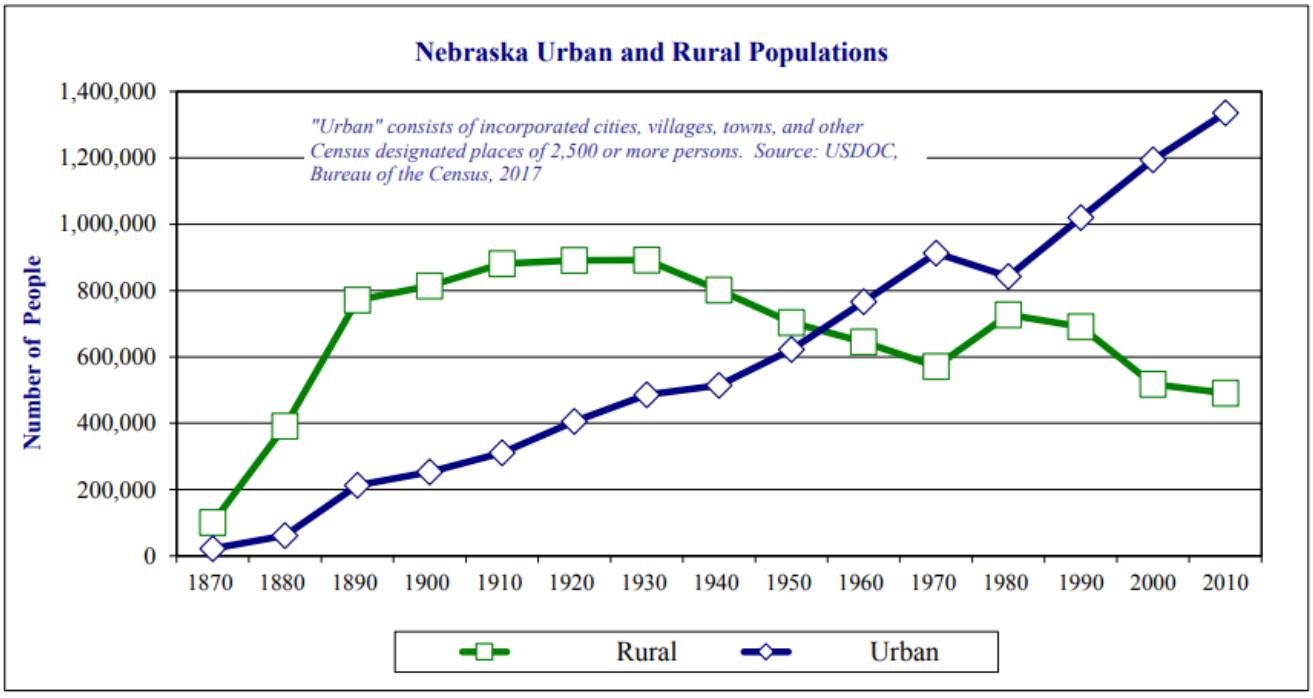
Figure 6 shows how Nebraska's population growth since 1955 has been concentrated in urban areas, especially metropolitan areas such as Omaha (Douglas and Sarpy counties) and Lincoln (Lancaster County), while rural population has steadily declined. In 1870, most of Nebraska's population was rural. In 2010, about two thirds of Nebraska residents lived in urban areas, defined as municipalities of 2,500 or more residents. Between 2000 and 2010, 68 of the state's 93 counties lost population. The state population continues to increase in urban areas and decrease in rural areas.

Figure 5: North Central District Health Department Population Projections, 2020-2025



Source: Center for Public Affairs Research, UNO: Nebraska County Projections, (December 2015).

Figure 6: Nebraska Urban and Rural Populations, 1870-2010



Source: U.S. Department of Commerce. Bureau of the Census, 2017.

Population Changes by Age Group

Age groups "65-84" and "85 and older" have experienced a positive growth in the NCDHD between 2010 and 2017, while all age groups under 65 years of age, except for "Under 5 years", have experienced a negative growth. Similar trends for age groups "65 and older" have been shown at the State level. Age group "45-64" years experienced the most significant negative change between 2010 and 2017 (-6.0%) followed by age group "5-14" (-5.8%). One-fifth of the rural Nebraska county population (19.6%) was 65 years of age or older in 2010, compared to 15.1 percent in small urban counties and 10.7 percent in large urban counties (Nebraska DHHS, 2016).

When comparing population changes between 2000 and 2010, population decrease was pronounced in NCDHD, totaling an 8.5% decrease, with some age groups experiencing a population decrease of over 20% (i.e., "5-14" and "25-44"). In contrast, over the last time period between 2010 and 2017, population change (negative or positive) among all age groups has been 6% or lower. These population changes may indicate that total population in NCDHD will stabilize by the next decennial census.

Racial and Ethnic Minorities

Based on U.S. Census data, the minority population in NCDHD is growing at a higher rate than the non-Hispanic White population. Since 2010, the number of people who were classified as racial or ethnic minorities increased by 31.0 percent to an estimated population of 3,542 in 2017. In contrast, the non-Hispanic White population in NCDHD decreased by 5.1 percent over the seven-year period.

The total Hispanic population in NCDHD has tripled since 2000, growing from 410 individuals to 1,233 by 2017. The Native American and Asian/Pacific Islander population have also experienced positive population changes between 2010 and 2017 (12.8% and 29.2%, respectively), while "African American" and "Other" races have experienced a negative population change between 2010 and 2017 (-21.7% and -23.9%, respectively).

Table 1: NCDHD Population Characteristics, 2000, 2010, 2017

	2000		2010			2017		
	Population	% of Total	Population	% of Total	% Change in Population [a]	Population	% of Total	% Change in Population [b]
NCDHD Total	**51,084**	**100%**	**46,764**	**100%**	**-8.5%**	**45,370**	**100%**	**-3.0%**
Gender								
Female	**25,894**	**50.7%**	**23,660**	**50.6%**	**-8.6%**	**22,820**	**50.3%**	**-3.6%**
Male	**25,190**	**49.3%**	**23,104**	**49.4%**	**-8.3%**	**22,550**	**49.7%**	**-2.4%**
Age								
Under 5 years	**2,977**	**5.8%**	**2,766**	**5.9%**	**-7.1%**	**2,848**	**6.3%**	**3.0%**
5 -14 years	**7,824**	**15.3%**	**6,226**	**13.3%**	**-20.4%**	**5,868**	**12.9%**	**-5.8%**
15 -24 years	**5,916**	**11.6%**	**4,876**	**10.4%**	**-17.6%**	**4,751**	**10.5%**	**-2.6%**

25 -44 years	**12,198**	**23.9%**	**9,372**	**20.0%**	**-23.2%**	**8,960**	**19.7%**	**-4.4%**
45 -64 years	**11,840**	**23.2%**	**13,663**	**29.2%**	**15.4%**	**12,844**	**28.3%**	**-6.0%**
65 -84 years	**8,640**	**16.9%**	**8,192**	**17.5%**	**-5.2%**	**8,391**	**18.5%**	**2.4%**
85 and older	**1,689**	**3.3%**	**1,677**	**3.6%**	**-0.7%**	**1,708**	**3.8%**	**1.9%**
Race/Ethnicity								
White, NH [c]	**49,518**	**96.4%**	**44,369**	**94.3%**	**-10.4%**	**42,128**	**92.2%**	**-5.1%**
African American, NH	**27**	**0.1%**	**120**	**0.3%**	**344.4%**	**94**	**0.2%**	**-21.7%**
Native American, NH	**982**	**1.9%**	**1,074**	**2.3%**	**9.4%**	**1,211**	**2.7%**	**12.8%**
Asian/Pacific Islander, NH	**98**	**0.2%**	**24**	**0.1%**	**-75.5%**	**31**	**0.1%**	**29.2%**
Other, NH	**14**	**0.0%**	**309**	**0.7%**	**2107.1%**	**235**	**0.5%**	**-23.9%**
2+ Races, NH	**318**	**0.6%**	**388**	**0.8%**	**22.0%**	**738**	**1.6%**	**90.2%**
Hispanic	**410**	**0.8%**	**788**	**1.7%**	**92.2%**	**1,233**	**2.7%**	**56.5%**
Minority [d]	**1,849**	**3.6%**	**2,703**	**5.7%**	**46.2%**	**3,542**	**7.8%**	**31.0%**

[a] Change Population from 2000 to 2010
[b] Change in Population from 2010 to 2017
[c] NH = Non-Hispanic
[d] Reflects those who are not "White, NH"
Source: US Census Bureau

Household/Family Type

In 2010, over one-fourth (26.6%) of the 19,933 households in the NCDHD had one or more children under the age of 18 living at home (which equates to 5,297 households). By comparison, Nebraska had nearly one-third (32.0%) of children under the age of 18 living at home.

Single-parent households continue to increase in the NCDHD. The proportion of family households headed by single parents increased from 9.0 percent in 2010 (Census) to 13.5 percent in the 2017 (American Community Survey).

Educational Level of the NCDHD Adults

According to the 2013-2017 American Community Survey (ACS, Table S1501), 20.4 percent of persons aged 25 and older in the NCDHD had obtained a bachelor's degree or higher while 23.4 percent had some college or technical training. Over one-third of adults in this age group (35.2%) had a high school diploma or equivalent and 7.7 percent had less than a high school education. When comparing to the State of Nebraska level of educational attainment, the NCDHD had a similar percentage with some college or technical training than the State, and a lower percentage with bachelor's degree or higher. Table 2.

Table 2: Educational Attainment, population 25 years and over, NCDHD vs. State of Nebraska (ACS, 2017)

Level of education:	**NCDHD**	**State of Nebraska**
Bachelor's degree or higher	20.4%	30.6%

Some college or technical training	23.4%	23.4%
High school diploma or equivalent	35.2%	26.7%
Less than a high school education	7.7%	9.1%

Health Literacy

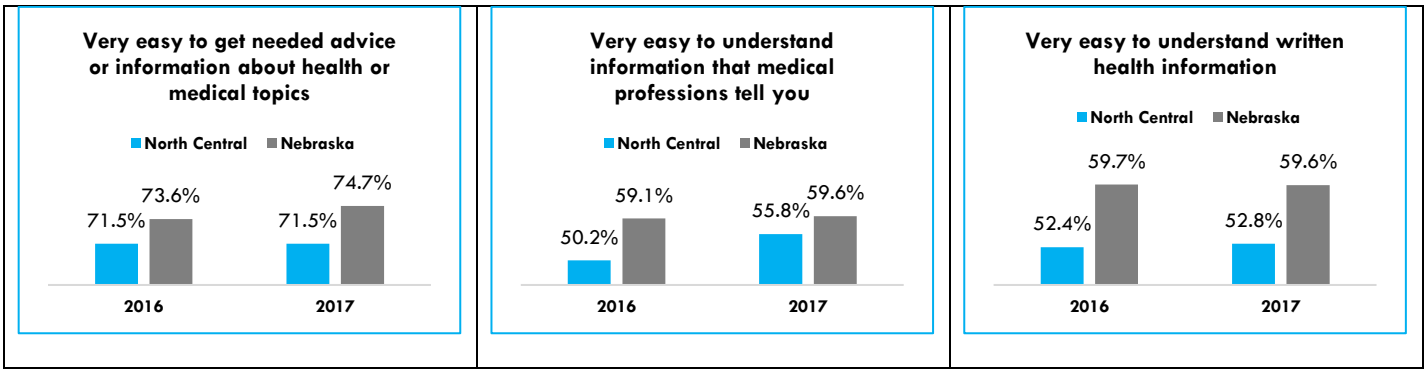
Health literacy is often defined as the ability of an individual to understand health information to the extent needed to make informed decisions (Ratzen & Parker, 2000). More specifically, health literacy is the ability of adults to use printed and written health-related information to function in society, to achieve one's goals and to develop one's knowledge and potential. (Kutner et al., 2006).

"Older adults have the greatest risk of poor health outcomes related to low literacy, putting them at a disadvantage when managing their health care compared to younger individuals". Regression analysis has demonstrated that income, education, help with filling out of forms, and health information sources are predictors of health literacy. (Crane, 2015).

The 2018 Community Health Assessment Survey[1] asked if respondents ever get help from others to fill out forms, read prescription labels, insurance forms, and/or health education sheets. Forty-three percent of participants indicated that they need help "Very often" or "Sometimes" to perform these tasks, while 57 percent responded that they "never" or "rarely" needed any help.

The Nebraska Behavioral Risk Factor Surveillance System (BRFSS) in 2016 and 2017 included three statements related to health literacy: 1) Very easy to get needed advice or information about health or medical topics, 2) Very easy to understand information that medical professions tell you, and 3) Very easy to understand written health information. Overall, the NCDHD showed lower levels of health literacy compared to the State. Figure 7.

Figure 7: BRFSS Health Literacy Statements, NCDHD and Nebraska, 2016-2017



[1] Question #23 of the 2018 Community Health Assessment Survey.

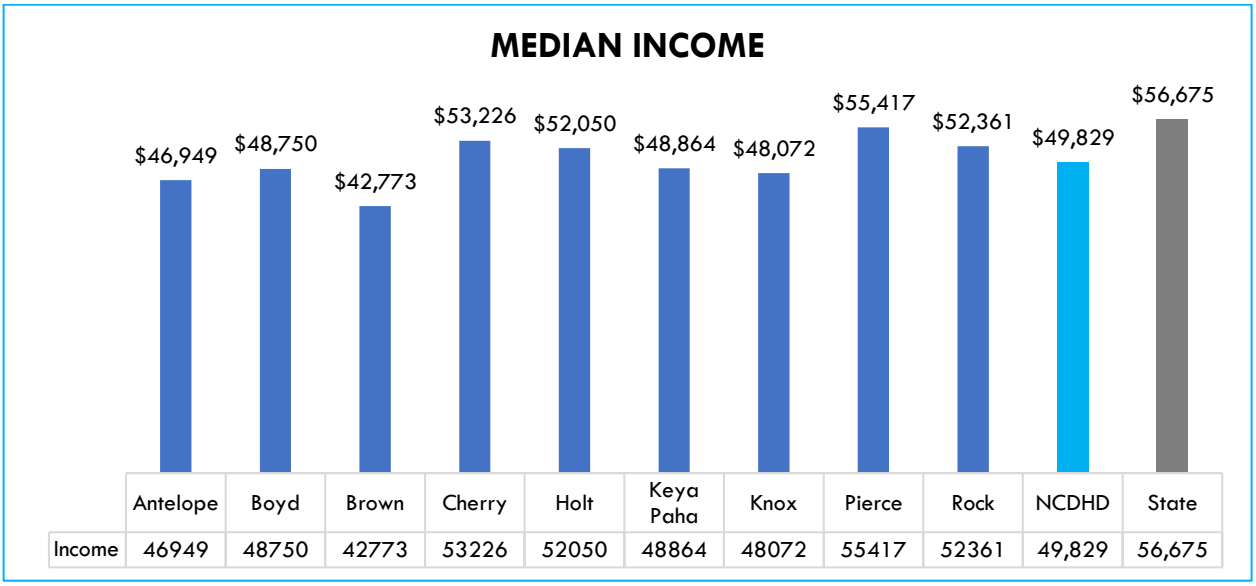
Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Socioeconomic Status

According to the 2013-2017 ACS, the median household income in the NCDHD was $49,829, which was lower than the Nebraska median at $56,675. There was, however; a large disparity in median incomes across the nine counties of the NCDHD, ranging from a low of $42,773 in Brown County to a high of $55,417 in Pierce County. Figure 8.

The 2018 Community Health Assessment Survey shows a median income of $62,500[2] for the respondents, which is higher than the median household income for the NCDHD. However, it is relevant to point out that over 50 percent of respondents to the survey are from Holt County, which has a median household income slightly higher than the NCDHD ($52,050 vs. $49,829, respectively).

Figure 8: Median Income by County, NCDHD, State of Nebraska, ACS 2013-2017



Source: American Community Survey (ACS, 5-year estimates, 2013-2017, Table S1901).

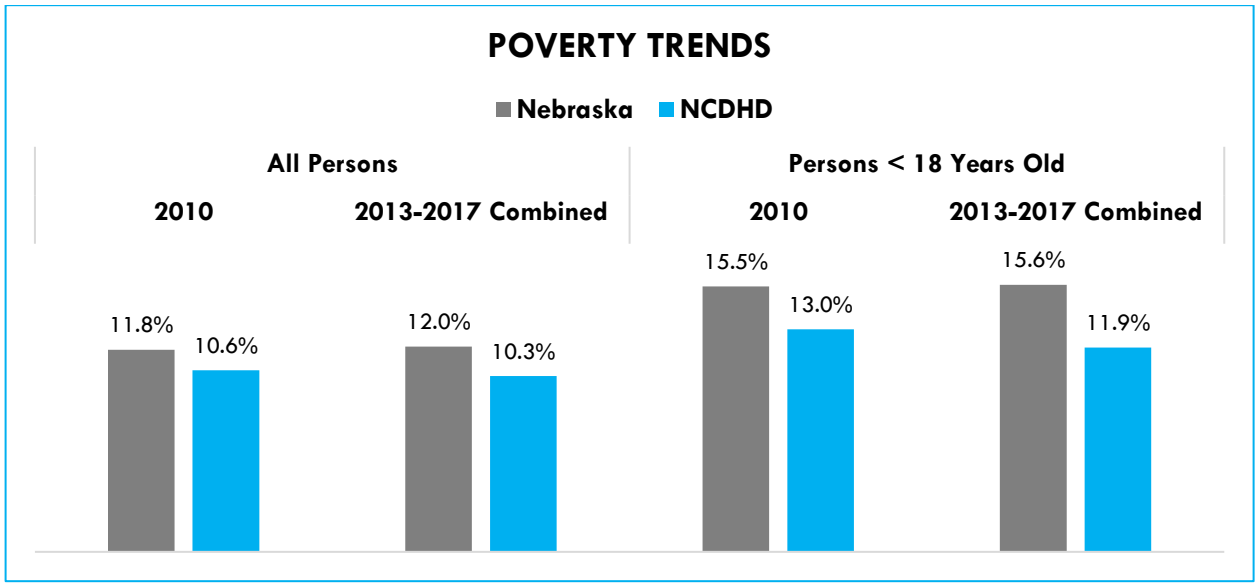
Poverty

Poverty rate in the NCDHD decreased from 10.6 percent in 2010 (Census) to 10.3 percent in 2013-2017 (ACS) among all persons and decreased from 13.0 percent to 11.9 percent among persons under 18 years of age (Figure 9). The State rate was higher than the rate for the NCDHD for all persons as well as for those under 18.

[2] Note: The average between $50,000 and $74,999 household income range was considered as the value for the "median".

Based on the 2013-2017 poverty estimates for NCDHD, an estimated 4,658 persons of all ages and 1,256 persons under 18 years of age were living in poverty.

Figure 9: Poverty Trends, NCDHD vs. Nebraska*



*Percentage below 100% of the federal poverty level. Source: 2010 Census; 2013-2017 American Community Survey (ACS)

Keya Paha County showed the highest poverty rate (all ages) in the NCDHD (17.7%). Keya Paha County also showed the greatest decrease in poverty rates (all persons) from 2010 to 2017 (-5.0%), followed by Brown County (-3.4%).

Keya Paha County showed the highest percentage of population under 18 years of age living in poverty (27.4%), over 15 percent higher when compared to the NCDHD, followed by Brown County (22.3%). Keya Paha County also showed the highest decrease in poverty rates for 18 years old and younger among all counties in the NCDHD from 2010 to 2017 (-15.5%), followed by Boyd County (-8.0%). Table 3.

Table 3: Percentage of Families and People Whose Income in the Past 12 Months Is Below the Poverty Level: All Persons and Under Age 18

POVERTY: ALL PERSONS					POVERTY: UNDER 18 YEARS			
	2010	2017	%Change 2010-2017			2010	2017	%Change 2010-2017
Antelope	11.4%	11.5%	0.1%		Antelope	16.5%	14.6%	-1.9%
Boyd	8.3%	9.8%	1.5%		Boyd	13.6%	5.6%	-8.0%
Brown	19.4%	16.0%	-3.4%		Brown	17.0%	22.3%	5.3%

Cherry	7.8%	9.0%	1.2%		Cherry	3.1%	9.0%	5.9%
Holt	7.8%	8.9%	1.1%		Holt	9.4%	8.0%	-1.4%
Keya Paha	22.7%	17.7%	-5.0%*		Keya Paha	42.9%	27.4%*	-15.5%
Knox	13.7%	12.3%	-1.4%		Knox	19.5%	18.5%	-1.0%
Pierce	8.2%	6.8%	-1.4%		Pierce	9.6%	7.1%	-2.5%
Rock	9.6%	9.7%	0.1%		Rock	14.0%	7.0%	-7.0%
NCDHD	10.6%	10.3%	-0.3%		NCDHD	13.0%	11.9%	-1.1%
Nebraska	11.8%	12.0%	0.2%		Nebraska	15.5%	15.6%	0.1%

*The Small Area Income and Poverty Estimates (SAIPE) was used for Keya Paha County estimates to increase accuracy for the 2017 projected poverty estimates (all persons and under 18 years).
Sources: 2010 Census; 2013-2017 American Community Survey (ACS); SAIPE (All Persons and Under Age 18 tables: 2017 estimates used for Keya Paha County).

Food and Housing Insecurity

Food and housing insecurity can affect the physical and mental health of affected individuals and impede their ability to achieve optimal health. The United States Department of Agriculture (USDA) Economic Research Service defines food insecurity as reduced food intake or reduced dietary quality because the household lacked money and other resources for food. The U.S. Department of Health and Human Services defined housing insecurity as high housing costs in proportion to income, poor housing quality, unstable neighborhoods, overcrowding, or homelessness (Nebraska DHHS, 2016).

> ***"Research from the Tufts Friedman School suggests that poor eating causes nearly 1,000 deaths each day in the United States from heart disease, stroke or diabetes."***

According to the USDA Economic Research Service, about 1 in 7 households in Nebraska (14.8%) were food insecure between 2013 and 2015, an increase from 10.4 percent in Nebraska between 2001 and 2003. Current food insecurity rates in Nebraska are higher when compared to the national average for the 2013-2015 period (13.7%).

The USDA Economic Research Services also tracks areas of low-access to healthy food based on Census tracts with at least 500 people, or 33 percent of the population, living more than 1 mile (urban areas) or 10 miles (rural areas) from a supermarket. Due to the rural nature of the NCDHD area, 100 percent of the populations of Boyd, Cherry, Keya Paha, and Pierce counties are categorized as having low access to healthy food. Greater accessibility to healthy food were found in Antelope, Brown, Knox and Rock counties. One-third of the population in Antelope County, and 81.7 percent of Holt County population have low access to healthy food (Table 4).

Table 4: Low Access to Healthy Food (%)

NCHD	Low Access to Healthy Food
Antelope	32.1%
Boyd	100.0%
Brown	0.0%
Cherry	100.0%
Holt	81.7%
Keya Paha	100.0%
Knox	0.0%
Pierce	100.0%
Rock	0.0%

Source: USDA Economic Research Service, 2015.

The Nebraska Behavioral Risk Factor Surveillance System (BRFSS) measures food and housing insecurity based on moderate to high stress related to not having enough money to buy nutrition foods and not having enough money to pay the rent or mortgage among those who rent or own their home. In 2015, more than 1 in 6 NCDHD adults (15.3%) reported food insecurity during the past year while more than 1 in 4 (27.4%) reported housing insecurity. The NCDHD food and housing insecurity rates are lower when compared to the State. Table 5.

Table 5: Food and Housing Insecurity (BRFSS, 2015)

	Food Insecurity	Housing Insecurity
NCDHD	15.3%	27.4%
Nebraska	21.0%	28.5%

Source: BRFSS 2011-2017 Detailed Tables for LHDs (11-9-18)

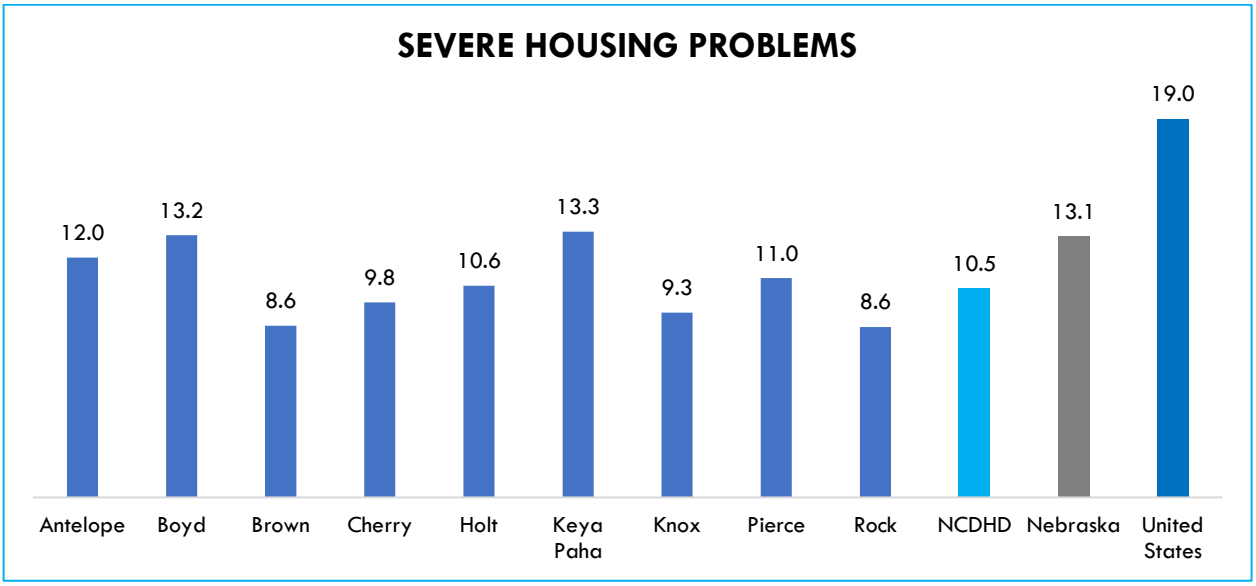
Within the NCDHD, BRFSS indicators of 2017 report include other nutritional statistics such as: sugar-sweetened beverages are consumed by 27% of adults (1 or more in the last 30 days. Data from 2013, the most recent statistics) and males consume twice as much more sugar sweetened beverages than females in the NCDHD (37.3% vs. 17.8%, difference is statistically significant), 46% of adults reported either watching or reducing their sodium intake, 34% consumed fruits less than once a day, 15% consumed vegetables less than once a day. Respondents to the 2018 Community Health Assessment Survey, seventy five percent noted "poor eating habits" as having mid to major impact in the overall health of the NCDHD community (tied with "Texting while driving"; percentages added from 4 to 7 in the ranking scale).

Housing Environment: Severe housing problems

Severe housing problems are referred to households with at least 1 of 4 housing problems: overcrowding, high housing costs, or lack of kitchen or plumbing facilities. It was estimated that 19 percent of households in the United States and 13.1 percent of households in Nebraska were classified as having "severe housing problems" (Comprehensive Housing Affordability Strategy (CHAS) data, 2010-2014).

According to the CHAS data (2010-2014), a total of 2,094 households had severe housing problems in the NCDHD, which represents 10.5% of all households in the NCDHD. Keya Paha had the highest percentage of households classified as having "severe housing problems" (13.3%), followed by Boyd County (13.2%), and then by Antelope County (12.0%). Rock County showed the lowest percentage of "severe housing problems" among all counties in the NCDHD (8.6%). Figure 10.

Figure 10: Percentage of Severe Housing Problems, County, NCDHD, Nebraska, and the United States: 2010-2014



Source: Comprehensive Housing Affordability Strategy (CHAS) data, 2010-2014

Unemployment

According to the Nebraska Department of Labor, the unemployment rate (as of December 2018) is 0.3 percent lower in the NCDHD when compared to the State of Nebraska (2.5% vs. 2.8%). Table 6.

Cherry County shows the lowest unemployment rate in the NCDHD (1.7%), followed Keya Paha County (2.0%). Brown County shows the highest unemployment rate (3.2%), the 10th highest among the 93 counties in the State of Nebraska, followed by Boyd County (2.9%). Table 6.

Table 6: County, NCDHD, and State Unemployment Rates (December 2018)

County	Unemployed	Labor Force	% Unemployed
Antelope	90	3506	2.6%
Boyd	31	1071	2.9%
Brown	44	1386	3.2%
Cherry	58	3333	1.7%
Holt	139	5713	2.4%
Keya Paha	12	593	2.0%
Knox	125	4,628	2.7%
Pierce	100	4,057	2.5%
Rock	25	894	2.8%
NCDHD	624	25,181	**2.5%**
Nebraska	28,472	1,024,189	**2.8%**

Source: Nebraska Department of Labor, Labor Market Information, Local Area Unemployment Statistics

Unemployment rates have been steadily declining in the NCDHD after the great recession of 2008-2009. Cherry County experienced the greatest decline in unemployment rates among all counties in the NCDHD since 2008 (-0.7%), followed by Knox and Pierce counties (-0.5% each). The exception has been Brown County that experienced an increase in its unemployment rate of 0.5 percent. Table 7.

Table 7: NCDHD unemployment rates 2008 - 2018

County NCDHD	2008	2009	2010	2011	2012	2013	2014	2015	2017	2018	%Change 2008-2018
Antelope	3	3.7	3.6	3.6	3.3	3.2	2.7	2.6	2.6	2.6	-0.4
Boyd	3.2	3.9	3.9	3.8	3.9	3.5	3.3	2.7	3	2.9	-0.3
Brown	2.7	3.1	4.7	4.6	4.1	3.9	3.5	3.7	3.7	3.2	0.5
Cherry	2.4	2.6	3	3	2.9	2.8	2.5	2.3	2.3	1.7	-0.7
Holt	2.7	3.1	3.6	3.4	3.2	3.1	2.7	2.4	2.5	2.4	-0.3
Keya Paha	4.8	4.8	3.5	3	3.1	3.3	2.7	2.1	2.1	2.0	-2.8
Knox	3.2	3.6	4.1	3.9	3.4	3.5	3.1	3.2	3.1	2.7	-0.5
Pierce	3	4	3.7	3.5	3.3	3.3	2.9	2.5	2.6	2.5	-0.5
Rock	2.8	3	2.8	2.7	2.5	3.2	2.6	2.7	2.6	2.8	0.0

Sources: Unemployment rates 2008-2017: 1) Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) data. 2) Census Bureau, Small Area Income and Poverty Estimates (SAIPE) Program. Unemployment rates (as of December 2018): 3) Nebraska Department of Labor, Labor Market Information, Local Area Unemployment Statistics

Respondents to the 2018 Community Health Assessment Survey indicated that 96.4% were employed/self-employed, and 3.6 percent were unemployed (either students or already retired). These percentages mirror the actual employment rates from the Nebraska Department of Labor in 2018.

High School Graduation Rates

According to the U.S. Department of Education, the 4-year public high school graduation rate (defined as the proportion of public high school freshmen who graduate with a regular diploma four years after starting ninth grade) was 88.7 percent in Nebraska during 2018 compared to 87.9 percent in the NCDHD (O'Neill Public Schools District).

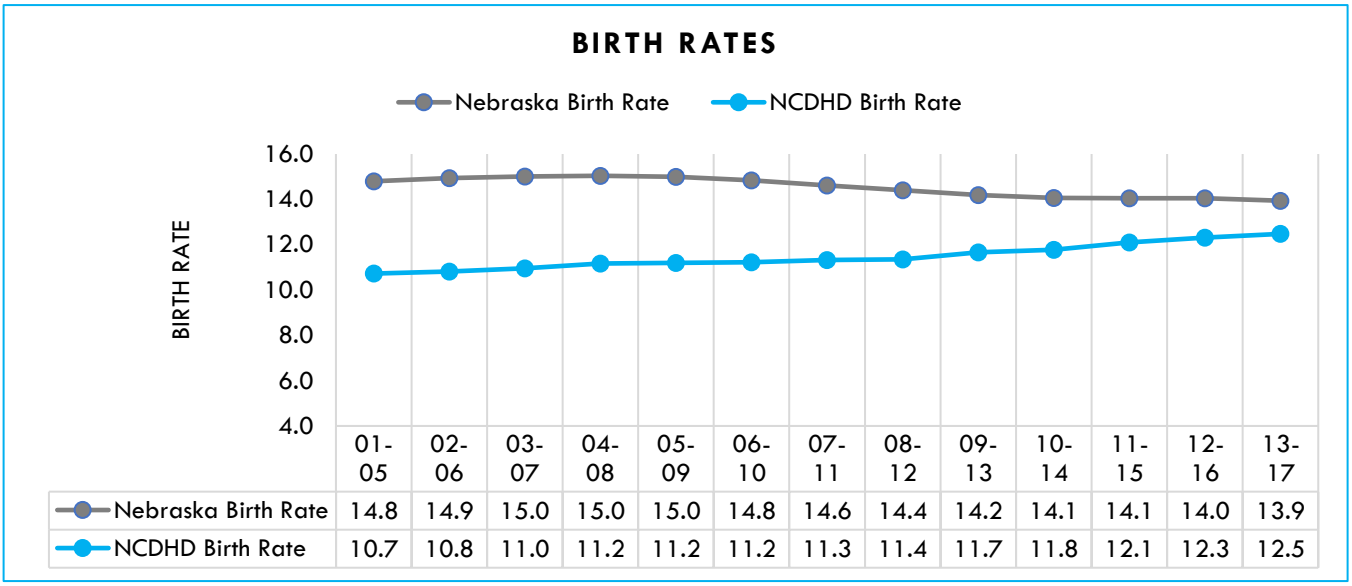
General Health Status

Health Outcomes

Births

From 2001-2005 years combined, the number of births and birth rates in the NCDHD has steadily increased. In comparison, Nebraska birth rates have declined during the same time period (Figure 5). In the combined 2013-2017 years, there were 2,830 resident births in the NCDHD, for a rate of 12.5 live births per 1,000 population. The difference between the NCDHD and Nebraska birth rates was 4.1 live births in the combined 2001-2005 years, which has declined to a difference of only 1.5 live births per 1,000 population in the combined 2013-2017 years. Figure 11.

Figure 11: Overall Birth Rates in the NCDHD and Nebraska (adjusted age rate per 1,000 population), 2001-2017



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Nebraska Birth Rate	14.8	14.9	15.0	15.0	15.0	14.8	14.6	14.4	14.2	14.1	14.1	14.0	13.9
NCDHD Birth Rate	10.7	10.8	11.0	11.2	11.2	11.2	11.3	11.4	11.7	11.8	12.1	12.3	12.5

Five-Year Moving Averages 2001-2005 Combined to 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, February 2019.

Number of births and birth rates vary widely in the NCDHD. Holt County shows the highest number of births (*n* = 718), followed by Knox County (*n* = 527). Live birth rates per 1,000 population ranges from 8.1 in Boyd County, to 14.0 in Holt County. Three counties in the NCDHD show live births per 1,000 population higher than the average in the Health District: Antelope, Cherry and Holt Counties. Table 8.

*Table 8: Number of Birth and Birth Rates by County, NCDHD and Nebraska (2013-2017)**

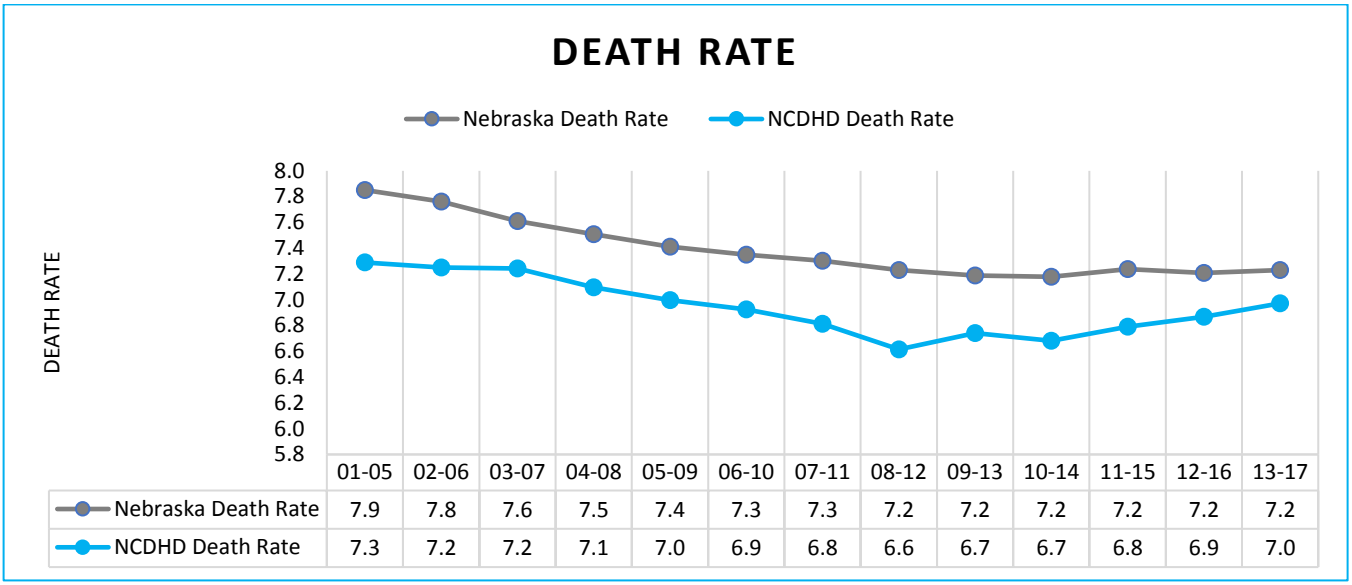
County	# Births	Birth Rate
Antelope	425	13.2
Boyd	81	8.1
Brown	136	9.1
Cherry	387	13.3
Holt	718	14.0
Keya Paha	38	9.5
Knox	527	12.4
Pierce	445	12.4
Rock	73	10.3
NCDHD	**2,830**	**12.5**
Nebraska	**131,993**	**13.9**

*Adjusted age rate per 1,000 population. Birth data for Nebraska and North Central District Health Department, for years 2013-2017 combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, February 2019.

Deaths

The number of NCDHD deaths exceeded the number of births by 22 in the Health District in the combined 2013-2017 years (2,852 vs. 2,830, respectively). The death rate in the combined 2013-2017 years (7.0 deaths per 1,000 population), was slightly higher than rates from the previous years. The NCDHD death rates have remained lower when compared to State rates since 2001-2005. (Figure 12).

Figure 12: Overall Death Rates in the NCDHD and Nebraska (adjusted age rate per 1,000 population), 2001-2017



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Nebraska Death Rate	7.9	7.8	7.6	7.5	7.4	7.3	7.3	7.2	7.2	7.2	7.2	7.2	7.2
NCDHD Death Rate	7.3	7.2	7.2	7.1	7.0	6.9	6.8	6.6	6.7	6.7	6.8	6.9	7.0

Five-Year Moving Averages 2001-2005 Combined to 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, February 2019.

When comparing death rates by county in the NCDHD, Rock County shows the highest death rate per 1,000 population (10.3), followed by Boyd County (7.5). Keya Paha County has the lowest death rate among the nine counties in the NCDHD (3.7), followed by Cherry County (6.5). Table 9.

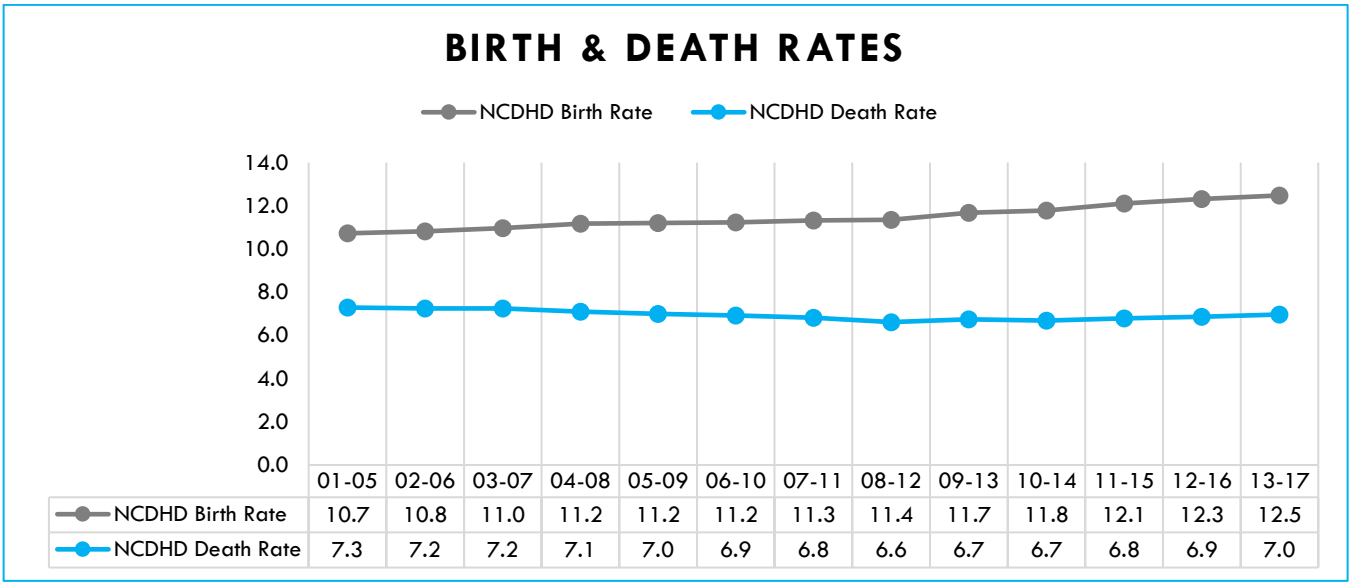
*Table 9: Number of Deaths and Death Rates by County, NCDHD and Nebraska (2013-2017)**

County	# Deaths	Death Rate
Antelope	398	6.7
Boyd	174	7.5
Brown	194	7.0
Cherry	325	6.5
Holt	638	6.9
Keya Paha	29	3.7
Knox	585	7.1
Pierce	381	7.3
Rock	128	10.3
NCDHD	**2,852**	**7.0**
Nebraska	**81,518**	**7.2**

*Adjusted age rate per 1,000 population. Death data for Nebraska and North Central District Health Department, for years 2013-2017 combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, February 2019.

Figure 13 shows overall birth and death rates (adjusted age rates) for the NCDHD from 2001-2005 combined to 2013-2017 combined. Death rates in the NCDHD have been stable since 2001-2005 combined, while the birth rate has steady increased since the same time period.

Figure 13: Birth and Death Rates in NCDHD



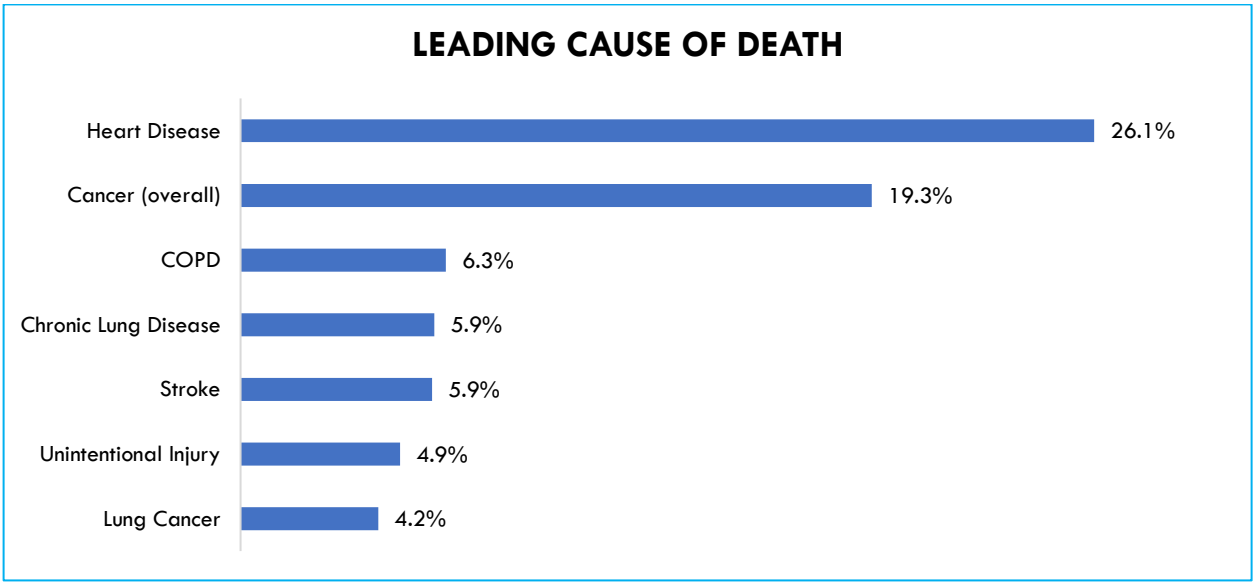
	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD Birth Rate	10.7	10.8	11.0	11.2	11.2	11.2	11.3	11.4	11.7	11.8	12.1	12.3	12.5
NCDHD Death Rate	7.3	7.2	7.2	7.1	7.0	6.9	6.8	6.6	6.7	6.7	6.8	6.9	7.0

Five-Year Moving Averages 2001-2005 Combined to 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, February 2019.

Causes of Death (top seven) in the North Central District Health Department

Heart disease has been the leading cause of death (based on total number of deaths) in the NCDHD, accounting for 744 deaths in the 2013-2017 combined years, representing over one-fourth (26.1%) of all cause of deaths. The second most common cause of death in the NCDHD was cancer, with nearly one-fourth of the top seven causes of death (19.3%), accounting for 550 deaths, followed by COPD (6.3%), accounting for 179 deaths. The following cause of death in the NCDHD ranked from 4th to 7th are: Chronic Lung Disease, Stroke, Unintentional Injury, and Lung cancer (Figure 14).

Figure 14: Seven Leading Causes of Death in the NCDHD (Top Seven), 2013-2017*



*Based on total number of deaths. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

Table 10 shows the top ten leading cause of death (based on number of deaths) from 2005-2009 combined years to 2013-2017 combined years. Both, heart disease and cancer have been the leading cause of death for the NCDHD residents since 2005-2009 combined years.

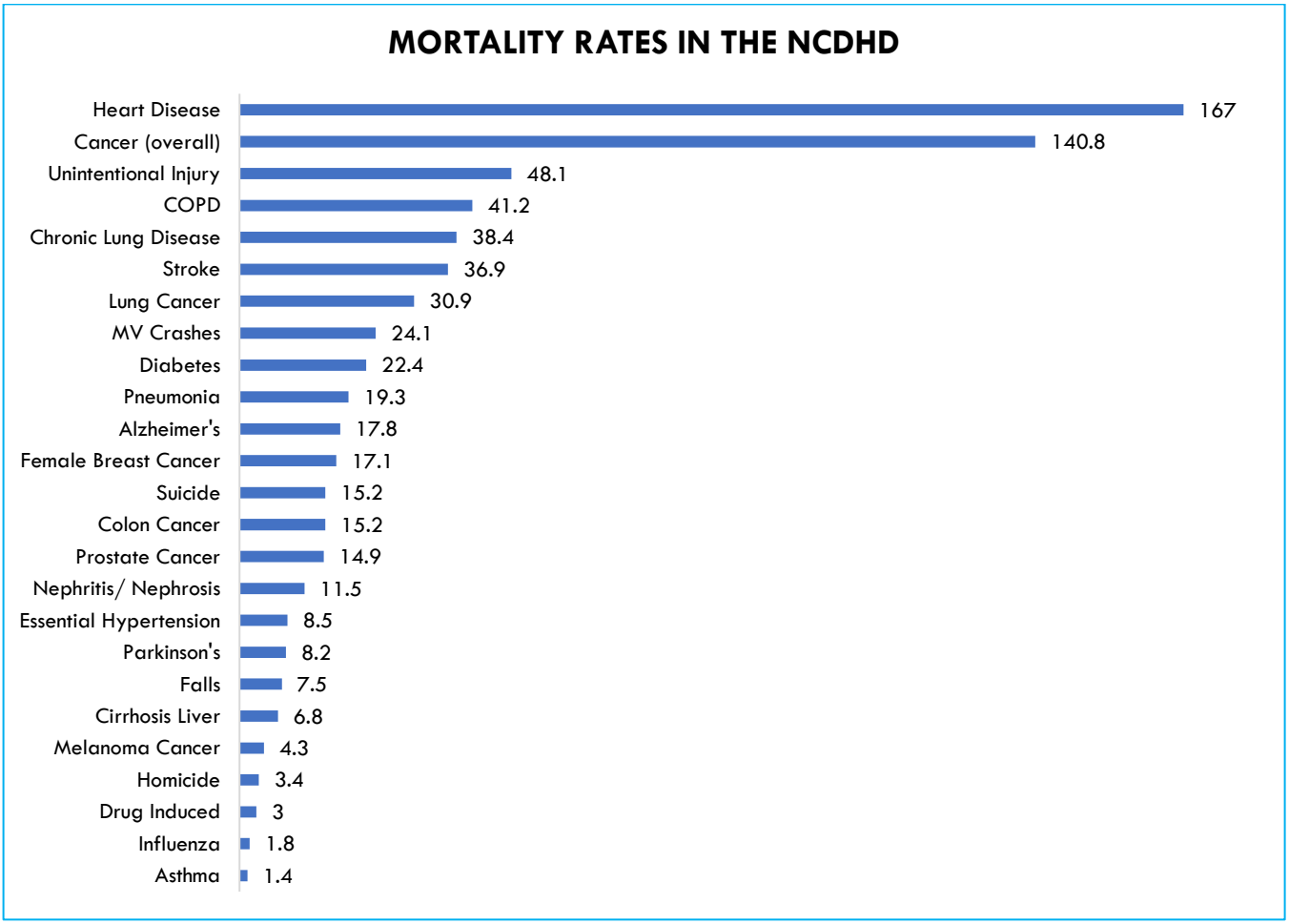
Table 10: Top ten Leading cause of death in the NCDHD, 2005-2009 to 20013-2017

2005-2009				2010-2014				2013-2017			
Rank	Cause of Death	Deaths	Total	**Rank**	Cause of Death	Deaths	Total	**Rank**	Cause of Death	Deaths	Total
1	Heart Disease	823	28.8%	**1**	Heart Disease	688	25.0%	**1**	Heart Disease	744	26.1%
2	Cancer	607	21.3%	**2**	Cancer	586	21.3%	**2**	Cancer	550	19.3%
3	Stroke	209	7.3%	**3**	Stroke	204	7.4%	**3**	COPD	179	6.3%
4	Unintentional Injury	164	5.7%	**4**	Chronic Lung	158	5.7%	**4**	Chronic Lung Disease	169	5.9%
5	Chronic Lung	135	4.7%	**5**	Unintentional Injury	127	4.6%	**5**	Stroke	167	5.9%
6	Alzheimer's	110	3.9%	**6**	Alzheimer's	95	3.5%	**6**	Unintentional Injury	139	4.9%
7	Diabetes	91	3.2%	**7**	Pneumonia	89	3.2%	**7**	Lung Cancer	120	4.2%
8	Pneumonia	73	2.6%	**8**	Di abetes	86	3.1%	**8**	Diabetes	90	3.2%
9	Kidney Disease	50	1.8%	**9**	Kidney Disease	49	1.8%	**9**	Alzheimer's	86	3.0%
10	Parkinson's	35	1.2%	**10**	Parkinson's	37	1.3%	**10**	Pneumonia	85	3.0%
	Total	**2,856**			**Total**	**2,750**			**Total**	**2,852**	

Mortality rates per 100,000 population

For the 2013-2017 combined years, heart disease mortality rate was the highest among all cause of deaths in the NCDHD (167 per 100,000 population), followed by Cancer (overall) (140.8 per 100,000 population), and then by Unintentional injury (48.1 per 100,000 population). Figure 15 shows mortality rates for all cause of deaths in the NCDHD during the 2013-2017 combined years.

Figure 15: Mortality rates (per 100,000 population) of all cause of deaths in the NCDHD, 2013-2017

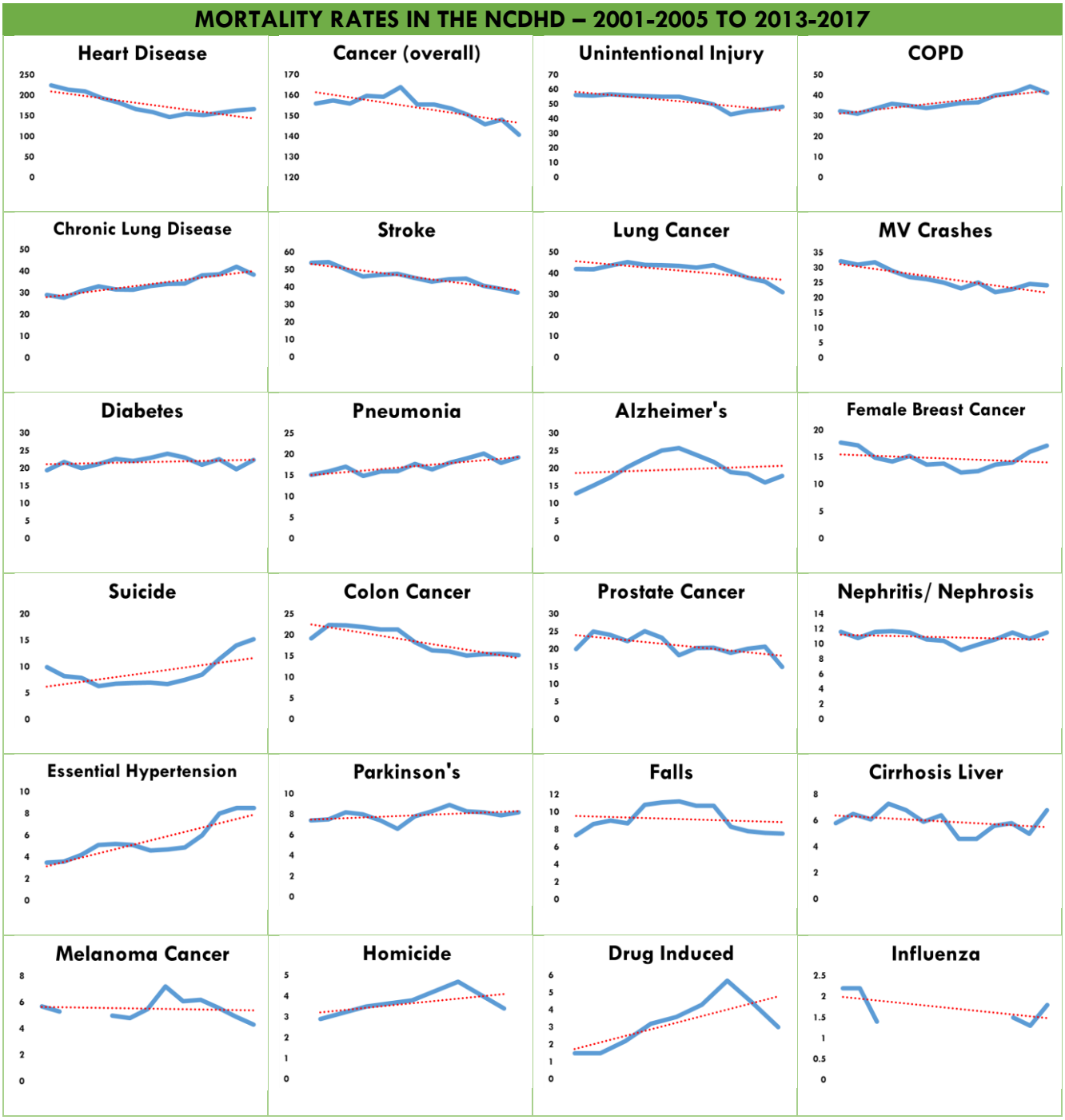


Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

The following charts (Figure 16) show causes of death in the NCDHD and their trends (dotted red line) sorted from the highest to the lowest mortality rates[3] from 2001-2005 combined years to 2013-2017 combined years.

[3] Mortality rates were sorted according to the 2013-2017 combined years.

Figure 16: Mortality rate (per 100,000 population) trends for all cause of death in the NCDHD, 2001-2005 – 2013-2017



* Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

Table 11 shows percentage change in death rate for all cause of deaths in the NCDHD between 2001-2005 combined years and 2013-2017 combined years.

Table 11: Death rate percentage change in the NCDHD between 2001-2005 and 2013-2017

Cause of death:	% Change 2001-2005 to 20013-2017
Stroke	-31.5%
Lung Cancer	-26.4%
Heart Disease	-25.6%
Prostate Cancer	-25.5%
MV Crashes	-24.9%
Melanoma Cancer	-24.6%
Colon Cancer	-20.8%
Influenza	-18.2%
Unintentional Injury	-14.6%
Cancer (overall)	-9.7%
Female Breast Cancer	-3.4%
Nephritis/ Nephrosis	-0.9%
Asthma	0.0%
Falls	2.7%
Parkinson's	10.8%
Diabetes	15.5%
Homicide	17.2%
Cirrhosis Liver	17.2%
COPD	27.6%
Pneumonia	27.8%
Chronic Lung Disease	32.0%
Alzheimer's	39.1%
Suicide	53.5%
Drug Induced	100.0%
Essential Hypertension	142.9%
Cervical Cancer*	
Oral Cancer*	

* Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

The following cause of death experienced a mortality rate decline of over 25% in the NCDHD between 2001-2005 combined years and 2013-2017 combined years:

- Stroke (-31.5%)
- Lung cancer (-26.4%)
- Heart disease (-25.6%)
- Prostate cancer (-25.5%)

The following cause of deaths experienced a mortality rate increase of over 25% in the NCDHD between 2001-2005 combined years and 2013-2017 combined years:

- Essential hypertension (142.9%)
- Drug induced (100%)
- Suicide (53.5%)
- Alzheimer's (39.1%)
- Chronic Lung Disease (32.0%)
- Pneumonia (27.8%)
- COPD (27.6%)

Life Expectancy

Life expectancy at birth in the NCDHD averaged 80.4 years in 2014, with females (82.8 years) expected to live nearly five years longer than males (78.0 years). Between 1980 and 2014, life expectancy in the NCDHD added 4.8 years, higher when compared to 4.2 years for the whole State of Nebraska, but slightly lower than the nation during the same time period (5.3 years). Table 12.

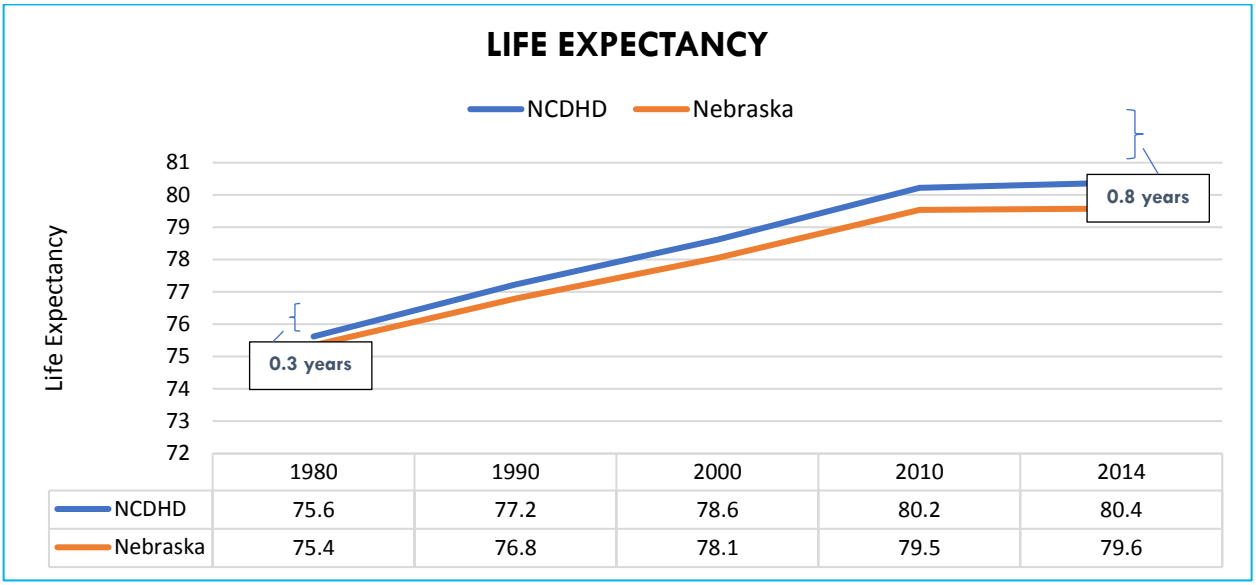
Table 12: Life Expectancy in the NCDHD, Nebraska, and the U.S. 1980-2014

LIFE EXPECTANCY						
	Life Expectancy by Year					Change in Life Expectancy 1980-2014 (years)
	1980	**1990**	**2000**	**2010**	**2014**	
NCDHD	75.6	77.2	78.6	80.2	80.4	+4.8
Nebraska	75.4	76.8	78.1	79.5	79.6	+4.2
United States	73.8	75.4	76.9	78.8	79.1	+5.3

Source: Institute for Health Metrics and Evaluation (IHME), US County Profile (2014 Life Expectancy). http://www.healthdata.org and US Health Map data visualization for life expectancies in the years 1980, 1990, 2000 and 2010: https://vizhub.healthdata.org/subnational/usa

The difference in life expectancy has been increasing between the NCDHD and the State, averaging 0.5 additional years in the NCDHD every ten years since 1980. In the year 2014, the life expectancy in the NCDHD was 0.8 years higher than the State, but it was only 0.3 years higher in the year 1980. Figure 17.

Figure 17: Life Expectancy NCDHD vs. Nebraska, 1980-2014



Source: Institute for Health Metrics and Evaluation (IHME), US County Profile (2014 Life Expectancy). http://www.healthdata.org and US Health Map data visualization for life expectancies in the years 1980, 1990, 2000 and 2010: https://vizhub.healthdata.org/subnational/usa

For life expectancy at the NCDHD county level, Antelope County shows the highest life expectancy among all counties (81.2 years). Antelope County is ranked 7th in life expectancy among the 93 counties in the State of Nebraska. Knox County shows the lowest life expectancy in the NCDHD with 79.4 years, and it's ranked 57th in life expectancy among all counties in the State of Nebraska. Table 13 shows life expectancy by county and 2014 rankings among the 93 counties in the State of Nebraska. Figure 18 graphically depicts life expectancy trends in the NCDHD counties between 1980 and 2014.

> ***"Much of the variation in life expectancy among counties can be explained by a combination of socioeconomic and race/ethnicity factors, behavioral and metabolic risk factors, and health care factors." (Dwyer-Lindgren et al., 2017)***

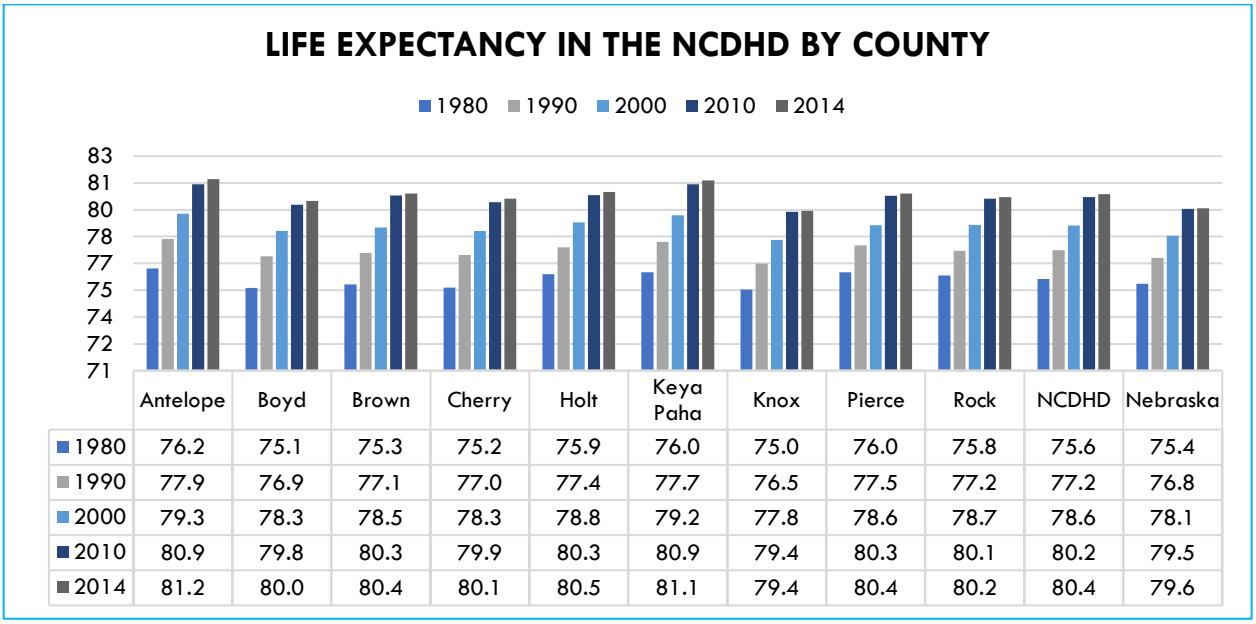
Table 13: Life Expectancy and Ranking by County, 1980-2014

NCHD counties	Life Expectancy by Year					2014 Nebraska Rank
	1980	1990	2000	2010	2014	
Antelope	76.2	77.9	79.28	80.9	81.2	7
Boyd	75.1	76.9	78.32	79.8	80.0	41

Brown	75.3	77.1	78.51	80.3	80.4	27
Cherry	75.2	77.0	78.32	79.9	80.1	37
Holt	75.9	77.4	78.8	80.3	80.5	22
Keya Paha	76.0	77.7	79.19	80.9	81.1	10
Knox	75.0	76.5	77.81	79.4	79.4	57
Pierce	76.0	77.5	78.64	80.3	80.4	28
Rock	75.8	77.2	78.66	80.1	80.2	35

Source: Institute for Health Metrics and Evaluation (IHME), US County Profile (2014 Life Expectancy). http://www.healthdata.org and US Health Map data visualization for life expectancies in the years 1980, 1990, 2000 and 2010: https://vizhub.healthdata.org/subnational/usa

Figure 18: Life Expectancy trends in the NCDHD, Counties, and Nebraska 1980-2014

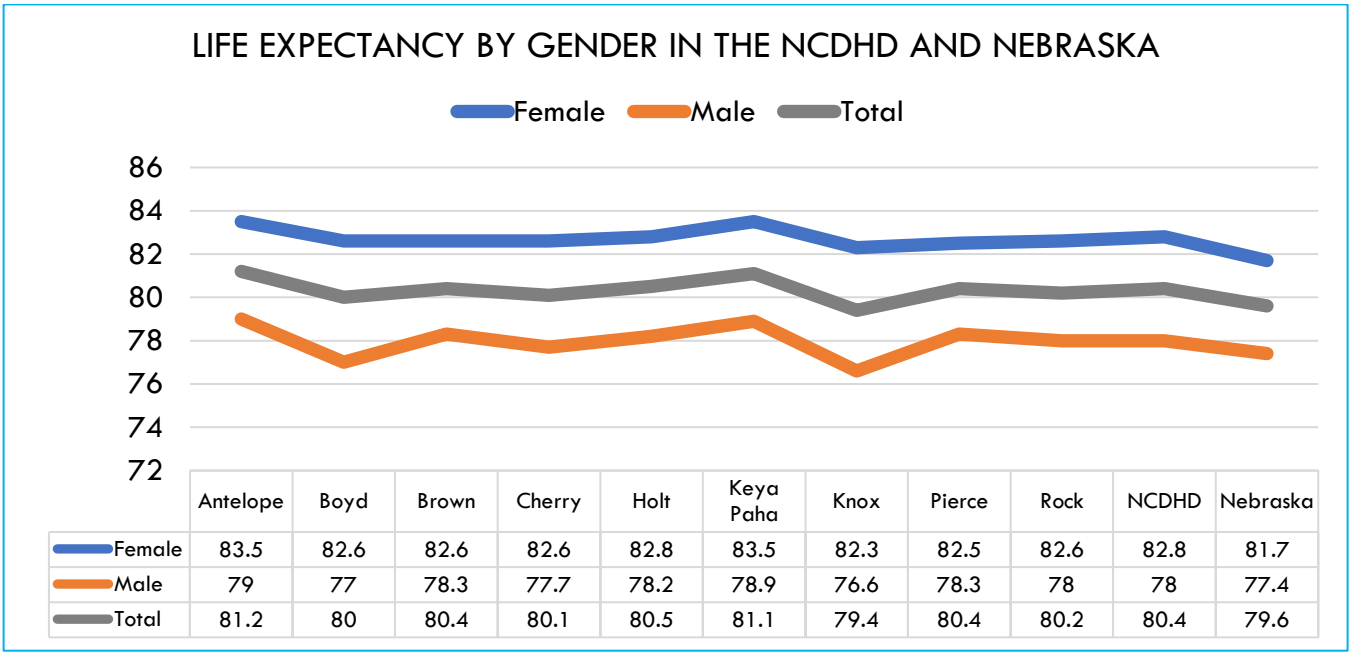


	Antelope	Boyd	Brown	Cherry	Holt	Keya Paha	Knox	Pierce	Rock	NCDHD	Nebraska
1980	76.2	75.1	75.3	75.2	75.9	76.0	75.0	76.0	75.8	75.6	75.4
1990	77.9	76.9	77.1	77.0	77.4	77.7	76.5	77.5	77.2	77.2	76.8
2000	79.3	78.3	78.5	78.3	78.8	79.2	77.8	78.6	78.7	78.6	78.1
2010	80.9	79.8	80.3	79.9	80.3	80.9	79.4	80.3	80.1	80.2	79.5
2014	81.2	80.0	80.4	80.1	80.5	81.1	79.4	80.4	80.2	80.4	79.6

Source: Institute for Health Metrics and Evaluation (IHME), US County Profile (2014 Life Expectancy). http://www.healthdata.org and US Health Map data visualization for life expectancies in the years 1980, 1990, 2000 and 2010: https://vizhub.healthdata.org/subnational/usa

Life expectancy among females is 4.8 years higher than males in the NCDHD (82.8 vs. 78.0, respectively). While life expectancy among females is higher, males in the NCDHD showed a greater increase than Nebraska females for life expectancy since the year 1980, averaging an increase in life expectancy of 8.4% vs. 3.9% for females. Figure 19.

Figure 19: Life Expectancy by Gender, Total, in the NCDHD and Nebraska



	Antelope	Boyd	Brown	Cherry	Holt	Keya Paha	Knox	Pierce	Rock	NCDHD	Nebraska
Female	83.5	82.6	82.6	82.6	82.8	83.5	82.3	82.5	82.6	82.8	81.7
Male	79	77	78.3	77.7	78.2	78.9	76.6	78.3	78	78	77.4
Total	81.2	80	80.4	80.1	80.5	81.1	79.4	80.4	80.2	80.4	79.6

Source: Institute for Health Metrics and Evaluation (IHME), US County Profile (2014 Life Expectancy)

Females in Antelope County showed the highest percentage change for life expectancy between 1980 and 2014 (4.7%), while females in Pierce County showed the lowest percentage change (3.3%). Males in Brown County experienced the highest percentage change for life expectancy between 1980 and 2014, while males in Knox County showed the lowest percent change (7.7%). Table 14.

Table 14: Life Expectancy in 2014 by NCDHD County & State, and Percentage Change in Gender by County and NCDHD 1980-2014

LIFE EXPECTANCY BY COUNTY					
	Life Expectancy 2014		Life Expectancy 2014	Gender % change 1980-2014	
NCHD counties	**Female**	**Male**	**Total**	**Female**	**Male**
Antelope	83.5	79	81.2	4.7	8.4
Boyd	82.6	77	80	3.7	8.5
Brown	82.6	78.3	80.4	3.9	9.4
Cherry	82.6	77.7	80.1	4.1	8.8
Holt	82.8	78.2	80.5	3.5	8.4
Keya Paha	83.5	78.9	81.1	4.5	8.5
Knox	82.3	76.6	79.4	3.6	7.7
Pierce	82.5	78.3	80.4	3.3	8.2

Rock	82.6	78	80.2	3.5	8
NCDHD	**82.8**	**78**	80.4	**3.9**	**8.4**
Nebraska	**81.7**	**77.4**	79.6		
United States	81.5	76.7	78.8		

Source: Institute for Health Metrics and Evaluation (IHME), US County Profile (2014 Life Expectancy). http://www.healthdata.org and US Health Map data visualization for life expectancies in the years 1980, 1990, 2000 and 2010: https://vizhub.healthdata.org/subnational/usa

Life Expectancy data indicate that NCDHD residents are expected to live longer than their counterparts at the State and National levels.

Health-Related Quality of Life

Health-related quality of life (HRQOL) is an individual's or a group's perceived physical and mental health over time. These measures are important because they can assess dysfunction and disability not measured by standard morbidity and mortality data.

Because quality of life is subjective, it is typically measured with self-reports. The use of self-reported measures is fundamentally different from using objective measures (e.g., household income, unemployment levels, neighborhood crime) often used to assess well-being. The use of both objective and subjective measures, when available, are desirable for public policy purposes. (CDC, 2019).

Well-being concepts:

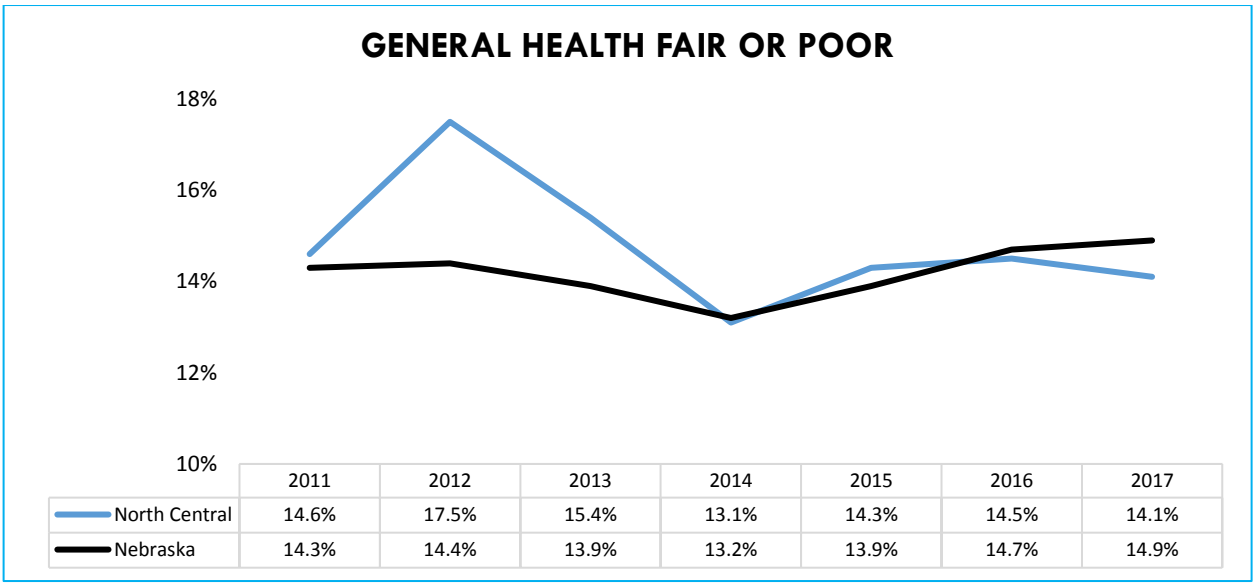
Well-being is a positive outcome that is meaningful for people and for many sectors of society, because it tells us that people perceive that their lives are going well. Good living conditions (e.g., housing, employment) are fundamental to well-being. Tracking these conditions is important for public policy.

Well-being is associated with numerous health-, job-, family-, and economically-related benefits. For example, higher levels of well-being are associated with decreased risk of disease, illness, and injury; better immune functioning; speedier recovery; and increased longevity. Individuals with high levels of well-being are more productive at work and are more likely to contribute to their communities. (CDC, 2019).

General Health Ratings

Fair or poor general health in the State of Nebraska has remained stable over the past seven years. However, there are significant changes when compared to the NCDHD ratings. From 2011 to 2015, NCDHD's general health ratings "fair" or "poor" were similar or higher than the State, but in the last two measures (2016 and 2017) NCDHD's ratings have been lower than the State. In 2017, 14.1 percent in the NCDHD reported general health as fair or "poor" compared to 14.9 percent in the State. (Figure 20). Whereas the percent of the population at the State level who mention having a general health of "Fair" or "Poor" are slightly increasing, the opposite is occurring at the NCDHD.

Figure 20: General Health "Fair" or "Poor", NCDHD vs. Nebraska, 2011-2017



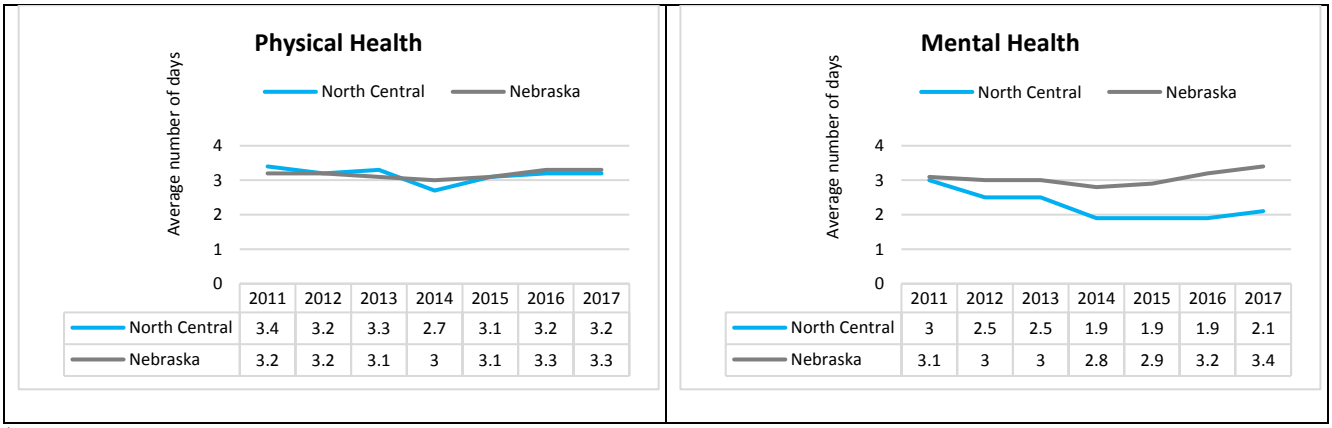
	2011	2012	2013	2014	2015	2016	2017
North Central	14.6%	17.5%	15.4%	13.1%	14.3%	14.5%	14.1%
Nebraska	14.3%	14.4%	13.9%	13.2%	13.9%	14.7%	14.9%

Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

Poor Physical/Mental Health Days

In 2017, the average number of poor mental health days (2.1) was 1.1 days lower when compared to poor mental health days (3.2) in the past month among NCDHD adults. The average number of days with poor physical health has been stable since 2011 in the NCDHD, while the average number of poor mental health days has been declining in the last years, from an average of 3.0 days in 2011 to 2.1 days in 2017. Compared to adults at the State level, NCDHD adults reported fewer poor mental health days (3.4 and 2.1 days, respectively). Figure 21.

Figure 21: Average Number of Days Physical Health and Mental Health were Not Good during the Past 30 Days, NCDHD and Nebraska Adults, 2011-2017*



	2011	2012	2013	2014	2015	2016	2017
North Central	3.4	3.2	3.3	2.7	3.1	3.2	3.2
Nebraska	3.2	3.2	3.1	3	3.1	3.3	3.3

	2011	2012	2013	2014	2015	2016	2017
North Central	3	2.5	2.5	1.9	1.9	1.9	2.1
Nebraska	3.1	3	3	2.8	2.9	3.2	3.4

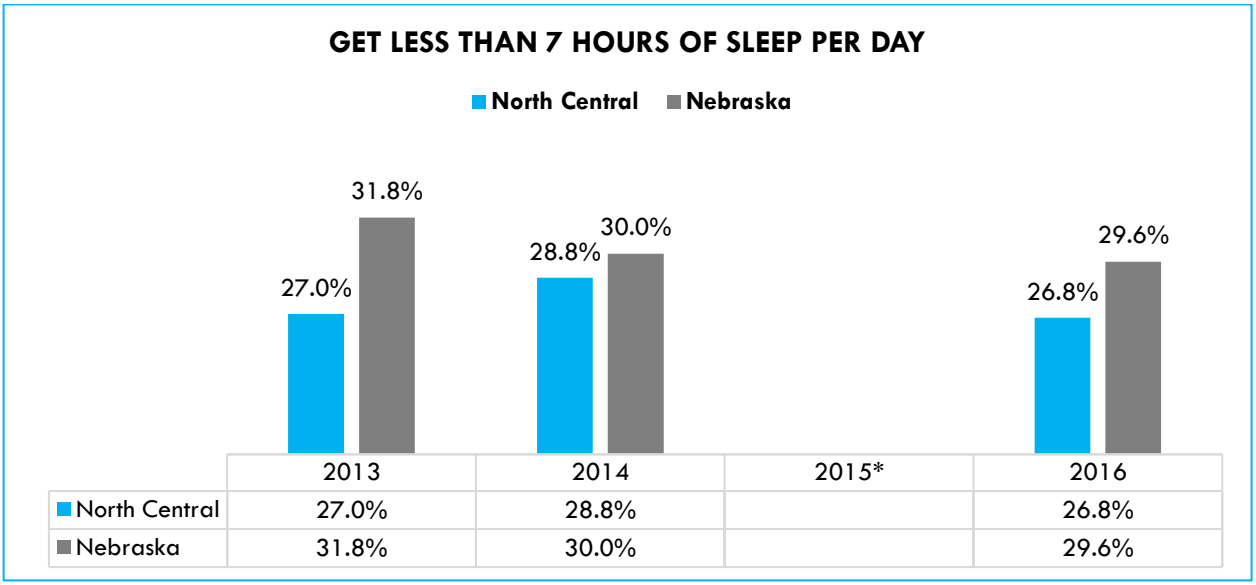
*Average number of days during the previous 30 that adults 18 and older report (1) their physical health (illness and injury) was not good and (2) their mental health (including stress, depression, and emotions) was not good. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

Sleep

About 7–19 percent of adults in the United States reported not getting enough rest or sleep every day (Centers for Disease Control and Prevention, 2019). Sleep deficiency is linked to many chronic health problems, including heart disease, kidney disease, high blood pressure, diabetes, stroke, obesity, and depression. Sleep deficiency also is associated with an increased risk of injury in adults, teens, and children. Adults should obtain on average of 7-8 hours of sleep per day in order to be healthy (National Heart, Lung and Blood Institute, https://www.nhlbi.nih.gov).

In 2016, over one-fourth of the NCDHD adults (26.8%) got less than 7 hours of sleep per day, which was lower than the percentage for adults at the State level (29.6%). Overall, NCDHD adults have reported less than 7 hours of sleep in a lower percentage than adults at the state level in 2013, 2014, and 2016. Figure 22.

Figure 22: Get less than 7 hours of sleep per day, NCDHD vs. Nebraska, 2013-2016



	2013	2014	2015*	2016
North Central	27.0%	28.8%		26.8%
Nebraska	31.8%	30.0%		29.6%

*Data was not available in 2011, 2012, 2015, and 2017. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

Healthcare Access and Utilization

People without insurance coverage have worse access to care than people who are insured. One in five uninsured adults in 2017 went without needed medical care due to cost. Studies repeatedly demonstrate that the uninsured are less likely than those with insurance to receive preventive care (i.e., prenatal care, immunizations, cancer screenings, etc.) and services for major health conditions and chronic diseases (Henry J. Kaiser Family Foundation, 2018).

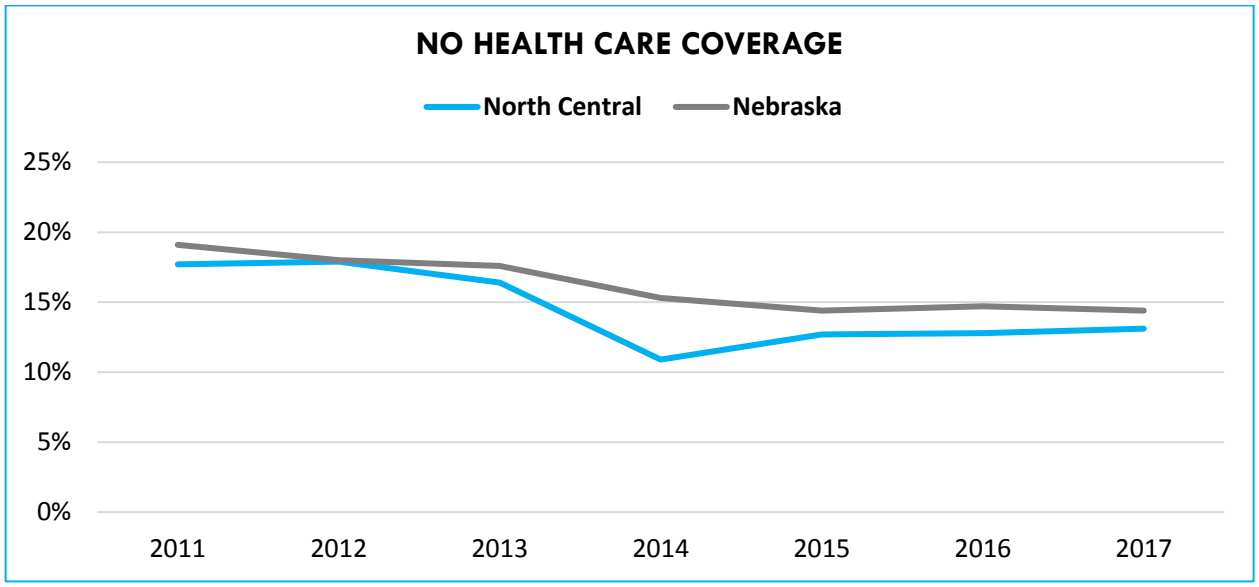
Healthcare Coverage

In 2017, about 1 in 8 18-64-year-old adults in the NCDHD (13.1%) reported not having any kind of healthcare coverage (either private or public health insurance).

While this remains a significant portion of the population, the percentage of uninsured adults 18-64 years old has declined steadily since 2011 (17.7%), with a noticeable drop in 2014 (10.9%), and a slight increase in 2017 (13.1%).

NCDHD has historically had a lower percentage of uninsured adults under age 65 compared to the State. In 2014, the percentage difference of insured adults was statistically significantly lower in the NCDHD when compared to the State overall. (Figure 23).

Figure 23: No Health Care Coverage among Adults 18-64 years old, NCDHD and Nebraska., 2011-2017*



Percentage of adults 18-64 years old who report that they do not have any kind of health care coverage. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

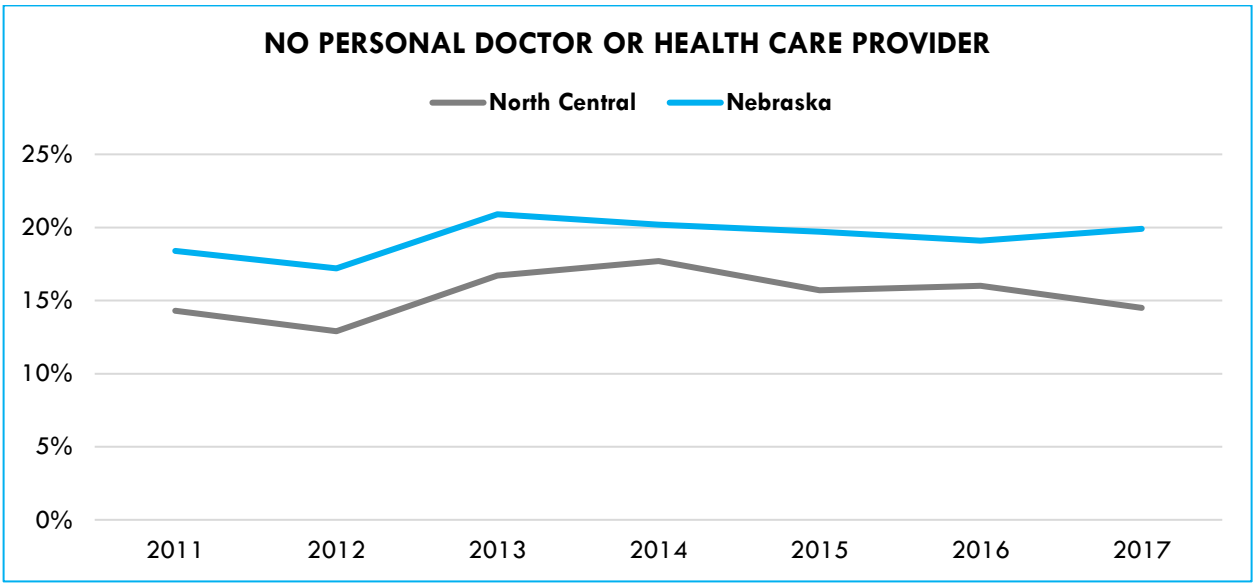
Barriers to Healthcare

Lacking a Personal Healthcare Provider

According to the BRFSS, 1 in 7 NCDHD adults in 2017 (14.5%) reported not having someone they consider to be their personal doctor or healthcare provider. This percentage has been declining since 2014 (17.7%), the highest level reported within the seven-year time period (2011-2017). In addition, in 2017 the percentage of adults reporting not having a personal doctor in the NCDHD was significantly lower than at the State level (14.5% vs. 19.9%, respectively).

The NCDHD continues to have a lower percentage of adults with no personal healthcare provider compared to the State overall. Figure 24.

Figure 24: No Personal Doctor or Health Care Provider among Adults, NCDHD and Nebraska, 2011-2017*

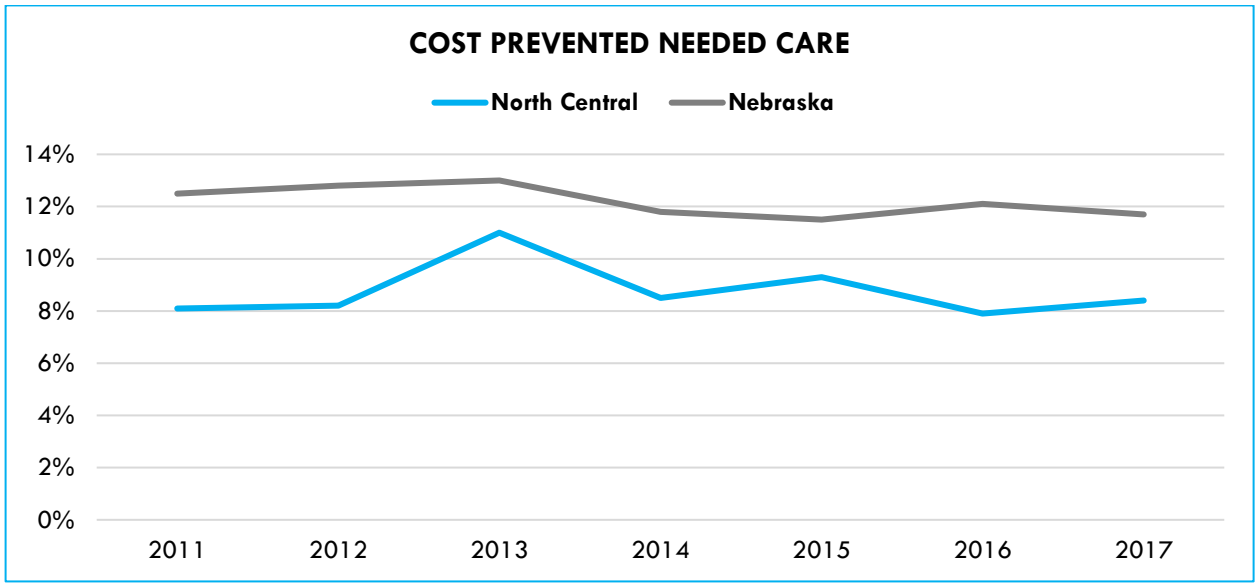


*Percentage of adults 18 and older who report that they do not have a personal doctor or health care provider. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

Cost as a Barrier to Care

In 2017, 8.4 percent of NCDHD adults reported that, at least once during the past 12 months, they needed to but were unable to see a doctor due to cost of care. Since 2011, the percentage of NCDHD adults who have reported that were unable to see a doctor due to cost of care has been lower than the State. Cost continues to be less of a barrier to needed care among NCDHD adults compared to adults at the State level. Figure 25.

Figure 25: Cost Prevented Needed Care during the Past Year among Adults, NCDHD and Nebraska, 2011-2017*



*Percentage of adults 18 and older who report that they needed to see a doctor but could not because of cost during the past 12 months
Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

Shortage Area Designations

Throughout the State of Nebraska, there are geographic areas, populations, and facilities with insufficient primary care, dental and mental health providers and services. Rural areas often have fewer healthcare resources, so people must travel greater distances to reach healthcare providers. Since people tend to have greater need for healthcare as they age, access to healthcare services is likely to become increasingly difficult in rural areas as rural hospitals struggle to stay operational and the proportion of elderly in the population increases. (DHHS, 2016; HRSA, https://bhw.hrsa.gov/).

Much of Nebraska has "state shortage area" or "national shortage area" designation for specific physician specialties, for dentists, or for psychiatrists and mental health practitioners. In fact, for psychiatry and mental health practitioners, the entire state (except for Lincoln and Omaha and their immediate surrounding areas) is a state-designated mental health shortage area. (DHHS, 2016). The Rural Health Advisory Commission has the responsibility of designating shortage areas for purposes of the Nebraska rural incentive programs for the professions and specialties defined in the Act. Every 3 years a statewide review of all the shortage areas is completed by the office of Rural Health (Nebraska Rural Health Advisory Commission's, Annual Report, 2018).

The table below summarizes counties in the NCDHD that have been classified as having shortages of health care providers by specialty. Table 15.

Table 15: Shortages of Specialty Care in the NCDHD

	SHORTAGE OF:				
NCDHD County:	**General Dentistry**	**Family Practice**	**Psychiatry and Mental Health**	**General Internal Medicine**	**General Surgery**
Antelope	Yes	Yes	Yes	Yes	Yes
Boyd	No	No	Yes	No	Yes
Brown	Yes	Yes	Yes	No	Yes
Cherry	Yes	Yes	Yes	Yes	No
Holt	No	No	Yes	Yes	Yes
Keya Paha	Yes	Yes	Yes	Yes	Yes
Knox	Yes	Yes	Yes	Yes	No
Pierce	Yes	Yes	Yes	Yes	No
Rock	No	Yes	Yes	Yes	Yes
Total number of counties in the NCDHD with specialty care shortages	**6**	**7**	**9**	**7**	**6**

Source: Nebraska Office of Rural Health, 2016 and 2017 (http://dhhs.ne.gov/publichealth/RuralHealth/Pages/ShortageAreas.aspx)

According to studies on the economic impact of rural health care, "One primary care physician in a rural community creates 23 jobs annually. On average, 14 percent of total employment in rural communities is attributed to the health sector". (Doeksen et al., 2012).

According to the 2018 Community Health Assessment Survey, nearly two out of ten respondents indicated healthcare workforce shortages as the 2nd top concern regarding healthcare in the NCDHD (the highest concern was related to the high cost of healthcare). One respondent mentioned:

"In Atkinson, I am concerned about the nurse shortage as well as the physician shortage"

Table 16 shows the Health Professionals Shortage Areas (HPSAs) designated by HRSA (Health Resources and Services Administration) as having shortages of primary care, dental care, or mental health providers and may be geographic (a county or service area), population (e.g., low income or Medicaid eligible) or facilities (e.g., federally qualified health centers, or state or federal prisons)

(source: https://data.hrsa.gov/tools/shortage-area/hpsa-find). HRSA has identified 42 geographic areas and locations in the NCDHD with Health Professional Shortage Areas (HPSAs).

The Santee Sioux Nation, located in Knox County, has been designated by HRSA as having HPSAs for primary care, dental care, and mental health. All counties in the NCDHD have been identified as having professional shortages in mental health.

Table 16: Health Professional Shortage Areas (HPSAs) in the NCDHD

Discipline	HPSA Name	Designation Type
Primary Care	Keya Paha	Single County
Primary Care	**Santee Sioux Nation**	Native American/Tribal Facility/Population
Primary Care	Ainsworth Family Clinic	Rural Health Clinic
Primary Care	Avera O'Neill Family Medicine	Rural Health Clinic
Primary Care	Cherry County Clinic	Rural Health Clinic
Primary Care	Chi Health Plainview Clinic	Rural Health Clinic
Primary Care	Greater Sandhills Family Healthcare - Atkinson	Rural Health Clinic
Primary Care	Greater Sandhills Family Healthcare-Bass	Rural Health Clinic
Primary Care	Grtr Sandhills Family Healthcare-Stuart	Rural Health Clinic
Primary Care	Rock County Clinic	Rural Health Clinic
Primary Care	Valentine Medical Clinic, LLC	Rural Health Clinic
Primary Care	West Holt Medical Clinic	Rural Health Clinic
Dental Health	**Santee Sioux Nation**	**Native American/Tribal Facility/Population**
Dental Health	Avera O'Neill Family Medicine	Rural Health Clinic
Dental Health	Cherry County Clinic	Rural Health Clinic
Dental Health	Chi Health Plainview Clinic	Rural Health Clinic
Dental Health	Greater Sandhills Family Healthcare - Atkinson	Rural Health Clinic
Dental Health	Greater Sandhills Family Healthcare-Bass	Rural Health Clinic
Dental Health	Grtr Sandhills Family Healthcare-Stuart	Rural Health Clinic
Dental Health	Rock County Clinic	Rural Health Clinic
Dental Health	Valentine Medical Clinic, LLC	Rural Health Clinic
Dental Health	West Holt Medical Clinic	Rural Health Clinic
Mental Health	Catchment Area 4	Geographic HPSA
Mental Health	Antelope County	Single County
Mental Health	Boyd County	Single County
Mental Health	Brown County	Single County
Mental Health	Cherry County	Single County
Mental Health	Holt County	Single County
Mental Health	Keya Paha County	Single County
Mental Health	Knox County	Single County
Mental Health	Pierce County	Single County
Mental Health	Rock County	Single County
Mental Health	**Santee Sioux Nation**	**Native American/Tribal Facility/Population**
Mental Health	Avera O'Neill Family Medicine	Rural Health Clinic

Mental Health	Cherry County Clinic	Rural Health Clinic
Mental Health	Chi Health Plainview Clinic	Rural Health Clinic
Mental Health	Greater Sandhills Family Healthcare - Atkinson	Rural Health Clinic
Mental Health	Greater Sandhills Family Healthcare-Bass	Rural Health Clinic
Mental Health	Grtr Sandhills Family Healthcare-Stuart	Rural Health Clinic
Mental Health	Rock County Clinic	Rural Health Clinic
Mental Health	Valentine Medical Clinic, LLC	Rural Health Clinic
Mental Health	West Holt Medical Clinic	Rural Health Clinic

Source: HRSA Find (https://data.hrsa.gov/tools/shortage-area/hpsa-find)

Nursing Workforce

The Nebraska Center of Nursing, under the administration of the Licensure Unit at the Nebraska DHHS, Division of Public Health, annually tracks the workforce of Registered Nurses (RNs), Advanced Practice Registered Nurses (APRNs), and Licensed Practical Nurses (LPNs) through their renewal process of their respective licenses. RNs and APRNs renew their licenses on even years, and LPNs renew on odd years. Data is collected and disseminated by county based on where nurses work. The Nebraska Center for Nursing also make nursing workforce projections based on the supply and demand of nurses in 9 economic regions defined by the Nebraska Department of Labor. See Figure 26.

According to the Nebraska Center for Nursing "2018 RN/LPN Biennial report", there are 447 RNs and 164 LPNs working in the NCDHD. The current RN workforce rate per 100,000 population in the State of Nebraska is 1,300.6, and only Holt County in the NCDHD is above that average (1,485.4 per 100,000 population). Keya Paha County has the lowest RN workforce rate in the NCDHD (121.4 per 100,000 population). The total RN workforce rate for the NCDHD is 963.5 per 100,000 population, over 320 RNs less than the total for the State.

LPNs show higher workforce rates in the NCDHD when compared to the State (362.7 vs. 260.6 LPNs per 100,000 population, respectively), a difference of over 100 LPNs per 100,000 population. Holt County also has the highest LPN workforce rate per 100,000 population in the NCDHD, and there are no LPNs working in Keya Paha County (2017 LPN workforce). Table 17.

Table 17: RN and LPN workforce in the NCDHD

County:	RNs - 2016	LPNs - 2017	RNs per 100,000	LPNs per 100,000
Antelope	62	22	927.4	345.8
Boyd	17	5	809.9	252.9
Brown	24	8	763.1	265.4
Cherry	49	15	857.7	257.8
Holt	155	50	1485.4	490.1

Keya Paha	1	0	121.4	0
Knox	64	23	735.5	271.5
Pierce	60	30	825.8	420.3
Rock	15	11	983	766
NCDHD	**447**	**164**	**963.5**	**362.7**
Nebraska	23754	5004	1300.6	260.6

Source: Nebraska Center for Nursing, 2018 RN/LPN Biennial Report.

Advanced Practice Registered Nurses (APRN) Workforce

There is a total of 34 APRNs in the NCDHD, twenty-seven of them are Nurse Practitioners (APRN-NPs), and seven are Certified Registered Nurse Anesthetists (APRN-CRNA). Holt County has a total of 12 APRNs, followed by Antelope County with 6 APRNs. Table 18 shows the number and specialty of APRNs in the NCDHD by county.

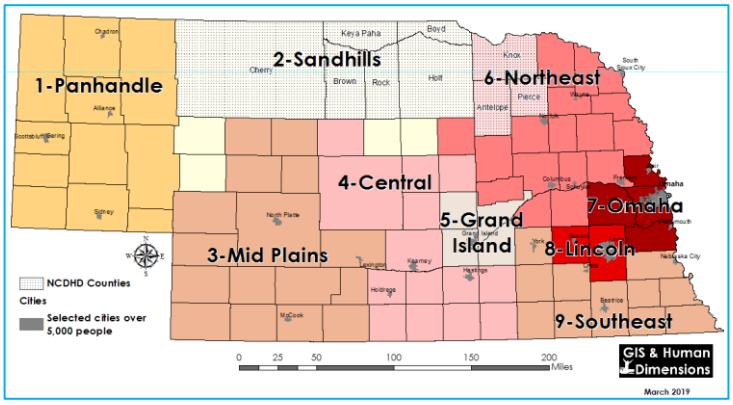
Table 18: Number of APRNs by Specialty in the NCDHD and Nebraska

County:	APRN-NP	APRN-CRNA	Total APRNs
Antelope	4	2	6
Boyd	1	0	1
Brown	1	1	2
Cherry	1	1	2
Holt	9	3	12
Keya Paha	0	0	0
Knox	4	0	4
Pierce	3	0	3
Rock	4	0	4
NCDHD	27	7	34
Nebraska	1,345	318	1,784*

*It includes 88 Clinical Nurse Specialists (CNS), and 33 Nurse Midwives (APRN-CNM). Source: 2016 RN Workforce (Nebraska Center for Nursing).

Nursing Workforce Projections

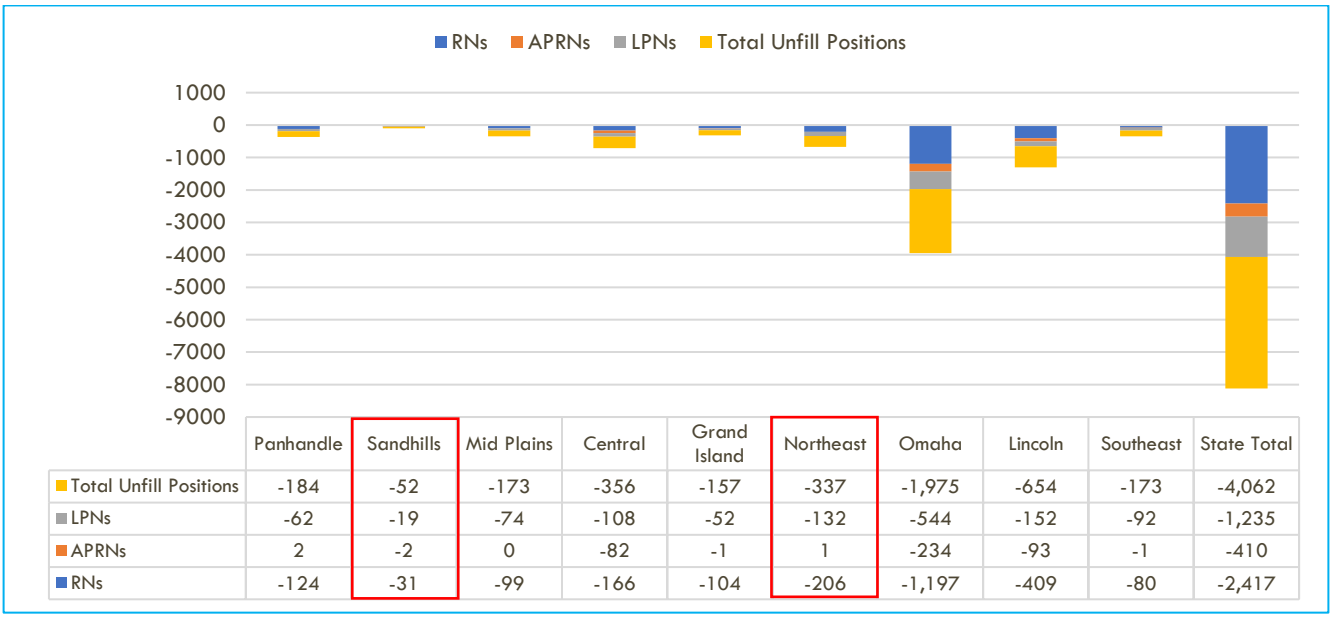
Figure 26: Economic Regions and the NCDHD counties



Sources: Nebraska Department of Labor (Economic Regions). Own elaboration.

According to the Nebraska Center for Nursing (2018 Biennial Report), the current shortage of nurses (2019) in the State of Nebraska is 4,616 FTE[4] nurses (it includes RNs, APRNs, and LPNs). This shortage will increase to 5,435 FTE nurses in the year 2025, a nearly 18% growth. The nursing projections are based on the 9 economic regions defined by the Nebraska Department of Labor. The NCDHD includes portions of the Sandhills (6 Counties: Cherry, Keya Paha, Boyd, Brown, Rock, and Holt) and the Northeast Economic (3 Counties: Knox, Antelope, and Pierce). Figure 26. According to the nursing projections, the Sandhills Economic Region is facing a nursing shortage of 52 nurses, and the Northeast region is facing a shortage of 337 nurses. Over two-thirds of the nursing shortage is due to unfilled RN and APRN positions. Figure 27.

Figure 27: Nursing Shortages by Economic Region (2018 projections)



	Panhandle	Sandhills	Mid Plains	Central	Grand Island	Northeast	Omaha	Lincoln	Southeast	State Total
Total Unfill Positions	-184	-52	-173	-356	-157	-337	-1,975	-654	-173	-4,062
LPNs	-62	-19	-74	-108	-52	-132	-544	-152	-92	-1,235
APRNs	2	-2	0	-82	-1	1	-234	-93	-1	-410
RNs	-124	-31	-99	-166	-104	-206	-1,197	-409	-80	-2,417

Source: Nebraska Center for Nursing, 2018.

[4] FTE: Full-Time Equivalent

Chronic Disease

Cardiovascular Disease

Cardiovascular disease (CVD) includes all diseases of the heart and blood vessels, including coronary heart disease, stroke, congestive heart failure, hypertension disease, and atherosclerosis. CVD is a chronic disease, with an onset that often extends decades after exposure to one or more risk factors (DHHS, 2016).

Heart Disease

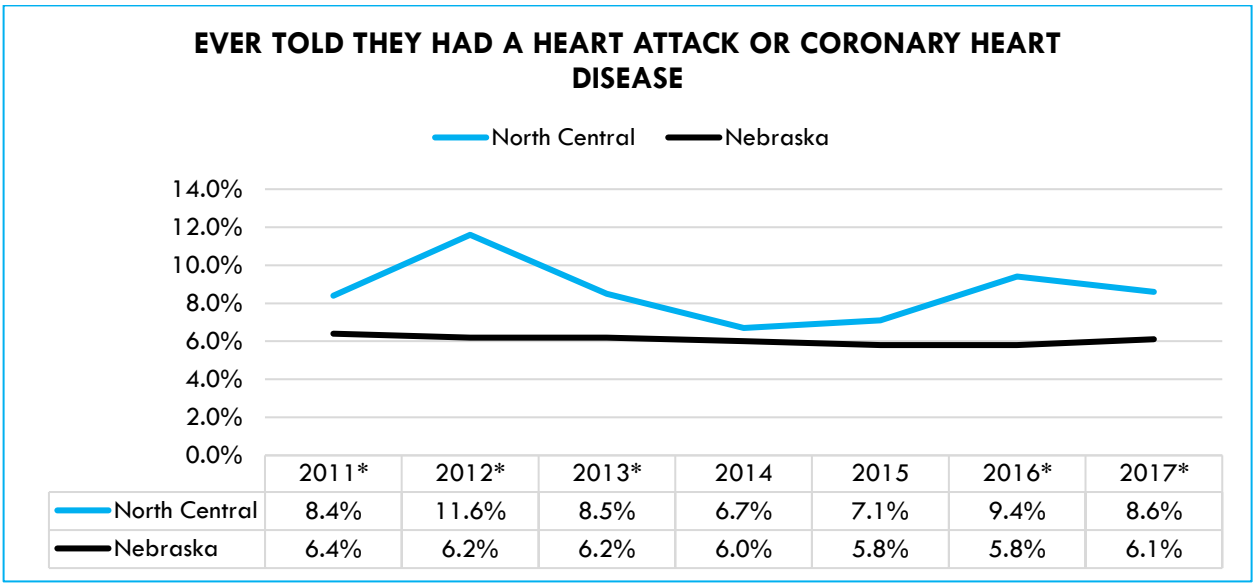
Coronary heart disease (or coronary artery disease) is a narrowing of the small blood vessels that supply blood and oxygen to the heart (coronary arteries). Coronary heart disease often results from the buildup of fatty material and plaque (atherosclerosis). As the coronary arteries narrow, the flow of blood to the heart can slow or stop. This disease can cause chest pain (stable angina), shortness of breath, heart attack, or other symptoms.

Prevalence

According to the 2017 Nebraska BRFSS, 1 in 11 NCDHD adults (8.6%) reported that they have ever been told they had a heart attack or coronary heart disease. This percentage is statistically significantly higher when compared to the State, at 1 in 16 adults (6.1%) reporting a heart attack or coronary heart disease. Figure 28.

According to the 2018 Community Health Assessment Survey, "heart problems" is ranked 4th (out of 15) as one of the most serious health issues facing the community in the NCDHD. 84.8% of respondents to the survey ranked "heart problems" as a middle (rank = 4) to extremely (rank = 7) serious concern.

Figure 28: Ever told they had a heart attack or coronary heart disease, NCDHD vs. Nebraska 2011-2017



	2011*	2012*	2013*	2014	2015	2016*	2017*
North Central	8.4%	11.6%	8.5%	6.7%	7.1%	9.4%	8.6%
Nebraska	6.4%	6.2%	6.2%	6.0%	5.8%	5.8%	6.1%

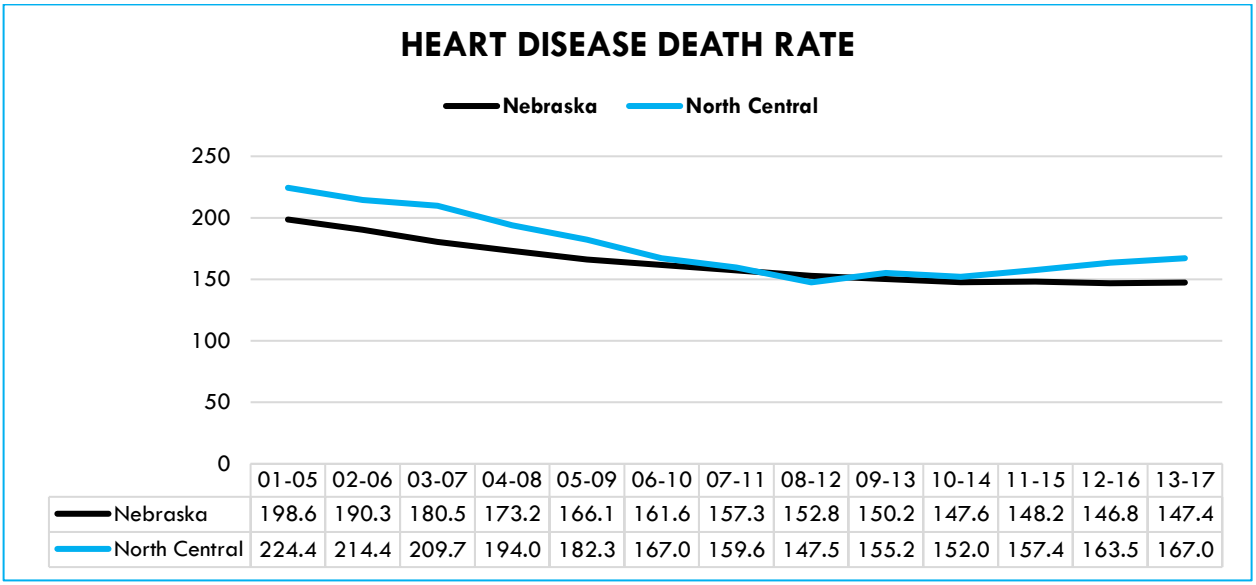
*NCDHD rates are significantly higher than the State. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Mortality

There were 744 deaths due to heart disease in the NCDHD for years 2013-2017 combined, accounting for 26.1 percent of all deaths among NCDHD residents (ranked as the leading cause of death among NCDHD residents). In Nebraska, cancer has been the leading cause of death since 2009.

The age-adjusted rate (AAR) for heart disease death in the NCDHD declined 25.8 percent between 2001-2005 years combined and the 2013-2017 years combined. For 2001-2005 years combined, the AAR in the NCDHD has been higher than the State, except during the 2008-2012 years combined (147.5% vs. 152.8, respectively). Figure 29.

*Figure 29: Heart Disease Death Rate per 100,000 Population (age adjusted), NCDHD vs. Nebraska, 2001-2005 to 2013-2017**



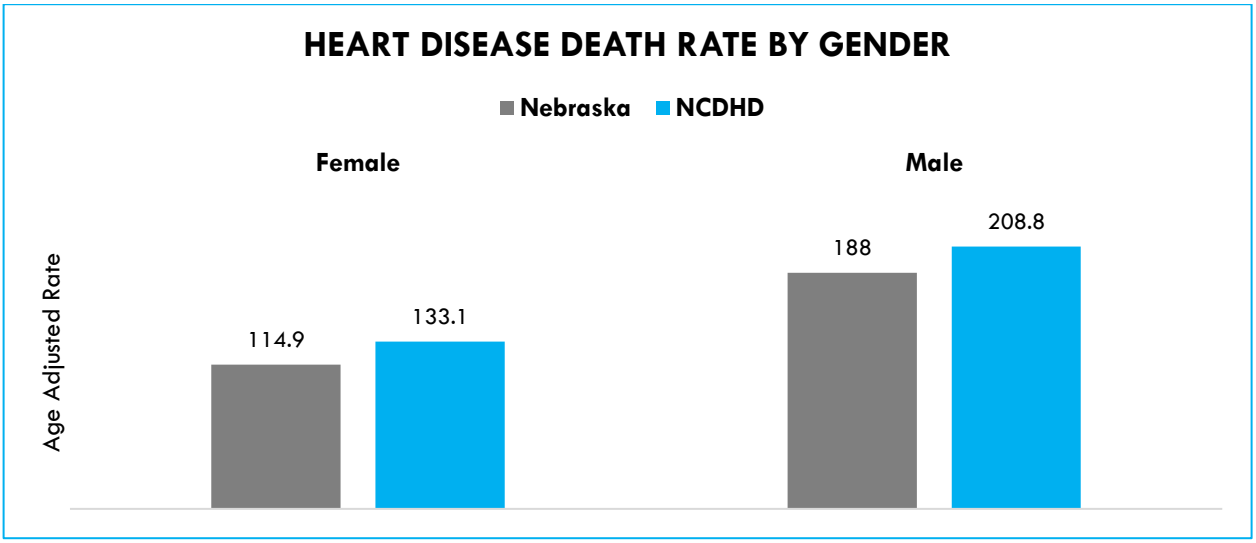
	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Nebraska	198.6	190.3	180.5	173.2	166.1	161.6	157.3	152.8	150.2	147.6	148.2	146.8	147.4
North Central	224.4	214.4	209.7	194.0	182.3	167.0	159.6	147.5	155.2	152.0	157.4	163.5	167.0

*Five Year Moving Averages 2001-2005 Combined to 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Heart disease mortality by gender, age, and race/ethnicity

Males are 1.57 times more likely to die of heart disease than females in the NCDHD (208.8 per 100,000 males vs. 133.1 per 100,000 females), slightly lower when compared at the State level (1.64 times). Figure 30.

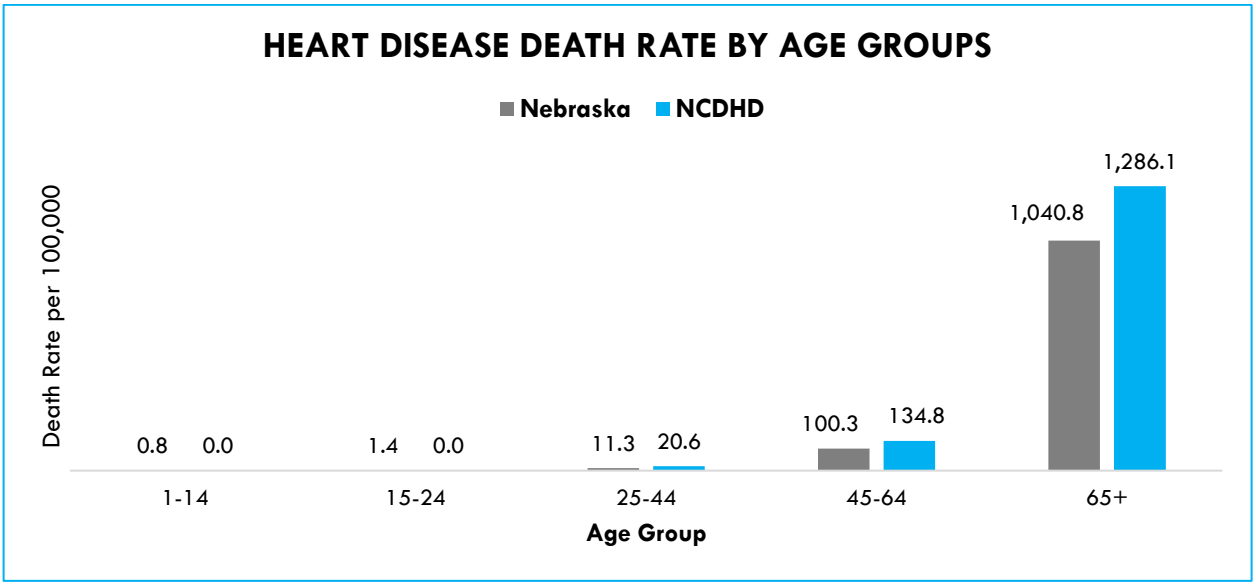
*Figure 30: Heart Disease Death Rate by Gender (age adjusted), NCDHD vs. Nebraska, 2013-2017 years combined**



*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Heart disease death rates increase 9.5 times when comparing age groups 65+ with 45-64 years in the NCDHD. Figure 31. Heart disease deaths among NCDHD residents over 65 years of age accounts over one-fourth of all causes of death for this age group (27.2%), followed by cancer (18.9%).

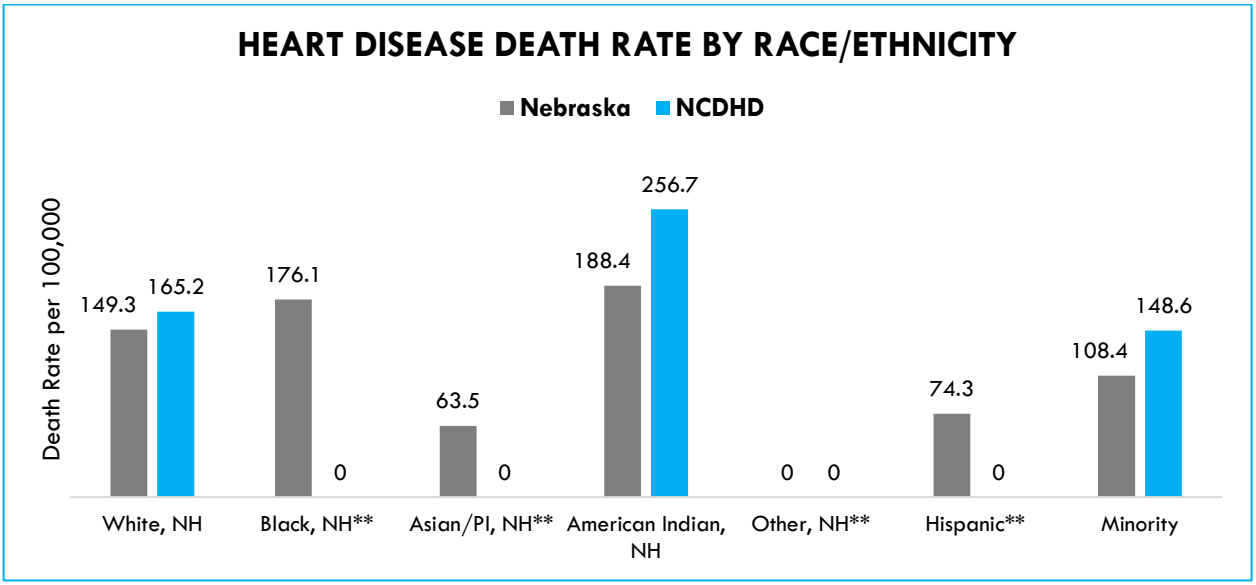
*Figure 31: Heart Disease Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

In terms of race/ethnicity, Native Americans show the highest prevalence of heart disease death rates among all residents in the NCDHD (256.7 per 100,000 population), 1.6 times higher when compared to the White non-Hispanic population (165.2 per 100,000 population). Minorities** show the lowest heart disease death rate among all races/ethnicities (148.6 per 100,000 population). Figure 32.

*Figure 32: Heart Disease Death Rate by Race/Ethnicity, NCDHD vs. Nebraska, 2013-2017 combined**

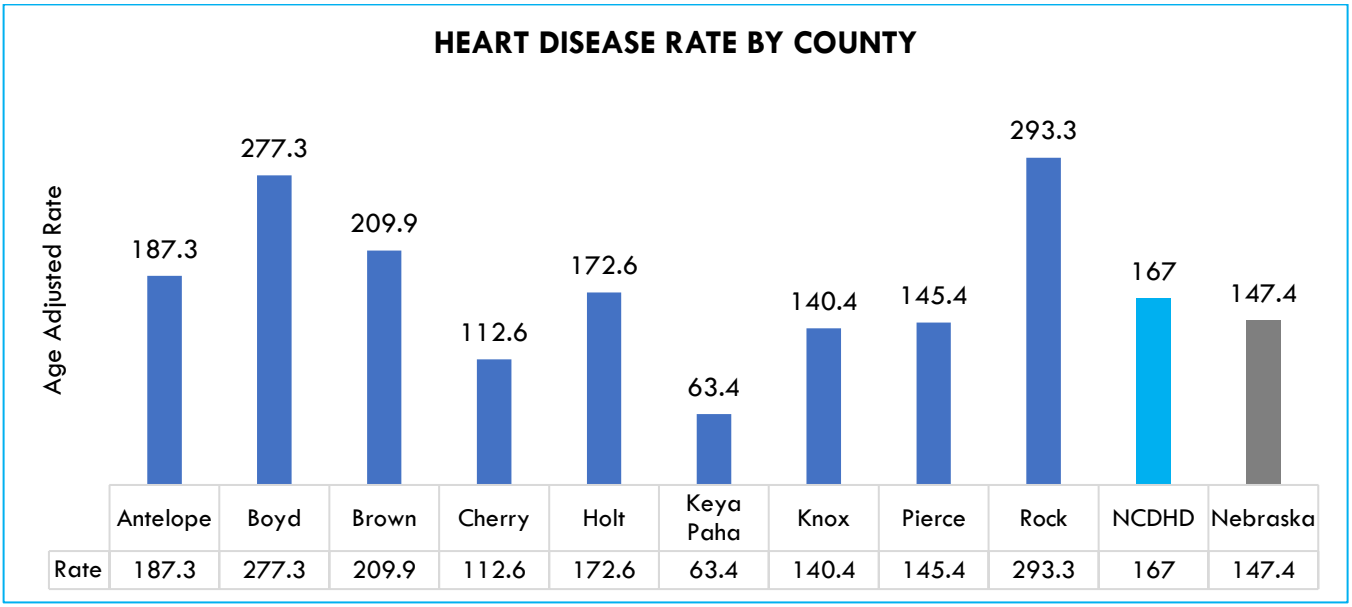


*Five Year Moving Averages 2013-2017 Combined. **Race/ethnicity categories are non-overlapping except for the 'minority' category, which includes respondents who reported being Hispanic and/or a race other than White. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Heart disease mortality by NCDHD Counties

Rock County showed the highest heart disease death rate per 100,000 population among all counties in the NCDHD (293.3), nearly 1.8 times higher than the total rate for the NCDHD (167.0), followed by Boyd County (277.3; 1.7 times higher than the total rate for the NCDHD). Keya Paha showed the lowest heart disease death rate among all counties in the NCDHD (63.4), followed by Cherry County (112.6), 2.6 and 1.5 times lower than the average rate for the NCDHD, respectively. Figure 33.

*Figure 33: Heart Disease Rate by County, NCDHD and Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Hospitalizations

Heart disease hospitalization rate per 1,000 Medicare Beneficiaries, 65+, All Races/Ethnicities, both genders, 2013-2015 years combined increased by 52% in the NCDHD when compared to 2009-2011 years combined. Table 19.

Heart disease hospitalization rate for Medicare Beneficiaries for all population 65+ in the NCDHD is 22.5 points lower when compared to the State of Nebraska (47.8 vs. 70.3 per 1,000 Medicare Beneficiaries, respectively). Nebraska has a lower heart disease hospitalization rate for all populations over 65 years age when compared to the National level (70.3 vs. 88.5 per 1,000 Medicare Beneficiaries, respectively). Table 19.

Pierce County has maintained the highest heart disease hospitalization rate per 1,000 Medicare Beneficiaries over 65 years of age between 2009-2011 combined years and 2013-2015 combined years among all counties in the NCDHD (41.3 and 60.1, respectively). Keya Paha County shows the lowest heart disease hospitalization rate among all counties in the NCDHD during the 2013-2015 combined years (33.1). Brown County showed the lowest heart disease hospitalization rate for Medicare Beneficiaries over 65 years of age during the 2009-2011 combined years (27.5). Antelope and Holt Counties show the highest percent change in heart disease hospitalization rate per 1,000 Medicare Beneficiaries over 65 years of age among all counties in the NCDHD between 2009-2011 combined years and 2013-2015 combined years (82% each).

Table 19: Heart Disease Hospitalization Rate per 1,000 Medicare Beneficiaries, 65+, All Races/Ethnicities, Both Genders, by County, NCDHD, and State of Nebraska, 2009-2011 and 2013-2015

HEART DISEASE HOSPITALIZATION RATE			
County:	**2009-2011 combined**	**2013-2015 combined**	**Change in hospitalization rate 2009-2011 to 2013-2015**
Antelope	30.8	56	82%
Boyd	32.1	49	53%
Brown	**27.5**	36.7	33%
Cherry	30.8	43.6	42%
Holt	28.7	52.3	82%
Keya Paha	30.8	33.1	7%
Knox	33.8	58	72%
Pierce	41.3	60.1	46%
Rock	27.9	41.7	49%
NCDHD	**31.5**	**47.8**	**52%**
Nebraska	42.8	70.3	64%
National Rate	54.3	88.5	63%

Source: Centers for Disease Control and Prevention, Interactive Atlas of Heart Disease and Stroke, Interactive Atlas of Heart Disease and Stroke Tables, State Report with county data (2009-2011 and 2013-2015 combined years). (https://www.cdc.gov/dhdsp/maps/atlas/index.htm).

Stroke

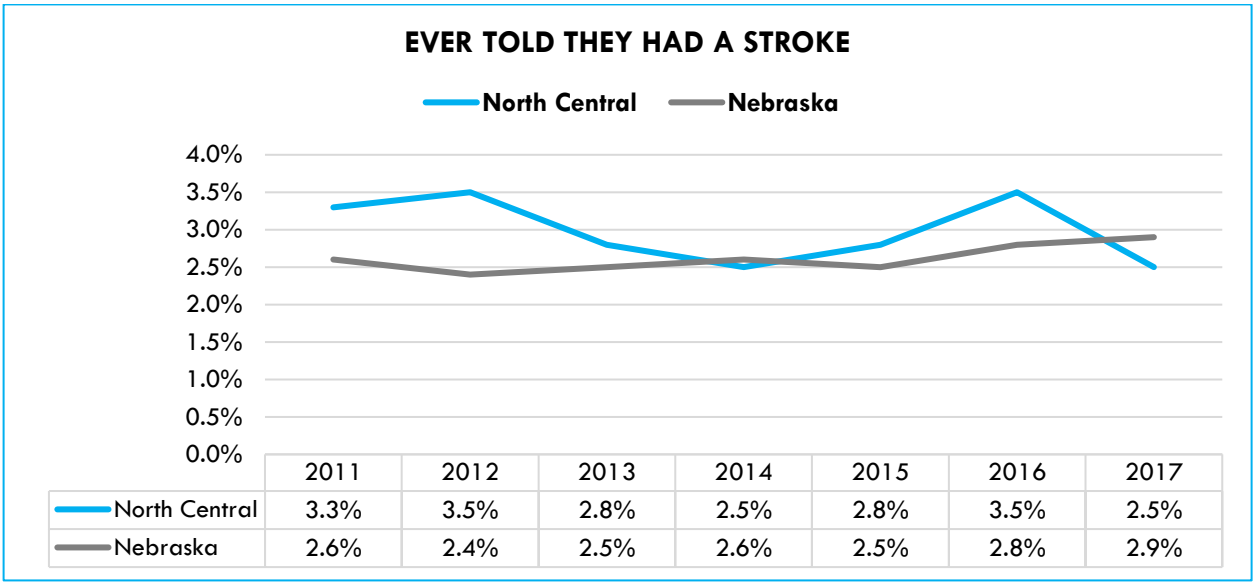
A stroke, sometimes called a brain attack, occurs when something blocks blood supply to part of the brain or when a blood vessel in the brain bursts. In either case, parts of the brain become damaged or die. A stroke can cause lasting brain damage, long-term disability, or even death (CDC, 2019).

Prevalence

According to the 2013-2017 combined years, NCDHD BRFSS, 1 in 40 NCDHD adults (2.5%) reported that they have ever been told they had a stroke. This percentage has been decreasing overall since 2011, and in 2017, for the first time since 2014, NCDHD had a lower percentage than the State (2.5% vs. 2.9%, respectively). Figure 34.

According to the 2018 Community Health Assessment Survey, "stroke" is ranked 8th (out of 15) among the most serious health issue facing the community in the NCDHD. Nearly two-thirds of respondents (65.9%) to the survey ranked "stroke" as a middle (rank = 4) to extremely (rank = 7) serious concern.

Figure 34: Ever told they had a stroke, NCDHD vs. Nebraska 2011-2017



	2011	2012	2013	2014	2015	2016	2017
North Central	3.3%	3.5%	2.8%	2.5%	2.8%	3.5%	2.5%
Nebraska	2.6%	2.4%	2.5%	2.6%	2.5%	2.8%	2.9%

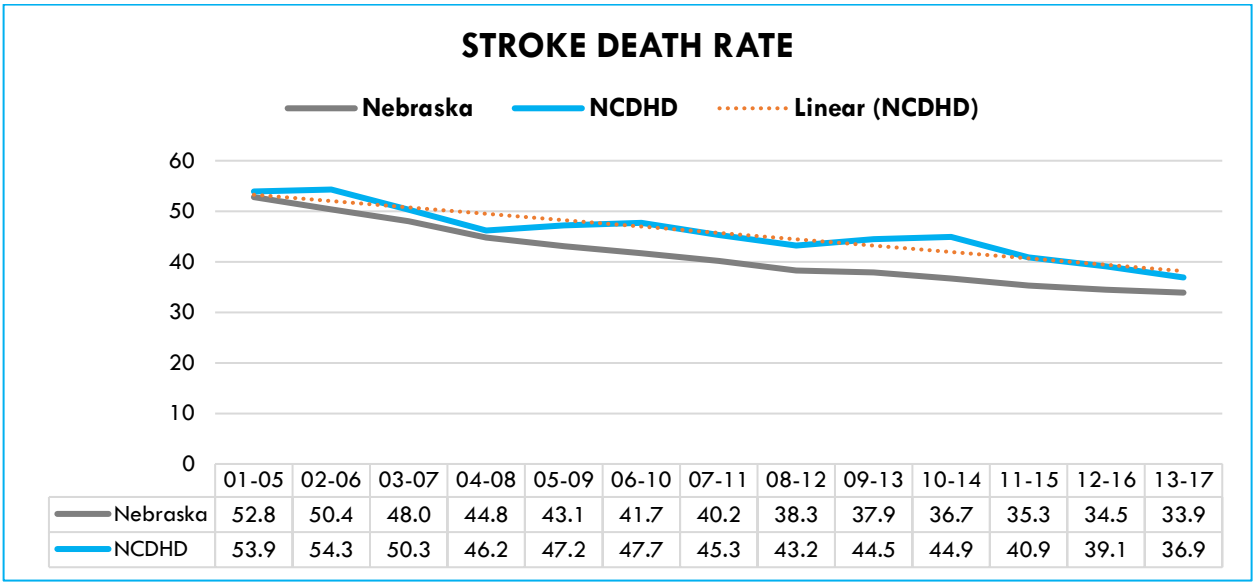
Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Mortality

Stroke was the cause of 167 deaths in the NCDHD during 2013-2017 combined years, accounting for 5.9 percent of all NCDHD deaths during that time period. The age-adjusted death rate due to stroke in the NCDHD has steadily declined from 53.9 deaths per 100,000 population in 2001-2005 combined years to 36.9 deaths per 100,000 population in 2013-2017 combined years, for a 31.5 percent overall decline (Figure 35). As a result, stroke dropped from the third to the fifth leading cause of death in the NCDHD beginning in 2011-2014 combined years.

Nebraska death rates due to stroke have experienced a similar decline between 2001-2005 combined years and 2013-2017 combined years, decreasing 35.8 percent from 52.8 to 33.9 deaths per 100,000 population, respectively. Figure 35.

Figure 35: Stroke Death Rate per 100,000 Population (age adjusted), NCDHD vs. Nebraska, 2001-2005 to 2013-2017*



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
Nebraska	52.8	50.4	48.0	44.8	43.1	41.7	40.2	38.3	37.9	36.7	35.3	34.5	33.9
NCDHD	53.9	54.3	50.3	46.2	47.2	47.7	45.3	43.2	44.5	44.9	40.9	39.1	36.9

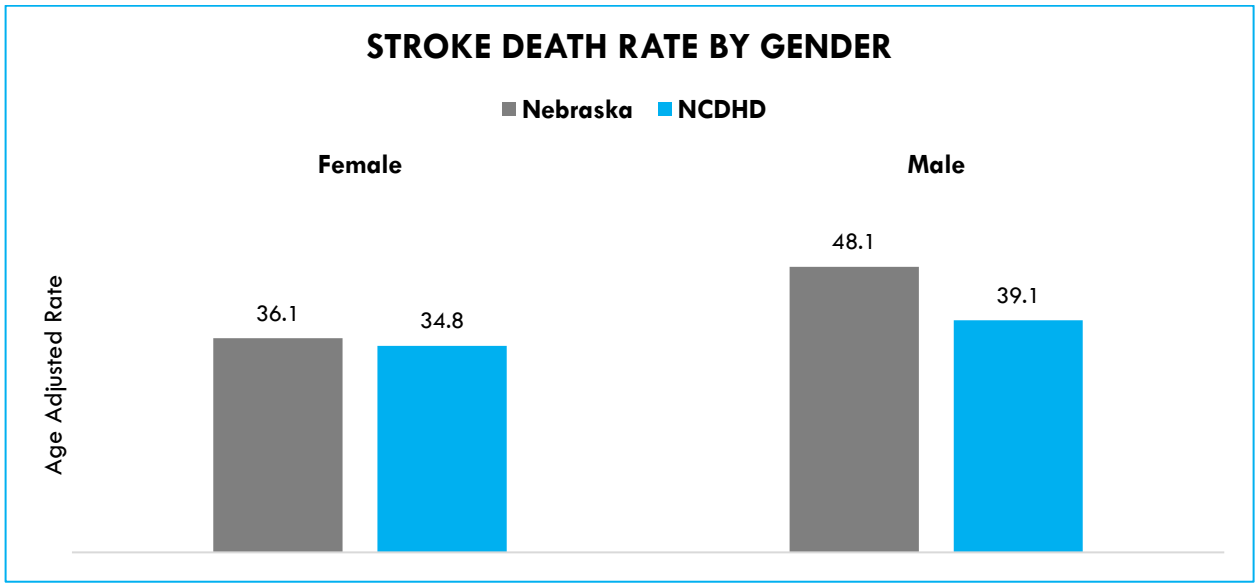
*Five Year Moving Averages 2001-2005 Combined to 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Stroke mortality by gender, age, and race/ethnicity

GENDER – Stroke mortality

Males are 1.12 times more likely to die of a stroke than females in the NCDHD (39.1 per 100,000 males vs. 34.8 per 100,000 females), slightly lower when compared at the State level (1.33 times). Males in the NCDHD are 1.23 times less likely to die of a stroke when compared to Nebraska males overall. Figure 36.

*Figure 36: Stroke Death Rate by Gender (age adjusted), NCDHD vs. Nebraska, 2013-2017 years combined**

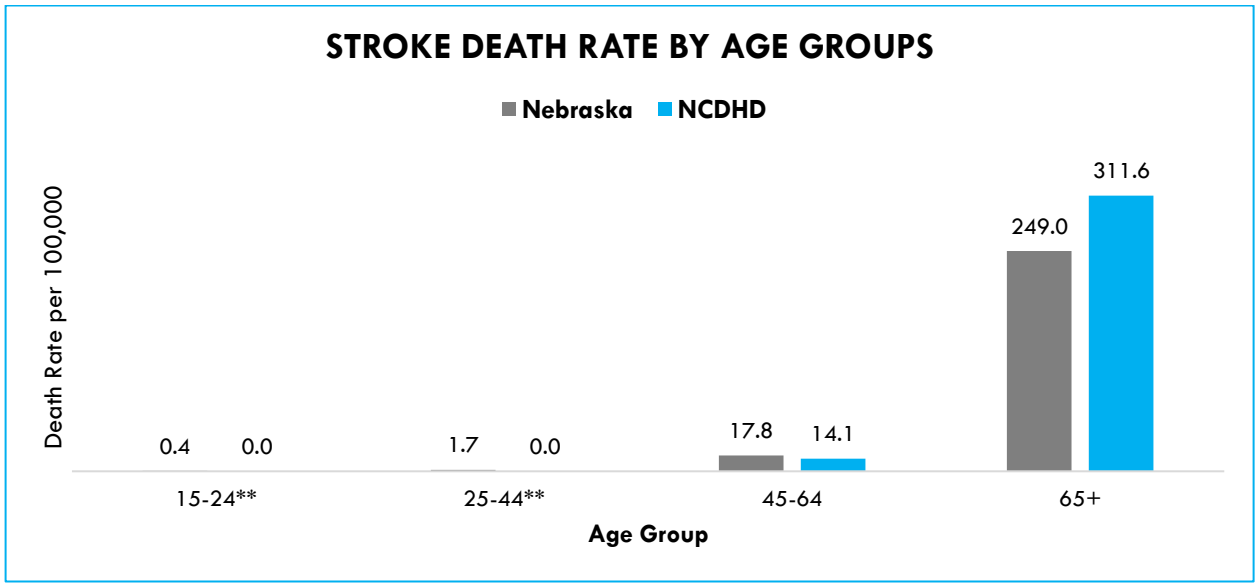


*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

AGE – Stroke mortality

Stroke death rates increase 22 times when comparing age groups 65+ with 45-64 years in the NCDHD. Figure 37. Stroke deaths among NCDHD residents over 65 years of age represent 6.6 percent of all cause of deaths for this age group.

*Figure 37: Stroke Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

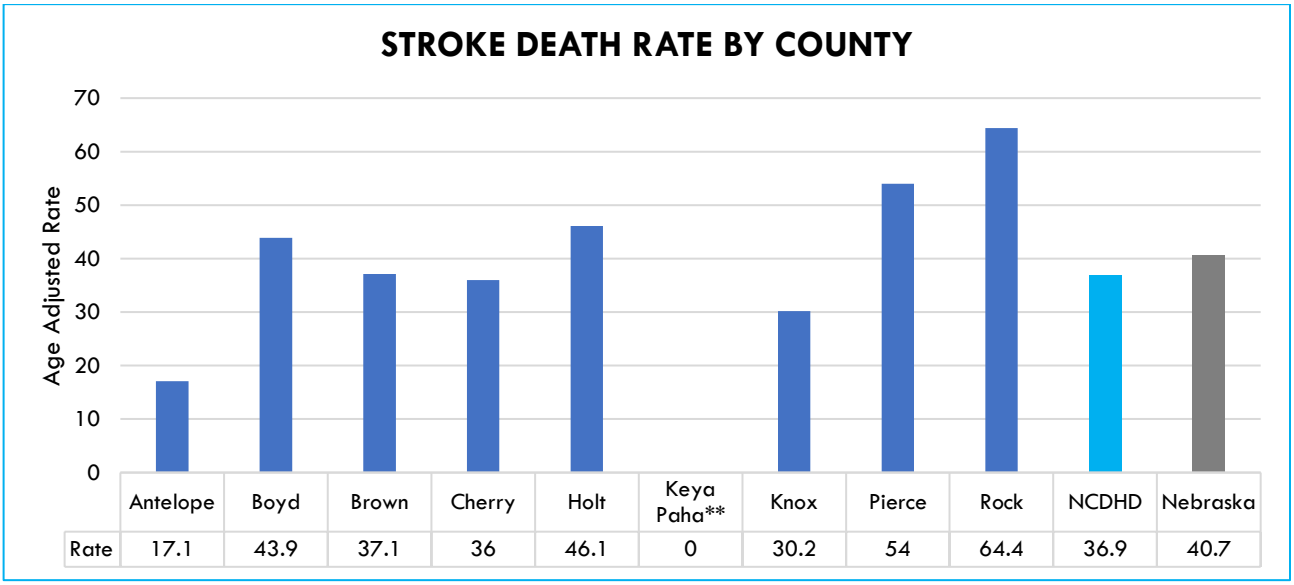
RACE/ETHNICITY – Stroke mortality

In terms of race/ethnicity, the White non-Hispanic population show a stroke death rate of 37.1 per 100,000 population, 10.5% higher when compared to the overall White non-Hispanic in the State (33.4 per 100,000 population). Data was not available for the rest of races/ethnicities due to small sample size.

Stroke disease mortality by NCDHD Counties

Rock County shows the highest stroke death rate among all counties in the NCDHD (64.4 per 100,000 population), 1.7 times higher than the total rate for the NCDHD (36.9 per 100,000 population), followed by Pierce County (54.0 per 100,000 population; 1.5 times higher than the total rate for the NCDHD). Antelope County shows the lowest stroke death rate among all counties in the NCDHD (17.1 per 100,000 population), followed by Knox County (30.2 per 100,000 population), 0.5 and 0.8 times lower than the average rate for the NCDHD. Figure 38.

*Figure 38: Stroke Death Rate by County, NCDHD and Nebraska, 2013-2017 combined**



	Antelope	Boyd	Brown	Cherry	Holt	Keya Paha**	Knox	Pierce	Rock	NCDHD	Nebraska
Rate	17.1	43.9	37.1	36	46.1	0	30.2	54	64.4	36.9	40.7

*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Hospitalizations

Stroke hospitalization rate per 1,000 Medicare Beneficiaries, 65+, All Races/Ethnicities, both genders, 2013-2015 years combined increased by 45% in the NCDHD when compared to 2009-2011 years combined. Table 20.

Stroke hospitalization rate for Medicare Beneficiaries for 65+, All Races/Ethnicities, both genders in the NCDHD is 3.3 points lower when compared to the State of Nebraska (7.3 vs. 8.9 per 1,000 Medicare Beneficiaries, respectively). Nebraska has a lower stroke hospitalization rate for 65+, All Races/Ethnicities, both genders when compared to the National level (13.8 vs. 16.9 per 1,000 Medicare Beneficiaries, respectively). Table 20.

Pierce County has the highest stroke disease hospitalization rate per 1,000 Medicare Beneficiaries over 65 years of age in the 2013-2015 combined years among all counties in the NCDHD (13.6). While Keya Paha County shows the lowest heart disease hospitalization rate among all counties in the NCDHD during the 2013-2015 combined years. Rock County showed the lowest stroke hospitalization rate for this population during the 2009-2011 combined years. Pierce County shows the highest percent change in stroke disease hospitalization rate per 1,000 Medicare Beneficiaries over 65 years of age among all counties in the NCDHD between 2009-2011 combined years and 2013-2015 combined years (134%).

Table 20: Stroke Hospitalization Rate per 1,000 Medicare Beneficiaries, 65+, All Races/Ethnicities, Both Genders, by County, NCDHD, and State of Nebraska, 2009-2011 and 2013-2015

STROKE HOSPITALIZATION RATE			
County:	**2009-2011**	**2013-2015**	**Change in hospitalization rate 2009-2011 to 2013-2015**
Antelope	6.3	7.8	24%
Boyd	8.6	10.7	24%
Brown	5.6	9.1	63%
Cherry	7.8	11	41%
Holt	6.6	11.2	70%
Keya Paha	7.9	9.9	25%
Knox	10.7	11.4	7%
Pierce	5.8	13.6	134%
Rock	6	9.8	63%
NCDHD	**7.3**	**10.5**	**45%**
Nebraska	8.9	13.8	55%
National Rate	11.6	16.9	46%

Source: Centers for Disease Control and Prevention, Interactive Atlas of Heart Disease and Stroke, Interactive Atlas of Heart Disease and Stroke Tables, State Report with county data (2009-2011 and 2013-2015 combined years). (https://www.cdc.gov/dhdsp/maps/atlas/index.htm).

Clinical Risk Factors for Cardiovascular Disease

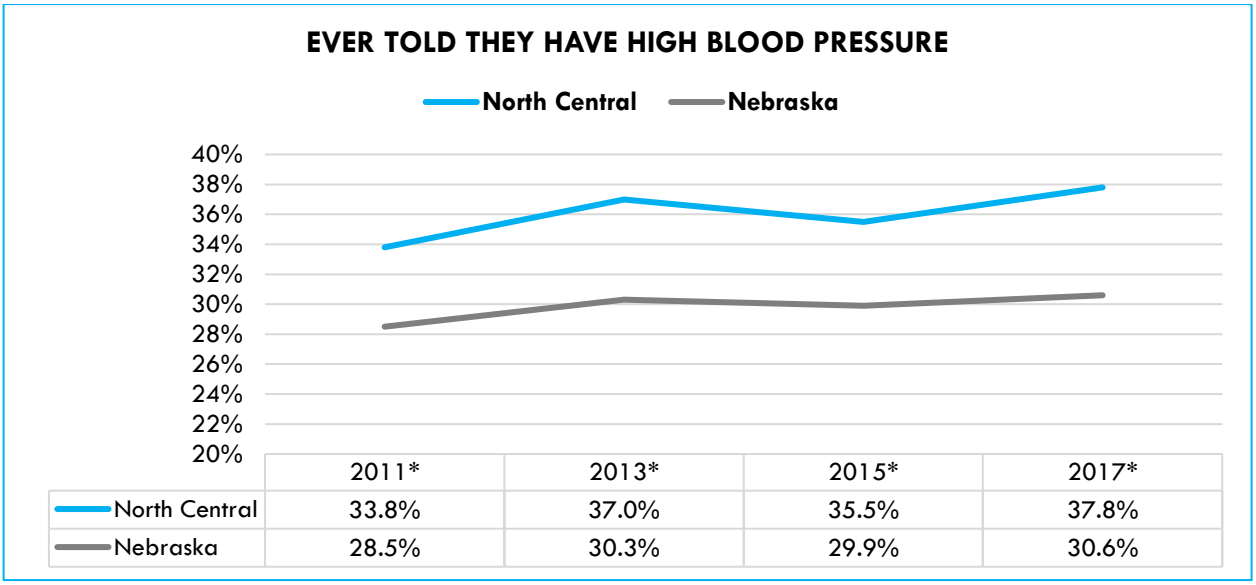
High Blood Pressure

High blood pressure (also referred to as hypertension) occurs when an individual has a systolic blood pressure of 140 mg/dL or higher or a diastolic blood pressure of 90 mg/dL or higher. High blood pressure often goes undetected or is not properly managed. About 1 in 3 U.S. adults -or about 75 million people- have high blood pressure. Only about half (54%) of these people have their high blood pressure under control. Many youth are also being diagnosed with high blood pressure. This common condition increases the risk for heart disease and stroke, two of the leading causes of death for Americans (Merai et al. 2016; Jackson et al. 2018).

Prevalence in the NCDHD

In the NCDHD, Nebraska and nationwide, prevalence of high blood pressure has increased in recent years. In the NCDHD, the proportion of adults reporting they have been told they have high blood pressure increased from 33.8% in 2011 to 2017 37.8%. Since 2011, NCDHD adults, compared to Nebraska adults, were statistically significantly more likely to report having been diagnosed with high blood pressure. Figure 39.

Figure 39: Ever Told they Have High Blood Pressure among Adults, NCDHD and Nebraska, 2011, 2017*



	2011*	2013*	2015*	2017*
North Central	33.8%	37.0%	35.5%	37.8%
Nebraska	28.5%	30.3%	29.9%	30.6%

*Differences were statistically significant between NCDHD and Nebraska. Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

According to the 2018 Community Health Assessment Survey, high blood pressure is considered the 2nd (out of 15) most serious health issue, after cancer, facing the community in the NCDHD. 85.6 percent

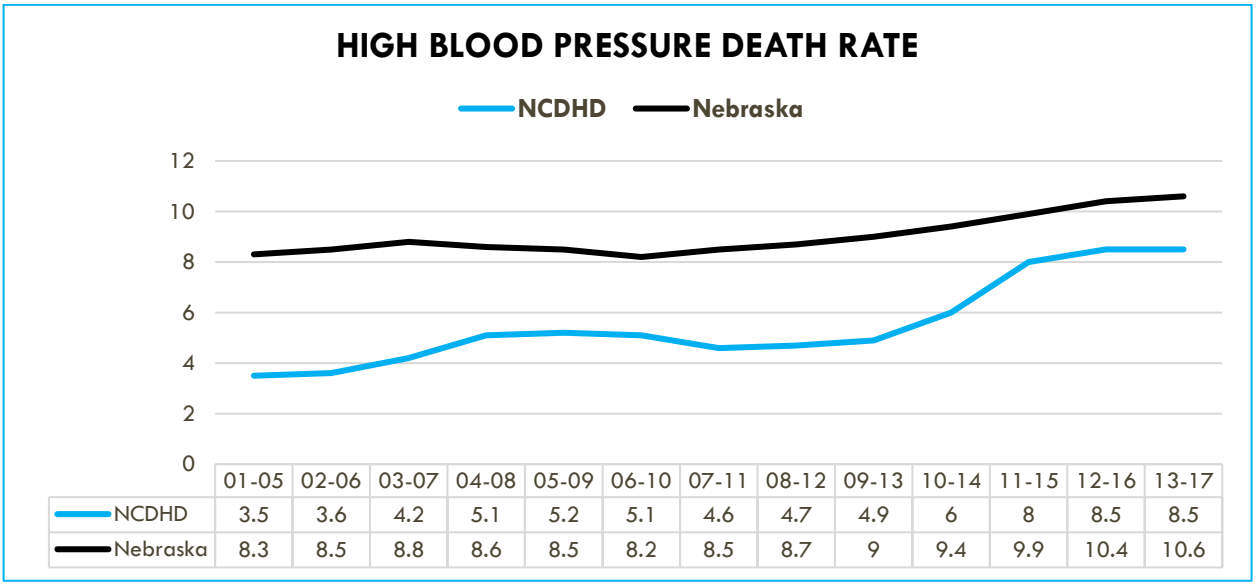
of respondents to the survey ranked "high blood pressure" as a middle (rank = 4) to extremely (rank = 7) serious concern.

The majority of adults who have been diagnosed with high blood pressure (76.8% in the NCDHD and 78.6% in Nebraska in 2017) reported currently taking medication to control their hypertension. This percentage declined in the NCDHD between 2011 (85.1%) and 2017 (76.8%).

Mortality

High blood pressure was the cause of 41 deaths in the NCDHD for 2013-2017 years combined, making it the 17th leading cause of death in the NCDHD. The age-adjusted death rate due to high blood pressure in the NCDHD has increased steadily from 3.5 deaths per 100,000 population in the 2001-2005 years combined to 8.5 deaths in the 2013-2017 years combined, which was the highest rate since 2001-2005 years combined, a **143%** growth between both periods (Figure 40).

*Figure 40: High Blood Pressure Death Rate per 100,000 population (age-adjusted), NCDHD and Nebraska, 2001-2005 combined to 2013-2017 combined**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	3.5	3.6	4.2	5.1	5.2	5.1	4.6	4.7	4.9	6	8	8.5	8.5
Nebraska	8.3	8.5	8.8	8.6	8.5	8.2	8.5	8.7	9	9.4	9.9	10.4	10.6

*Five Year Moving Averages 2001-2005 Combined to 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

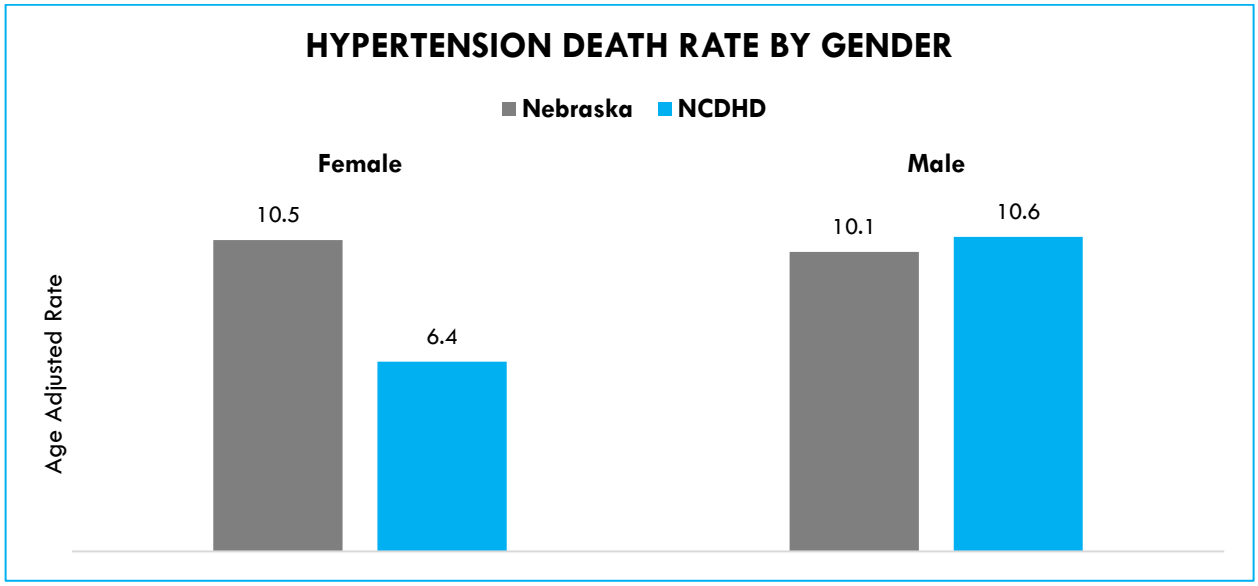
The NCDHD death rate for high blood pressure in 2013-2017 years combined was 1.2 times lower than the Nebraska death rates (8.5 and 10.6, respectively). However, this difference has significantly decreased since 2001-2005 years combined when the NCDHD death rate for high blood pressure was 2.4 times lower than the State (3.5 and 8.3, respectively).

High Blood Pressure mortality by gender, age, and race/ethnicity

GENDER – High Blood Pressure

Males are 1.7 times more likely to die of hypertension than females in the NCDHD (10.6 vs. 6.4 per 100,000 population, respectively) in 2013-2017 combined years. Females in the NCDHD are 1.6 times less likely to die of hypertension when compared to females at the State level (6.4 vs. 10.1 per 100,000 population, respectively). Figure 41.

Figure 41: Hypertension Death Rate by Gender (age adjusted), NCDHD vs. Nebraska, 2013-2017 years combined

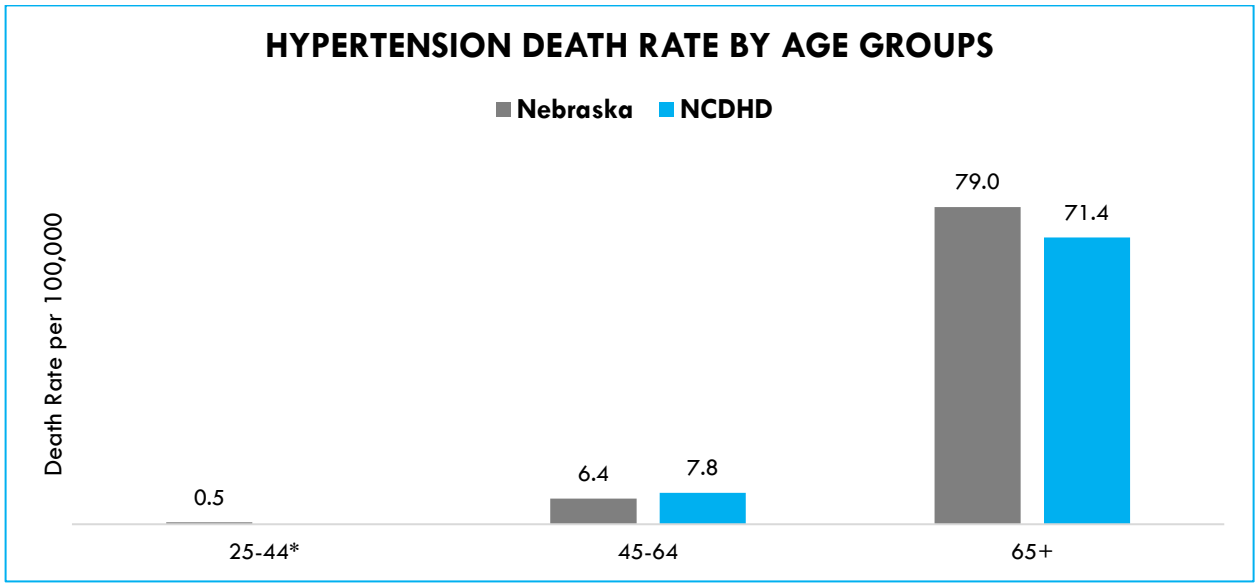


*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

AGE – High Blood Pressure

Hypertension death rates increase 9 times between age groups 45-64 years and 65+ in the NCDHD. Figure 42. Hypertension death rates among NCDHD residents over 65 years of age represent 1.5 percent of all causes of death for this age group.

*Figure 42: Hypertension Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

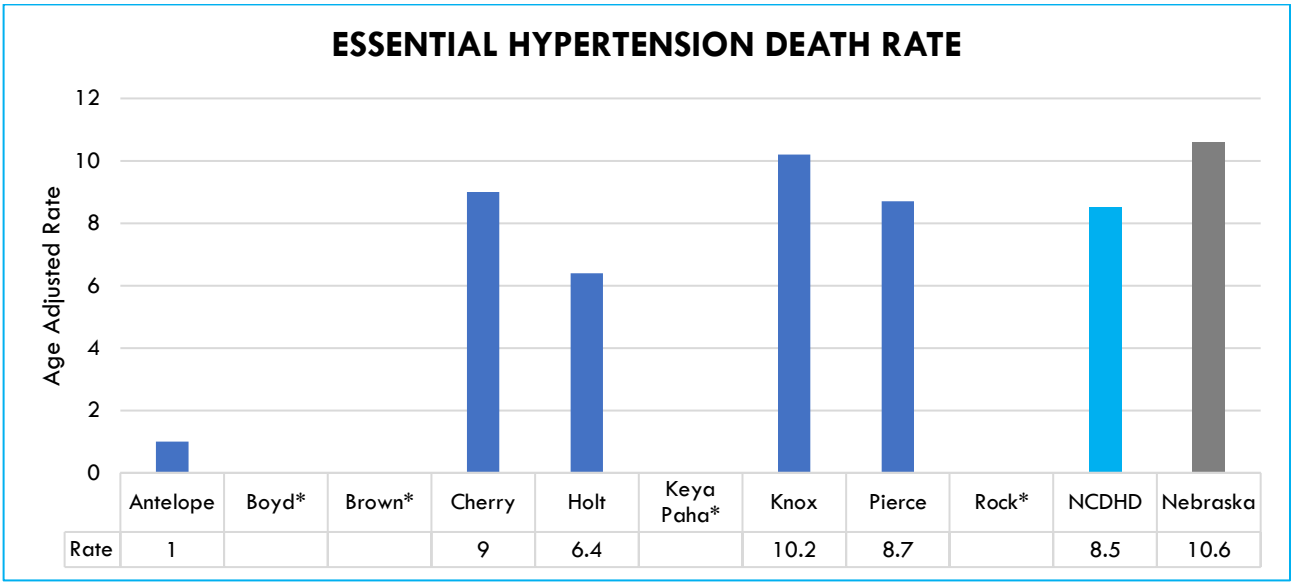
RACE/ETHNICITY – High Blood Pressure

In terms of race/ethnicity, the White non-Hispanic population shows a hypertension death rate of 8.7 per 100,000 population, 16.8% lower when compared to the overall White non-Hispanic in the State (10.3 per 100,000 population). Data was not available for the rest of races/ethnicities due to small sample size.

High Blood Pressure mortality by NCDHD counties

Knox county shows the highest high blood pressure death rate among all counties in the NCDHD (10.2 per 100,000 population), followed by Cherry County (9.0 per 100,000 population). The lowest high blood pressure death rate among all counties in the NCDHD was in Antelope County (1.0 per 100,000 population). High blood pressure death rates were not reported for Boyd, Brown, Keya Paha, and Rock counties due to small number of deaths. Figure 43.

*Figure 43: Essential Hypertension Death Rate by County, NCDHD and Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Hospitalizations

Substantial changes in high blood pressure rates per 1,000 Medicare Beneficiaries 65+, All Races/Ethnicities, Both Genders, were experienced between 2009-2011 years combined and 2013-2015 years combined. Hospitalization rates for high blood pressure increased over 5,000 percent in the NCDHD, over 3,500 percent at the State level, and over 2,000 percent at the national level. Table 21.

The NCDHD has an average high blood pressure rate of 36.3 per 1,000 Medicare Beneficiaries 65+, All Races/Ethnicities, Both Genders, 22.2 points lower when compared to the State (58.5).

Knox County has the highest Hypertension Hospitalization Rate per 1,000 Medicare Beneficiaries, 65+, All Races/Ethnicities, Both Genders, among all counties in the NCDHD (48.5), followed by Pierce County (45.9).

Holt County shows the highest increase for Hypertension Hospitalization Rate per 1,000 Medicare Beneficiaries, 65+, All Races/Ethnicities, Both Genders, between 2009-2011 years combined and 2013-2015 years combined (6,317%) among all counties in the NCDHD. Hypertension Hospitalization Rates for Boyd, Brown, Keya Paha, and Rock counties were not reported due to small sample size. Table 21.

Table 21: Hypertension Hospitalization Rate per 1,000 Medicare Beneficiaries, 65+, All Races/Ethnicities, Both Genders, by County, NCDHD, and State of Nebraska, 2009-2011 and 2013-2015

HYPERTENSION HOSPITALIZATION RATE			
County:	**2009-2011**	**2013-2015**	**Change in hospitalization rate 2009-2011 to 2013-2015**
Antelope	0.7	36	5,043%
Boyd*		33.1	
Brown*		29.9	
Cherry	0	32.5	
Holt	0.6	38.5	6,317%
Keya Paha*		29	
Knox	0.9	48.5	5,289%
Pierce	1	45.9	4,490%
Rock*		33.3	
NCDHD	**0.6**	**36.3**	**5,572%**
Nebraska	1.6	58.5	3,556%
National Rate	3.3	73.2	2,118%

Source: Centers for Disease Control and Prevention, Interactive Atlas of Heart Disease and Stroke, Interactive Atlas of Heart Disease and Stroke Tables, State Report with county data (2009-2011 and 2013-2015 combined years). (https://www.cdc.gov/dhdsp/maps/atlas/index.htm).

High Blood Cholesterol

High blood cholesterol is a major risk factor for coronary heart disease. High cholesterol has no symptoms, so many people don't know that their cholesterol is too high. A simple blood test can check cholesterol levels. Persons with elevated blood cholesterol levels (total cholesterol of 200 mg/dL or higher) are at increased risk of developing coronary heart disease (Nebraska DHHS, 2016; CDC, 2019).

The National Institutes of Health recommend that blood cholesterol levels be checked at least once every five years in healthy adults. For many people with high cholesterol, diet and exercise alone are enough to lower and maintain cholesterol at healthy levels. Cholesterol-lowering drugs are also available to help manage cholesterol levels. (Nebraska DHHS, 2016).

95 million U.S. adults age 20 or older have total cholesterol levels higher than 200 mg/dL. Nearly 29 million adult Americans have total cholesterol levels higher than 240 mg/dL.3. 7% of U.S. children and adolescents ages 6 to 19 have high total cholesterol. (Benjamin et al., 2017; Nguyen et al., 2015).

In 2017, over 8 out of 10 adults in the NCDHD and in Nebraska (84.4% each) had their blood cholesterol level checked in the past five years. Among those who have ever had their cholesterol

checked, 34.7 percent of adults in the NCDHD reported having ever been told by a health professional that their cholesterol was high, a percentage slightly higher when compared to the State (31.9%). [No BRFSS data was available between 2011 and 2016 for both the NCDHD and State.)

Diabetes

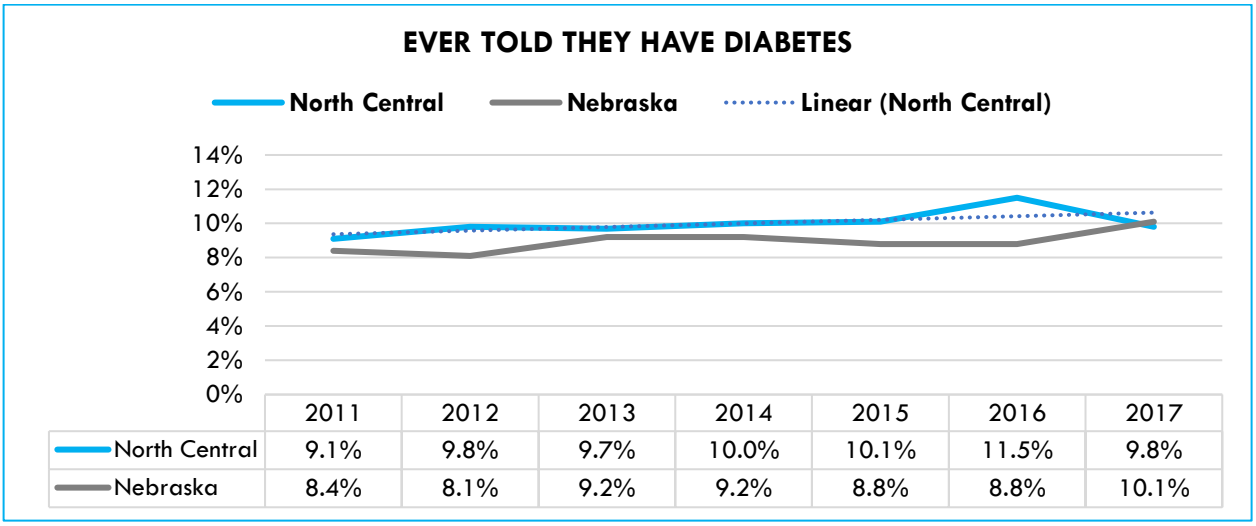
Diabetes is a chronic (long-lasting) health condition that affects how the body turns food into energy. Diabetes is characterized by elevated blood sugar levels caused by the body not producing or properly using insulin. Insulin helps glucose (sugar) leave the blood and enter the body's cells. Type 1 diabetes occurs when the body does not produce insulin, affecting about 5-10 percent of people with diabetes. Type 2 diabetes develops when the body does not make enough insulin or does not efficiently use insulin, affecting about 90-95 percent of people with diabetes. (Nebraska DHHS, 2016; CDC, 2019).

Diabetes Prevalence

The self-reported prevalence of diagnosed diabetes among adults in the NCDHD steadily rose between 2011 and 2016 (Figure 44). In 2011, 9.1 percent of the NCDHD adults reported having ever been told that they have diabetes, which increased to 11.5 percent in 2016. A sharp decline was observed in 2017 as the prevalence of being diagnosed with diabetes in the NCDHD decreased to 9.8 percent (a xx% from previous year), and for the first time since 2011, the prevalence of diabetes in the NCDHD was lower than the State (9.8% vs. 10.1%, respectively).

According to the 2018 Community Health Assessment Survey, diabetes is ranked the 5th (out of 15) most serious health issue facing the community in the NCDHD. 83.8 percent of respondents to the survey ranked "diabetes" as a middle (rank = 4) to extremely (rank = 7) serious concern.

Figure 44: Ever Told they have Diabetes (excluding pregnancy) among Adults, NCDHD and Nebraska, 2011-2017*



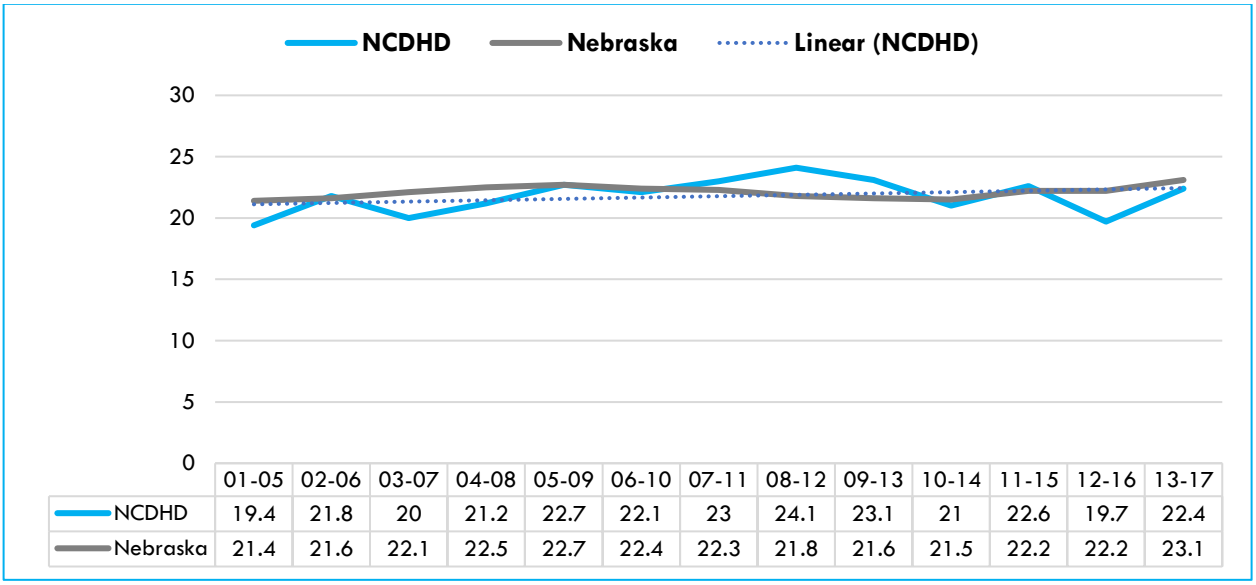
	2011	2012	2013	2014	2015	2016	2017
North Central	9.1%	9.8%	9.7%	10.0%	10.1%	11.5%	9.8%
Nebraska	8.4%	8.1%	9.2%	9.2%	8.8%	8.8%	10.1%

*Percentage of adults 18 and older who report that they have ever been told by a doctor, nurse, or other health professional that they have diabetes (excluding pregnancy. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Diabetes Mortality

Diabetes was the primary cause of 90 deaths in the NCDHD in 2013-2017 combined years, making it the 9th leading cause of death in the NCDHD. Age-adjusted diabetes death rates in the NCDHD has been stable from 2001-2005 combined years to 2013-2017 combined years (see linear trend line in Figure 45). Between 2012-2016 and 2013-2017 combined years, diabetes death rates in the NCDHD have been lower when compared to the State.

*Figure 45: Diabetes Death Rate per 100,000 population (age adjusted), NCDHD and Nebraska, 2001-2005 and 2013-2017 combined years**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	19.4	21.8	20	21.2	22.7	22.1	23	24.1	23.1	21	22.6	19.7	22.4
Nebraska	21.4	21.6	22.1	22.5	22.7	22.4	22.3	21.8	21.6	21.5	22.2	22.2	23.1

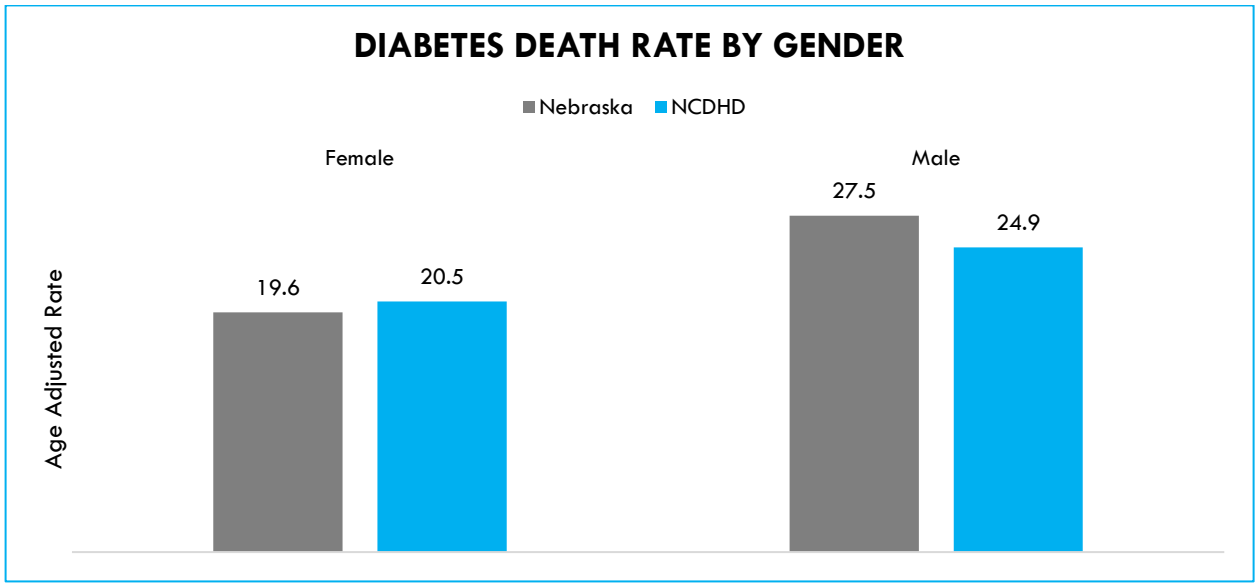
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Diabetes mortality by gender, age, and race/ethnicity

GENDER - Diabetes

Males are 1.2 times more likely to die of diabetes than females in the NCDHD (24.9 per 100,000 males vs. 20.5 per 100,000 females), slightly lower when compared at the State level (1.40 times). Males in the NCDHD are 1.1 times less likely to die of diabetes when compared to Nebraska males overall. Figure 46.

*Figure 46: Diabetes Death Rate by Gender, NCDHD vs. Nebraska, 2013-2017**

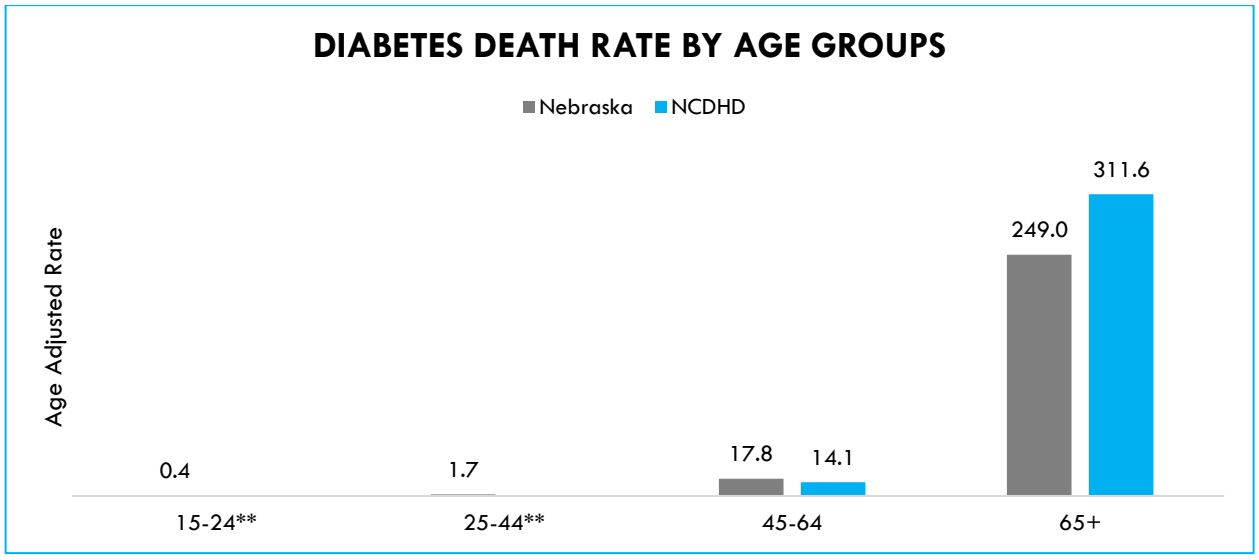


*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

AGE - Diabetes

Diabetes death rates increase 22 times between age groups 45-64 years and 65+ in the NCDHD. Figure 47. Diabetes deaths among NCDHD residents over 65 years of age represent 3.1 percent of all causes of death for this age group. The diabetes death rate for age group 65+ in the NCDHD is 1.25 times higher when compared to the State (249.0 vs. 311.6 per 100,000 population, respectively).

Figure 47: Diabetes Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017 combined



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

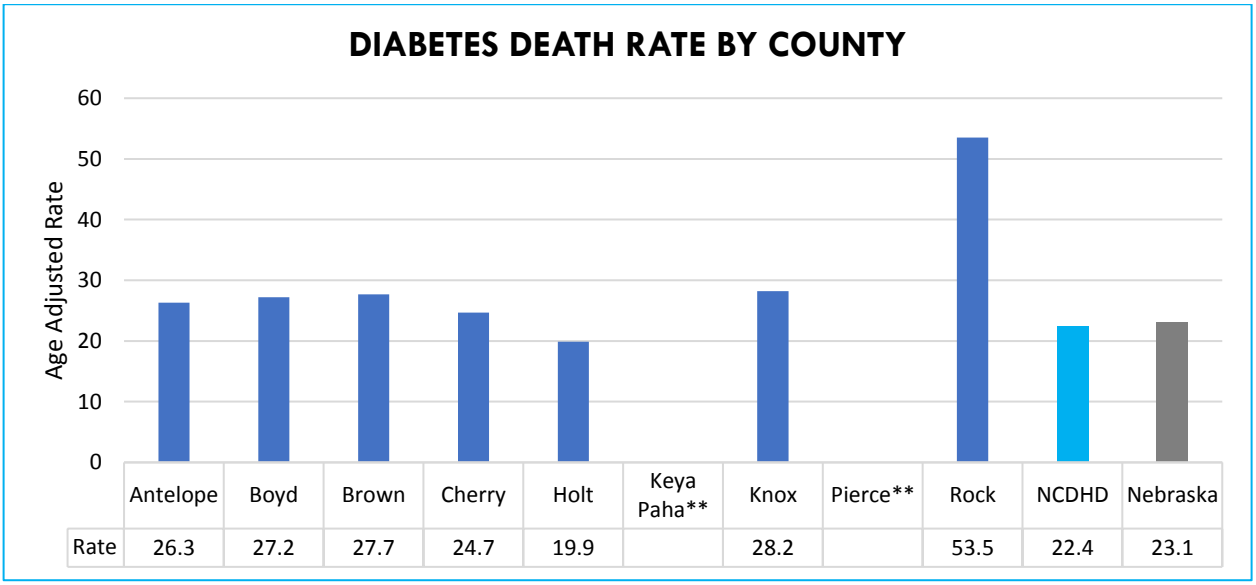
RACE/ETHNICITY - Diabetes

In terms of race/ethnicity, the White non-Hispanic population showed a diabetes death rate of 22.4 per 100,000 population, just 0.4% higher when compared to the overall White non-Hispanic in the State (22.0 per 100,000 population). Data was not available for the rest of races/ethnicities due to small sample size.

Diabetes disease mortality by NCDHD Counties

Rock County showed the highest stroke death rate among all counties in the NCDHD (53.5 per 100,000 population), 2.4 times higher than the total rate for the NCDHD (22.4 per 100,000 population), followed by Knox County (28.2 per 100,000 population; 1.3 times higher than the total rate for the NCDHD). Holt County showed the lowest diabetes death rate among all counties in the NCDHD (19.9 per 100,000 population), followed by Cherry County (24.7 per 100,000 population). Figure 48.

*Figure 48: Diabetes Death Rate by County, NCDHD and Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Cancer

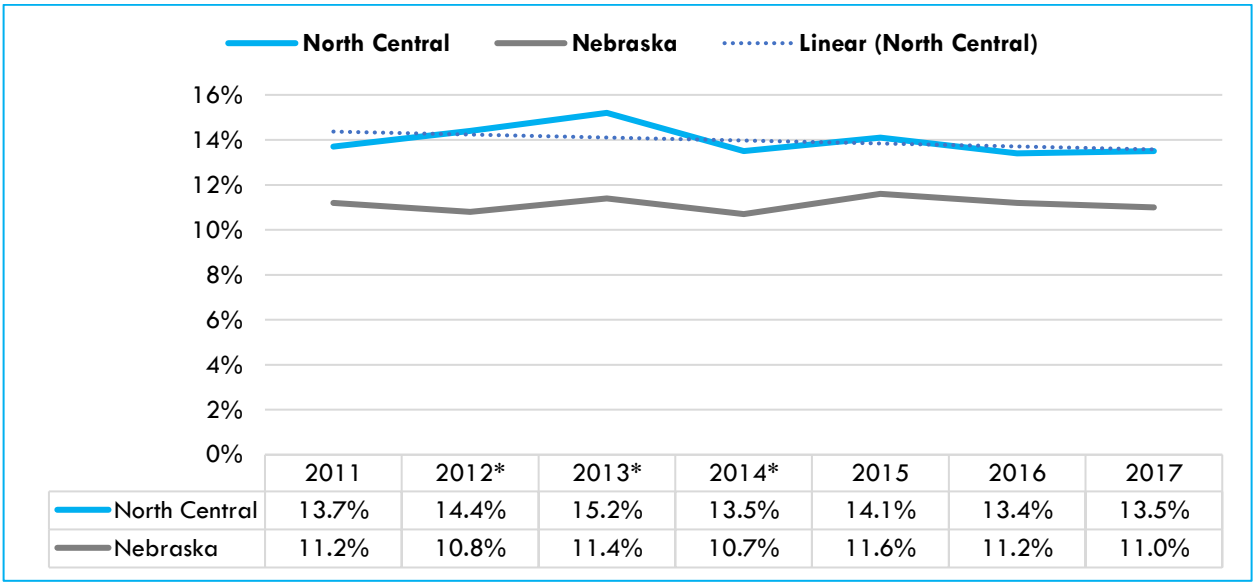
Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by both external factors (e.g., tobacco, infectious organisms, chemicals, and radiation) and internal factors (e.g., inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). These causal factors may

act together or in sequence to initiate and promote carcinogenesis. Ten or more years often pass between exposures to external factors and detectable cancer (Nebraska DHHS, 2016).

Cancer Prevalence

According to results from the 2017 Nebraska BRFSS, about 1 in 8 NCDHD adults (13.5%) reported that they have ever been told they have cancer (prevalence rates in the NCDHD were statistically significantly higher than the State between 2012 and 2014). Figure 49. 8.5 percent reported ever being told they have some other form of cancer. These percentages have been stable since 2011, but they have been higher than the State overall.

Figure 49: Ever been told they have cancer, 2011-2017



	2011	2012*	2013*	2014*	2015	2016	2017
North Central	13.7%	14.4%	15.2%	13.5%	14.1%	13.4%	13.5%
Nebraska	11.2%	10.8%	11.4%	10.7%	11.6%	11.2%	11.0%

*Prevalence rates are statistically significantly higher in the NCDHD than in the State. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

According to the 2018 Community Health Assessment Survey, cancer was considered the most serious health issue facing the community in the NCDHD. Nearly nine of out ten respondents to the survey ranked "cancer" as a middle (rank = 4) to extremely (rank = 7) serious concern, the highest of all 15 health issues listed in the survey.

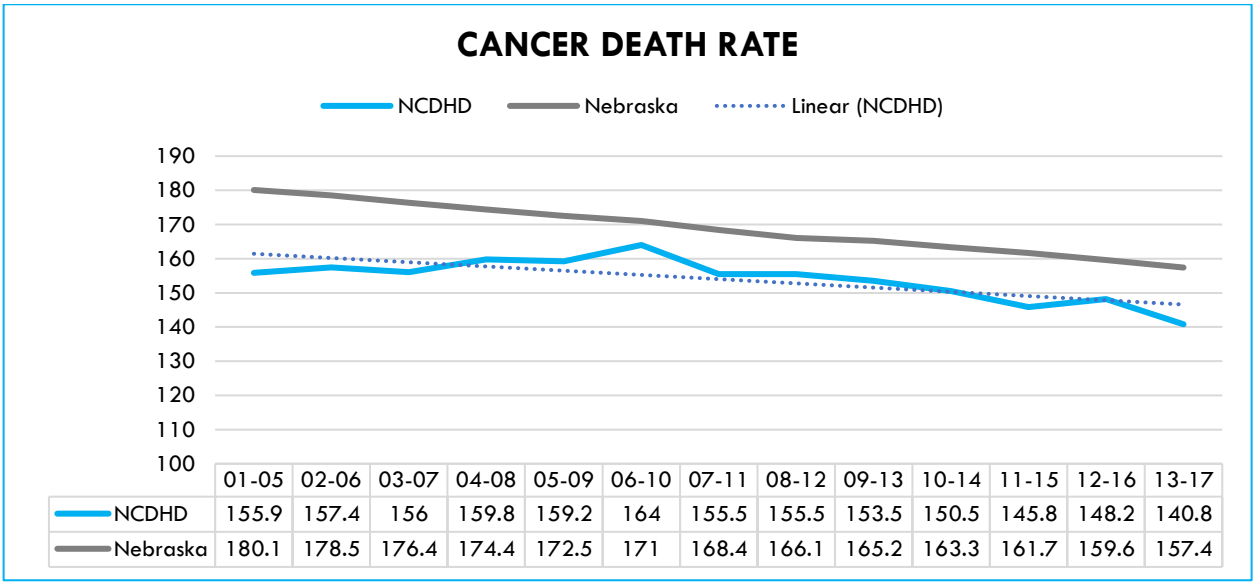
Cancer Mortality

There were 550 deaths in the NCDHD related to cancer during the 2013-2017 combined years, accounting for 1 in 5 deaths (Nebraska Vital Statistics, 2019).

The NCDHD's age-adjusted cancer death rate per 100,000 population decreased 9.7 percent between 2001-2005 combined years and 2013-2017 combined years, from 155.9 to 140.8, respectively. The cancer rate in the State during the same time period decreased 12.6 percent (from 180.1 to 157.4 per 100,000 population). (Figure 50).

The 2013-2017 combined years cancer death rate in the NCDHD was substantially lower when compared to the State (140.8 and 157.4, respectively).

*Figure 50: Cancer Death Rate per 100,000 population (age adjusted), NCDHD and Nebraska, 2001-2005 and 2013-2017**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	155.9	157.4	156	159.8	159.2	164	155.5	155.5	153.5	150.5	145.8	148.2	140.8
Nebraska	180.1	178.5	176.4	174.4	172.5	171	168.4	166.1	165.2	163.3	161.7	159.6	157.4

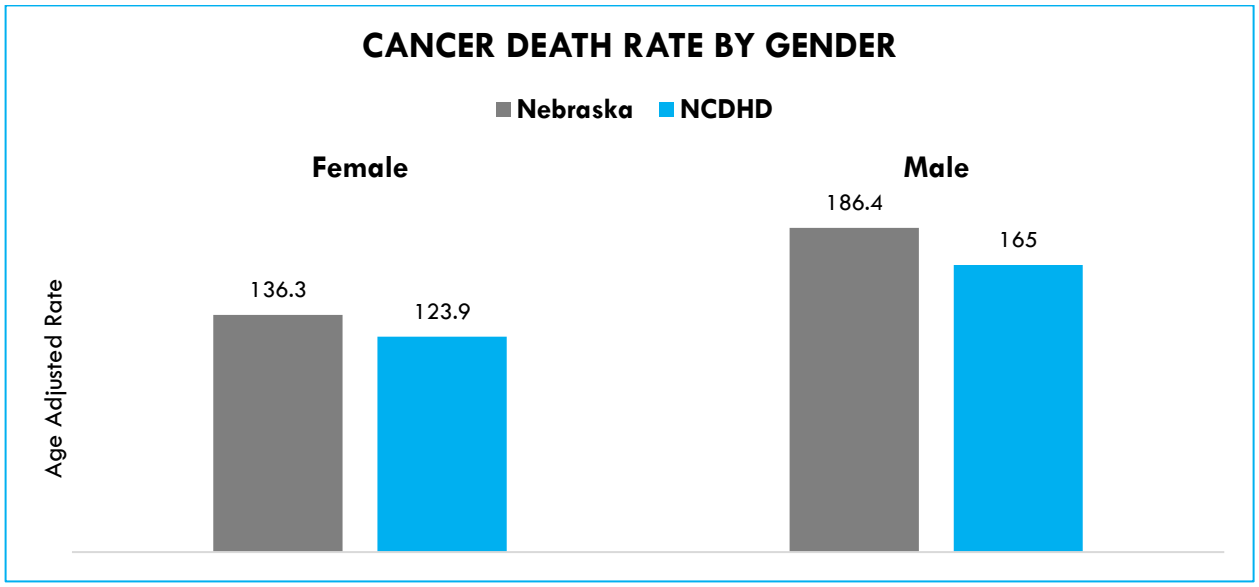
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Cancer mortality by gender, age, and race/ethnicity

GENDER - Cancer:

Males were 1.3 times more likely to die of cancer than females in the NCDHD (165.0 per 100,000 males vs. 123.9 females per 100,000 females), slightly lower when compared to the State level (1.4 times). Males in the NCDHD were 1.1 times less likely to die of cancer when compared to Nebraska males overall (165.0 per 100,000 population vs. 186.4 per 100,000 population, respectively). Figure 51.

*Figure 51: Cancer Death Rate by Gender, NCDHD vs. Nebraska, 2013-2017**

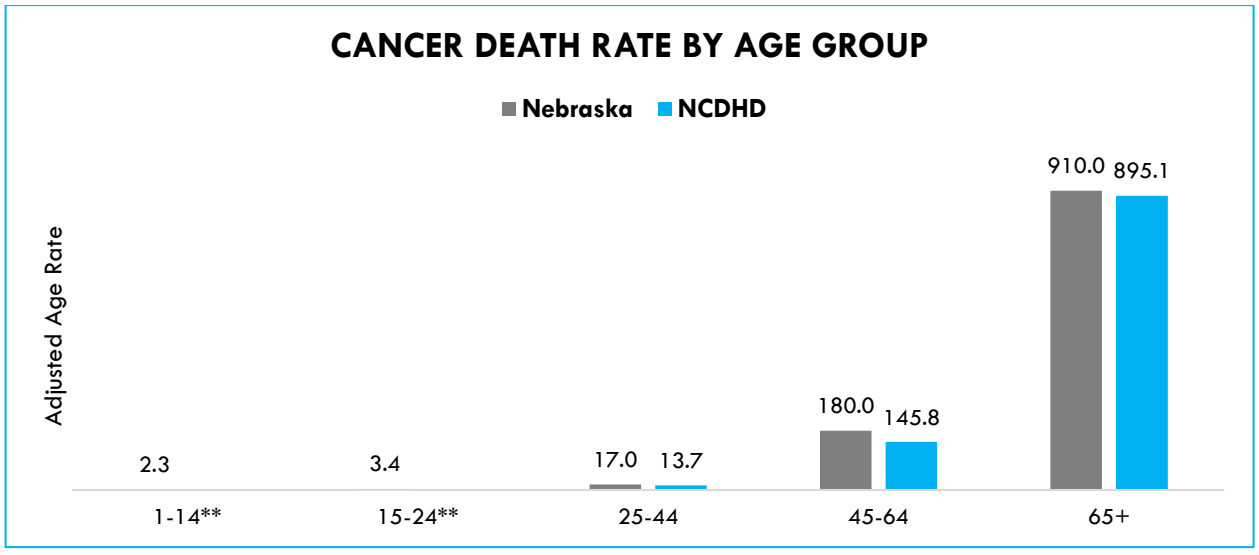


*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

AGE - Cancer:

Cancer death rates increase 6 times between age groups 45-64 years and 65+ years in the NCDHD. Figure 52. Cancer deaths among NCDHD residents over 65 years of age represent 18.9 percent of all causes of death for this age group. The cancer death rate for age group 65+ years in the NCDHD was similar when compared to the State (895.1 vs. 910.0 per 100,000 population, respectively).

*Figure 52: Cancer Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017**

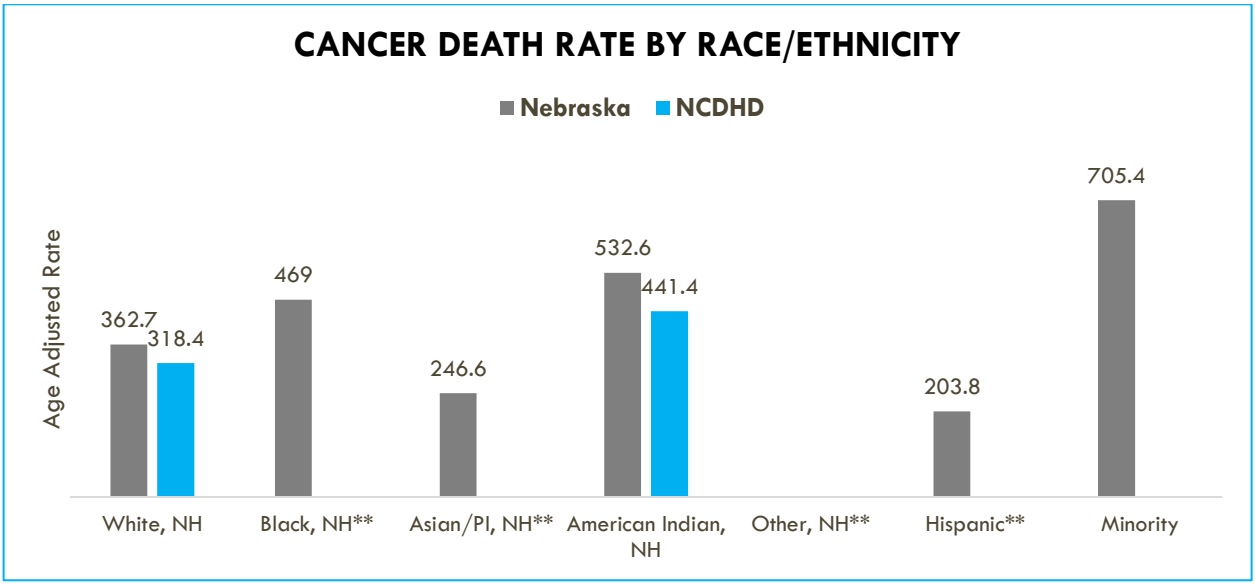


*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

RACE/ETHNICITY - Cancer

In terms of race/ethnicity, the Native American population in the NCDHD showed a cancer death rate 1.4 times higher when compared to the White non-Hispanic population (441.4 per 100,000 population vs. 318.4 per 100,000 population, respectively). The White Non-Hispanic and the Native American death rates in the NCDHD were lower when compared to the State death rates. Data was not available for the rest of races/ethnicities due to small sample size. Figure 53.

*Figure 53: Cancer Death Rate by Race/Ethnicity, NCDHD and Nebraska, 2013-2017 combined**

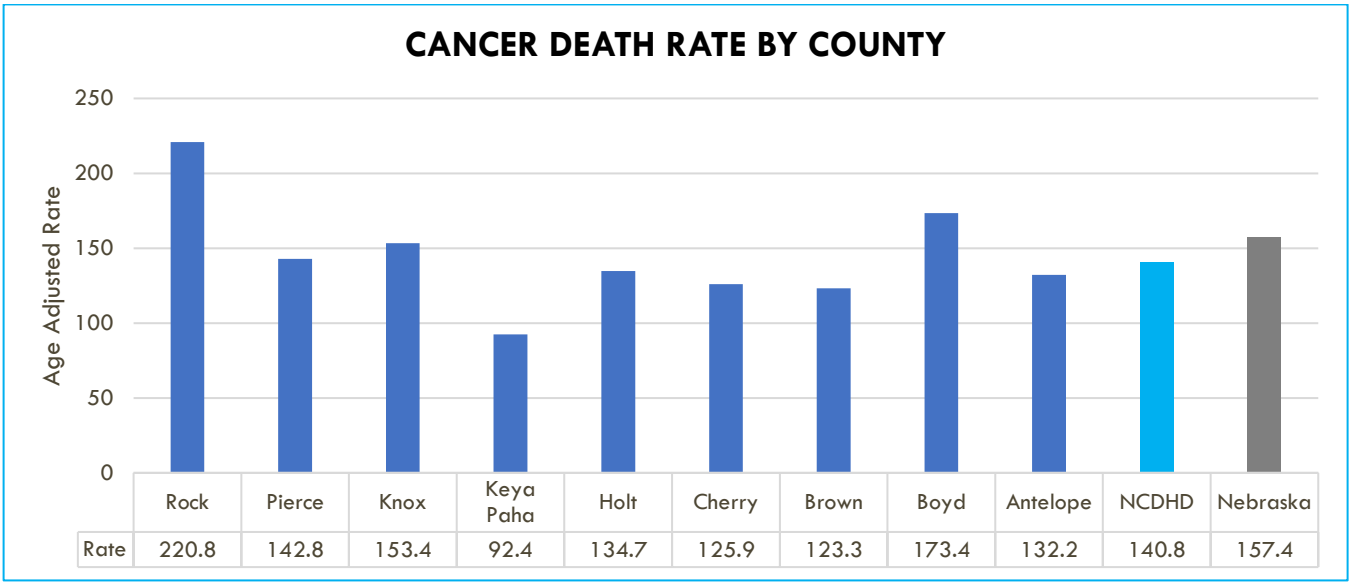


*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Cancer mortality by NCDHD Counties

Rock County showed the highest cancer death rate among all counties in the NCDHD (220.8 per 100,000 population), 1.4 times higher than the total rate for the NCDHD (140.8 per 100,000 population), followed by Boyd County (173.4 per 100,000 population; 1.1 times higher than the total rate for the NCDHD). Keya Paha County showed the lowest cancer death rate among all counties in the NCDHD (92.4 per 100,000 population), followed by Brown County (123.3 per 100,000 population). Figure 54.

*Figure 54: Cancer Death Rate by County, NCDHD and Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Leading cause of death by type of cancer

Lung cancer was the leading cause of all types of cancer deaths among NCDHD residents. Lung cancer death rate has experienced a steady decreased (age-adjusted per 100,000 population) from 42.0 in 2001-2005 combined years to 30.9 in 2013-2017 combined years (-26.4% change). All cancer death rates by type have significantly decreased between 2001-2005 combined years and 2013-2017 combined years, with the exception of female breast cancer. Table 22.

Female breast cancer death rate only decreased 3.4% between 2001-2005 combined years and 2013-2017 combined years, while the rest of cancer type death rates decreased over 20% during the same time period. Currently, female breast cancer has the second highest death rate among all cancers in the NCDHD, but it used to be ranked fourth in the 2001-2005 combined years.

Prostate cancer used to be the second leading cause of death in the NCDHD during the 2001-2005 combined years (20.0 per 100,000 males), but decreased to the fourth leading cause of death among all cancers during the 2013-2017 combined years (14.9 per 100,000 males), a 25.5% decrease.

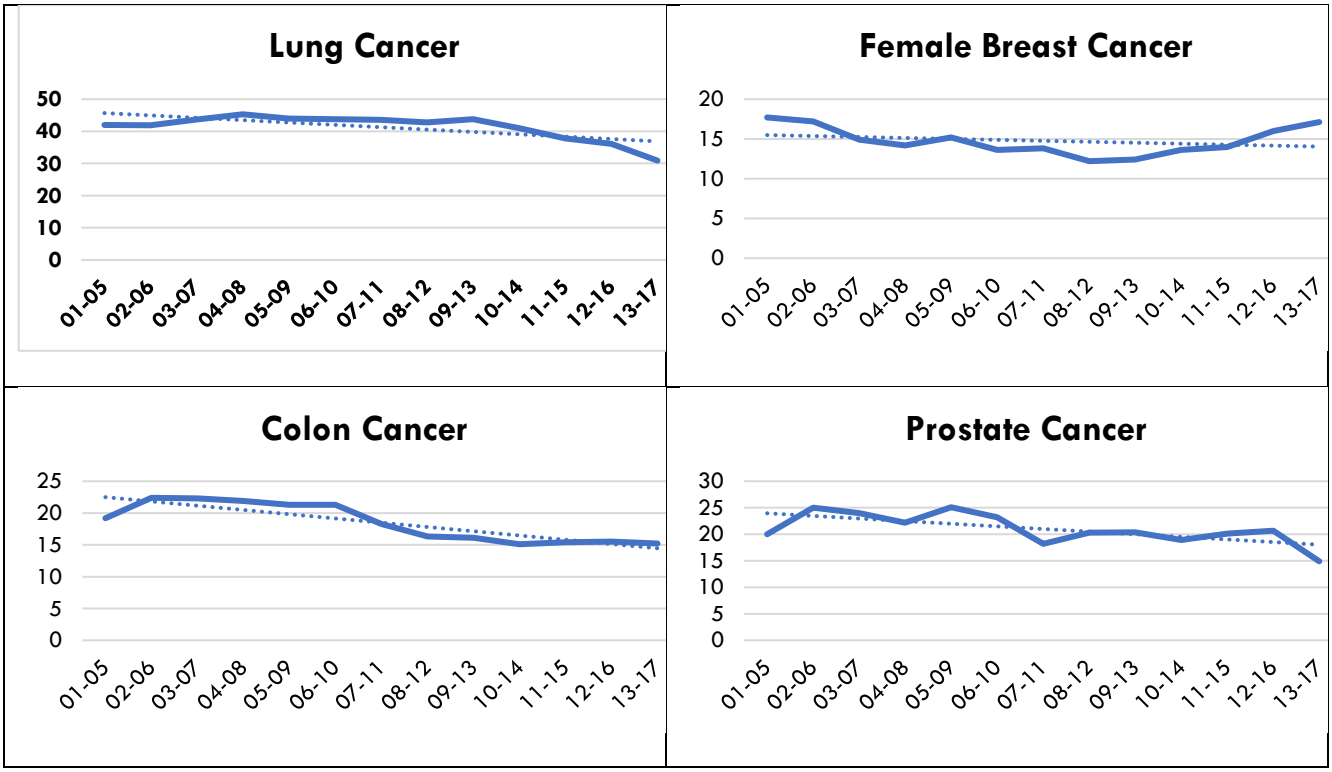
The following table shows NCDHD death rates by type of cancer, ranking, and percent of change between 2001-2005 combined years and 2013-2017 combined years.

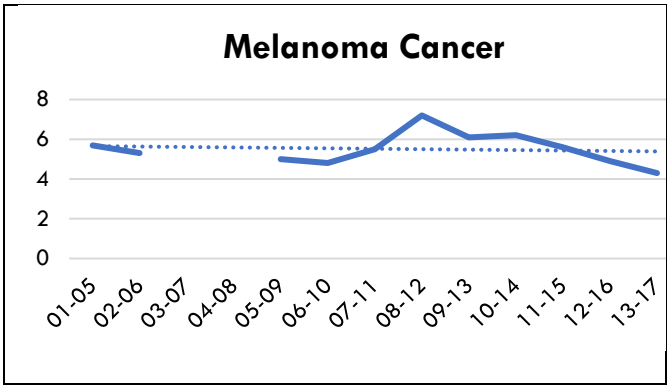
Table 22: NCDHD death rate by types of cancer, rankings, and percentage change between 2001-2005 and 2013-2017

2001-2005			2013-2017			2001-2005 to 2013-2017	
Type of cancer:	**Death rate**	**Rank #**	**Type of cancer**	**Death rate**	**Rank #**	**Rank change**	**% change**
Lung Cancer	42	1	Lung Cancer	30.9	1	-	-26.4%
Prostate Cancer	20	2	Prostate Cancer	14.9	4	⬇	-25.5%
Colon Cancer	19.2	3	Colon Cancer	15.2	3	-	-20.8%
Female Breast Cancer	**17.7**	**4**	**Female Breast Cancer**	**17.1**	**2**	⬆	**-3.4%**
Melanoma Cancer	5.7	5	Melanoma Cancer	4.3	5	-	-24.6%

The following charts show death rate trends by type of cancer in the NCDHD. A trendline was added to the charts to show the magnitude of change between 2001-2005 combined years and 2013-2017 combined years. Figure 55.

*Figure 55: Trends of death rates by type of cancer in the NCDHD, 2001-2005 to 2013-2017**





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Note: Data are age-adjusted to the 2000 U.S. standard population. *Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

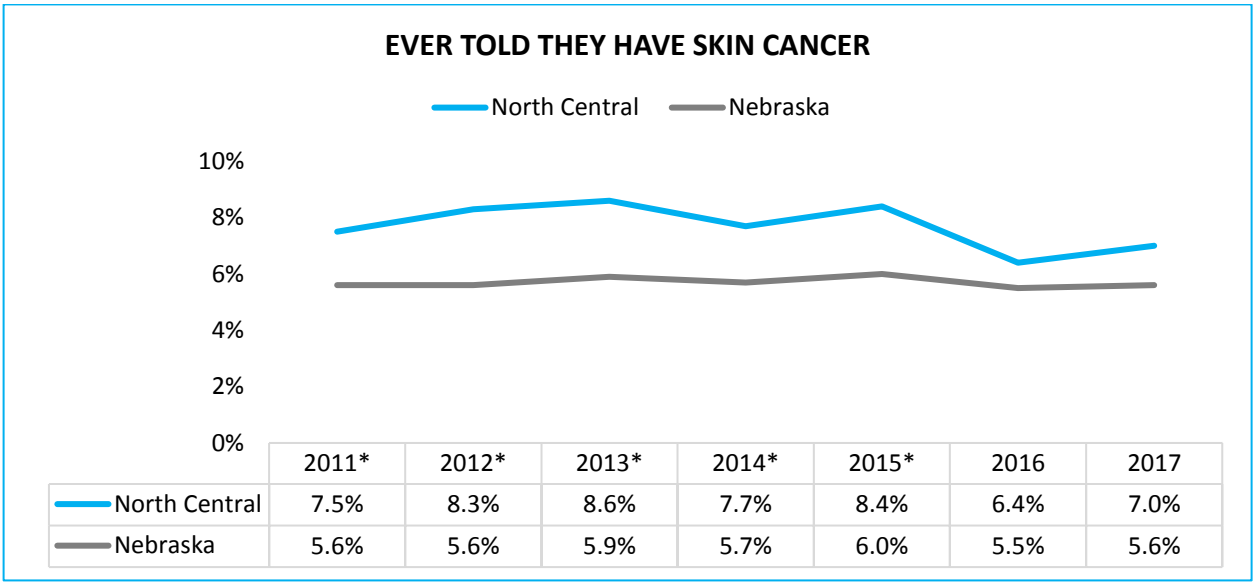
Skin Cancer

Seven percent reported ever being told they have skin cancer in the NCDHD, compared to 5.6 percent at the State level in 2017. Self-reported skin cancer rates have not increased since 2011 in the NCDHD, but they continue to be statistically significantly higher than the State (2011 to 2015). Figure 56. In the 2018 Community Health Assessment Survey, three out of ten respondents mentioned "Dermatology" as one service that they would like to see added to their hospital (the highest percentage among all type of services mentioned by respondents).

The State of Nebraska ranks 17th highest for skin cancer among all States in the U.S. (25.6 melanomas of the skin per 100,000 population, age-adjusted; Source: CDC, 2015; https://gis.cdc.gov/Cancer/USCS/DataViz.html).

In 2014, the Surgeon General established skin cancer prevention as a high priority for the nation. The CDC webpage contains printable materials with information on the prevention of skin cancer – and other types of cancer-, especially for school children and educators. These printable materials are available at: https://www.cdc.gov/cancer/dcpc/publications/index.htm

Figure 56: Ever Told they Have Skin Cancer, 2011-2017



	2011*	2012*	2013*	2014*	2015*	2016	2017
North Central	7.5%	8.3%	8.6%	7.7%	8.4%	6.4%	7.0%
Nebraska	5.6%	5.6%	5.9%	5.7%	6.0%	5.5%	5.6%

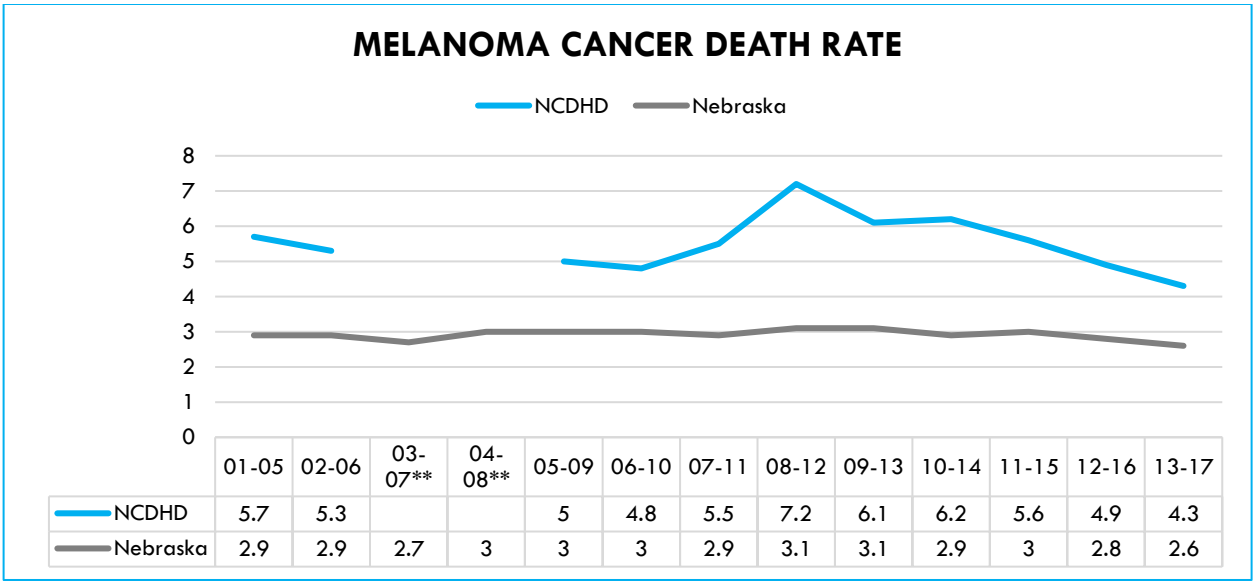
*Prevalence rates are statistically significantly higher in the NCDHD than in the State. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Melanoma cancer

Melanoma cancer was ranked the 21th leading cause of death in the NCDHD in 2013-2017 combined years, accounting for 16 deaths at a rate of 4.3 deaths per 100,000 population (age-adjusted). Melanoma cancer deaths rates in the NCDHD were 1.7 times higher when compared to the State (4.3 per 100,000 population vs. 2.6 per 100,000 population, respectively).

The Melanoma cancer death rate decreased 25 percent in the NCDHD between 2001-2005 combined years to 2013-2017 combined years, while in the State it decreased 10 percent during the same time period. The melanoma cancer death rate in the NCDHD experienced a sharp decline starting in 2010-2014 combined years, from 3.3 per 100,000 to 1.7 per 100,000 population in 2013-2017 combined years, a 48.5 percent decrease. Figure 57.

*Figure 57: Melanoma Cancer Death Rate per 100,000 population (age adjusted), NCDHD and Nebraska, 2001-2005 and 2013-2017**



	01-05	02-06	03-07**	04-08**	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	5.7	5.3			5	4.8	5.5	7.2	6.1	6.2	5.6	4.9	4.3
Nebraska	2.9	2.9	2.7	3	3	3	2.9	3.1	3.1	2.9	3	2.8	2.6

*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Melanoma cancer mortality by gender, age, and race/ethnicity

GENDER – melanoma cancer:

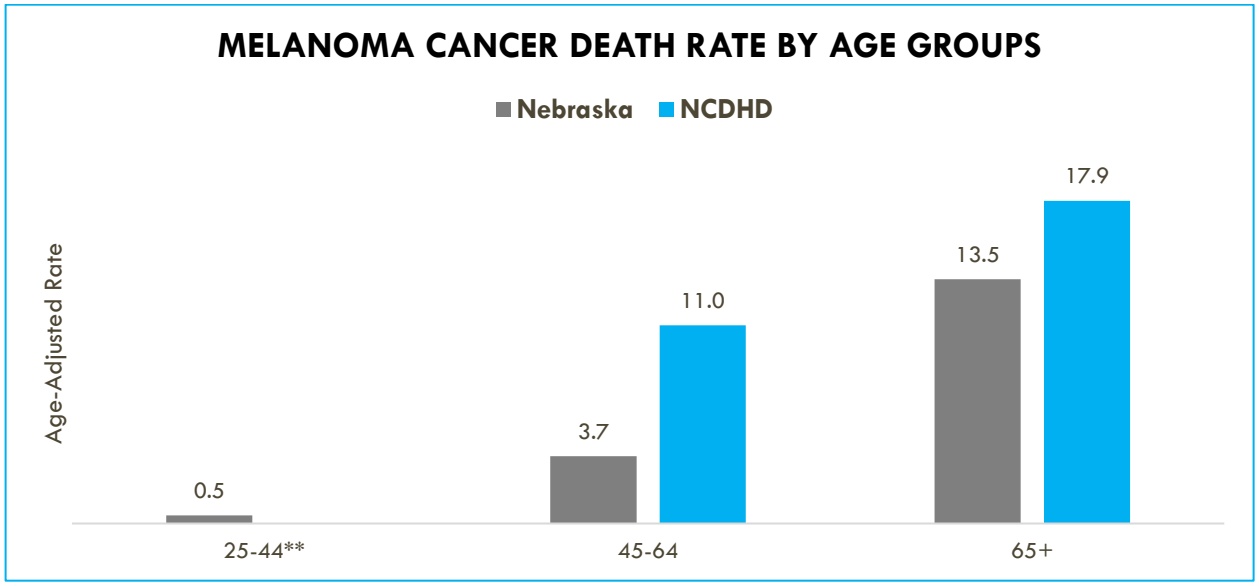
Melanoma cancer death rate among males in the NCDHD was 1.7 times higher when compared to the State levels (6.7 per 100,000 males vs. 3.9 per 100,000 males, respectively). No data were available for females in the NCDHD due to small sample size.

AGE – melanoma cancer:

Melanoma cancer death rates were 1.7 times higher among age group 65+ when compared to the 45-64 years age group in the NCDHD (17.9 vs. 11.0 per 100,000 population). Figure 58. Cancer due to melanoma caused the death of 16 residents in the NCDHD in the 2013-2017 years combined, 56 percent of them were in the age group 65+ years.

The melanoma cancer death rate for age group 65+years in the NCDHD was 1.3 times higher when compared to the State (17.9 vs. 13.5 per 100,000 population, respectively).

*Figure 58: Melanoma Cancer Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017**

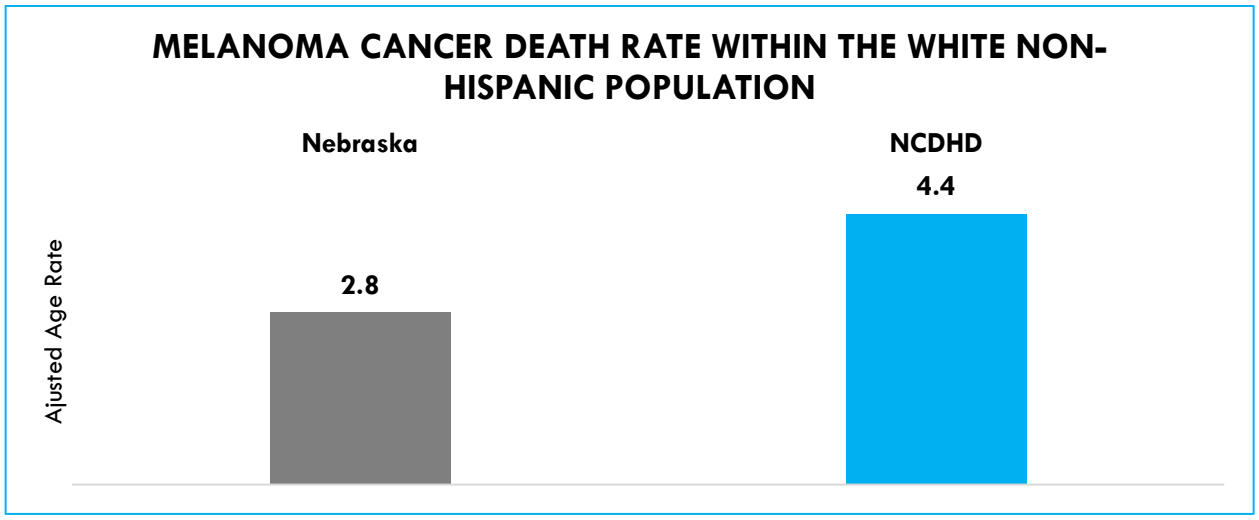


*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

RACE/ETHNICITY – Melanoma cancer

White Non-Hispanic in the NCDHD were nearly twice as likely to die of melanoma cancer when compared to the White Non-Hispanic in Nebraska (4.4 per 100,000 population vs. 2.8 per 100,000 population, respectively). No death rate data were available for other races/ethnicities due to small sample size. Figure 59.

*Figure 59: Melanoma Cancer Death Rate within the White Non-Hispanic population, NCDHD and Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Melanoma cancer mortality by NCDHD Counties

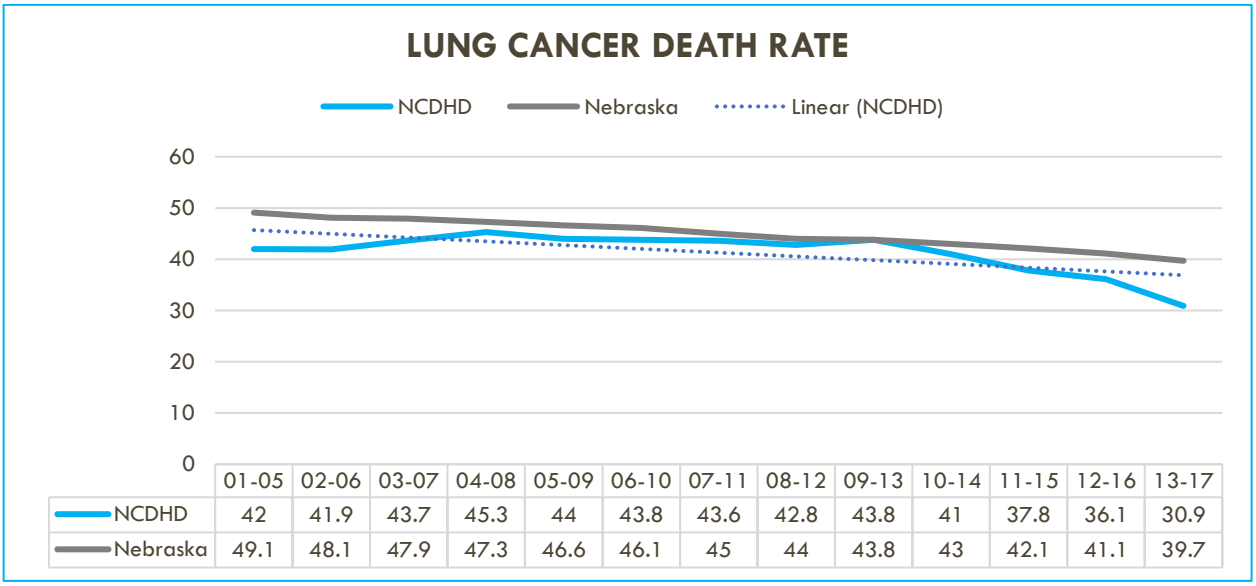
Knox County showed a melanoma cancer rate of 8.3 per 100,000 population during the 2013-2017 years combined, which was nearly twice the death rate for the whole health district (8.3 vs. 4.3 per 100,000 population, respectively). Data was not available for the rest of the NCDHD counties due to small sample size.

Lung Cancer

Lung cancer was the 7th leading cause of death in NCDHD for 2013-2017 combined years, accounting for 120 deaths at a rate of 30.9 deaths per 100,000 population (age-adjusted). Lung cancer death rates in the NCDHD were 1.3 times lower when compared to the State (30.9 per 100,000 population vs. 39.7 per 100,000 population, respectively).

Lung cancer decreased 26 percent in the NCDHD between 2001-2005 combined years to 2013-2017 combined years, while the State decreased 19 percent during the same time period. Figure 60.

*Figure 60: Lung Cancer Death Rate per 100,000 population (age adjusted), NCDHD and Nebraska, 2001-2005 and 2013-2017 combined years**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	42	41.9	43.7	45.3	44	43.8	43.6	42.8	43.8	41	37.8	36.1	30.9
Nebraska	49.1	48.1	47.9	47.3	46.6	46.1	45	44	43.8	43	42.1	41.1	39.7

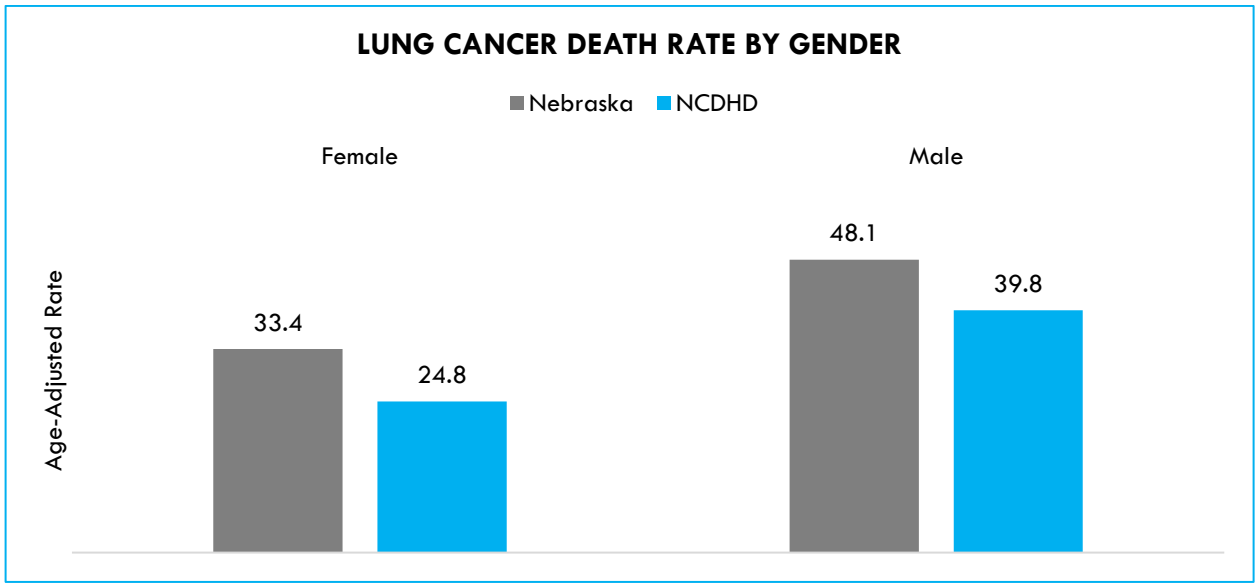
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

GENDER – Lung cancer

Males were 1.6 times more likely to die of lung cancer than females in the NCDHD (39.8 per 100,000 males vs. 24.8 females per 100,000 females). Lung cancer death rates at the State level were higher by

gender when compared to the NCDHD (48.1 per 100,000 for males, and 33.4 per 100,000 for females). Figure 61.

*Figure 61: Lung Cancer Death Rate by Gender, NCDHD vs. Nebraska, 2013-2017**



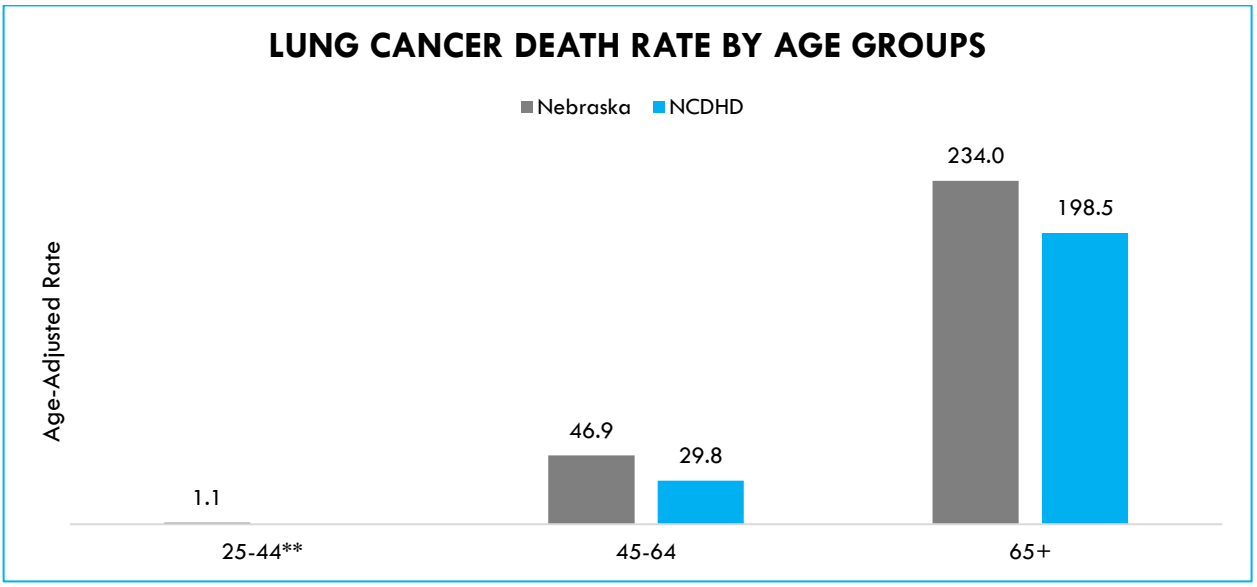
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

AGE – Lung cancer

Lung cancer death rate is 6.7 times higher among age group 65+ when compared to the 45-64 age group in the NCDHD (198.5 vs. 29.8 per 100,000 population). Figure 62. Lung cancer caused the death of 120 residents in the NCDHD during the 2013-2017 years combined, 83 percent of them were in the age group 65+.

The lung cancer death rate for age group 65+ in the NCDHD is 0.8 times lower when compared to the State (198.5 vs. 234.0 per 100,000 population, respectively).

*Figure 62: Lung Cancer Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017**

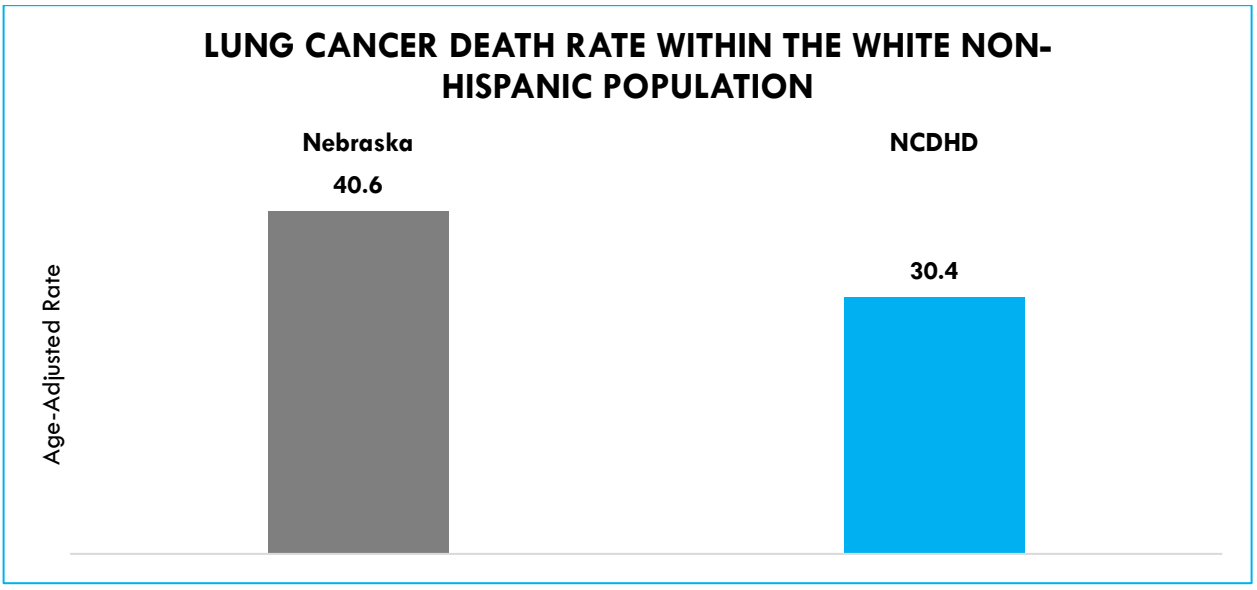


*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

RACE/ETHNICIY – Lung cancer

White Non-Hispanic in the NCDHD are 1.3 times less likely to die of lung cancer when compared to the White Non-Hispanic in Nebraska. No data was available for other races/ethnicities due to small sample size. Figure 63.

*Figure 63: Lung Cancer Death Rate within the White Non-Hispanic population, NCDHD and Nebraska, 2013-2017 combined**

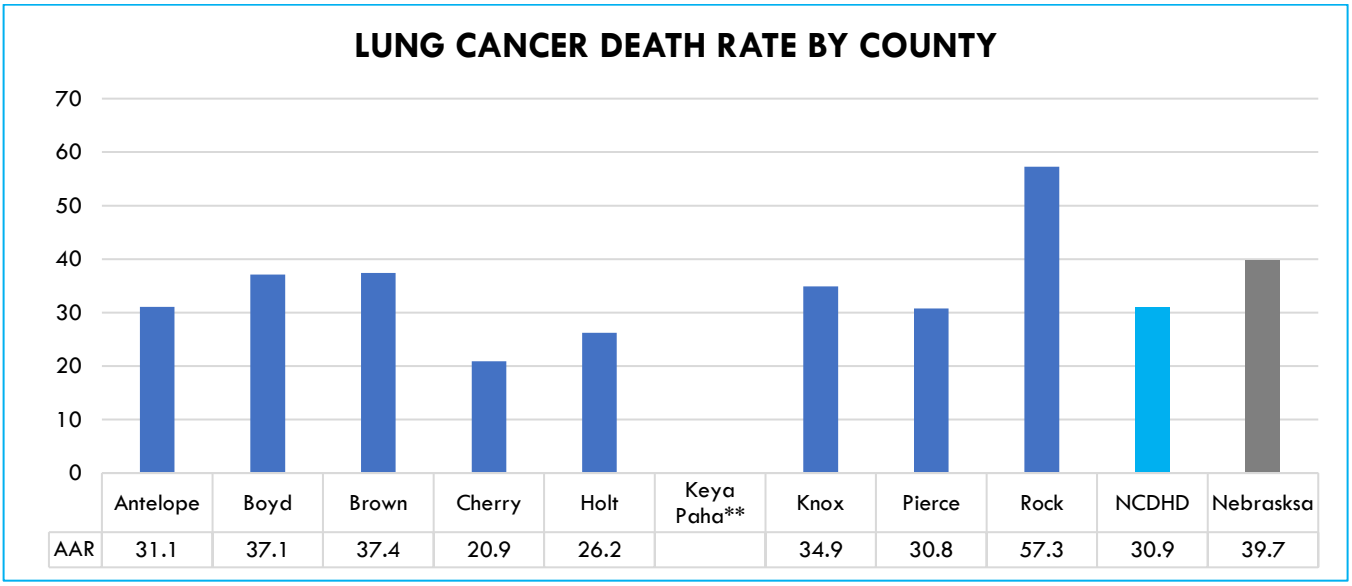


*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Lung cancer mortality by NCDHD Counties

Rock County has the highest lung cancer death rate in the NCDHD (57.3 per 100,000 population), followed by Brown County (37.4 per 100,000 population), and Boyd County (37.1 per 100,000 population). Cherry County has the lowest lung cancer death rate in the NCDHD (20.9 per 100,000 population). Data was not available for Keya Paha County due to small sample size. Figure 64.

Figure 64: Lung Cancer Death Rate by County, NCDHD and Nebraska, 2013-2017 combined*



	Antelope	Boyd	Brown	Cherry	Holt	Keya Paha**	Knox	Pierce	Rock	NCDHD	Nebrasksa
AAR	31.1	37.1	37.4	20.9	26.2		34.9	30.8	57.3	30.9	39.7

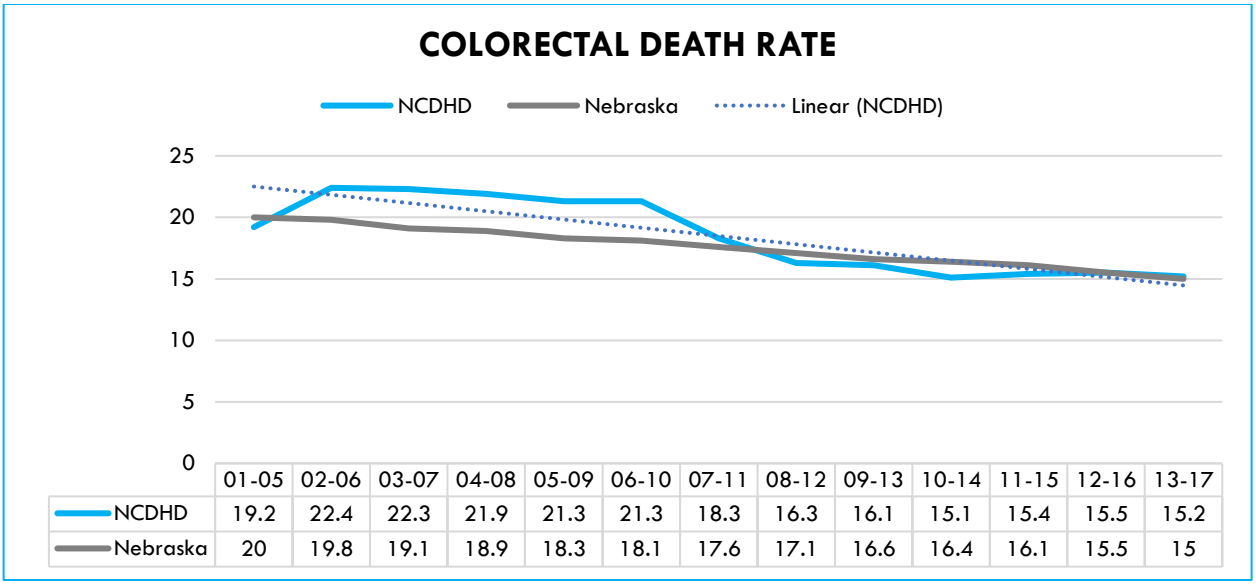
*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Colorectal cancer

Colorectal cancer (i.e., colon cancer) is the 17th cause of death in the NCDHD, accounting for 61 deaths at a rate of 15.2 deaths per 100,000 population (age-adjusted). Colorectal cancer deaths rates in the NCDHD are comparable to the State (15.2 per 100,000 population vs. 15.0 per 100,000 population, respectively).

Colorectal cancer declined 21 percent in the NCDHD between 2001-2005 combined years to 2013-2017 combined years, while in the State declined 25 percent during the same time period. The colorectal death rate in the NCDHD experienced a sharp decline in the 2008-2012 combined years, when the colorectal death rate was lower than the State for first time since 2001-2005 combined years. Starting in 2008-2012 combined years, the colorectal death rate in the NCDHD has been similar to the State. Figure 65.

*Figure 65: Colorectal Death Rate per 100,000 population (age adjusted), NCDHD and Nebraska, 2001-2005 and 2013-2017 combined years**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	19.2	22.4	22.3	21.9	21.3	21.3	18.3	16.3	16.1	15.1	15.4	15.5	15.2
Nebraska	20	19.8	19.1	18.9	18.3	18.1	17.6	17.1	16.6	16.4	16.1	15.5	15

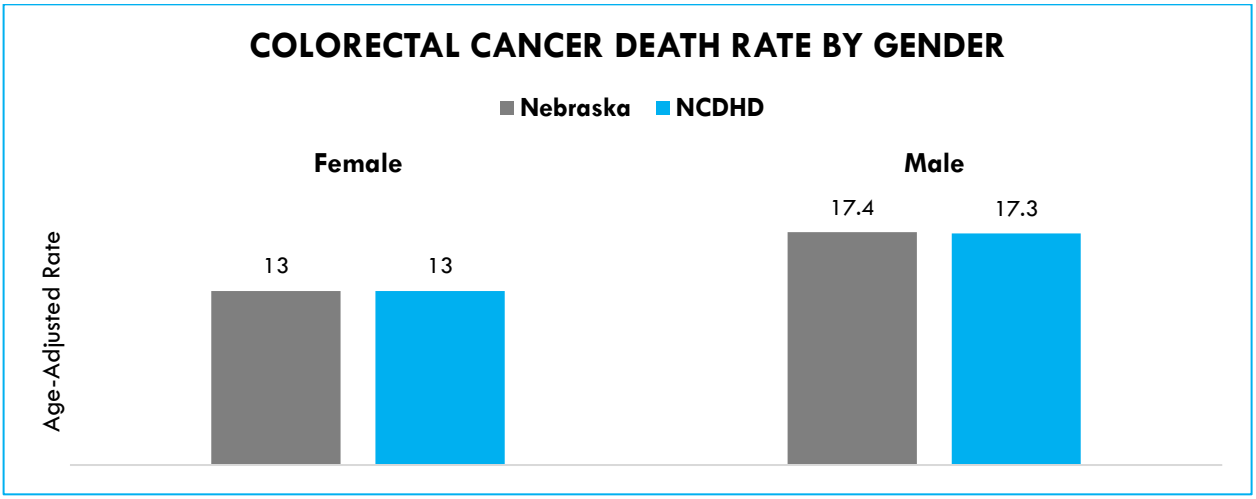
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Colorectal cancer mortality by gender, age, and race/ethnicity

GENDER - Colorectal cancer

Males are 1.3 times more likely to die of colorectal cancer than females in the NCDHD (17.3 per 100,000 males vs. 13.0 females per 100,000 females), comparable to the death rates at the State (17.4 per 100,000 males vs. 13.0 females per 100,000 females). Figure 66.

*Figure 66: Colorectal Cancer Death Rate by Gender, NCDHD vs. Nebraska, 2013-2017**



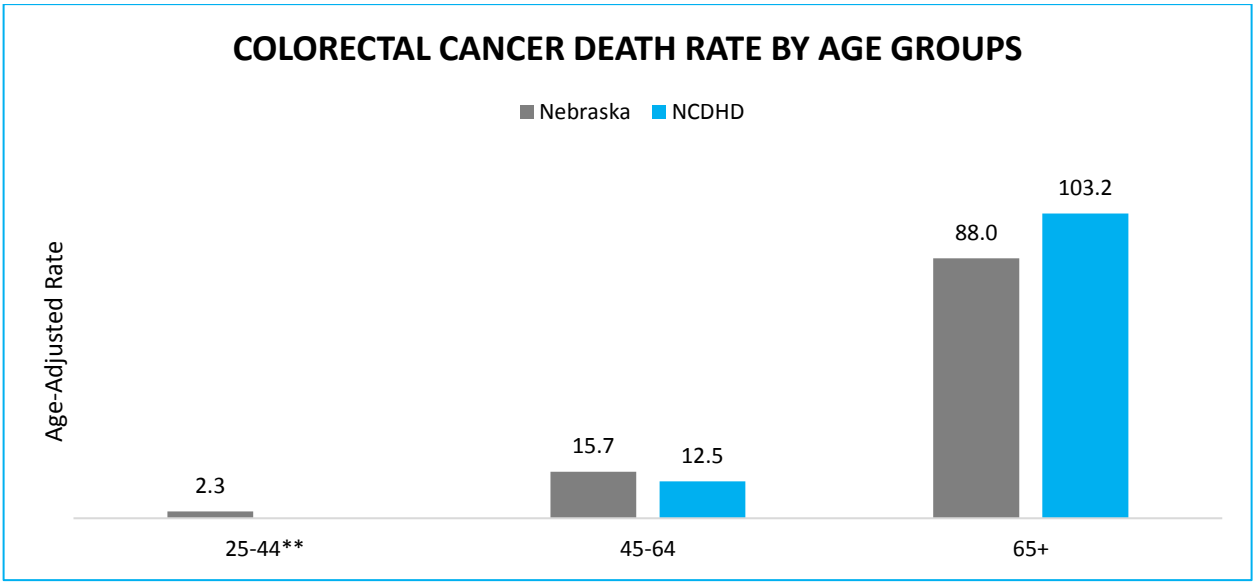
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

AGE – Colorectal cancer

Colorectal cancer death rates is 8.2 times higher among age group 65+ when compared to the 45-64 age group in the NCDHD (103.2 vs. 12.5 per 100,000 population). Figure 67. Colorectal cancer caused the death of 52 residents in the NCDHD in the 2013-2017 years combined, 85 percent of them were in the age group 65+.

The colorectal cancer death rate for age group 65+ in the NCDHD is 1.2 times higher when compared to the State (103.2 vs. 88.0 per 100,000 population, respectively).

*Figure 67: Colorectal Cancer Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

RACE/ETHNICITY – Colorectal cancer

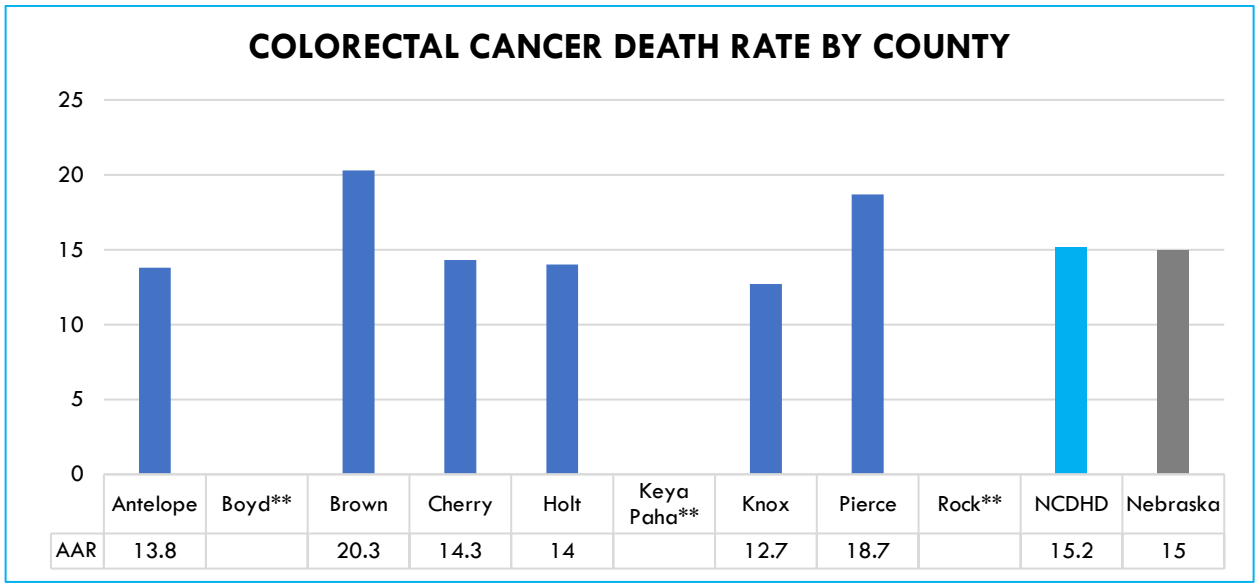
White Non-Hispanics in the NCDHD have a slightly lower colorectal cancer death rate when compared to the White Non-Hispanics in the State (14.8 vs. 15.2 per 100,000 population, respectively). No other races/ethnicities were available to compare due to small sample size.

Colorectal cancer mortality by NCDHD Counties

Brown County has the highest colorectal cancer death rate in the NCDHD (20.3 per 100,000 population), followed by Pierce County (18.7 per 100,000 population), and Cherry County (14.3 per 100,000 population). Knox County has the lowest colorectal cancer death rate in the NCDHD (12.7 per

100,000 population). Data was not available for Boyd, Keya Paha, and Rock counties due to small sample size. Figure 68.

*Figure 68: Colorectal Cancer Death Rate by County, NCDHD and Nebraska, 2013-2017 combined**



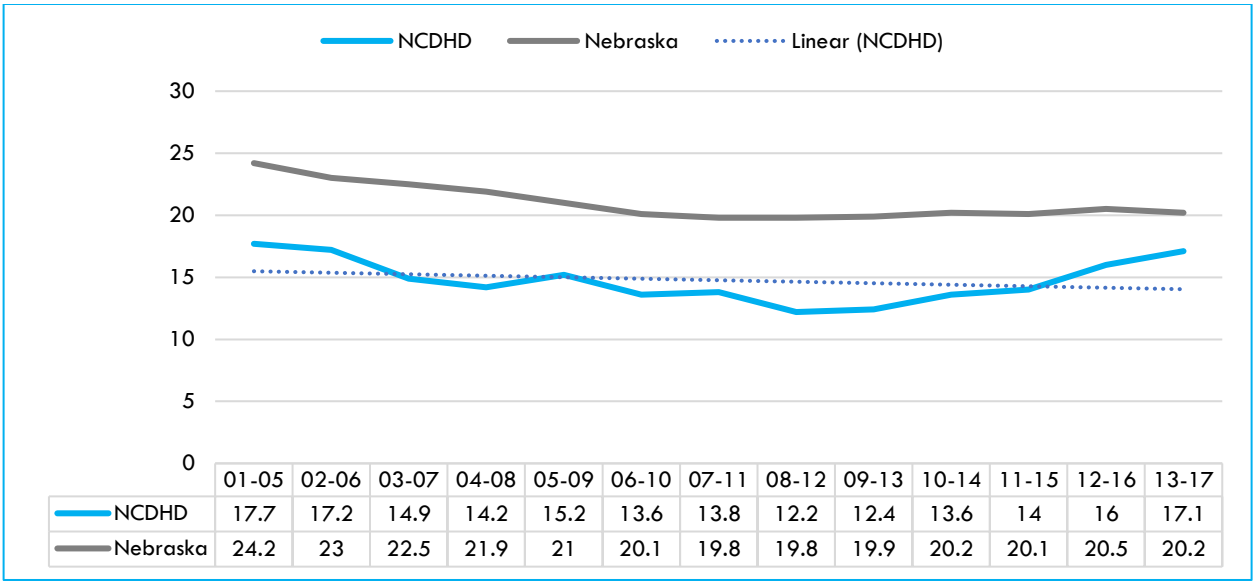
*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Female Breast Cancer

Female breast cancer is the 12th cause of death in NCDHD during 2013-2017 combined years, accounting for 34 deaths at a rate of 17.1 deaths per 100,000 females (age-adjusted). Female breast cancer deaths rates in the NCDHD are 0.8 times lower when compared to the State (17.1 per 100,000 population vs. 20.2 per 100,000 population, respectively).

Female breast cancer death rate declined 3 percent in the NCDHD between 2001-2005 combined years to 2013-2017 combined years, while in the State declined 17 percent during the same time period. Female breast cancer has been on the rise since 2008-2012 combined years in the NCDHD, but overall, it shows a lower death rate than the State since 2001-2005 combined years. Figure 69.

*Figure 69: Female Breast Cancer Death Rate per 100,000 females (age adjusted), NCDHD and Nebraska, 2001-2005 and 2013-2017 combined years**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	17.7	17.2	14.9	14.2	15.2	13.6	13.8	12.2	12.4	13.6	14	16	17.1
Nebraska	24.2	23	22.5	21.9	21	20.1	19.8	19.8	19.9	20.2	20.1	20.5	20.2

*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

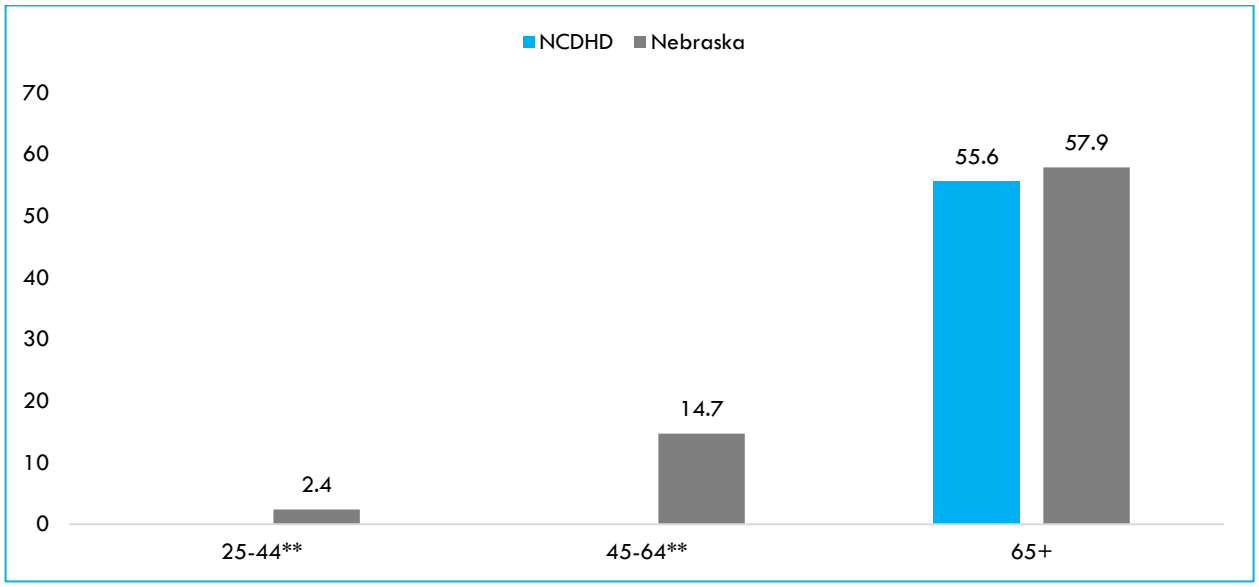
Female Breast Cancer mortality by gender, age, and race/ethnicity

AGE – Female Breast Cancer

Females 65+ years of age show a breast cancer death rate of 55.6 per 100,000, slightly lower when compared to the State of 57.9 per 100,000. No younger age groups were available to compare death rates in the NCDHD with the State due to small sample size. Figure 70.

Female breast cancer caused the death of 32 residents in the NCDHD during 2013-2017 years combined, 82 percent of them were in the age group 65+.

*Figure 70: Female Breast Cancer Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017**

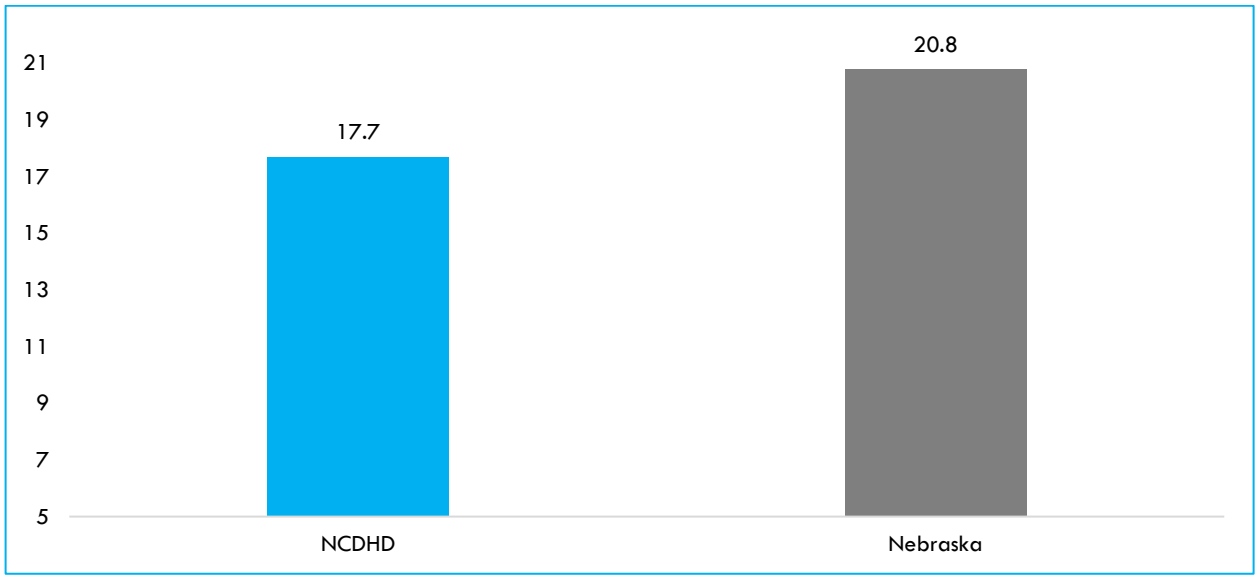


*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

RACE-ETHNICITY – Female Breast Cancer

White Non-Hispanic females in the NCDHD are 1.2 times less likely to die of breast cancer when compared to White Non-Hispanic female in Nebraska (17.7 vs. 20.8 per 100,000 females). No data was available for other races/ethnicities due to small sample size. Figure 71.

*Figure 71: Female Breast Cancer Death Rate within the White Non-Hispanic population, NCDHD and Nebraska, 2013-2017 combined**



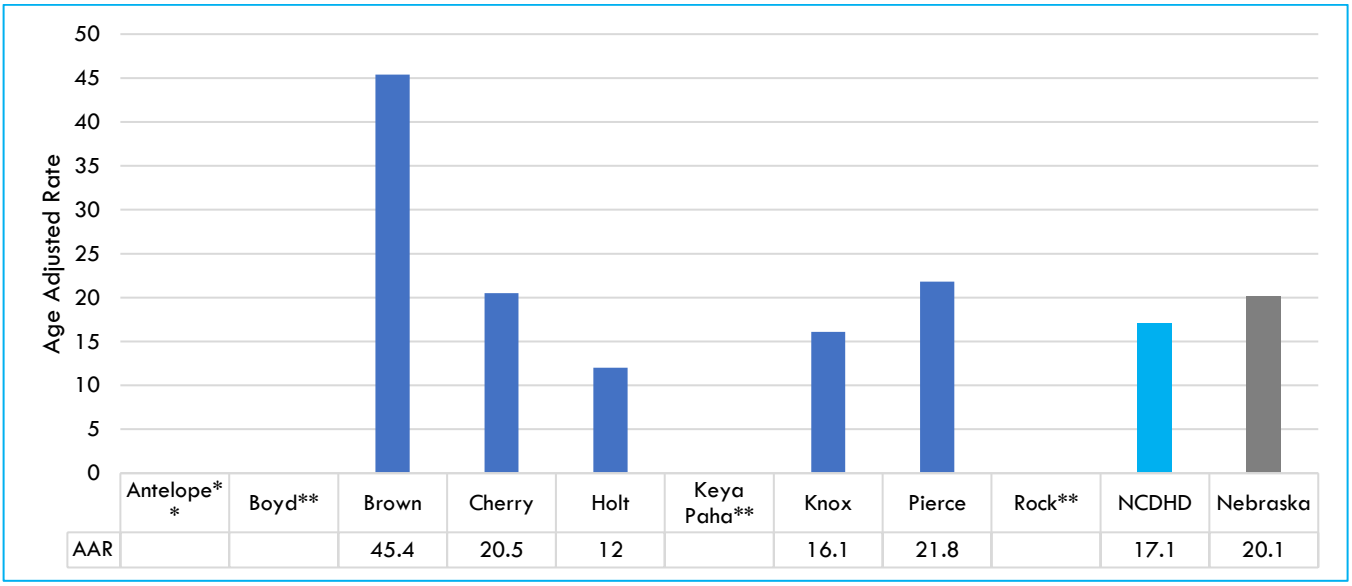
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Female breast cancer mortality by NCDHD Counties

Brown County has the highest female breast cancer death rate in the NCDHD in 2013-2017 combined years (45.4 per 100,000 population), followed by Pierce County (21.8 per 100,000 population), and Cherry County (20.5 per 100,000 population). Holt County has the lowest female breast cancer death rate in the NCDHD (12.0 per 100,000 population). Data was not available for Antelope, Boyd, Keya Paha, and Rock counties due to small sample size.

Brown County female breast cancer death rate is 2.7 times higher when compared to the NCDHD. Figure 72.

*Figure 72: Female Breast Cancer Death Rate by County, NCDHD and Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Invasive Female Breast Cancer by Stage of Disease

Percentage of invasive female breast cancer by stage disease at diagnosis is available for the 2011-2015 combined years for the NCDHD and Nebraska. Results show that percentages by stage of diagnoses compared between the NCDHD and Nebraska are similar. Two-thirds of diagnosis are "Localized", followed by one-fourth that are "Regional". Nearly six percent of cases are diagnosed as "Distant" and "Ustaged" stages. Table 23.

*Table 23: Comparison of the Number and Percentage of Invasive Female Breast Cancer Cases by Stage of Disease at Diagnosis between NE and North Central District HD Region, 2011-2015**

	Nebraska		North Central District HD Region	
Stage at Diagnosis	**Number**	%	**Number**	%
Localized	4,274	63.7	116	67.1
Regional	1,928	28.7	47	27.2
Distant	336	5.0	6	3.5
Unstaged	176	2.6	4	2.3
TOTAL	**6,714**	**100.0**	**173**	**100**

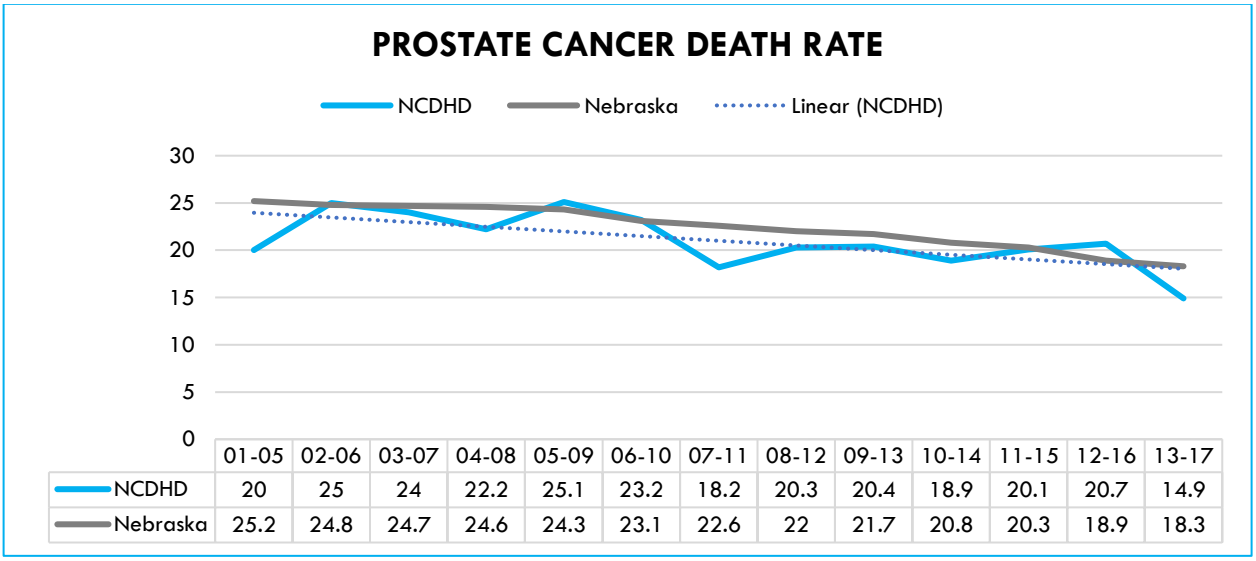
Source: Nebraska Cancer Registry Data (2019)

Prostate Cancer

Prostate cancer is the 15th leading cause of death in the NCDHD during 2013-2017 combined years, accounting for 28 deaths at a rate of 14.9 deaths per 100,000 males (age-adjusted). Prostate cancer deaths rates in the NCDHD are 0.8 times lower when compared to the State (14.9 per 100,000 population vs. 18.3 per 100,000 population, respectively).

Prostate cancer death rate declined 25.5 percent in the NCDHD between 2001-2005 combined years to 2013-2017 combined years, while in the State declined 27.4 percent during the same time period. Prostate cancer has shown an overall decline since 2001-2005 combined years in the NCDHD, showing a death rate slightly lower than the State since 2001-2005 combined years. Figure 73.

*Figure 73: Prostate Cancer Death Rate per 100,000 (age adjusted), NCDHD and Nebraska, 2001-2005 and 2013-2017 combined years**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	20	25	24	22.2	25.1	23.2	18.2	20.3	20.4	18.9	20.1	20.7	14.9
Nebraska	25.2	24.8	24.7	24.6	24.3	23.1	22.6	22	21.7	20.8	20.3	18.9	18.3

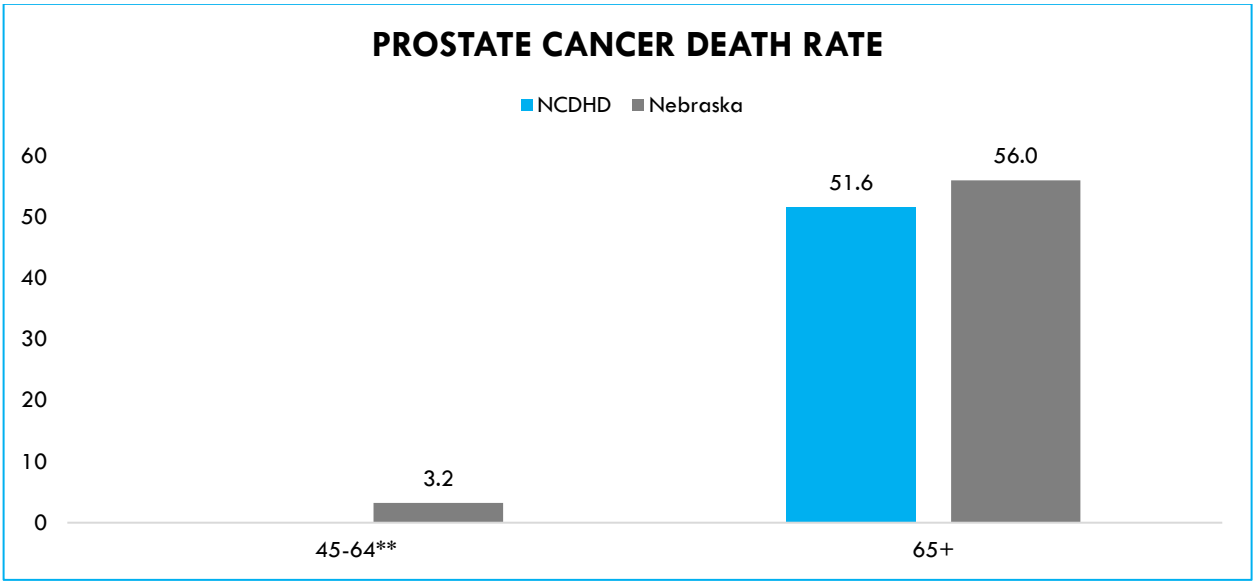
*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Prostate Cancer mortality by gender, age, and race/ethnicity

AGE – Prostate Cancer

Prostate cancer among age group 65+ years is slightly lower when compared to the State (51.6 per 100,000 population vs. 56.0 per 100,000 population). No younger age groups were available to compare death rates in the NCDHD with the State due to small sample size. Figure 74. Prostate cancer caused the death of 28 residents in the NCDHD during 2013-2017 years combined, 93 percent of them were in the age group 65+.

*Figure 74: Prostate Cancer Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

RACE/ETHNCITY – Prostate Cancer

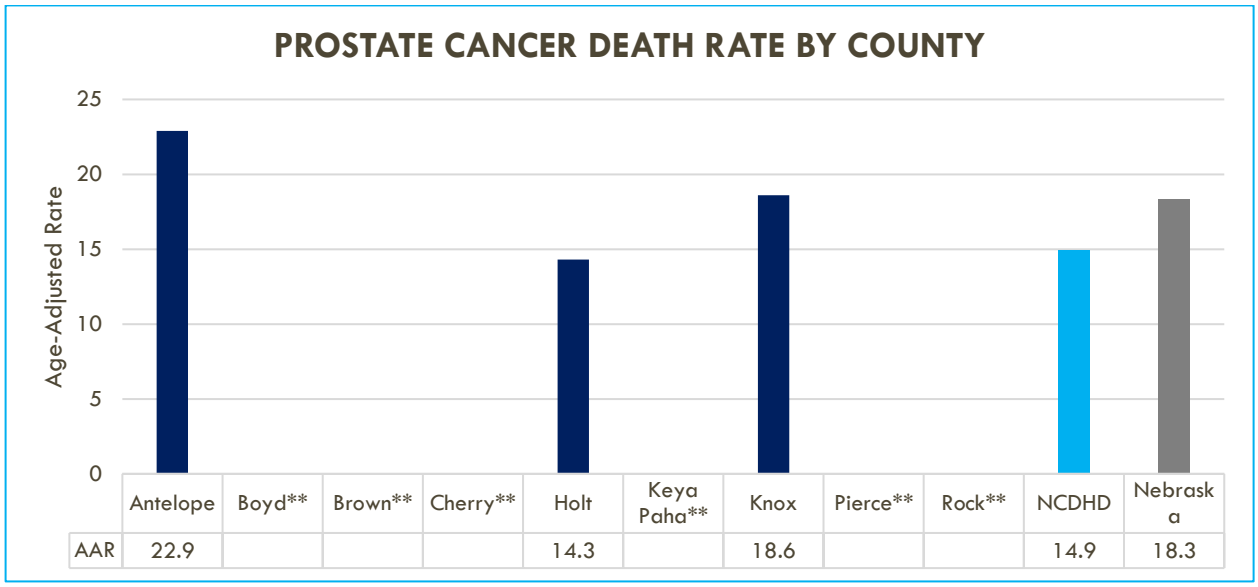
White Non-Hispanic males in the NCDHD are 1.3 times less likely to die of prostate cancer when compared to White Non-Hispanic males in Nebraska (14.6 per 100,000 males vs. 18.3 per 100,000 males, respectively). No data was available for other races/ethnicities due to small sample size.

Prostate cancer mortality by NCDHD Counties

Antelope County has the highest prostate cancer death rate in the NCDHD during 2013-2017 combined years (22.9 per 100,000 population), followed by Knox County (18.6 per 100,000 population), and Holt County (14.3 per 100,000 population). Death rate data was not available for Boyd, Brown, Cherry, Keya Paha, Pierce, and Rock counties due to small sample size. Figure 75.

Antelope County prostate cancer death rate is 1.5 times higher when compared to the NCDHD.

*Figure 75: Prostate Cancer Death Rate by County, NCDHD and Nebraska, 2013-2017 combined**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019.

Cervical and Oral Cancers

Cervical cancer death rates have not been reported since 2001, and oral cancer has not been reported since 2010-2014 combined years in the NCDHD due to small sample sizes.

Cervical cancer is most often diagnosed between the ages of 35 and 44. About 15% of cervical cancers are diagnosed in women over age 65. Few women under the age of 20 are diagnosed with cervical cancer.

Invasive cervical cancer:

Invasive cervical cases by stage of disease have been reported for the NCDHD and for Nebraska, 2011-2015 combined years. A total of ten cases have been diagnosed in the NCDHD, four of them have been "Localized", and six have been "Regional". Stage of diagnosis "Distant" and "Unstaged" have not been detected. Table 24.

*Table 24: Comparison of the Number and Percentage of Invasive Cervical Cancer Cases by Stage of Disease at Diagnosis between Nebraska and North Central District HD Region, 2011-2015**

	Nebraska		North Central District HD Region	
Stage at Diagnosis	**Number**	**%**	**Number**	**%**
Localized	151	43.6	4	40.0

Regional	125	36.1	6	60.0
Distant	49	14.2	0	0.0
Unstaged	21	6.1	0	0.0
TOTAL	346	100.0	10	100.0

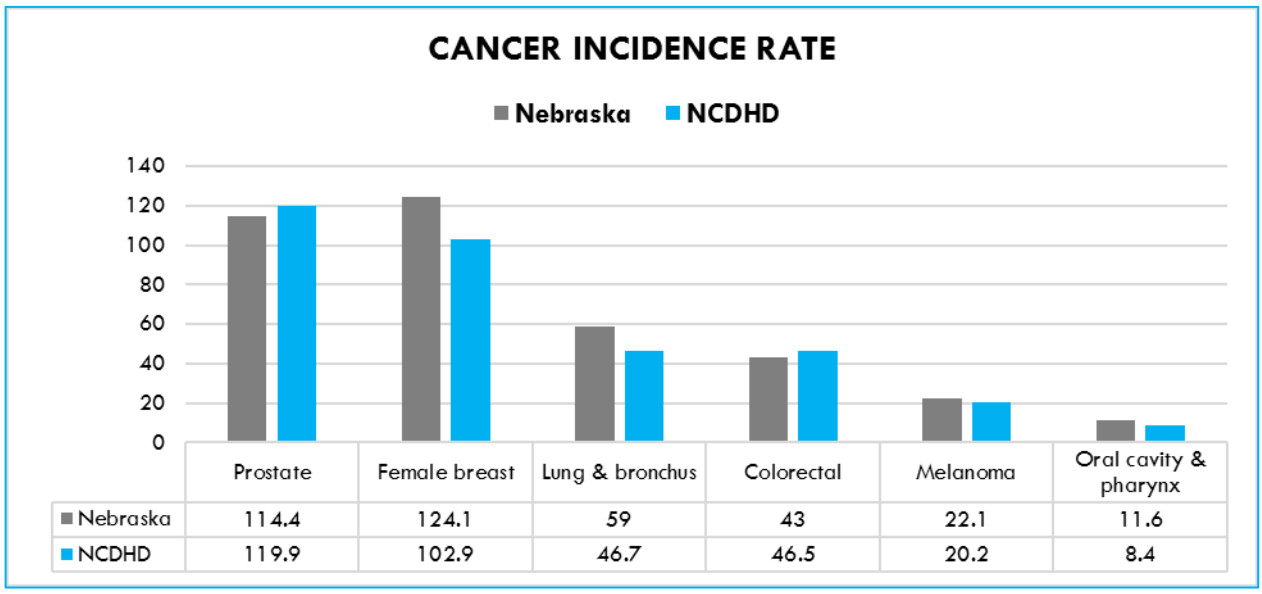
*NOTE: Cases are staged according to the Derived SEER Summary Stage 2000 coding system. Source: Nebraska Cancer Registry (2019).

Incidence of Cancer

For 2011-2015 combined years, a total of 1,417 cases of invasive cancer were recorded in the NCDHD, for an age-adjusted rate of 413.4 cases per 100,000 population. The most commonly diagnosed cancers among NCDHD residents included cancers of the prostate (212), lung (176), the female breast (173), and colon (163). Together these cancers comprised half of all new cases diagnosed in 2011-2015 combined years (51.1%).

Cancer incidence rates for 2011-2015 combined years (age-adjusted per 100,000 population) were highest for prostate (119.9), female breast (102.9), and followed by lung (46.7), colon (46.5), melanoma (20.2) and oral cavity (8.4). Cervical cancer was not reported due to small sample size (Figure 76). Overall, incidence of cancer by type in the NCDHD is slightly lower when compared to the rates reported at the State level. Prostate and colorectal cancers are the only cancers where the NCDHD incidence rate were higher than the Nebraska rate in 2011-2015 combined years.

Figure 76: Cancer Incidence Rates, by Type, per 100,000 population (age-adjusted), NCDHD and Nebraska, 2011-2015*



*Invasive cases only, breast cancer and cervical rates based on female population, prostate based on male population. Source: Nebraska Cancer Registry.

Cancer Screening

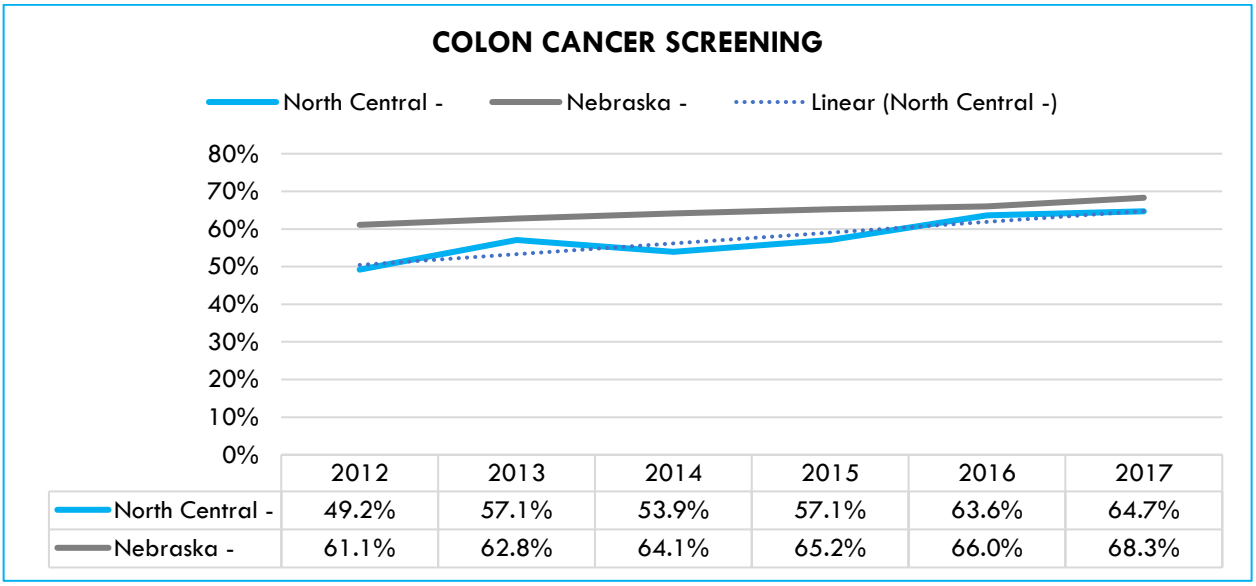
Getting screening tests regularly may find breast, cervical, and colorectal (colon) cancers early, when treatment is likely to work best. Lung cancer screening is recommended for some people who are at high risk. (CDC, 2019).

Colon Cancer Screening

The U.S. Preventive Services Task Force recommends screening beginning at age 50. Some groups recommend starting earlier, at age 45. (CDC, 2019[5]).

In 2017, about two-thirds of the NCDHD adults 50 to 75 years old (64.7%) reported being up-to-date on their colon cancer screening. Colon cancer screening has increased in the NCDHD since 2012 (Figure 77). The percentage increased from 49.2 percent in 2012 to 64.7 percent in 2017. Despite the steady increase in colon cancer screening in the NCDHD, 50-75 year old adults in the State continue to be more likely to be up-to-date on their colon cancer screening (64.7% vs. 68.3% in 2017, respectively).

Figure 77: Up-To-Date on Colon Cancer Screening among Adults 50-75 Years Old, NCDHD and Nebraska, 2012-2017*



	2012	2013	2014	2015	2016	2017
North Central -	49.2%	57.1%	53.9%	57.1%	63.6%	64.7%
Nebraska -	61.1%	62.8%	64.1%	65.2%	66.0%	68.3%

*Percentage of adults 50-75 years old who report having had a fecal occult blood test (FOBT) during the past year, or sigmoidoscopy during the past 5 years and an FOBT during the past 3 years, or a colonoscopy during the past 10 years. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

[5] **https://www.cdc.gov/cancer/colorectal/basic_info/screening/**

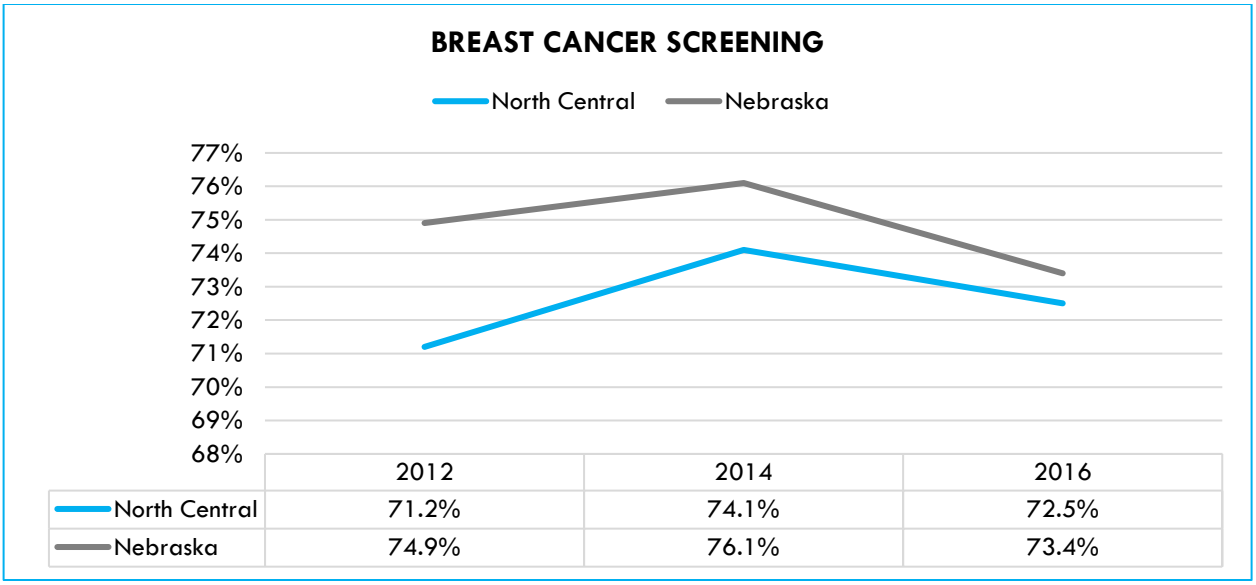
Breast Cancer Screening[6]

Mammograms are the best way to find breast cancer early, when it is easier to treat. Although breast cancer screening cannot prevent breast cancer, it can help find breast cancer early, when it is easier to treat.

The United States Preventive Services Task Force recommends that women who are 50 to 74 years old and are at average risk for breast cancer get a mammogram every two years. Women who are 40 to 49 years old should talk to their doctor or other health care professional about when to start and how often to get a mammogram. Women should weigh the benefits and risks of screening tests when deciding whether to begin getting mammograms before age 50. (CDC, 2019[7]).

In 2016, nearly 3 in 4 NCDHD women 50 to 74 years old (72.5%) were up-to-date on their breast cancer screening. The 2016 percentage was slightly lower to the 2014 percentage (74.1%) (Figure 78). However, unlike colon cancer screening, the percentage remained stable if not declined slightly between 2012 and 2016. Compared to the State, 50-74-year-old women in the NCDHD were less likely to report being up-to-date on their breast cancer screening in 2016 (73.4% and 72.5%, respectively).

Figure 78: Up-To-Date on Breast Cancer Screening among Women 50-74 Years Old, NCDHD and Nebraska, 2012-2016*



	2012	2014	2016
North Central	71.2%	74.1%	72.5%
Nebraska	74.9%	76.1%	73.4%

*Percentage of females 50-74 years old who report having had a mammogram during the past 2 years. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

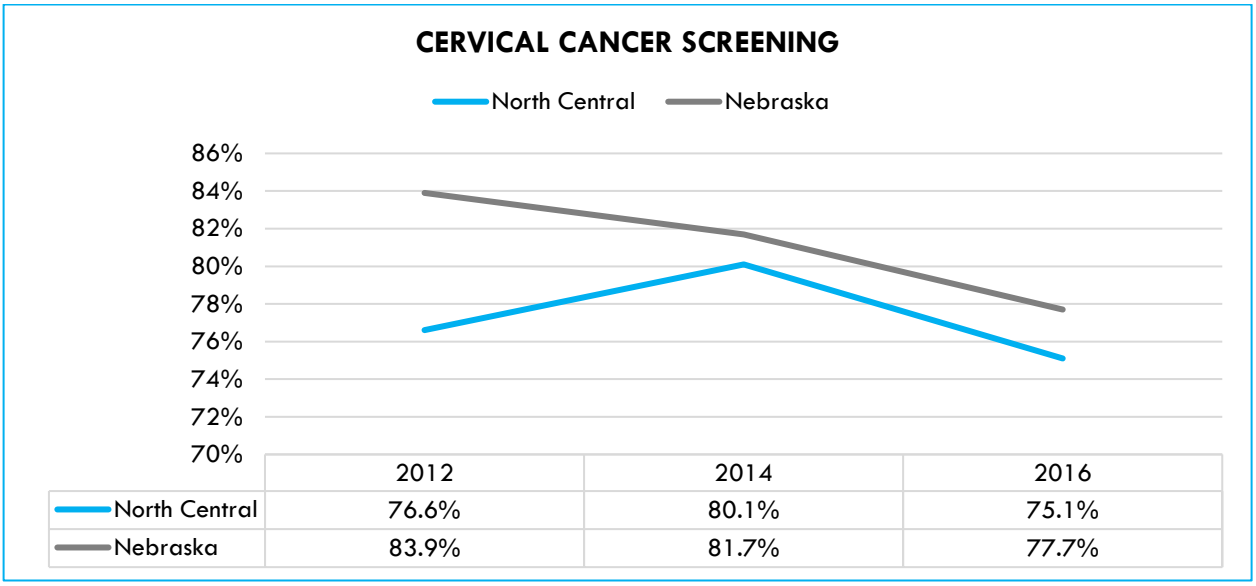
[6] If you have a low income or do not have health insurance, you may be able to get a free or low-cost screening test through the National Breast and Cervical Cancer Early Detection Program. (https://www.cdc.gov/cancer/nbccedp/screenings.htm)
[7] https://www.cdc.gov/cancer/breast/basic_info/screening.htm

Cervical Cancer Screening

The Pap test can find abnormal cells in the cervix which may turn into cancer. The HPV test looks for the virus (human papillomavirus) that can cause these cell changes. Pap tests also can find cervical cancer early, when the chance of being cured is very high. The U.S. Preventive Service Task Force recommends that women 21 to 65 years old receive a pap test every three years. (Nebraska DHHS, 2016. CDC, 2019[8]).

In 2016, about 3 in 4 NCDHD women 21 to 65 years old (75.1%) were up-to-date on their cervical cancer screening. The 2016 percentage was lower but not significantly lower than the 2012 percentage (76.6%) (Figure 79). Similar to breast cancer screening, the percentage between 2014 and 2016 declined quite abruptly. In 2016, 21-65-year-old women in the NCDHD were less likely than women statewide to cureport being up-to-date on their cervical cancer screening (75.1% and 77.7%, respectively).

Figure 79: Up-To-Date on Breast Cancer Screening among Women 50-74 Years Old, NCDHD and Nebraska, 2012-2016*



	2012	2014	2016
North Central	76.6%	80.1%	75.1%
Nebraska	83.9%	81.7%	77.7%

*Percentage of females 21-65 years old without a hysterectomy who report having a Pap test during the past 3 years. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011 – 2017)

[8] **https://www.cdc.gov/cancer/cervical/basic_info/screening.htm**

RISK AND PROTECTIVE FACTORS FOR CHRONIC DISEASE

Tobacco Use

Cigarette smoking remains the leading cause of preventable death and disability in the United States, despite a significant decline in the number ohof people who smoke. Over 16 million Americans have at least one disease caused by smoking. This amounts to $170 billion in direct medical costs that could be saved every year if we could prevent youth from starting to smoke and help every person who smokes to quit.

There is no safe level of exposure to secondhand smoke. It causes stroke, lung cancer, and coronary heart disease in adults. Nebraska has a comprehensive smoke-free law that prohibits smoking in all indoor areas of workplaces, restaurants, and bars that has been in effect since 2009. Since that law was adopted, Nebraska has continued to expand areas where residents are protected from exposure to secondhand smoke. Smoking-related costs due to medical care were estimated at $795 million annually in Nebraska, while the annual cost of smoking-related lost productivity in the state was estimated at an additional $532 million. (CDC, 2019[9]).

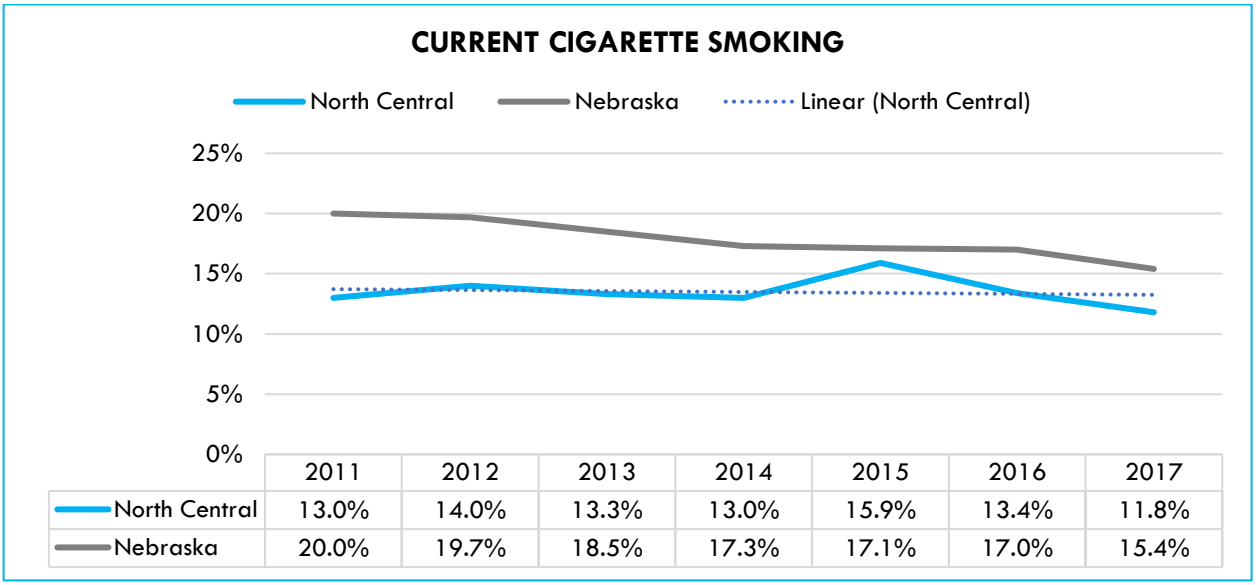
Tobacco Use among Adults

Cigarette Smoking among Adults

In 2017, about 1 in 9 NCDHD adults aged 18 and older (11.8%) reported that they currently smoke cigarettes. Cigarette smoking among NCDHD adults has remained stable since 2011, while cigarette smoking among Nebraska adults has steadily declined from 20.0 percent in 2011 to 15.4 percent in 2017 (Figure 80). Overall, cigarette smoking among NCDHD adults has remained lower when compared to the State since 2011.

[9] **https://www.cdc.gov/tobacco/about/osh/state-fact-sheets/nebraska/**

Figure 80: Current Cigarette Smoking among Adults, NCDHD and Nebraska, 2011-2017*



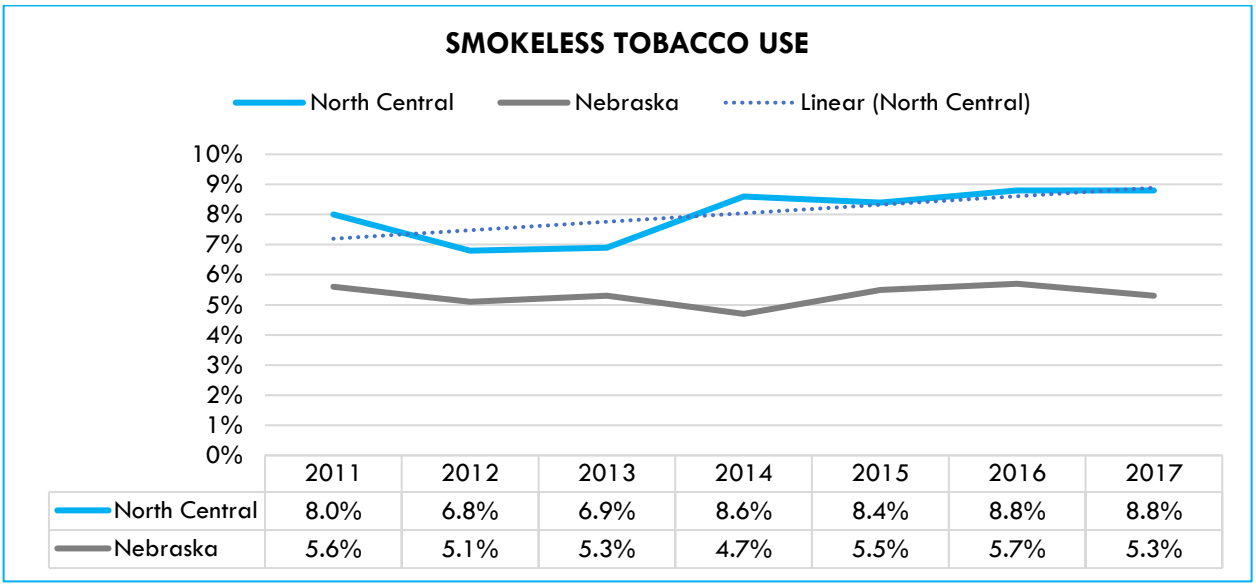
	2011	2012	2013	2014	2015	2016	2017
North Central	13.0%	14.0%	13.3%	13.0%	15.9%	13.4%	11.8%
Nebraska	20.0%	19.7%	18.5%	17.3%	17.1%	17.0%	15.4%

*Percentage of adults 18 and older who report that they currently smoke cigarettes either every day or on some days. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011-2017)

Smokeless Tobacco Use among Adults

In 2017, about 1 in 11 NCDHD adults reported that they currently use smokeless tobacco (8.8%). Smokeless tobacco use among NCDHD adults has increased between 2011 and 2017, and has remained higher when compared to the State. Figure 81While smokeless tobacco use among Nebraska adults has remained stable since 2011, the percentage of NCDHD adults who use smokeless tobacco increased steadily since 2012. The percentage of smokeless tobacco users among NCDHD adults increased from 6.8 percent in 2012 to 8.8 percent in 2017.

Figure 81: Current Smokeless Tobacco Use among Adults, NCDHD and Nebraska, 2011-2017*

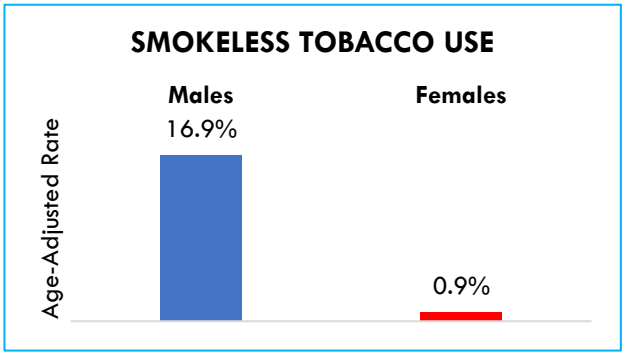


	2011	2012	2013	2014	2015	2016	2017
North Central	8.0%	6.8%	6.9%	8.6%	8.4%	8.8%	8.8%
Nebraska	5.6%	5.1%	5.3%	4.7%	5.5%	5.7%	5.3%

*Percentage of adults 18 and older who report that they currently use smokeless tobacco products (chewing tobacco, snuff, or snus) either every day on some days. Source: Behavioral Risk Factor Surveillance System (BRFSS, 2011-2017)

It should be noted that men in the NCDHD were nearly 19 times more likely than females in the NCDHD to report current smokeless tobacco use in 2017 (16.9% and 0.9%, respectively). Figure 82.

Figure 82: Current Smokeless Tobacco Use by Gender in the NCDHD, 2017



Source: Behavioral Risk Factor Surveillance System (BRFSS, 2017)

Tobacco Use among Youth

Cigarette Smoking among Youth

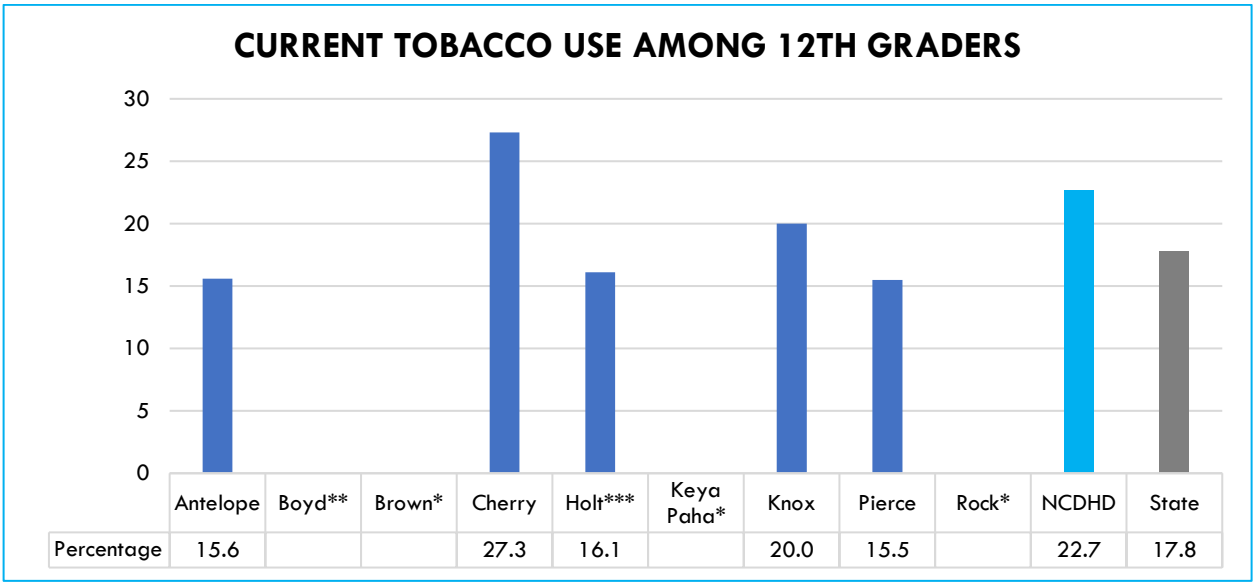
In 2017, about 1 in 13 Nebraska high school students (7.4%) reported smoking cigarettes on one or more of the past 30 days. Between 2003 and 2017 the percentage of Nebraska high school students who reported cigarette smoking declined dramatically from 24.1 percent to 7.4 percent, respectively.

High school students in Nebraska compared to their counterparts nationally were less likely to report cigarette smoking in 2017 (7.4% and 8.8%, respectively).

In 2016, about 1 in 5 12th grader students in the NCDHD (22.7%) reported using tobacco, higher when compared to the 12th graders in the State (17.8%).

Cherry County showed the highest percentage of 12th graders that use tobacco (27.3%), 1.2 times higher when compared to the NCDHD. Data was not available for Boyd, Brown, Keya Paha, and Rock counties. Figure 83.

Figure 83: Current Tobacco Use among 12th Graders, NCDHD and Nebraska, 2016



*Data not available. ** 2010 data. ***2014 data. Source: Nebraska Risk and Protective Factor Student Survey (2016).

E-Cigarette Use among Youth

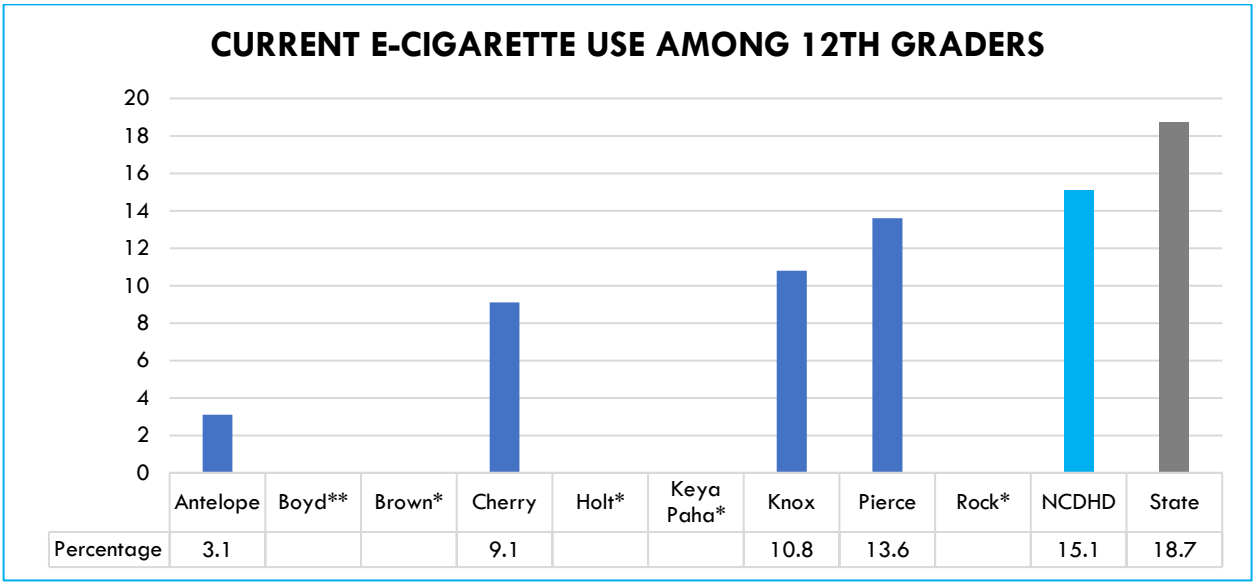
In 2017, more than 1 in 3 high school students (36.1%) in Nebraska reported that they had ever used electronic vapor products such as e-cigarettes, e-cigars, e-pipes, vape pipe, vaping pens, e-hookahs, and hookah pens (i.e., e-cigarettes) (2017 YRBS).

The proportion of high school students that reported using an electronic vapor product during the past 30 days decreased between 2015 (22.3%) and 2017 (9.4%) (2017 YRBS). Few differences were seen by gender for lifetime and past 30 day use of electronic vapor products. As grade level increased, the percentage of students that reported lifetime and past 30-day electronic vapor use increased.

In 2016, 15.1% of 12th graders in the NCDHD reported that they had used an e-cigarette in the last 30 days, which is lower when compared to the State (18.7%).

Pierce County showed the highest percentage of 12th graders that use e-cigarettes (13.6%), and Antelope County the lowest percentage (3.1%). Data was not available for Boyd, Brown, Holt, Keya Paha, and Rock counties. Figure 84.

Figure 84: Current Electronic Vapor Use among 12th Graders, NCDHD and Nebraska, 2016



*Data not available. ** 2010 data. Source: Nebraska Risk and Protective Factor Student Survey (2016).

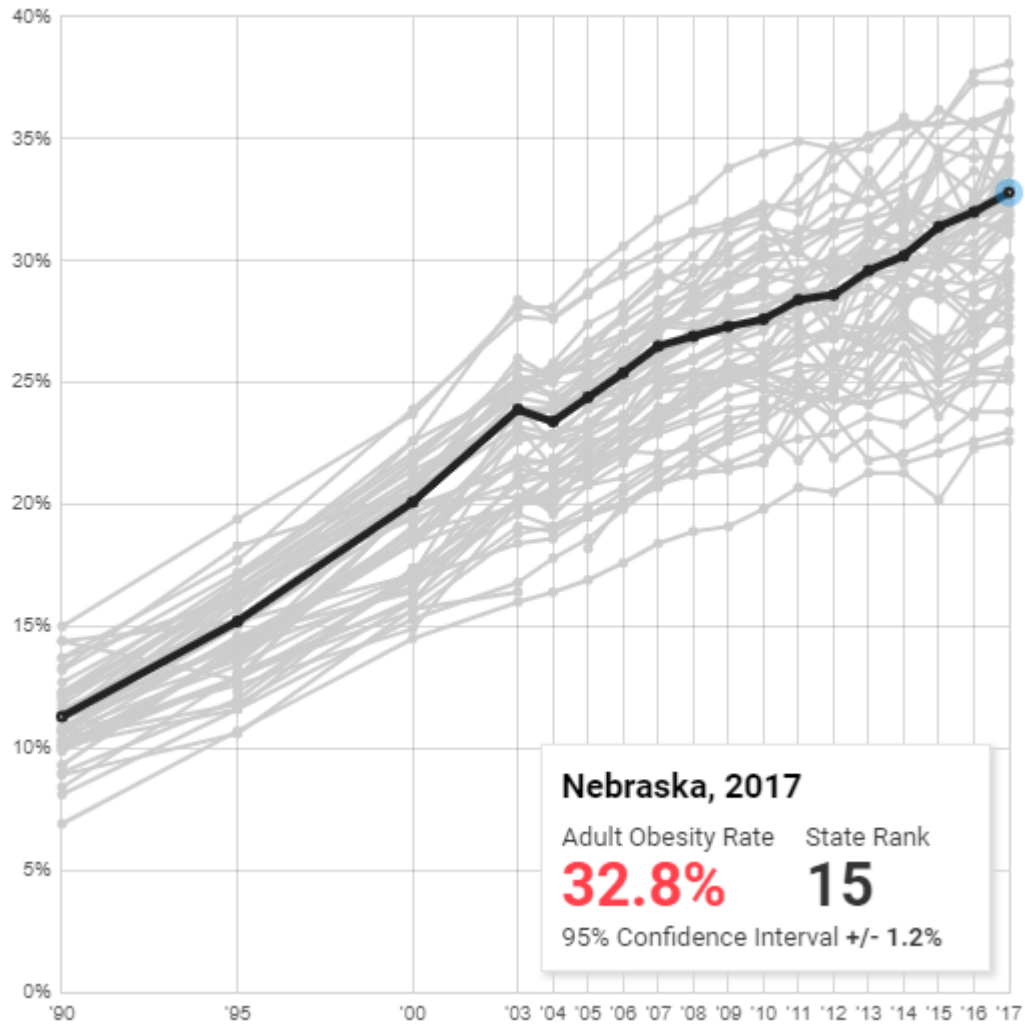
Obesity

Overweight and obesity are measured by an individual's body mass index (BMI) which is calculated as weight in kilograms divided by height in meters squared. Overweight (BMI=25.0-29.9) and obese (BMI=30.0+) individuals are at increased risk for many health conditions, including hypertension, type 2 diabetes, coronary heart disease, stroke, and some cancers. However, even modest weight loss (e.g., 5-7% of total body weight) is likely to produce health benefits (Nebraska DHHS, 2016).

Obesity among Adults

The proportion of adults who are at risk due to obesity has increased considerably over the past 25 years in Nebraska, increasing from 11.6 percent in 1990 to 32.8 percent in 2017. Currently, Nebraska is ranked15th for obesity rate among all States in the U.S. Figure 85.

Figure 85: Nebraska Adult Obesity Rate, 1990-2017

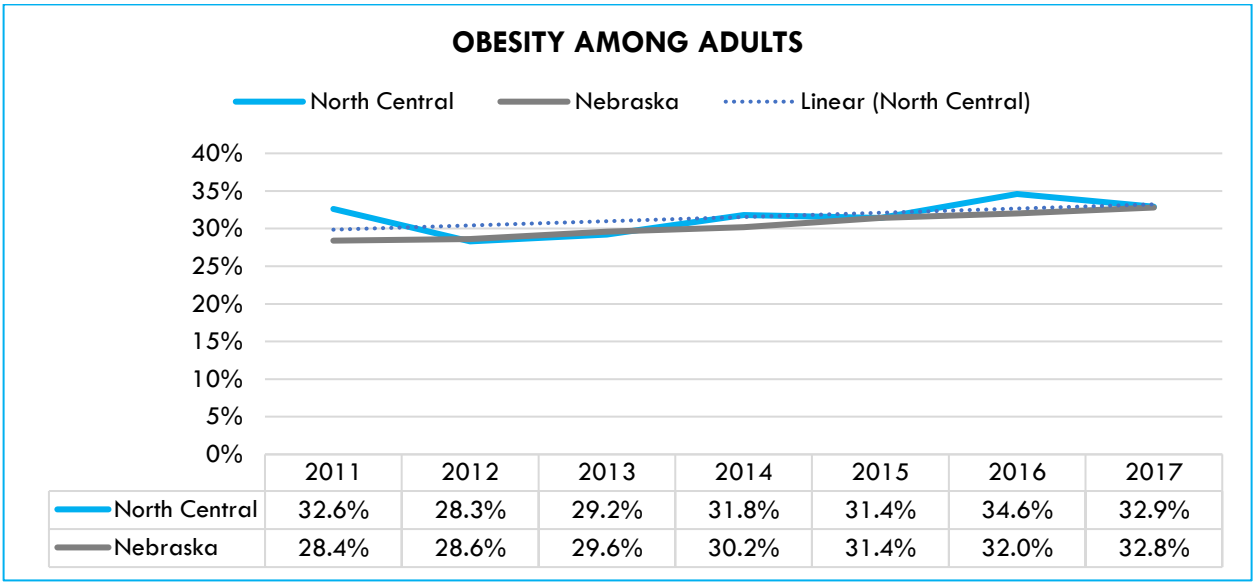


Source: BRFSS (2018). https://www.stateofobesity.org/adult-obesity/

During just the past four years, obesity among Nebraska adults increased from 29.6 percent in 2013 to 32.8 percent in 2017. (Figure 86).

The prevalence of obesity among adults in the NCDHD and Nebraska was similar over the past six years. Seven out of ten NCDHD adults (71.2%) reported heights and weights that classified them as overweight or obese in 2017.

Figure 86: Obesity among Adults, NCDHD and Nebraska, 2011-2017*



Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Table 19 shows the overall prevalence and changes in obesity rates from 2006 to 2013 by county in the NCDHD. Figure 87 depicts trends in obesity by county between 2006 and 2013 (CDC, Diabetes and Obesity Data Indicators[10]).

Boyd County experienced the highest percentage increase of change in obesity rates among all counties in the NCDHD between 2006 and 2013 (6.7%), followed by Pierce County (6.2%). Cherry County experienced a decrease percentage of change in obesity rates during the same time period (-2.5%) as did Antelope County (0.4%).

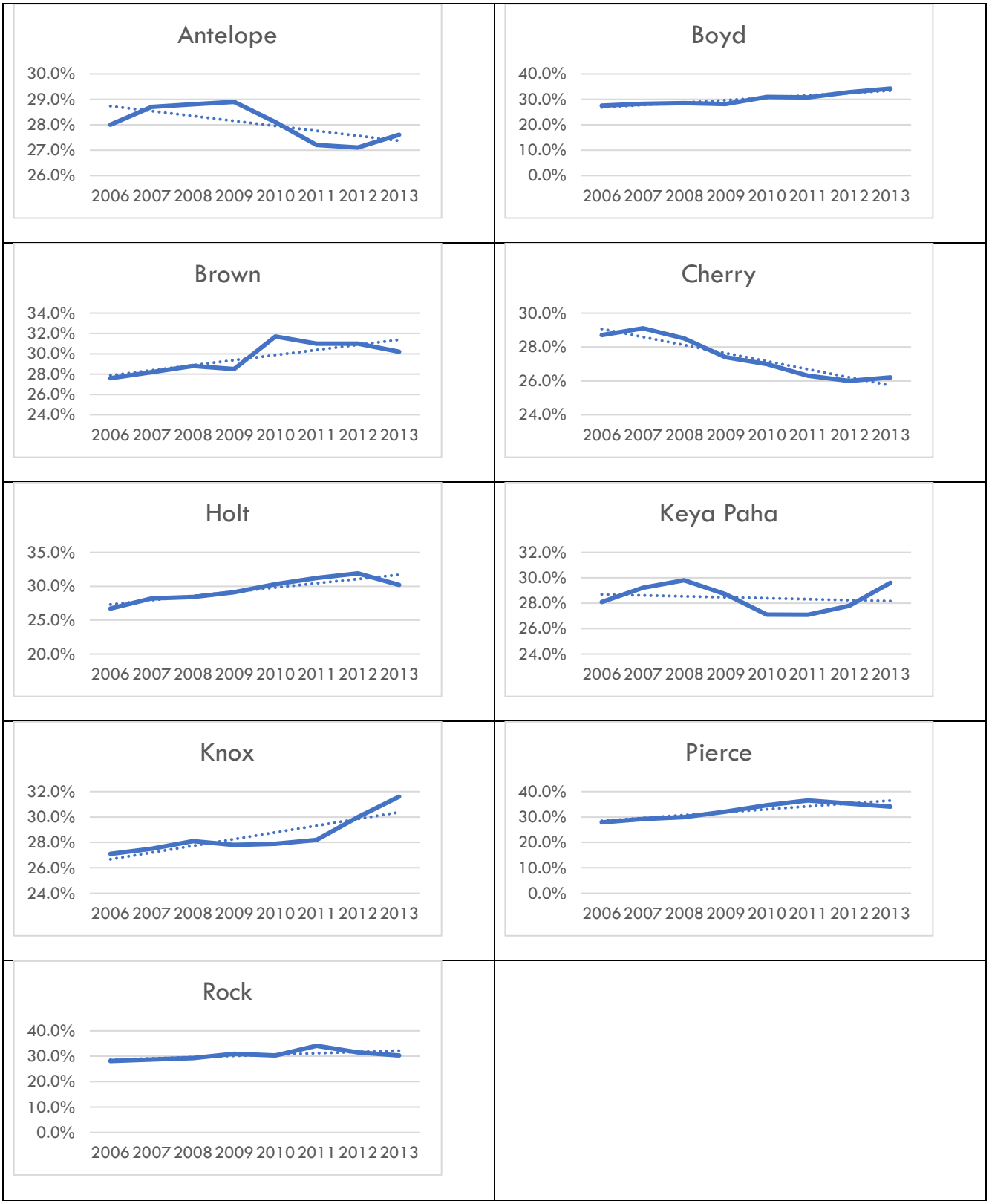
Table19: Obesity prevalence and percent change by county, 2006-2013

	2006	2007	2008	2009	2010	2011	2012	2013	% Change 2006-2013
Antelope	28.0%	28.7%	28.8%	28.9%	28.1%	27.2%	27.1%	27.6%	-0.4%
Boyd	27.5%	28.2%	28.5%	28.1%	30.9%	30.7%	32.8%	34.2%	**6.7%**
Brown	27.6%	28.2%	28.8%	28.5%	31.7%	31.0%	31.0%	30.2%	2.6%
Cherry	28.7%	29.1%	28.5%	27.4%	27.0%	26.3%	26.0%	26.2%	**-2.5%**
Holt	26.7%	28.2%	28.4%	29.1%	30.3%	31.2%	31.9%	30.2%	3.5%
Keya Paha	28.1%	29.2%	29.8%	28.7%	27.1%	27.1%	27.8%	29.6%	1.5%
Knox	27.1%	27.5%	28.1%	27.8%	27.9%	28.2%	30.0%	31.6%	4.5%
Pierce	27.9%	29.2%	30.0%	32.1%	34.6%	36.5%	35.3%	34.1%	6.2%
Rock	28.1%	28.7%	29.3%	30.9%	30.3%	34.1%	31.5%	30.3%	2.2%

[10] https://www.cdc.gov/diabetes/data/countydata/countydataindicators.html

Source: CDC, Diabetes and Obesity Data Indicators, 2006-2013

Figure 87: Obesity Trends by County in the NCDHD, 2006-2013



Source: CDC, Diabetes and Obesity Data Indicators, 2006-2013

According to the National Survey of Children's Health, about 1 in 6 Nebraska children 10-17 were obese (15.5%) in 2016/17, an increase from 2011/12 (13.8%).

According to the 2017 YRBS, slightly more than half of all Nebraska high school students (53.1%) reported that they were about the right weight while about 3 in 10 (29.4%) felt that they were slightly or very overweight.

Male students were more likely than female students to report being slightly or very underweight (23.8% and 10.7%, respectively) while female students were more likely than male students to report being slightly or very overweight (33.8% and 25.3%, respectively).

Nutrition

The Dietary Guidelines for Americans (USDA and HHS, 2011) provide U.S. consumers with information and guidance on how to follow a healthy eating pattern, emphasizing nutrient density over energy density, as well as physical activity to help achieve and maintain a healthy weight, promote health, and prevent disease.

The guidelines encourage Americans to balance calories with physical activity to manage weight. They also encourage increased consumption of fruits, vegetables, whole grains, fat-free and low-fat dairy products, and seafood. In contrast, they encourage decreased consumption of foods that are high in salt, saturated and trans fats, cholesterol, added sugars, and refined grains. (Nebraska DHHS, 2016).

Fruit and Vegetable Consumption

Fruit and Vegetable Consumption among Adults

In 2017, 33.9 percent of NCDHD adults reported that they consumed fruits an average of less than one time per day during the past month. The 2017 percentage was lower when compared to the State (36.9%). A lower percentage of females reported that they consumed fruits an average of less than one time per day than males in the NCDHD (28.6% vs. 39.3%, respectively).

The 2017 percentage of Nebraska adults reporting that they consumed vegetables an average of less than one time per day during the past month (15.0%) was considerably lower than fruit consumption, suggesting that adults consume at least some vegetables more often than fruits.

Fruit and Vegetable Consumption among Youth

The percentage of Nebraska high school students who reported consuming fruits or vegetables five or more times per day during the past seven days has remained relatively stable between 2003 and 2017

(data is not available at the health district or county level). During 2017, about 1 in 7 high school students (14.7%) reported consuming fruits and vegetables five or more times per day during the past seven days (YRBS, 2017).

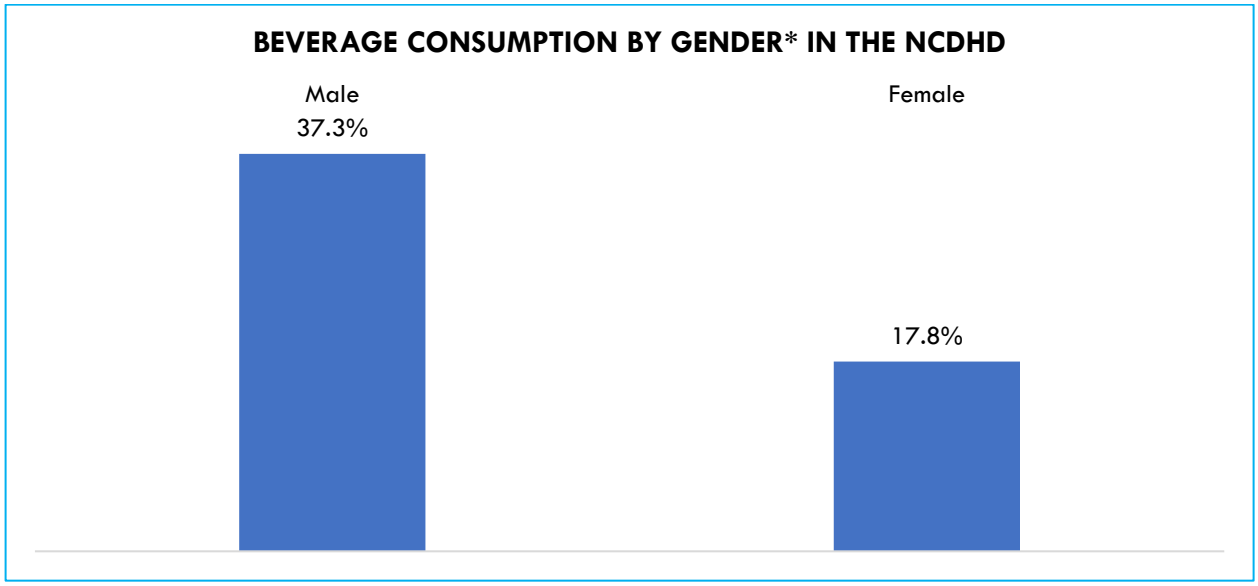
Beverage Consumption

Beverage Consumption among Adults

Over one-fourth of NCDHD adults (27.3%) in 2013 reported consuming sugar-sweetened beverages an average of one or more times per day during the past month.

Consumption of sugar-sweetened beverages among males was significantly statistically higher when compared to females in the NCDHD (37.3% vs. 17.8%). Figure 88.

Figure 88: Beverage consumption among NCDHD adults, 2013



Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Beverage Consumption among Youth

Youth in Nebraska continue to consume large amounts of sugar-sweetened beverages, including regular (non-diet) soda or pop, full calorie sports drinks, and other sugar-sweetened beverages (such as sweet tea or coffee, flavored milk and juice drinks, or energy drinks).

In 2017, nearly 1 in 3 Nebraska high school students (30.6%) reported drinking any sugar sweetened beverage on average of one or more times per day during the past seven days.

Male students were almost two times more likely than female students to report drinking any type of sugar sweetened beverage (39.7% and 21.1%, respectively). Males were significantly more likely to report drinking soda than females (24.2% and 11.9%, respectively). The same was reported for sports drinks (16.9% and 6.7%, respectively).

Recent research shows that "sugar-sweetened beverage intake associates with all-cause mortality independently of other dietary and lifestyle factors and obesity." (Anderson et., 2019).

Salt Consumption among Adults

Close to half (45.6%) of NCDHD adults in 2015 reported that they were watching or reducing their salt intake, slightly lower when compared to the State (46.8%). A larger proportion of females are watching or reducing their salt intake compared to males in the NCDHD (52.5% vs. 38.3%, respectively).

Physical Activity

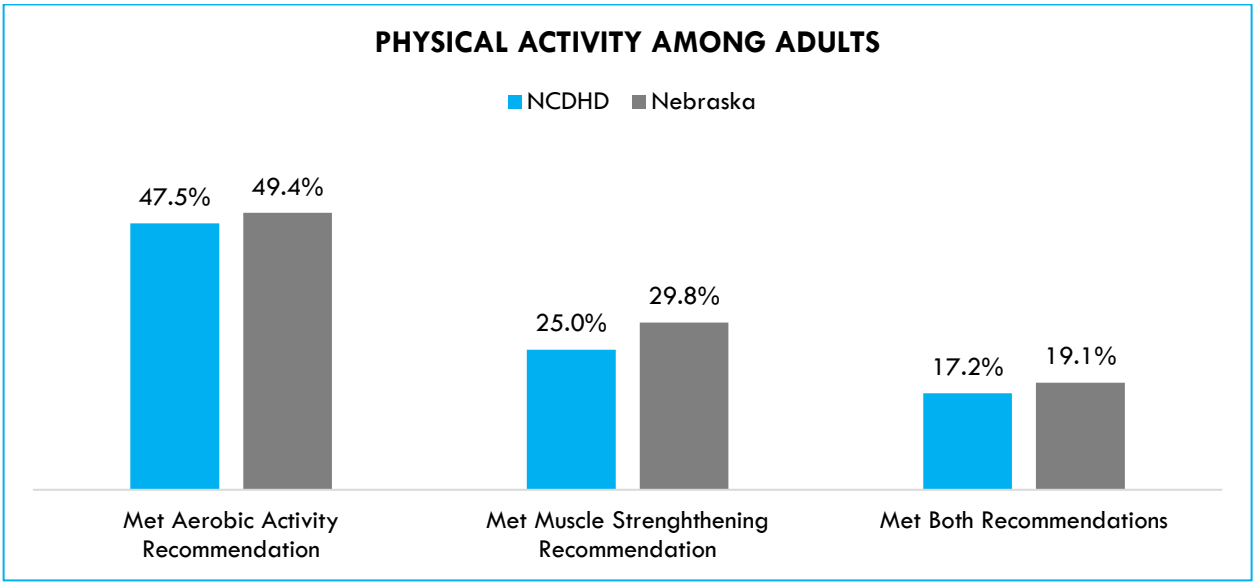
Regular physical activity can help control body weight and reduce the risk of cardiovascular disease, type 2 diabetes and some cancers. The 2018 report titled Physical Guidelines for Americans (2nd edition) from the U.S. DHHS recommends that "adults should do at least 150 minutes to 300 minutes a week of moderate-intensity, or 75 minutes to 150 minutes a week of vigorous-intensity aerobic physical activity." In addition, they should engage in muscle-strengthening activities that work all major muscle groups two or more days per week. Children and adolescents should engage in at least 60 minutes of physical activity each day.

Physical Activity among Adults

Nearly half of NCDHD adults in 2017 reported that they engage in the recommended amount of aerobic physical activity each week (47.5%) while only one-fourth reported engaging in the recommended amount of muscle strengthening activity each week (25.0%).

Overall, less than 1 in 5 met the current physical activity recommendation (i.e., both aerobic and muscle strengthening recommendations) in 2017 (17.2%). Adults in the NCDHD, compared to those statewide, were slightly less likely to engage in the recommended amount of muscle strengthening activity in 2017 (25.0% and 29.8%, respectively) and overall recommended activity (17.2% and 19.1%, respectively) (Figure 89).

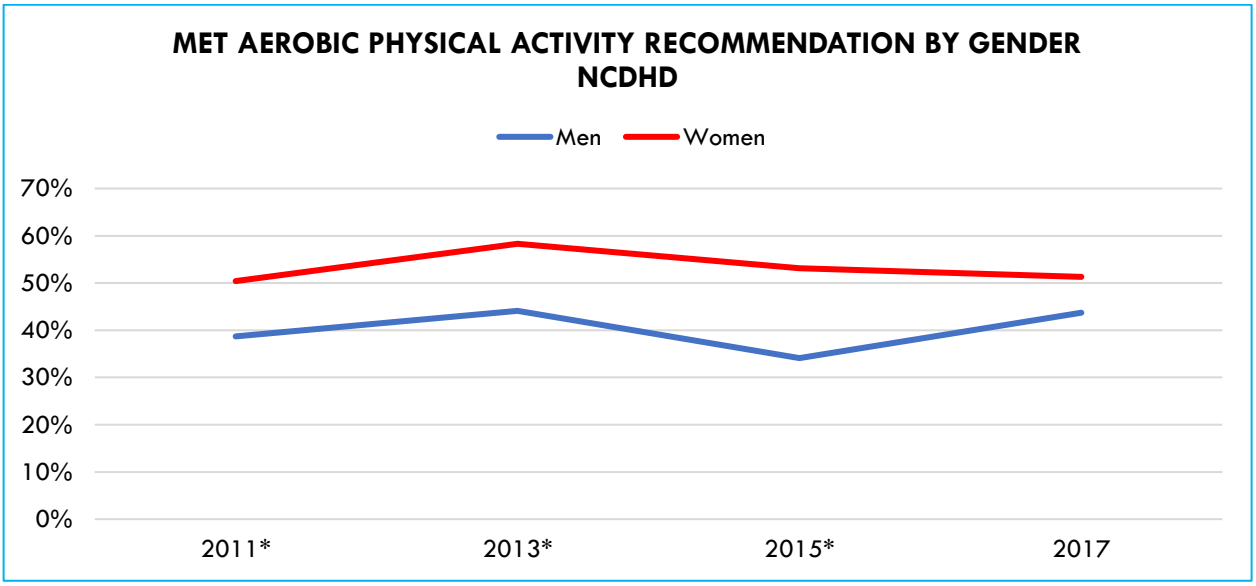
Figure 89: Physical Activity among Adults, NCDHD and Nebraska, 2017*



Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Between 2011 and 2015, women were significantly more likely to engage in aerobic activities than males in the NCDHD. Figure 90.

Figure 90: Met Aerobic Physical Activity Recommendation by Gender, NCDHD, 2011 to 2017



*Differences were statistically significant. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Physical Activity among Youth

According to the 2008 Physical Activity Guidelines for Americans, students should be physically active for 60 minutes or more per day, which should include most of the minutes in aerobic activity and the inclusion of both muscle- and bone-strengthening activities at least three days per week.

In 2017, over half of Nebraska high school students reported being physically active for 60 or more minutes on five or more of the past seven days, they also reported doing exercises to strengthen or tone their muscles on three or more of the past seven days.

Nebraska high school students spend a lot of time engaged in sedentary activities. In 2017, 1 in 5 (19.2%) reported spending three or more hours per day during an average school day watching television while 2 in 5 (38.3%) reported three or more hours playing video games or using a computer for non-school work. Collectively, nearly six out of ten students (57.5%) reported spending three or more hours watching television, playing video games, or using a computer for non-school work during an average school day.

INJURY

Injuries are a major public health concern in Nebraska and the United States, resulting in significant numbers of deaths, hospitalizations, and emergency department (ED) visits each year. For Nebraskans ages 1-44 years, unintentional injuries were the leading cause of death. (Nebraska DHHS, 2016).

Deaths due to injury usually occur at a much younger age than deaths due to cancer or heart disease (the first and second leading causes of death in Nebraska for all ages). As a result, the number of years of potential life lost (YPLL) due to injury is disproportionately large.

Injuries, in addition to causing death, also result in a wide variety of adverse health and lifestyle outcomes. In many cases, injury leads to disability, chronic pain, large medical costs, and profound changes in one's daily life. Furthermore, injury affects more than just the injured. Injury impacts families, employers, and communities due to its negative social and economic outcomes. The cost of injuries in the United States is more than $671 billion annually, including medical expenses and productivity losses, according to estimates made by the Centers for Disease Control and Prevention[11].

Nearly $130 billion of the fatal injury costs in the U.S. were attributable to unintentional injuries, followed by suicide ($50.8 billion) and homicide ($26.4 billion).

[11] https://www.cdc.gov/injury/wisqars/overview/cost_of_injury.html

Medical costs and work loss cost attributable to unintentional injuries in Nebraska and in the NCDHD

In Nebraska, the estimated average annual medical costs attributable to unintentional injuries were nearly $9 million, and work loss costs were $383 million (2008-2014).

Table 25 shows the estimated average annual medical costs and average work loss costs in the NCDHD by county:

Table 25: Average Annual Medical Costs and Work Loss Costs in the NCDHD^, 2008-2014

	Average annual medical costs	Average annual work loss costs
Antelope	$ 41,676	$ 1,419,725
Boyd*		
Brown*		
Cherry	$ 34,064	$ 1,849,167
Holt	$ 104,486	$ 2,877,511
Keya Paha*		
Knox	$ 98,304	$ 3,729,176
Pierce*		
Rock*		

^Medical and work loss estimates are expressed in year 2005. *Rates based on 20 or fewer deaths may be unstable. These rates are suppressed for counties. Source: CDC (WISQARS) https://wisqars.cdc.gov:8443/cdcMapFramework/mapModuleInterface.jsp

Unintentional Injury

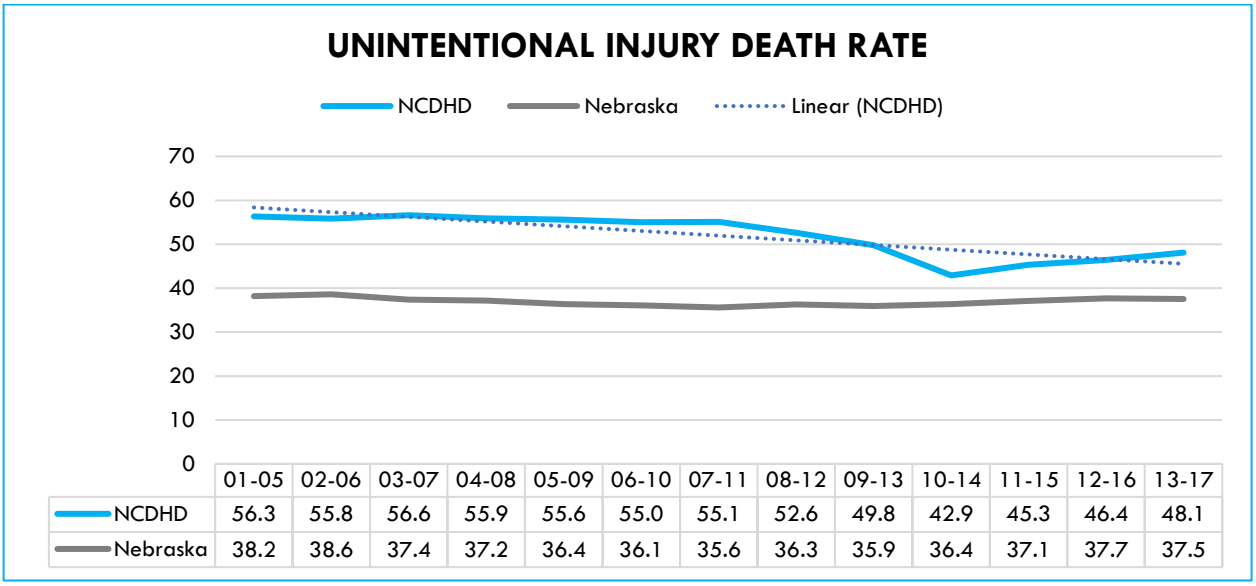
Unintentional Injury Deaths

In the NCDHD, unintentional injury accounted for 33 deaths in 2017 (total of 139 deaths in 2013-2017 combined years). The mortality rate for unintentional injuries in the NCDHD is 48.1 per 100,000 people (2013-2017 combined years), making it the third leading cause of death in the health district. The unintentional injury death rate in the NCDHD is 1.3 times higher than the State (48.1 per 100,000 population vs. 37.5 per 100,000 population, respectively).

The age-adjusted death rate due to unintentional injury in the NCDHD remained relatively stable until 2007-2011combined years (55-56 per 100,000 population). However, the unintentional injury death rate decreased to 42.9 per 100,000 population in 2010-2014 combined years, a 22% decrease from the 2007-2011 combined years, although the unintentional injury death rate in the NCDHD has slightly increased since that time period, from 42.9 per 100,000 population (2010-2014 combined years) to 48.1 per 100,000 population (2013-2017 combined years). Figure 91.

The NCDHD has experienced higher unintentional injury death rates over the years when compared to the State, although the difference has significantly decreased since 2010-2014 combined years.

Figure 91: Unintentional Injury Death Rate per 100,000 population (age-adjusted), NCDHD and Nebraska, 2001-2005 to 2013-2017



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	56.3	55.8	56.6	55.9	55.6	55.0	55.1	52.6	49.8	42.9	45.3	46.4	48.1
Nebraska	38.2	38.6	37.4	37.2	36.4	36.1	35.6	36.3	35.9	36.4	37.1	37.7	37.5

Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

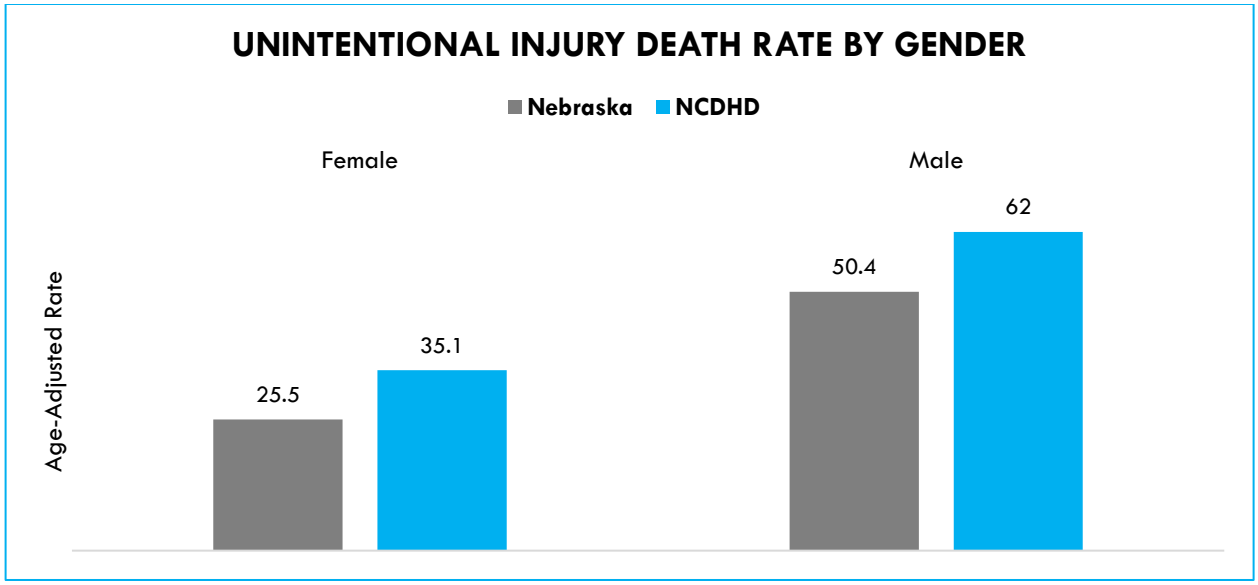
Unintentional injury mortality by gender, age, and race/ethnicity

GENDER – Unintentional injury mortality

Males are 1.8 times more likely to die of an unintentional injury than females in the NCDHD (62.0 per 100,000 population vs. 35.1 per 100,000 population), slightly lower when compared to the State level (2.0 times).

Females and males in the NCDHD are 1.4 and 1.2 times more likely to die of an unintentional injury than their counterparts in the State. Figure 92.

*Figure 92: Unintentional Injury Death Rate per 100,000 Population (age adjusted) by Gender, NCDHD vs. Nebraska, 2013-2017**

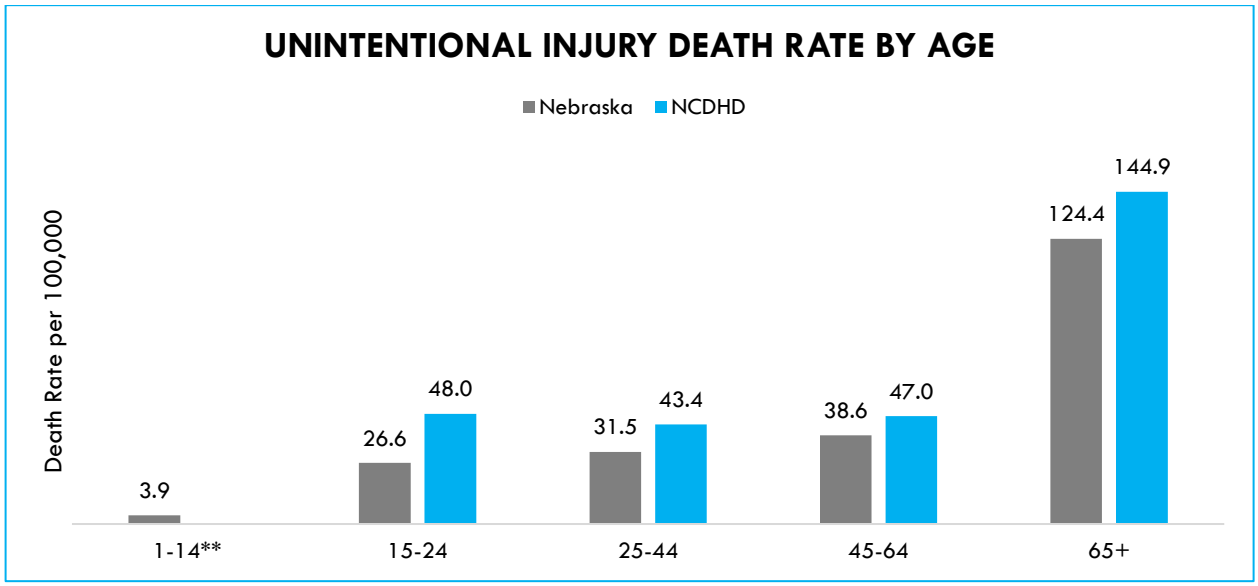


*Five Year Moving Averages 2013-2017 Combined. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

AGE – Unintentional injury mortality

Unintentional injury death rates increase 3.1 times when comparing age groups 65+ years with 45-64 years in the NCDHD. Unintentional injury death rates in the NCDHD are higher in all age groups when compared to the State. Figure 93.

*Figure 93: Unintentional Injury Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017 combined**



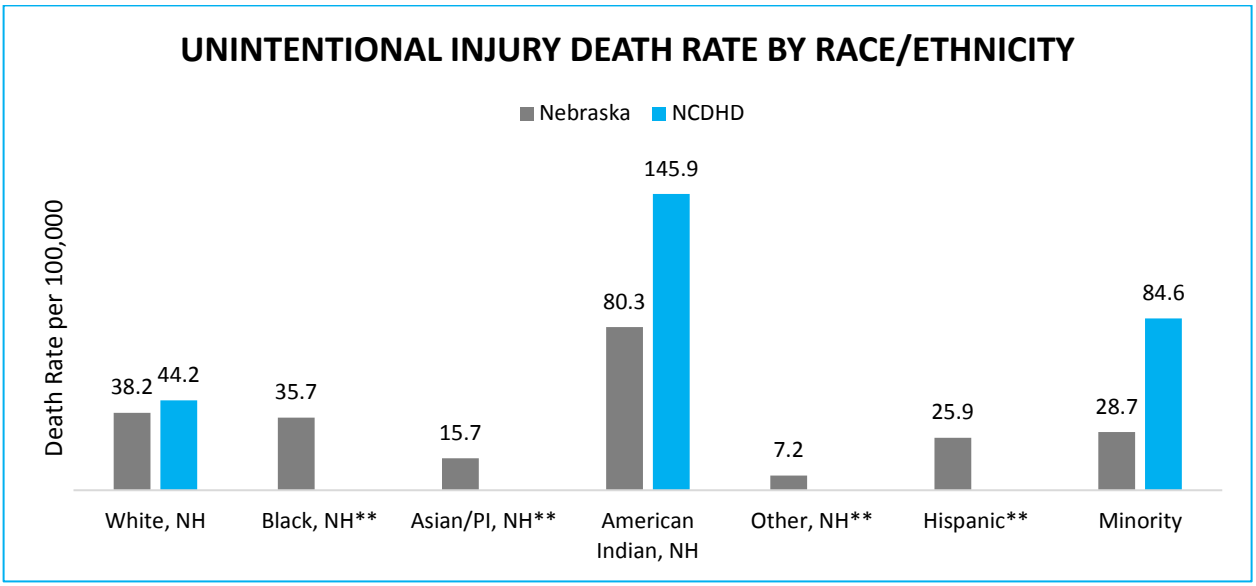
*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

RACE/ETHNICITY – Unintentional injury mortality

In terms of race/ethnicity, the Native American population showed an unintentional injury death rate of 145.9 per 100,000 population, 3.3 times higher when compared to the overall White non-Hispanic in the NCDHD (44.2 per 100,000 population). Also, the Native American unintentional injury mortality rate in the NCDHD is 1.8 times higher compared to the Native American population in the State (145.9 per 100,000 population vs. 80.3 per 100,000 population, respectively). Figure 94.

Minorities also showed a higher unintentional injury death rate when compared to other race/ethnicities in the NCDHD. Minorities are 1.9 times more likely to die of an unintentional injury than the overall White non-Hispanic in the NCDHD (84.6 per 100,000 population vs. 44.2 per 100,000 population, respectively).

*Figure 94: Unintentional Injury Death Rate by Race/Ethnicity, NCDHD vs. Nebraska, 2013-2017**

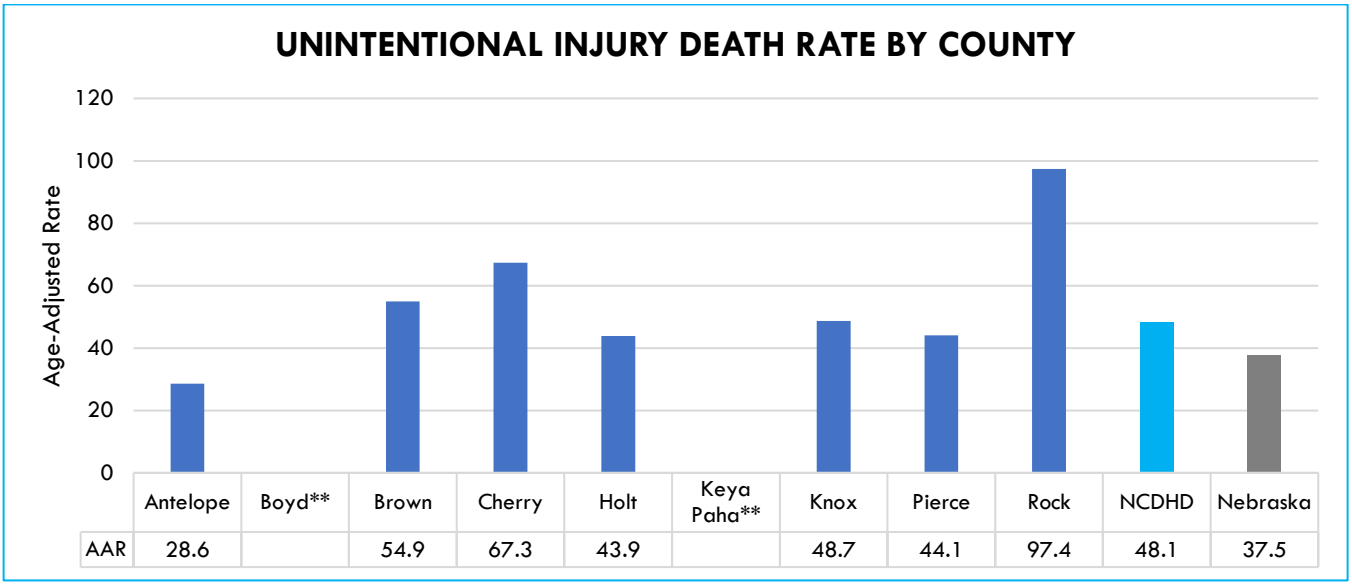


*Five Year Moving Averages 2013-2017 Combined. **Race/ethnicity categories are non-overlapping except for the 'minority' category, which includes respondents who reported being Hispanic and/or a race other than White. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

Unintentional injury death rate by county

Rock county has the highest injury death rate in the NCDHD (97.4 per 100,000), 2.0 times higher than the overall unintentional injury death rate in the NCDHD (48.1 per 100,000). Figure 95.

Figure 95: Unintentional Injury Death Rate by County, 2013-2017



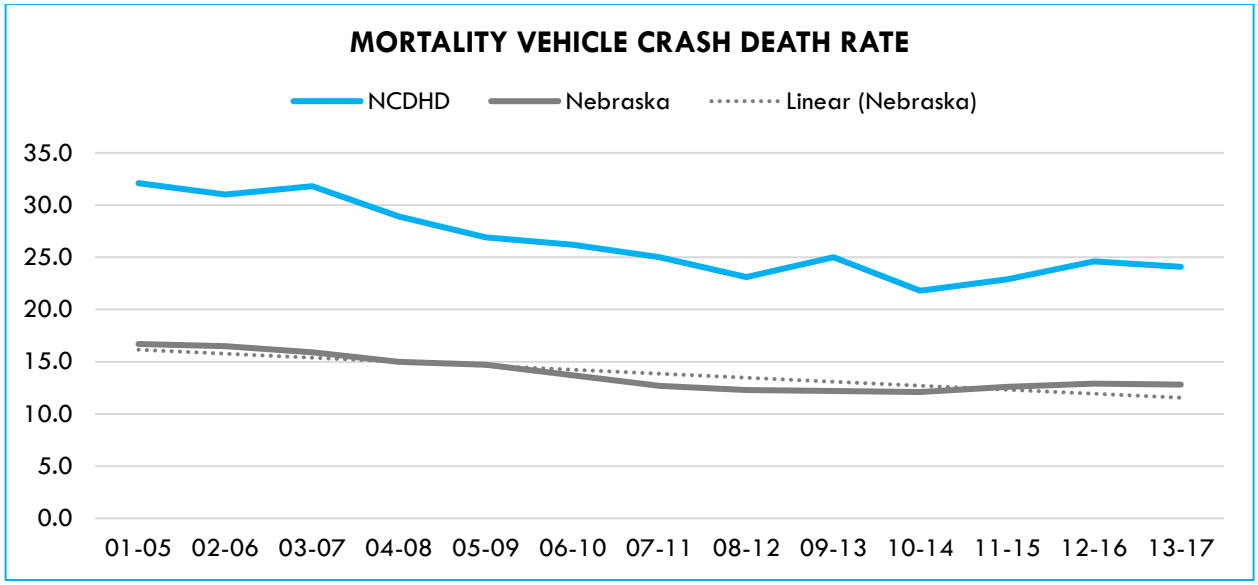
**Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

Motor Vehicle (MV) Crashes

In 2013-2017 combined years, there were 55 fatal motor vehicle crashes in the NCDHD[12], for an age-adjusted rate of 24.1 deaths per 100,000 population. Although the mortality rate for this cause of death has improved since 2001-2005 combined years (decreased 24.9%), it remains the most frequent cause of unintentional injury death in the NCDHD (Figure 96). Compared to the State, the NCDHD had a higher motor vehicle crash death rate for 2013-2017 combined years (12.8 and 24.1, respectively).

[12] There were 13 motor vehicle crashes in the year 2017 (AAR 22.8 per 100,000 population)

Figure 96: Motor Vehicle Crash Death Rate per 100,000 population (age adjusted), NCDHD and Nebraska, 2001-2005 to 2013-2017



Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

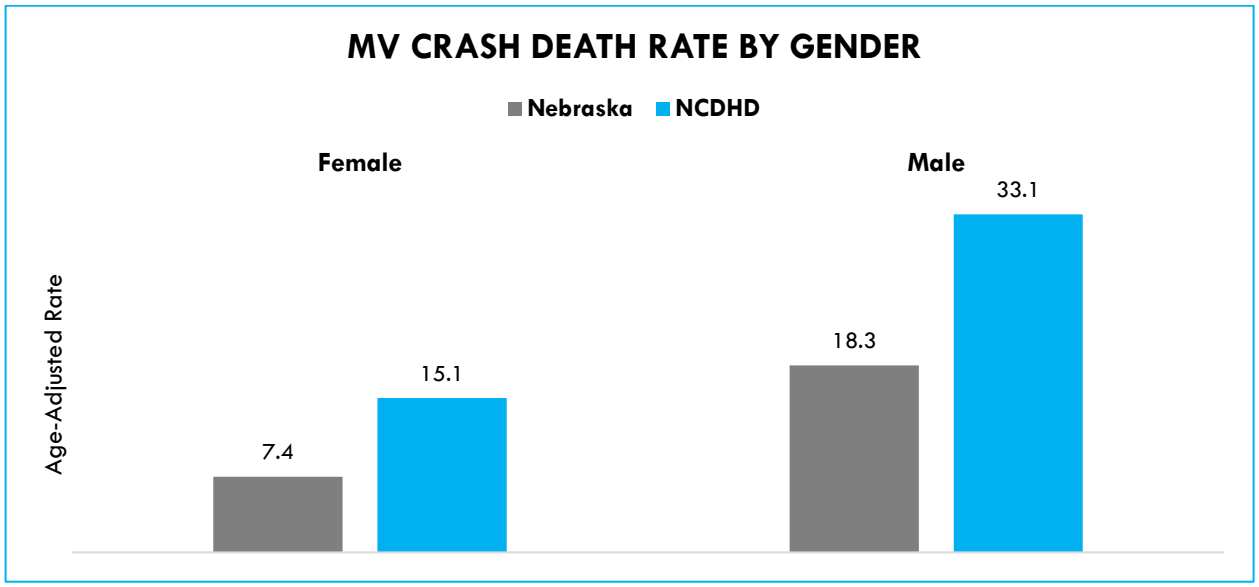
Motor Vehicle Crashes mortality by gender, age, and race/ethnicity

GENDER – MV Crashes mortality

Males are 2.2 times more likely to die in an MV crash injury than females in the NCDHD (33.1 per 100,000 population vs. 15.1 per 100,000 population), slightly lower when compared to the State level (2.5 times).

Females and males in the NCDHD are 2.0 and 1.8 times, respectively, more likely to die in an MV crash than their counterparts in the State. Figure 97.

Figure 97: MV Crash Death Rate by Gender, NCDHD vs. Nebraska, 2013-2017*

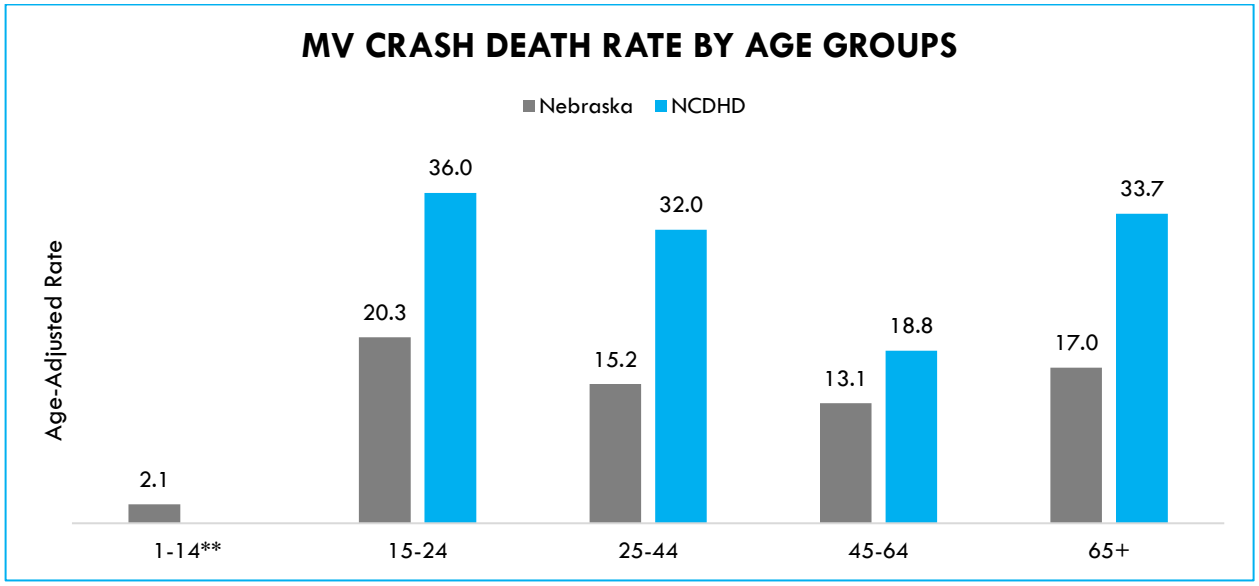


Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

AGE – MV Crashes mortality

MV crash death rates increase 1.9 times when comparing age groups 15-24 years with 45-64 years in the NCDHD (lowest MV crash death rate among all age groups; 18.8 per 100,000 population). MV crash death rates in the NCDHD are higher in all age groups when compared to the State. Figure 98.

*Figure 98: MV Crash Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017**

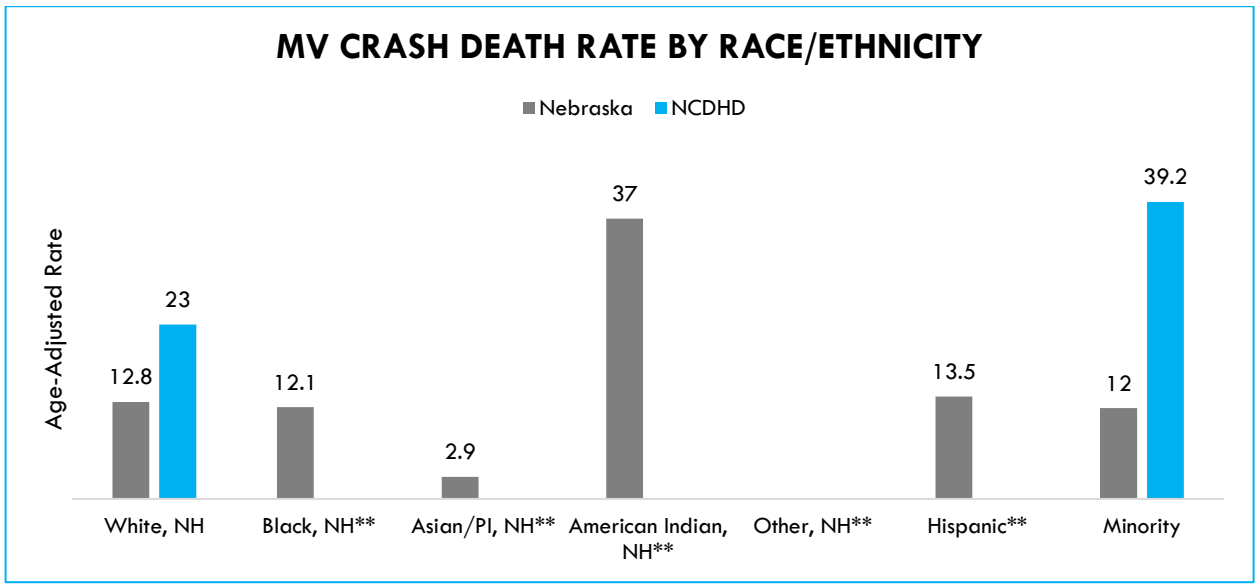


**Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

RACE/ETHNICITY – MV Crashes mortality

In terms of race/ethnicity, the minority population showed an unintentional injury death rate of 39.2 per 100,000 population, 1.7 times higher when compared to the overall White non-Hispanic in the NCDHD (23.0 per 100,000 population). Also, the minority MV Crash mortality rate in the NCDHD was 3.3 times higher compared to the minority population in the State (39.2 vs. 12.0, respectively). No additional MV crash death rates were available for other race/ethnicity in the NCDHD due to small sample size. Figure 99.

*Figure 99: MV Crash Death Rate by Race/Ethnicity, NCDHD vs. Nebraska, 2013-2017**

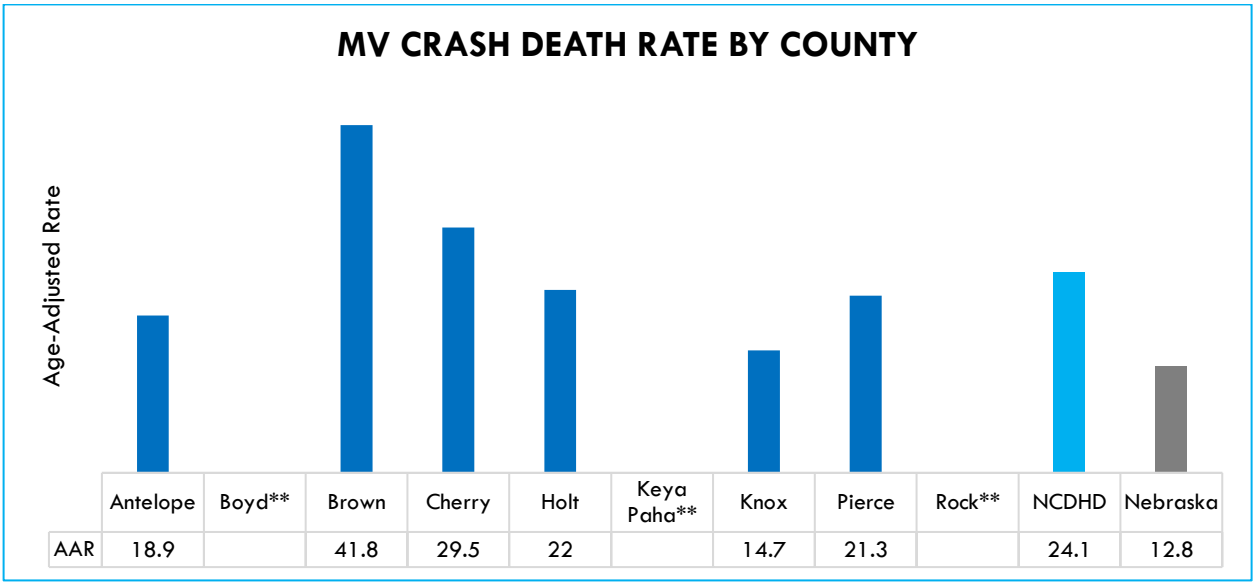


*Five-year moving average. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

MV Crashes mortality by NCDHD counties

Brown County showed the highest MV crash death rate among all counties in the NCDHD (41.8 per 100,000 population), 1.7 times higher than the total rate for the NCDHD (24.1 per 100,000 population), followed by Cherry County (29.5 per 100,000 population; 1.2 times higher than the total rate for the NCDHD). Knox County showed the lowest MV crash death rate among all counties in the NCDHD (14.7 per 100,000 population), followed by Antelope County (18.9 per 100,000 population). No MV crash death rate data were available for Boyd and Keya Paha counties due to small sample size. Figure 100.

*Figure 100: MV Crash Death Rate by County, NCDHD and Nebraska, 2013-2017**



	Antelope	Boyd**	Brown	Cherry	Holt	Keya Paha**	Knox	Pierce	Rock**	NCDHD	Nebraska
AAR	18.9		41.8	29.5	22		14.7	21.3		24.1	12.8

*Five-year moving average. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

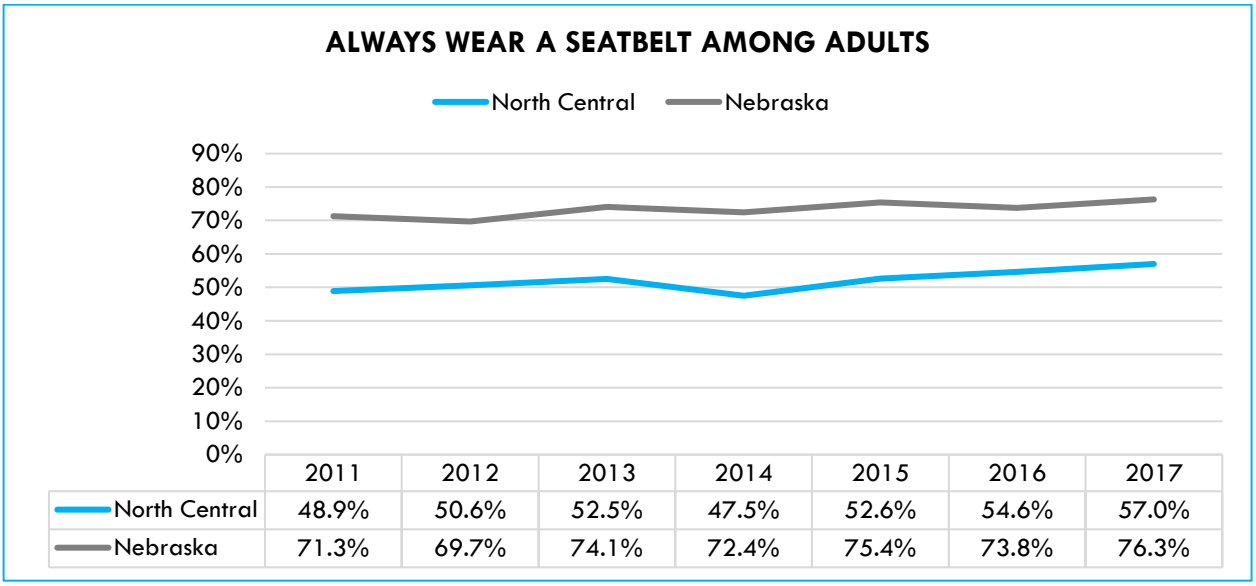
Seatbelt Usage

Both adults and youth in the NCDHD are far less likely to report seat belt use than their counterparts in the State.

In 2017, nearly 3 in 5 Nebraska adults (57.0%) reported that they always wear a seatbelt when driving or riding in a car. Overall, the percentage of NCDHD residents who report seat belt use has increased 8.1 percent since 2011, from 48.9 percent in 2011 to 57.0 percent in 2017 (Figure 101).

NCDHD adults were 19.3 percentage points less likely than adults in the State to report always wearing their seatbelt in 2017 (57.0% and 76.3%, respectively).

Figure 101: Always Wear a Seatbelt among Adults, NCDHD and Nebraska, 2011-2017*



	2011	2012	2013	2014	2015	2016	2017
North Central	48.9%	50.6%	52.5%	47.5%	52.6%	54.6%	57.0%
Nebraska	71.3%	69.7%	74.1%	72.4%	75.4%	73.8%	76.3%

*Percent of adults who report that they always use a seatbelt when driving or riding in a car. Source: Behavioral Risk Factor Surveillance System (BRFSS)

Among Nebraska high school students in 2017, 8.5 percent stated that they rarely or never wear a seatbelt when riding in a car driven by someone else. Though the percentage has declined over the past decade (it was 15.9% in 2005), it remains considerably higher than the statewide estimate of 5.9 percent among high school students in 2017. No data were available at the county or health district levels.

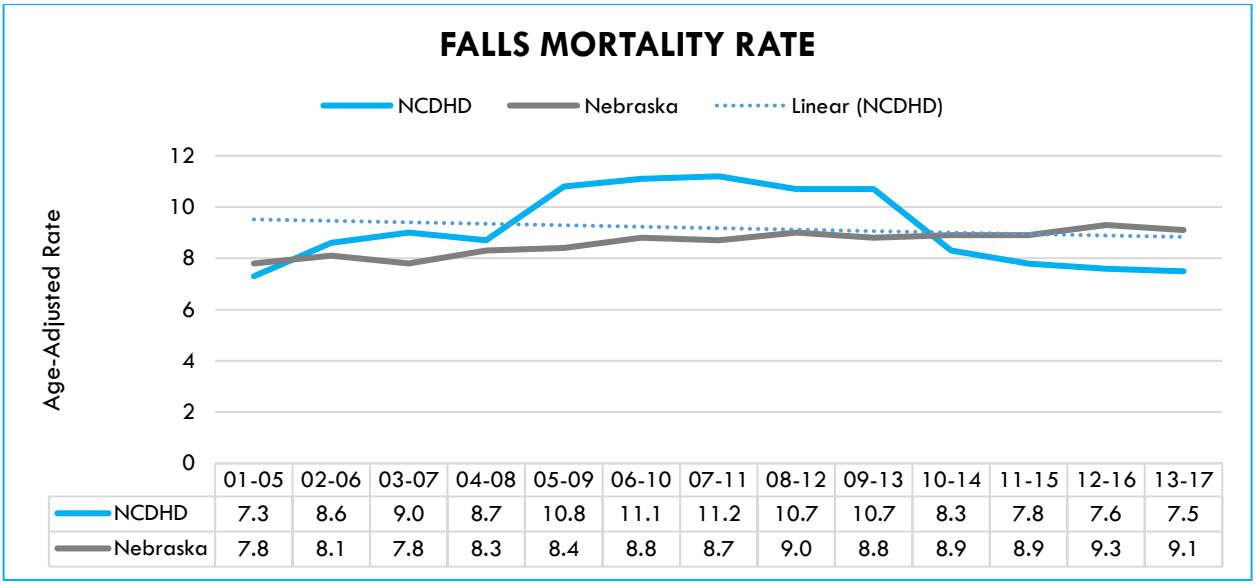
Distracted Driving

In 2017, more than 1 in 5 NCDHD adults (22.9%) reported that they texted while driving a car or other vehicle during the past 30 days (lower when compared to the State: 26.6%). In addition, nearly two-thirds (63.8%) reported that that they talked on a cell phone while driving a car or other vehicle during the past 30 days (lower when compared to the State: 66.5%).

Falls

Falls accounted for 34 deaths and an age-adjusted rate of 7.5 deaths per 100,000 population in the NCDHD for 2013-2017 combined years. After an increase between 2005-2009 combined years and 2009-2013 combined years, the death rate due to falls in the NCDHD decreased to lower levels than the State (Figure 102). For 2013-2017 combined years, the NCDHD death rate was 1.6 points lower than the State (7.5 per 100,000 population vs. 9.1 per 100,000 population, respectively).

*Figure 102: Unintentional Fall Death Rate per 100,000 population (age-adjusted), NCDHD and Nebraska, 2001-2005 to 2013-2017**



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	7.3	8.6	9.0	8.7	10.8	11.1	11.2	10.7	10.7	8.3	7.8	7.6	7.5
Nebraska	7.8	8.1	7.8	8.3	8.4	8.8	8.7	9.0	8.8	8.9	8.9	9.3	9.1

*Five-year moving average. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

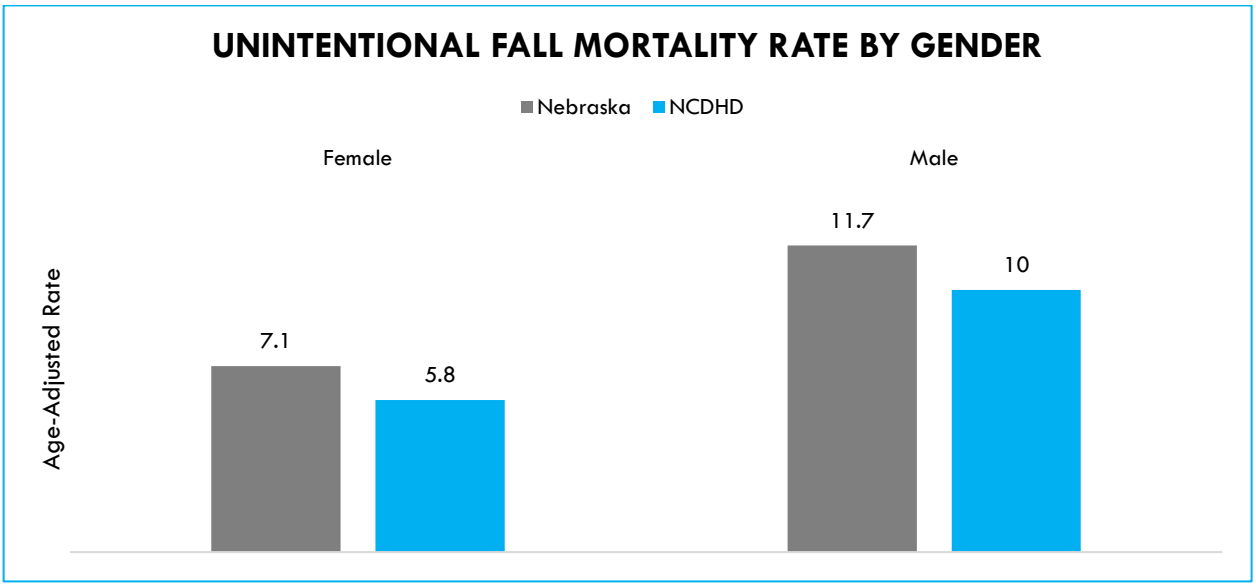
Falls mortality by gender, age, and race/ethnicity

GENDER – Unintentional Falls

Males are 1.7 times more likely to die from a fall injury than females in the NCDHD (10.0 per 100,000 population vs. 5.8 per 100,000 population, respectively), slightly higher when compared to the State level (1.6 times).

Females and males in the NCDHD are 1.2 times less likely to die from a fall than their counterparts in the State. Figure 103.

*Figure 103: Unintentional Fall Mortality Rate by Gender, NCDHD vs. Nebraska, 2013-2017**

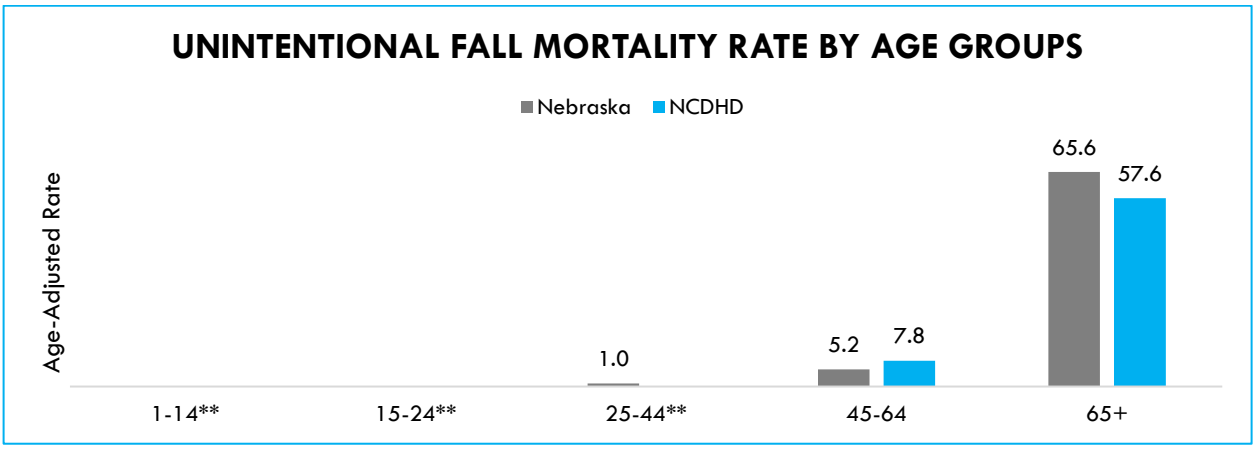


*Five-year moving average. Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

AGE – Unintentional Falls mortality

Unintentional fall death rates increase 7.4 times when comparing age groups 65+ years with 45-64 years in the NCDHD (57.6 per 100,000 population vs. 7.8 per 100,000 population, respectively). The unintentional fall death rate for the 65+ years old group in the NCDHD was 1.1 times lower when compared to their counterpart in the State (57.6 per 100,000 vs. 65.6 per 100,000 population, respectively). However, the unintentional fall death rate for the 45-64 years age group in the NCDHD was higher when compared to the State (7.8 per 100,000 population vs. 5.2 per 100,000 population, respectively). Figure 104.

Figure 104: Unintentional Fall Death Rate by Age Groups, NCDHD vs. Nebraska, 2013-2017*



*Five-year moving average. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

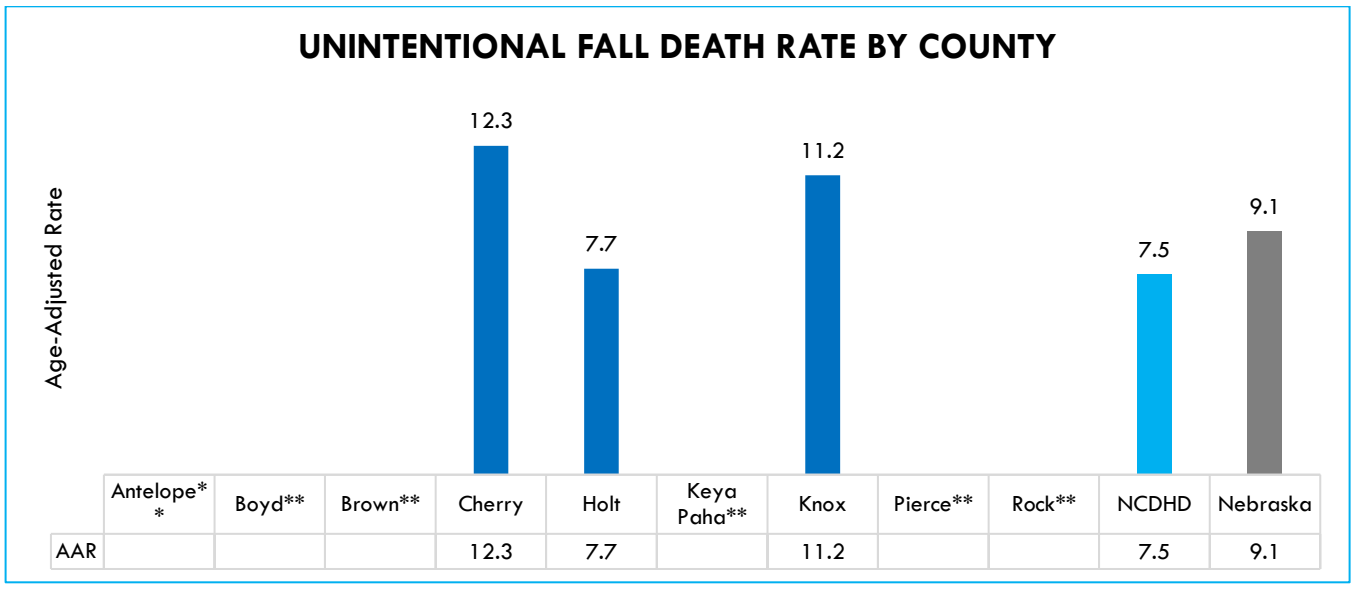
RACE/ETHNICITY – Unintentional Fall Mortality

The White non-Hispanic population in the NCDHD was 1.3 times less likely to die due to a fall injury than their counterparts at the State level (7.4 per 100,000 population vs. 9.4 per 100,000 population, respectively). No additional data were available for the rest of races/ethnicities in the NCDHD due to small sample size.

Unintentional Fall mortality by NCDHD counties

Cherry county showed the highest fall mortality rate among all counties in the NCDHD (12.3 per 100,000 population), followed by Knox County (11.2 per 100,000 population), and then by Holt County (7.7 per 100,000 population). No additional fall rate data were available for the rest of counties due to small sample size. Figure 105.

*Figure 105: Unintentional Fall Death Rate by County, NCDHD and Nebraska, 2013-2017**



*Five-year moving average. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

In 2016, nearly three out of ten NCDHD adults aged 45 and older (29.2%) reported that they had a fall (to the ground or another lower level) during the past year. About 1 in 15 (6.6%) NCDHD adults 45 and older in 2016 reported that they were injured due to a fall in the past year that caused them to limit their regular activities for at least a day or to go see a doctor.

NCDHD adults 45 years and older in 2016 were less likely than Nebraska adults 45 years and older to report a fall during the past year that resulted in an injury (6.5% and 10.1%, respectively), and were similar to report a fall during the past year (29.2% and 29.0%, respectively).

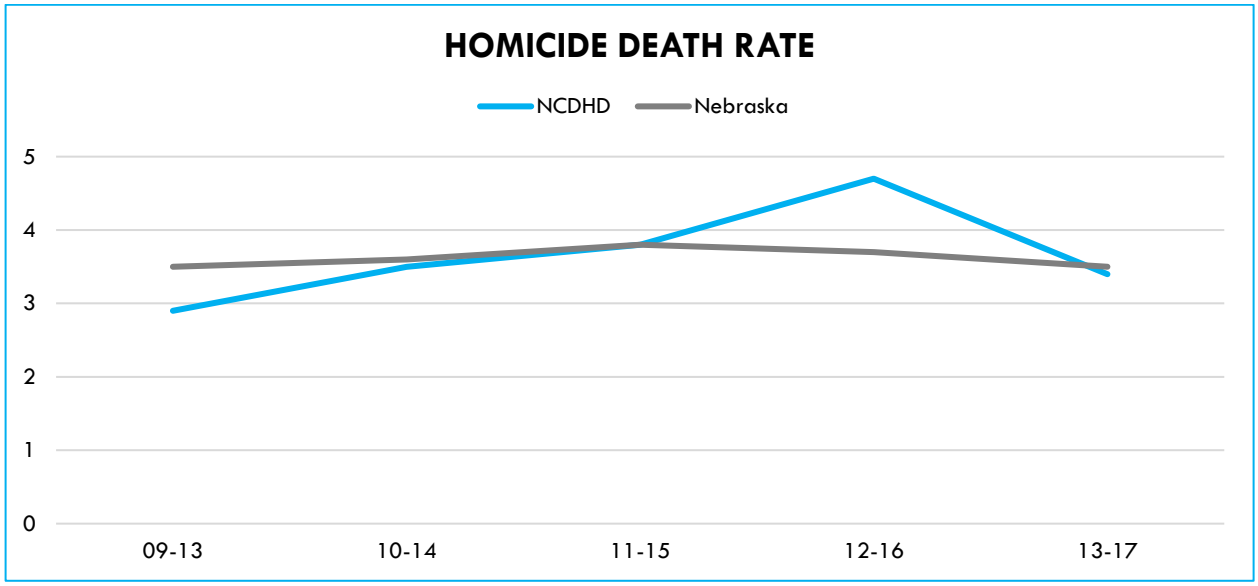
INTENTIONAL INJURIES

Intentional injuries include those resulting from violent and abusive behaviors (such as suicides, homicides, assaults, child abuse and neglect, and domestic violence). Suicide is discussed in the Mental Health section of this report.

Homicide

In 2013-2017 combined years, there were 8 deaths in the NCDHD resulting from homicide for an age-adjusted rate of 3.4 deaths per 100,000 population. The rate has fluctuated inconsistently in the NCDHD over the past years with little overall change between 2009-2013 and 2013-2017 combined years (Figure 106).

Figure 106: Homicide Death Rate per 100,000 population (age-adjusted), NCDHD and Nebraska, 2009-2013 - 2013-2017



Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

GENDER – Homicide death rate

Only the homicide death rate for males was available in the NCDHD for 2013-2017 combined years (4.3 per 100,000 population[13]), 1.3 times lower when compared to the State (5.4 per 100,000 population).

[13] * Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5)

AGE – Homicide death rate

No data were available for age groups in the NCDHD due to small sample size. At the State level, 25-44 years age group showed the highest homicide death rate among all groups (6.1 per 100,000 population) in the 2013-2017 combined years.

RACE/ETHNICITY – Homicide

In terms of race/ethnicity, the White non-Hispanic population showed a homicide death rate of 2.3 per 100,000 population in the NCDHD, 1.3 times higher when compared to the overall White non-Hispanic in the State (1.8 per 100,000 population). No additional homicide death rate data were available for the rest of race/ethnicities in the NCDHD due to small sample size.

Homicide death rates by NCDHD counties

Cherry county had a homicide death rate of 15.1 per 100,000 population, 4.4 times higher when compared to the overall NCDHD homicide death rate in 2013-2017 combined years (3.4 per 100,000 population). No data were available for the rest of the NCDHD counties due to small sample size.

MENTAL HEALTH AND SUICIDE

Mental health illnesses are very common in the United States, with an estimated 50% of all Americans diagnosed with a mental illness or disorder at some point in their lifetime. Mental illnesses, such as depression, are the third most common cause of hospitalization in the United States for those aged 18-44 years old, and adults living with serious mental illness die on average 25 years earlier than others (CDC, 2019).

According to the 2018 Community Health Assessment Survey, mental health is ranked 3rd among the top 10 concerns to health care in the NCDHD community.

Mental Illness

Depressive illness (including major depression, bipolar disorder, and dysthymia) is the most common mental illness, affecting roughly 21 million Americans each year.

According to the National Health and Nutrition Examination Survey, during 2013–2016, 8.1% of American adults aged 20 and over had depression in a given 2-week period. Women (10.4%) were almost twice as likely as were men (5.5%) to have had depression.

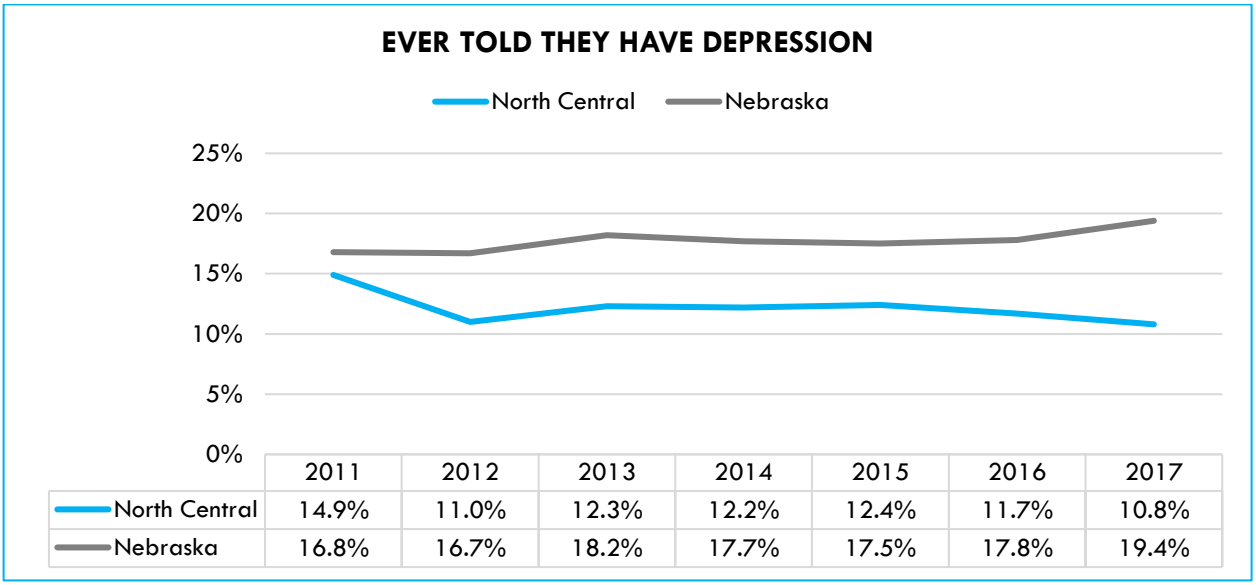
Mental illness is associated with increased morbidity from a number of chronic diseases, including cardiovascular disease, diabetes, cancer, asthma, and obesity. Unhealthy behaviors such as tobacco and alcohol use as well as rates of injury are also higher in persons with mental illness (Nebraska DHHS, 2016).

Mental Illness among Adults

In 2017, about 1 in 6 NCDHD adults (10.8%) reported having ever been told by a doctor, nurse, or other health professional that they have a depressive disorder, including depression, major depression, dysthymia, or minor depression (i.e., diagnosed depression).

Between 2012 and 2017 the prevalence of diagnosed depression among NCDHD adults remained relatively stable. Overall, the prevalence of depression among NCDHD adults has been lower than the State since 2011. In 2017, the NCDHD prevalence of depression among NCDHD adults was 8.6 points lower than the State (10.8% vs. 19.4%, respectively). (Figure 107).

Figure 107: Ever Told they have Depression among Adults, NCDHD and Nebraska, 2011-2017*



	2011	2012	2013	2014	2015	2016	2017
North Central	14.9%	11.0%	12.3%	12.2%	12.4%	11.7%	10.8%
Nebraska	16.8%	16.7%	18.2%	17.7%	17.5%	17.8%	19.4%

*Percentage of adults 18 and older who report that they have ever been told by a doctor, nurse, or other health professional that they have a depressive disorder (depression, major depression, dysthymia, or minor depression). Source: Behavioral Risk Factor Surveillance System (BRFSS).

As reported at the national level (National Health and Nutrition Examination Survey, 2013-2016), women in the NCDHD report prevalence rates of depression from 2011 to 2017 that are 1.1 to nearly three times higher than men in the NCDHD (BRFSS). These differences have been statistically significant in four out seven years between 2011 and 2017. Table 26.

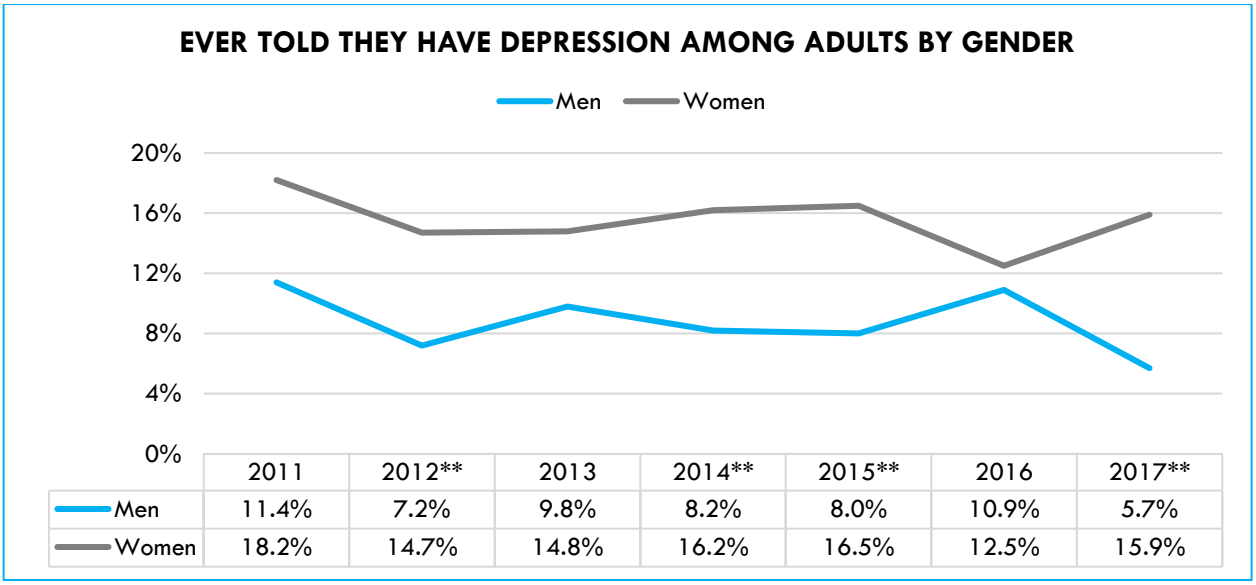
Table 26: Depression Rates by Gender in the NCDHD, 2011-2017

	Men	Women	Depression among women are # times higher than men:
2011	11.4%	18.2%	1.6
2012**	7.2%	14.7%	2.0
2013	9.8%	14.8%	1.5
2014**	8.2%	16.2%	2.0
2015**	8.0%	16.5%	2.1
2016	10.9%	12.5%	1.1
2017**	**5.7%**	**15.9%**	**2.8**

**Differences were statistically significant. Source: Behavioral Risk Factor Surveillance System (BRFSS).

Figure 108 shows the prevalence rate of depression by gender in the NCDHD from 2011 to 2017.

Figure 108: Ever Told They Have Depression by Gender, NCDHD, 2011-2017



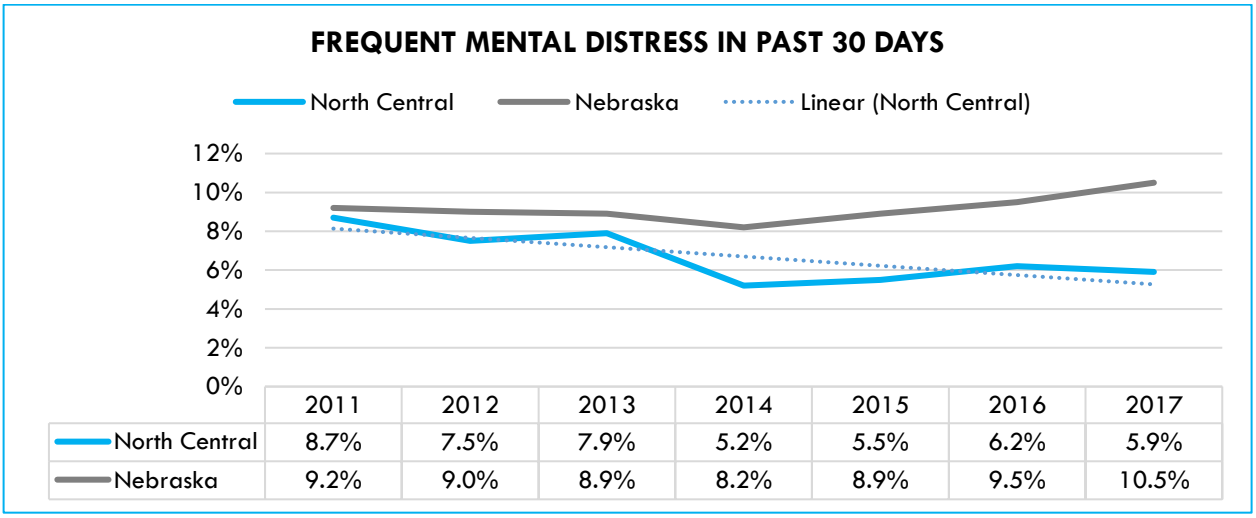
	2011	2012**	2013	2014**	2015**	2016	2017**
Men	11.4%	7.2%	9.8%	8.2%	8.0%	10.9%	5.7%
Women	18.2%	14.7%	14.8%	16.2%	16.5%	12.5%	15.9%

**Differences were statistically significant. Source: Behavioral Risk Factor Surveillance System (BRFSS).

Roughly 1 in 17 NCDHD adults in 2017 (5.9%) reported that their mental health (including stress, depression, and problems with emotions) was not good on 14 or more of the past 30 days (i.e., frequent mental distress).

Frequent mental distress declined between 2011 and 2017 and was consistently lower than the State percentage during this period (Figure 109).

Figure 109: Frequent Mental Distress in Past 30 Days among Adults, NCDHD and Nebraska, 2011-2017*



	2011	2012	2013	2014	2015	2016	2017
North Central	8.7%	7.5%	7.9%	5.2%	5.5%	6.2%	5.9%
Nebraska	9.2%	9.0%	8.9%	8.2%	8.9%	9.5%	10.5%

*Percentage of adults and older who report that their mental health (including stress, depression, and problems with emotions) was not good on14 or more of the previous 30 days. Source: Behavioral Risk Factor Surveillance System (BRFSS).

Suicide[14]

According to the Substance Abuse and Mental Health Services Administration (SAMHSA), more than 90 percent of those who die from suicide have a diagnosable mental disorder. Suicide victims are frequently experiencing undiagnosed, undertreated, or untreated depression. (Nebraska DHHS, 2016).

Everyone has a role to play in preventing suicide. For instance, faith communities can work to prevent suicide simply by fostering cultures and norms that are life-preserving, providing perspective and social support to community members, and helping people navigate the struggles of life to find a sustainable sense of hope, meaning, and purpose.

Although prior suicide attempts is one of the strongest risk factors for suicide, the vast majority of people who attempt suicide—9 in 10—do not ultimately die by suicide. Losing a loved one to suicide can be profoundly painful for family members and friends. (SAMHSA, https://www.samhsa.gov/find-help/suicide-prevention).

Death due to Suicide

Suicide was the 14th leading cause of death[15] in the NCDHD during 2013-2017 combined years, claiming 33 lives.

After remaining relatively stable between 2001-2005 combined years and 2010-2014 combined years, the suicide death rate in the NCDHD increased 79 percent between 2010-2014 combined years and 2013-2017 combined years to a rate of 15.2 deaths per 100,000 population (age-adjusted), the highest rate since 2001-2005 combined years.

[14] **If you believe someone may be thinking about suicide:**

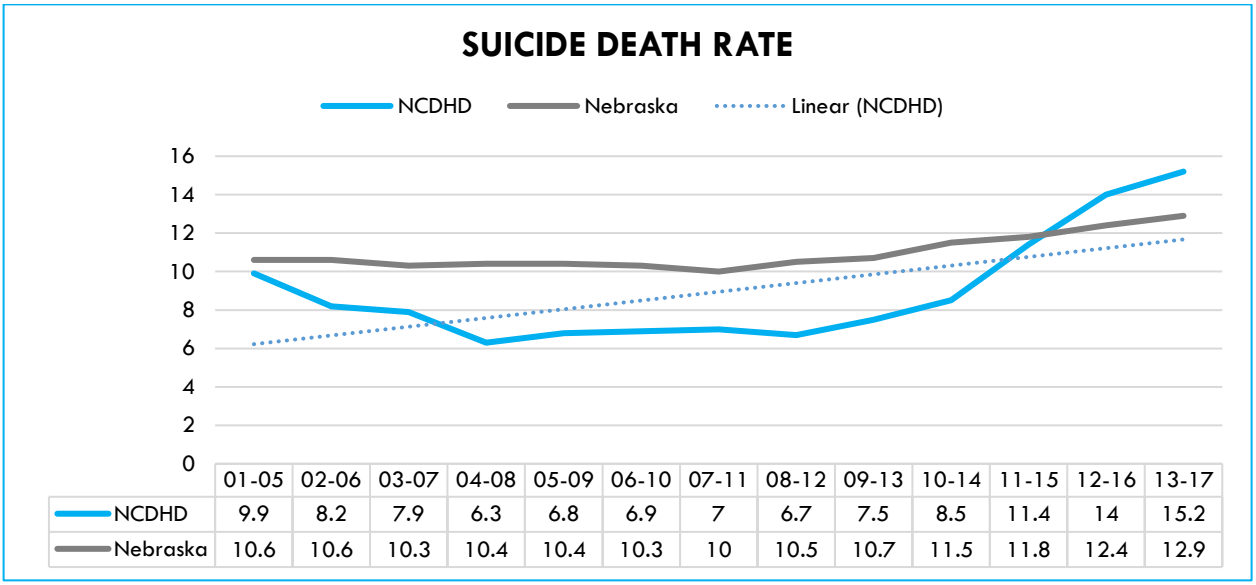
- Call 911, if danger for self-harm seems imminent.
- Ask them if they are thinking about killing themselves. (This will not put the idea into their head or make it more likely that they will attempt suicide.)
- Listen without judging and show you care.
- Stay with the person (or make sure the person is in a private, secure place with another caring person) until you can get further help.
- Remove any objects that could be used in a suicide attempt.
- Call SAMHSA's National Suicide Prevention Lifeline at 1-800-273-TALK (8255) and follow their guidance.

[15] Based on death rates

The suicide death rate in the NCDHD was lower than the State suicide rate between 2001-2005 combined years and 2011-2015 combined years, but it has been higher since 2012-2016 when compared to the State suicide rates. (Figure 110).

The actual number of suicide deaths in the NCDHD also increased during this period, from 22 deaths in 2001-2005 combined years to 33 deaths in 2013-2017 combined years.

Figure 110: Suicide Death Rate per 100,000 population (age-adjusted), NCDHD and Nebraska, 2001-2005 to 2013-2017



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	9.9	8.2	7.9	6.3	6.8	6.9	7	6.7	7.5	8.5	11.4	14	15.2
Nebraska	10.6	10.6	10.3	10.4	10.4	10.3	10	10.5	10.7	11.5	11.8	12.4	12.9

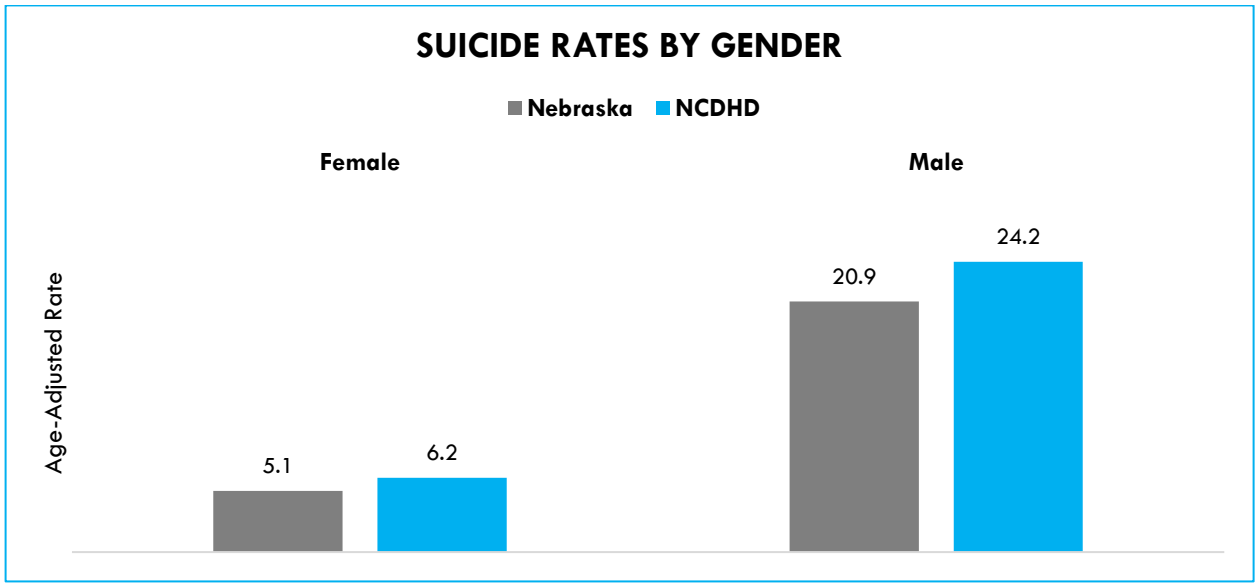
Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

Suicide rates by gender, age, and race/ethnicity

GENDER – Suicide rates

Males are nearly 4.0 times more likely to die of suicide than females in the NCDHD (24.2 per 100,000 population vs. 6.2 per 100,000 population, respectively). Both, males and females are more likely to die of suicide than their counterparts in the State. Figure 111.

Figure 111: Suicide Rate by Gender, NCDHD vs. Nebraska, 2013-2017

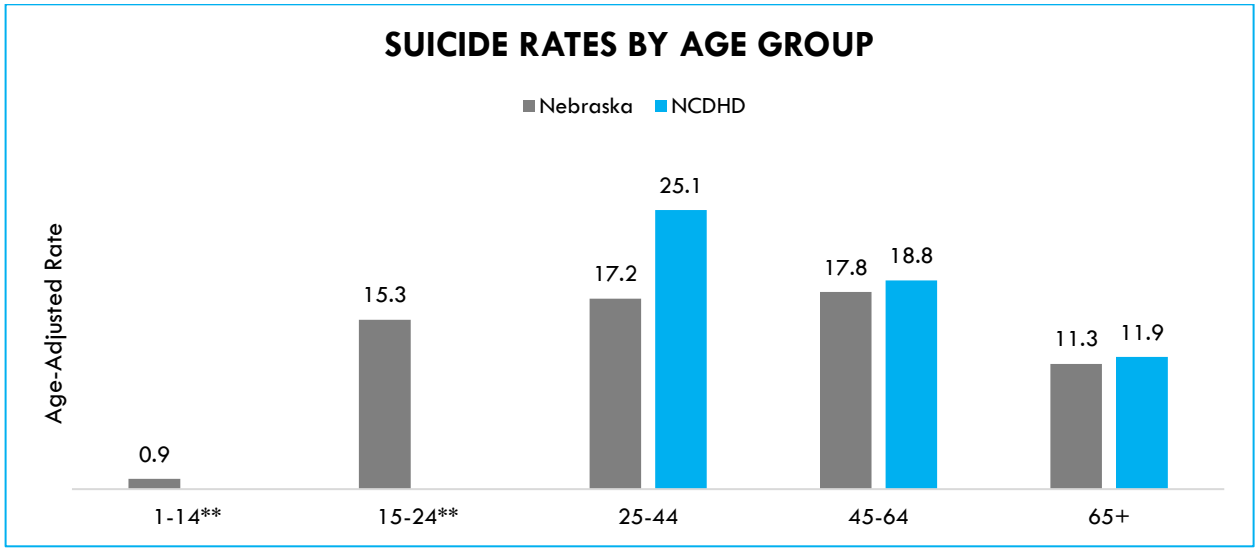


Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

AGE – Suicide rates

Suicide rates for 25-44 years age group was the highest among all age groups in the NCDHD for 2013-2017 combined years (25.1 per 100,000 population), followed by age group 45-64 years (18.8 per 100,000 population), and then by 65+ years age group (11.9 per 100,000 population). Suicide death rates for each age group in the NCDHD were higher when compared to Nebraska suicide death rates. Figure 112.

Figure 112: Suicide Rate by Gender, NCDHD vs. Nebraska, 2013-2017



**Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

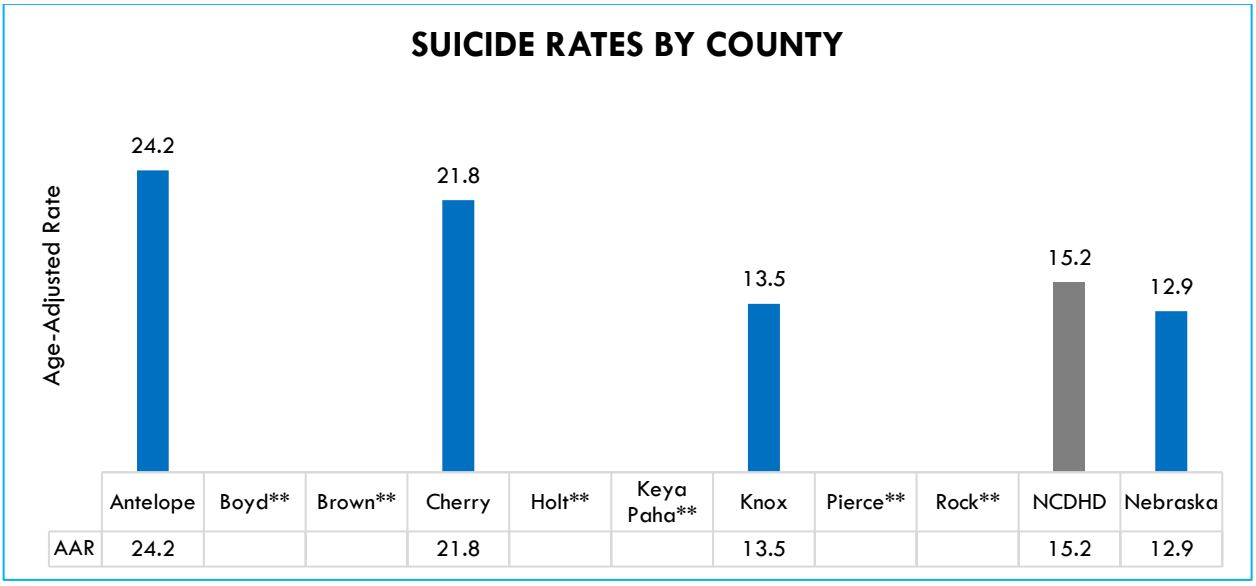
RACE/ETHNICITY – Suicide rates

In terms of race/ethnicity, the White non-Hispanic population showed a suicide rate slightly higher when compared to the White non-Hispanic population of the State (14.4 per 100,000 population vs. 14.2 per 100,000 population, respectively). No data were available for the rest of race/ethnicities in the NCDHD due to small sample size.

Suicide rates by NCDHD counties

Antelope county showed the highest suicide rate among all counties in the NCDHD (24.2 per 100,000 population), followed by Cherry County (21.8 per 100,000 population), and then by Knox County (13.5 per 100,000 population). No suicide death rate data were available for Boyd, Brown, Holt, Keya Paha, Pierce and Rock counties due to small sample size. Figure 113.

*Figure 113: Suicide Rates by County, NCDHD and Nebraska, 2013-2017**



*Five-year moving average. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

SUBSTANCE ABUSE

Substance abuse generally refers to the use of psychoactive substances, which affect mood, perception, and cognition by altering brain function. Alcohol and drug use fit into this category and are covered within this section.

Alcohol Misuse

Alcohol is the most frequently used and misused substance in the United States, and it can have devastating consequences. Alcohol misuse is especially problematic among youth and college-aged populations. People who drink to excess, including binge and heavy drinkers, are at even greater risk. (SAMHSA, 2019[16]).

Alcohol misuse is associated with injuries and deaths due to motor vehicle crashes, falls, fires, and drowning. Alcohol misuse is also a factor in a substantial proportion of homicides, suicides, domestic violence, and child abuse and neglect cases. Long-term heavy drinking can lead to heart disease, cancer, alcohol-related liver disease, and pancreatitis. Alcohol use during pregnancy is known to cause fetal alcohol syndrome, a leading cause of mental retardation. Excessive alcohol use is currently the third leading lifestyle-related cause of death for people in the United States each year. (Nebraska DHHS, 2016).

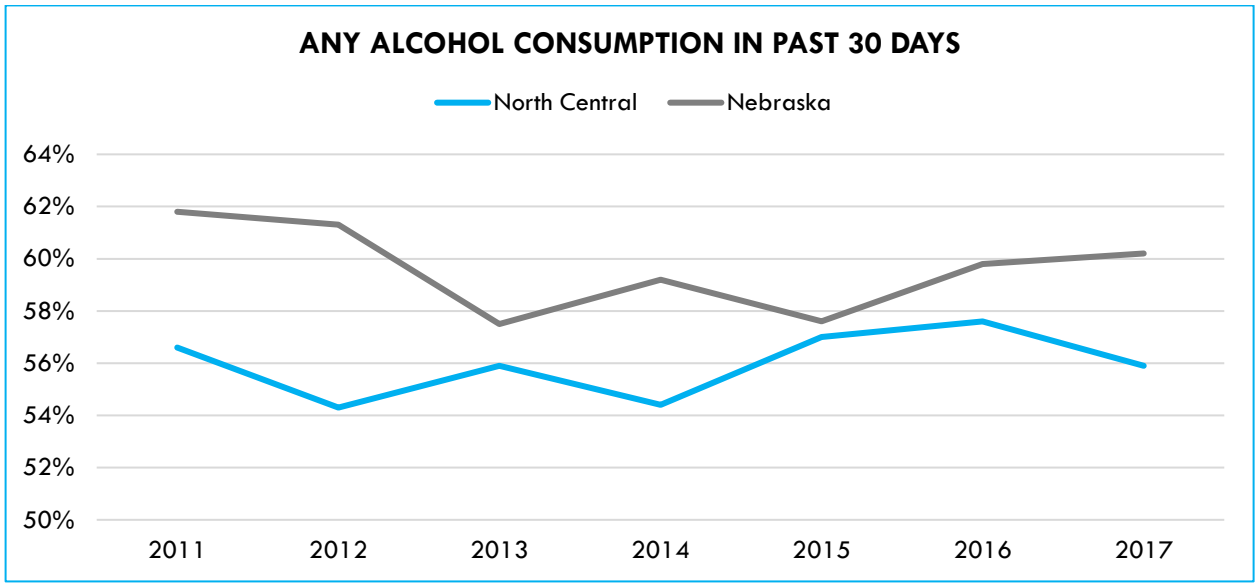
Respondents to the 2018 Community Health Assessment Survey, 59 percent noted "Alcohol abuse" as a behavior having mid to major impact in the overall health of the community.

Alcohol Use among Adults

In 2017, 55.9 percent of NCDHD adults reported consuming at least one drink of an alcoholic beverage (such as beer, wine, wine coolers, liquor, or cocktails) during the past month. This percentage has remained stable and lower when compared to the State since 2011. Figure 114.

[16] https://www.samhsa.gov/data/taxonomy/term/6529

Figure 114: Any Alcohol Consumption in Past 30 Days among Adults, NCDHD and Nebraska, 2011-2017



Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

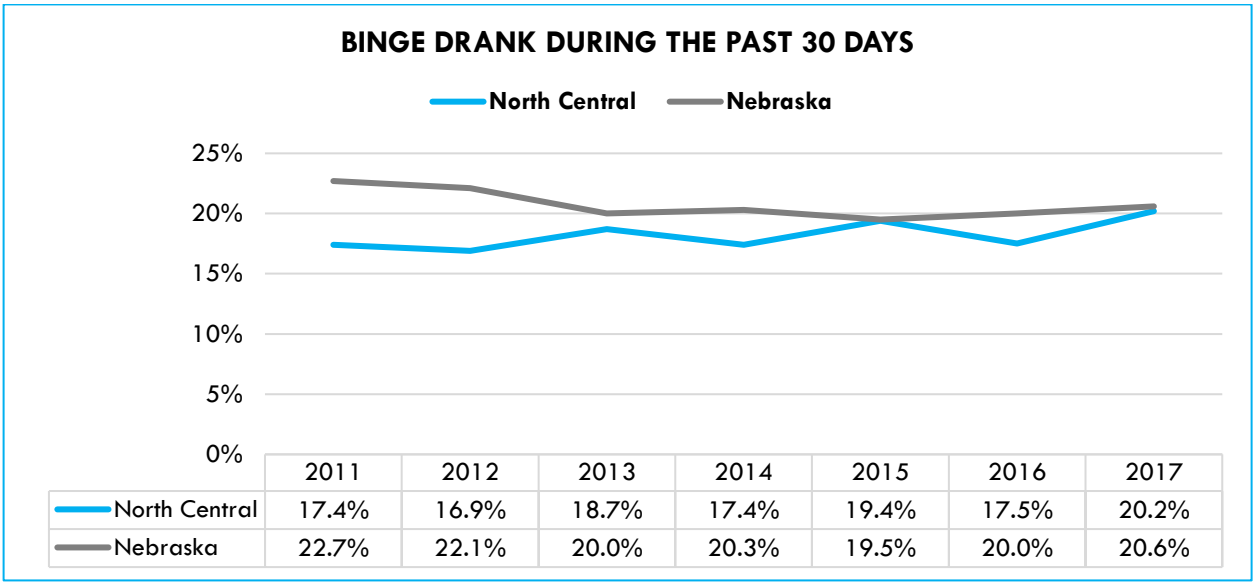
Binge Drinking

Binge Drinking among Adults

Binge drinking is defined as five or more drinks for men or four or more drinks for women (beer, wine, wine coolers, cocktails, or liquor) during one drinking occasion. In 2017, 1 in 5 NCDHD adults (20.2%) reported binge drinking at least once during the past month. Binge drinking prevalence has increased 2.8% in the NCDHD in the last seven years, from 17.4% in 2011 to 20.2% in 2017. (Figure 115).

NCDHD adults, compared to adults statewide have consistently reported lower percentages for binge drinking, although the difference has been reduced by only 0.4 percentage point in 2017 (20.2% and 20.6%, respectively).

Figure 115: Binge Drank during the Past 30 Days among Adults, NCDHD and Nebraska, 2011-2017*



	2011	2012	2013	2014	2015	2016	2017
North Central	17.4%	16.9%	18.7%	17.4%	19.4%	17.5%	20.2%
Nebraska	22.7%	22.1%	20.0%	20.3%	19.5%	20.0%	20.6%

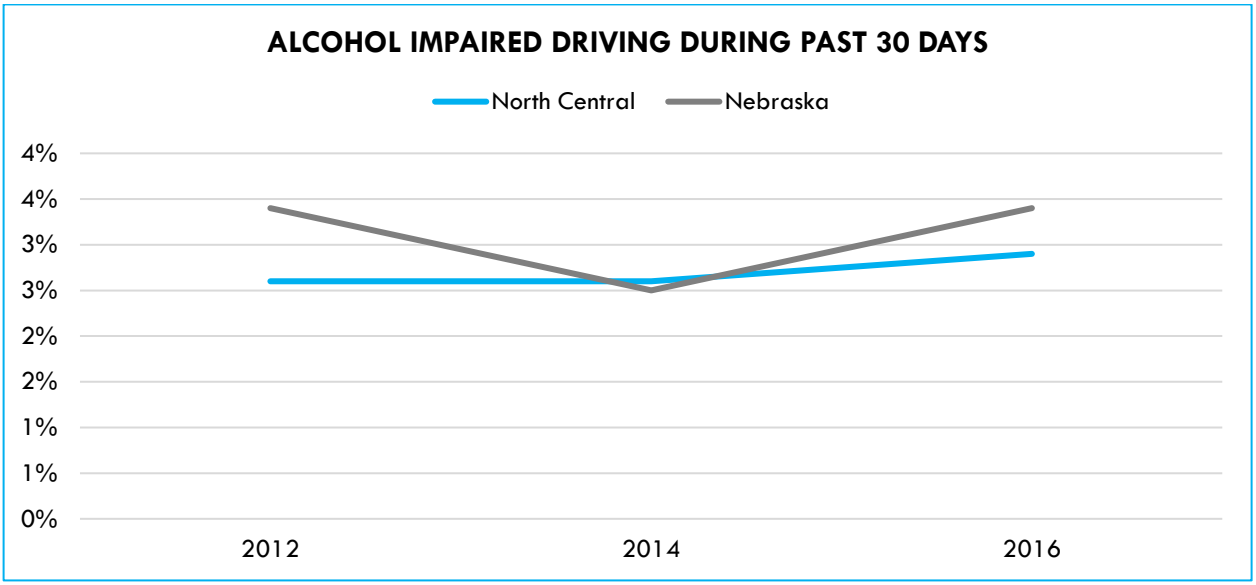
*Percentage of adults who report having five or more alcoholic drinks for men/four or more alcohol beverages for women on at least one occasion during the past 30 days. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Alcohol Impaired Driving among Adults

In 2016, 2.9 percent of NCDHD adults (1 in 35) reported that they drove a motor vehicle after drinking too much alcohol during the past 30 days. This was considerably lower than the percentage who reported binge drinking and has remained lower or similar when compared to the state percentage over the past few years (Figure 116).

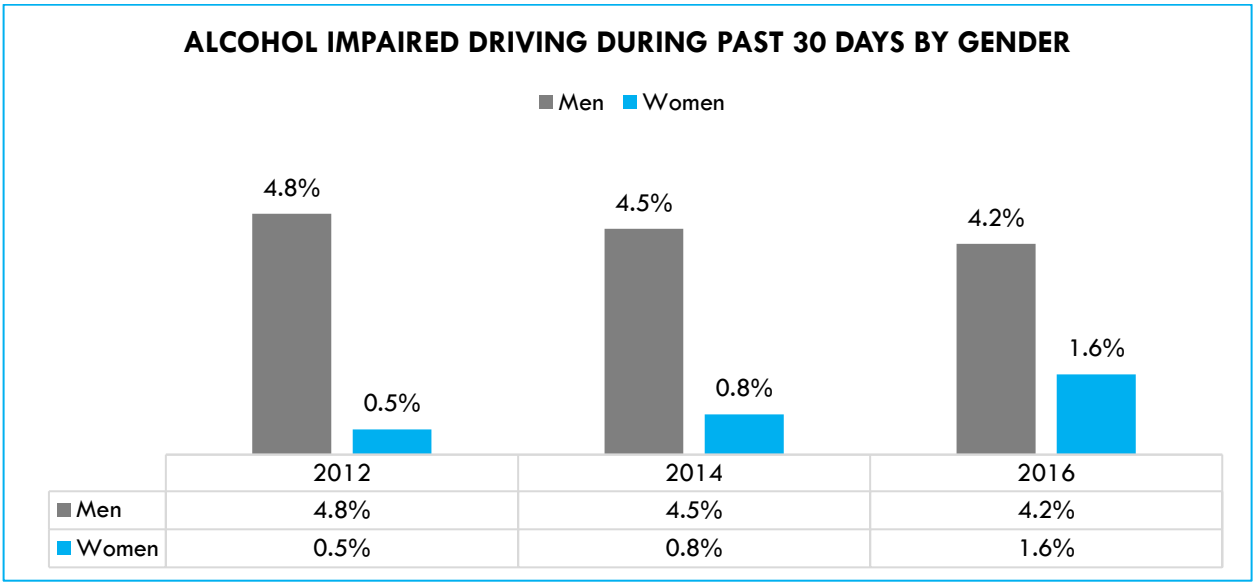
Men in the NCDHD were statistically significantly more likely to drive under the influence of alcohol when compared to women in 2012 and 2014. Differences were not statistically significant in 2016. Figure 117.

Figure 116: Alcohol Impaired Driving during Past 30 Days among Adults, NCDHD and Nebraska, 2012-2016*



*Percentage of adults 18 and older who report driving after having had perhaps too much to drink during the past 30 days. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Figure 117: Alcohol Impaired Driving during Past 30 Days by Gender, NCDHD and Nebraska, 2012-2016



	2012	2014	2016
Men	4.8%	4.5%	4.2%
Women	0.5%	0.8%	1.6%

Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

YOUTH

In 2017, the Youth Risk Behavior Survey (2016/2017 YRBS State-Level Data) reported 10.5 percent of statewide students engaged in binge drinking over the past 30 days[17]. Nebraska students report 3 percent less binge drinking when compared to the students in the United States, (10.5% vs. 13.5, respectively).

In 2016, the Nebraska Risk and Protective Factor Survey (NRPFSS) reported 15.1% of 12th graders in the NCDHD had engaged in binge drinking in the past 30 days[18], 4.9 percent less when compared to the year 2013 (20%). The percentage of binge drinking among 12th graders is 1% less when compared to the State (15.1% vs. 16.1%, respectively).

The perception of risk associated with having 5+ drinks of alcohol 1 or 2 times per week decreases by age, as 5 out of 10 8th graders perceive it as a "great risk", but that perception of risk decreases to 4 out of 10 12th graders (52.6% vs. 43.0%, respectively).

In 2016 NRPFSS, 7.5 percent of 12th graders said they had driven a car when they had been drinking and 15.5 percent reported riding with someone who had been drinking alcohol (16.9% for 8th graders). 94.4 percent of 12th graders said it was wrong to drive after drinking, which is slightly lower when compared to 8th graders (98.4%).

Marijuana Use

The proportion of Nebraska students that reported lifetime marijuana use and marijuana use during the past 30 days increased between 1991 and 2003 before declining between 2003 and 2017.

The 2017 percentages for lifetime and past 30-day marijuana use (25.4% and 13.4%, respectively) have remained fairly consistent when compared to recent years. However, they show a significant decrease from the levels reported in 2003 (34.6% and 18.3%, respectively). (YRBS, 2017).

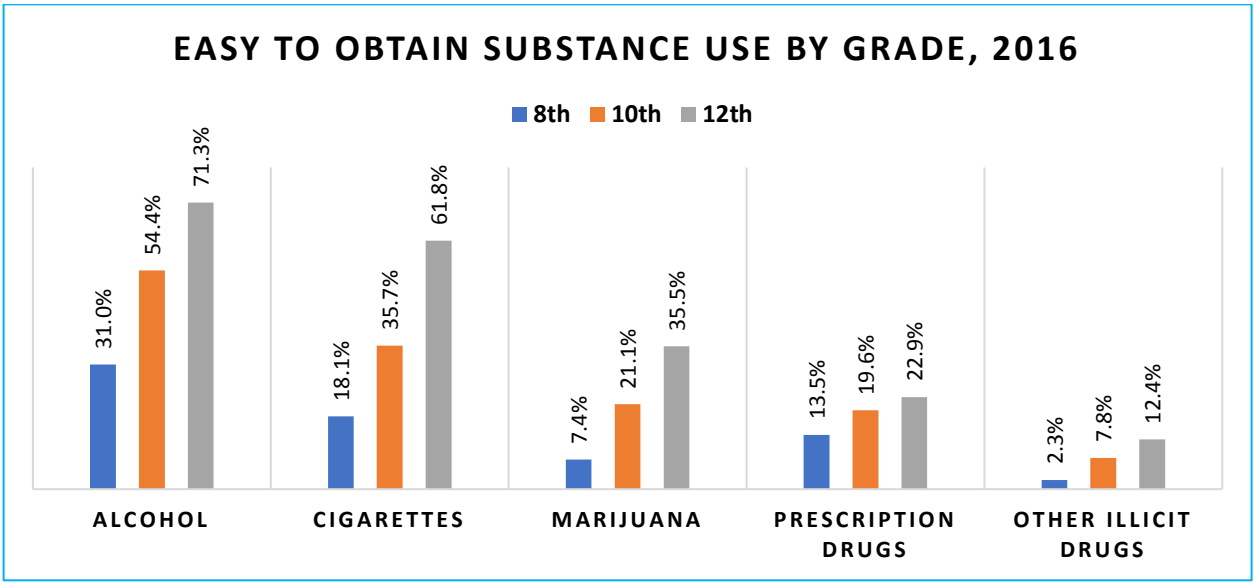
For 12th grade students in the NCDHD, lifetime marijuana use has increased from 15% in 2007 to 22.5% in 2016. (NRPFSS, 2017).

- Current use of marijuana for 12th graders in the NCDHD increased from 8.2% in 2012 to 10.8% in 2016. (NRPFSS, 2017).

[17] The definition of binge drinking was changed to 5 or more drinks for males and 4 or more drinks for females on the 2017 YRBS. Due to this change, trend data for binge drinking are not comparable to 2017.
[18] Percentage who reported having five or more drinks of alcohol in a row, within a couple of hours

Alcohol is mentioned as the easiest substance use to obtain among all students in the NCDHD in 2016, followed by cigarettes, marijuana, and then by other illicit drugs. These percentages are higher when compared to the 2014 data (see 2016 NCDHD Community Health Assessment Report, page 41). Figure 118.

Figure 118: Easy to Obtain Substance Use in the NCDHD: Alcohol, Cigarettes, Marijuana, Prescription Drugs and Other Illicit Drugs, 2016



Source: Nebraska Risk and Protective Factor Student Survey (NRPFSS, 2016). North Central District Health Department.

Prescription Drug Use

In 2016, 3.2 percent of NCDHD 12th graders reported lifetime non-medical prescription drug use (such as OxyContin, Percocet, Vicodin, codeine, Adderall, Ritalin, Xanax). This percentage was significantly lower when compared to 12th graders at the State level (9.1%).

Current prescription drug misuse was also reported lower by NCDHD 12th graders when compared to 12th graders at the State level in 2016 (1.6% vs. 3.4%).

Lifetime and current prescription drug misuse by 12th graders at the State level were lower when compared to the United States.

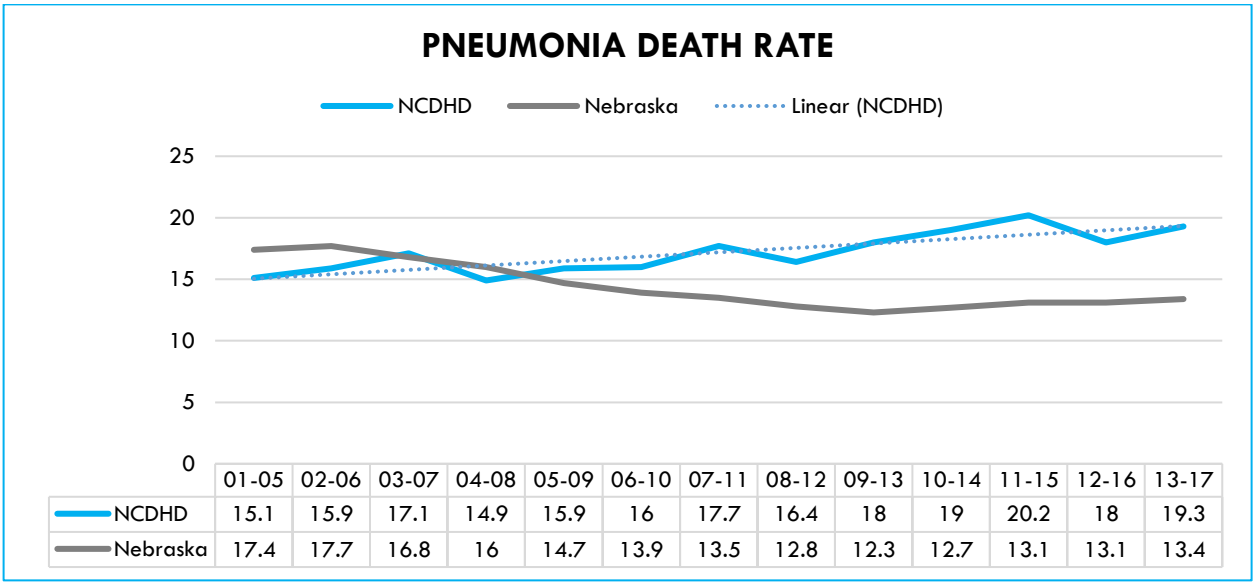
Influenza and Pneumonia

Mortality

Pneumonia was the tenth leading cause of death in the NCDHD for 2013-2017 combined years, claiming 85 lives and accounting for 3.0 percent of all deaths in the health district.

The death rate for pneumonia has increased 28% in the NCDHD between 2001-2005 combined years and 2013-2017 combined years, while in the State has declined 23% (Figure 119).

Figure 119: Pneumonia Death Rate per 100,000 population (age-adjusted), NCDHD and Nebraska, 2001-2005 to 2013-2017



	01-05	02-06	03-07	04-08	05-09	06-10	07-11	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	15.1	15.9	17.1	14.9	15.9	16	17.7	16.4	18	19	20.2	18	19.3
Nebraska	17.4	17.7	16.8	16	14.7	13.9	13.5	12.8	12.3	12.7	13.1	13.1	13.4

Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

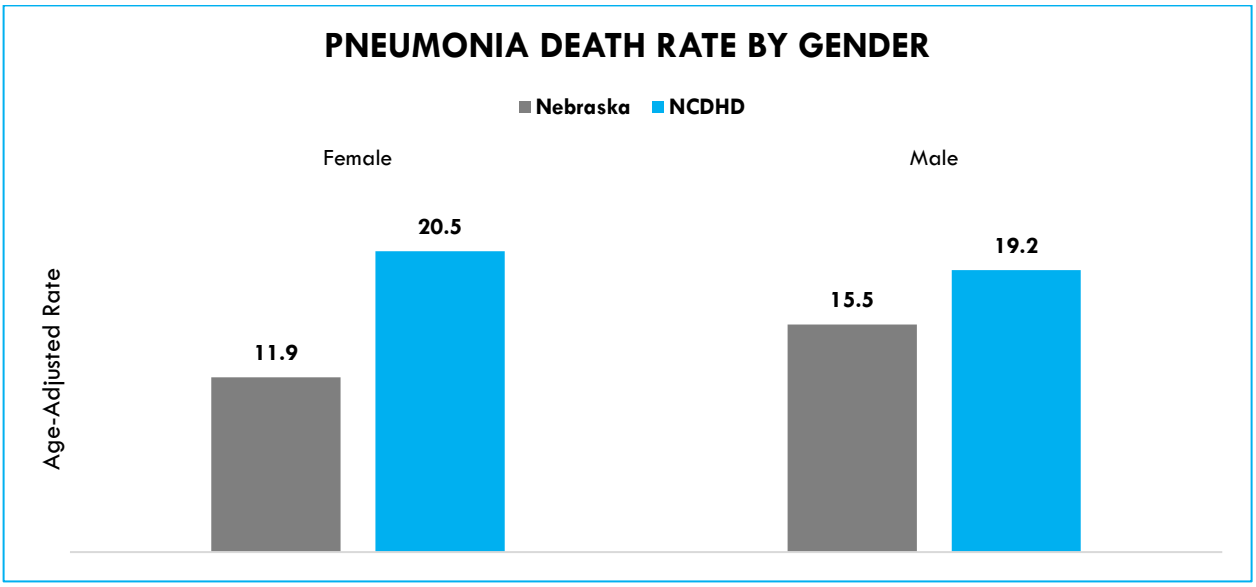
Compared to pneumonia, influenza caused fewer deaths in Nebraska, eight in total for 2013-2017 combined years. During the same time period, there were 81 pneumonia deaths in the State.

Pneumonia death rate by gender, age, and race/ethnicity

GENDER – Pneumonia death rate

Females had a slightly higher pneumonia death rate than males in the NCDHD for 2013-2017 combined years (20.5 per 100,000 population vs. 19.2 per 100,000 population, respectively). However, both genders in the NCDHD had a significantly higher pneumonia death rate when compared to their counterparts at the State level. Figure 120.

Figure 120: Pneumonia Death Rate by Gender, NCDHD vs. Nebraska, 2013-2107



Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

AGE – Pneumonia death rate

Pneumonia death rates for 65+ years age group in the NCDHD was 1.5 times higher when compared to their counterparts at the State level (152.8 per 100,000 population vs. 100.0 per 100,000 population, respectively). No other age groups were available for analysis due to small sample size.

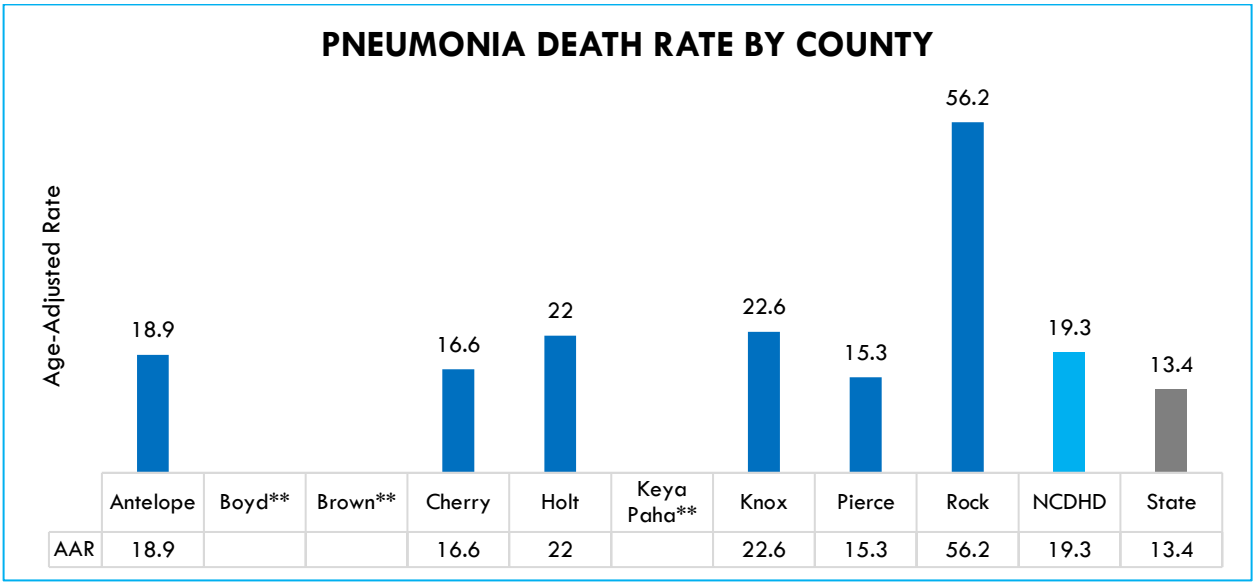
RACE/ETHNICITY – Pneumonia death rate

In terms of race/ethnicity, the White non-Hispanic population in the NCDHD showed a pneumonia death rate higher when compared to the White non-Hispanic population of the State (19.9 per 100,000 population vs. 13.4 per 100,000 population, respectively). No data were available for the rest of race/ethnicities in the NCDHD due to small sample size.

Pneumonia mortality rate by NCDHD counties

Rock County showed the highest pneumonia mortality rate among all counties in the NCDHD (56.2 per 100,000 population), followed by Knox County (22.6 per 100,000 population). Rock County mortality rate was 2.9 times higher when compared to the health district. No data were available for Boyd, Brown and Keya Paha counties due to small sample size. Figure 121.

*Figure 121: Pneumonia Death Rate by NCDHD County, 2001-2005 to 2013-2017**



*Five Year Moving Averages 2013-2017 Combined. **Number of deaths and death rate suppressed due to a small number of deaths (i.e., fewer than 5). Source: Nebraska Vital Records, Nebraska Department of Health and Human Services, January 2019

Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) remain a major public health challenge in the United States. Although progress has been made in preventing, diagnosing, and treating some STDs, the CDC estimates that nearly 20 million new infections occur each year in the United States, with half of these infections occurring among young people aged 15-24.

STDs are also the cause of many harmful and often irreversible complications, such as reproductive health problems and fetal and perinatal health problems. Studies also suggest that people with gonorrhea, chlamydia, and syphilis are at increased risk for HIV. In addition to the physical and psychological consequences of STDs, they account for $16 billion annually in U.S. healthcare costs.

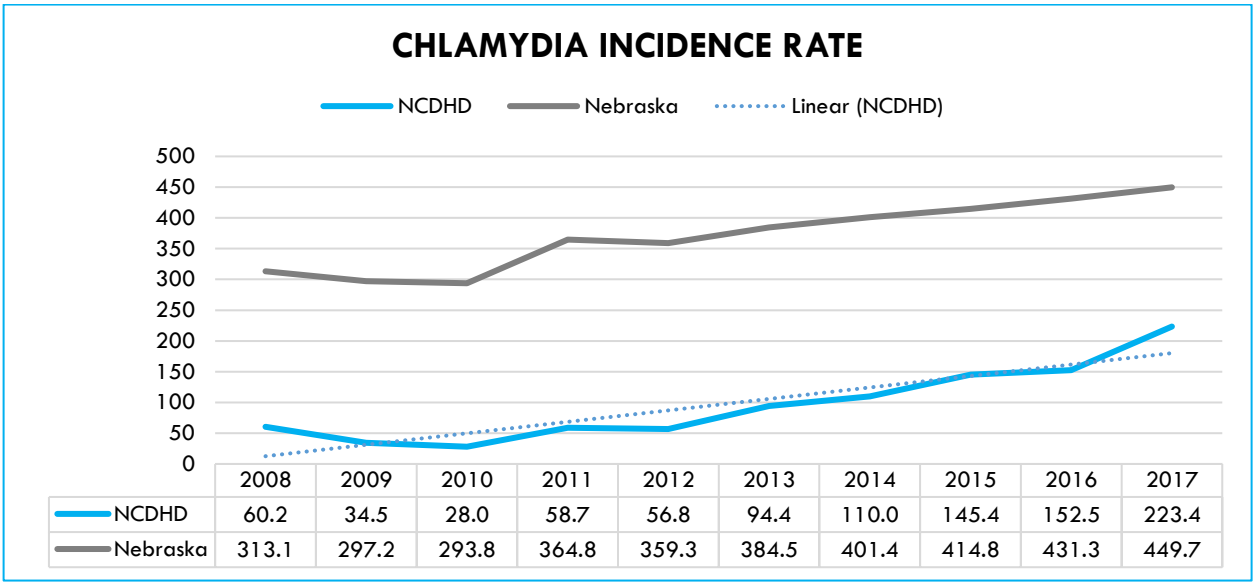
There was a total of 125 new STD cases diagnosed in the NCDHD in 2017[19]. STD rates in the NCDHD have increased in recent years, but remain lower than comparable statewide rates.

Chlamydia is the most common STD in the NCDHD, accounting for 4 out of 5 reported STD cases in the health district in 2017 (80.8%).

[19] **Syphilis is not reported due to small sample size.**

The incidence rate for chlamydia in the NCDHD was stable between 2008 and 2013 before increasing 137 percent between 2013 and 2017 (from 94.4 to 223.4 new cases per 100,000 population, respectively). The NCDHD rate (223.4) was lower than the State rate (449.7) in 2017 (Figure 122).

Figure 122: Chlamydia Incidence Rate, per 100,000 population in the NCDHD and Nebraska, 2008-2017



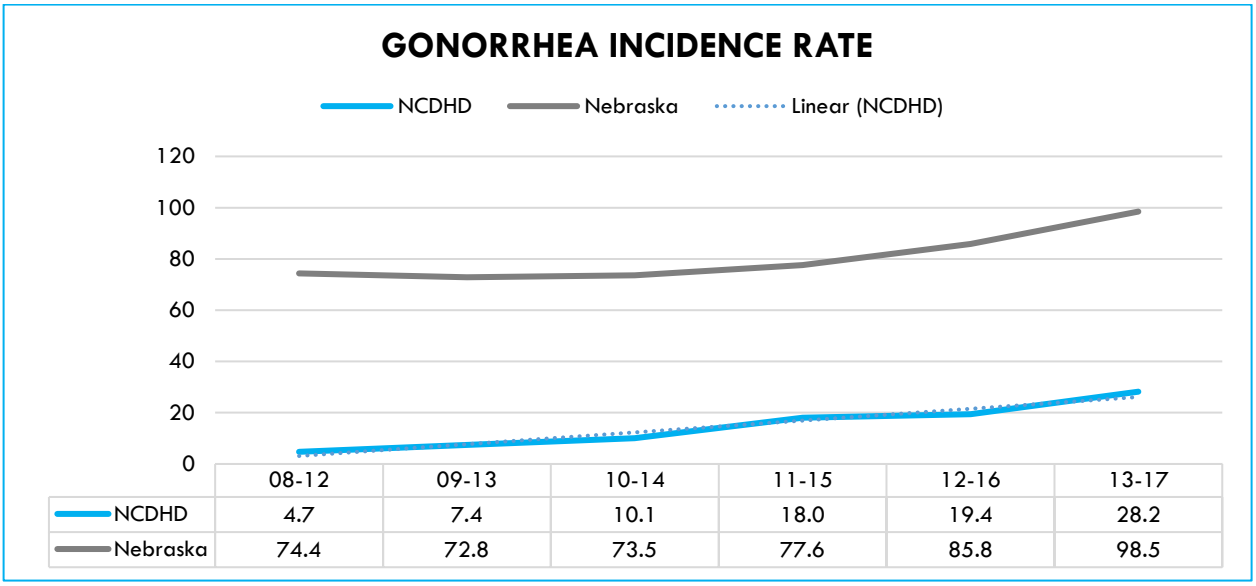
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
NCDHD	60.2	34.5	28.0	58.7	56.8	94.4	110.0	145.4	152.5	223.4
Nebraska	313.1	297.2	293.8	364.8	359.3	384.5	401.4	414.8	431.3	449.7

Source: Division of Public Health, Nebraska Department of Health and Human Services, February 2019

Gonorrhea is the second most common STD in the NCDHD, accounting for 19.2 percent of STD cases in 2017.

Incidence of gonorrhea also increased from 10.1 per 100,000 population in 2010-2014 combined years, to 28.2 new cases per 100,000 population in 2013-2017 combined years, respectively; a 181 percent increase. The 2013-2017 combined years NCDHD rate (28.0) was significantly lower than the State rate (98.5) (Figure 123).

Figure 123: Gonorrhea Incidence Rate, per 100,000 population in the NCDHD and Nebraska, 2008-2012 to 2013-2017



	08-12	09-13	10-14	11-15	12-16	13-17
NCDHD	4.7	7.4	10.1	18.0	19.4	28.2
Nebraska	74.4	72.8	73.5	77.6	85.8	98.5

Source: Division of Public Health, Nebraska Department of Health and Human Services, February 2019

HIV/AIDS

AIDS (acquired immunodeficiency syndrome) is a chronic, life-threatening condition caused by the human immunodeficiency virus (HIV). By damaging or destroying the cells of a person's immune system, HIV interferes with the body's ability to effectively fight off bacteria, viruses, and fungi that cause disease. This makes the person more susceptible to opportunistic infections that the body would normally be able to resist. (Nebraska DHHS, 2016).

New cases of HIV have not been reported in the NCDHD since 2008 due to small sample size.

ORAL HEALTH

Oral health is essential to overall health yet unfortunately, millions of Americans experience dental cavities and periodontal disease, and many have lost all their teeth. Early tooth loss caused by dental decay in children can result in failure to thrive, impaired speech development, absence from or an inability to perform well in school, and reduced self-esteem.

Untreated dental decay in older persons can lead to pain, abscesses, and loss of teeth. Periodontal disease is the leading cause of bleeding, pain, infection, and tooth loss. It is also a chronic inflammatory disease linked to other serious health risks, such as diabetes, cardiovascular disease, and preterm/low-weight births.

Dental disease is one of the most preventable health problems. Proper dental hygiene and good eating habits, along with regular professional dental care, decrease the risk of developing cavities and periodontal disease. Water fluoridation has helped improve oral health over the past 50 years in America. (Nebraska DHHS, 2016).

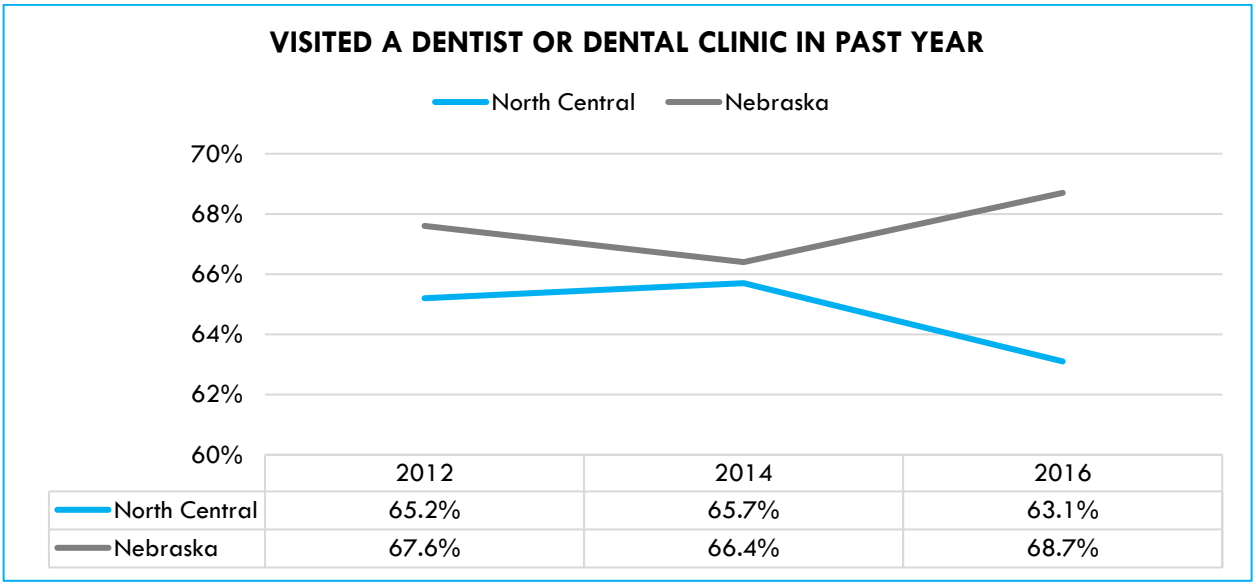
Dental Visits

Dental Visits among Adults

According to the 2016 BRFSS, nearly two-thirds of NCDHD adults (63.1%) reported that they visited a dentist or dental clinic for any reason during the past year; indicating that over one-third did not receive any dental care services in the past year.

The percentage receiving dental care declined in 2016 when compared to 2014 in the NCDHD. (Figure 124). The NCDHD showed a lower percentage of adults who received past year dental services when compared to Nebraska adults (63.1% and 68.7%, respectively, in 2016).

Figure 124: Visited a Dentist or Dental Clinic in Past Year among Adults, NCDHD and Nebraska, 2012-2016*



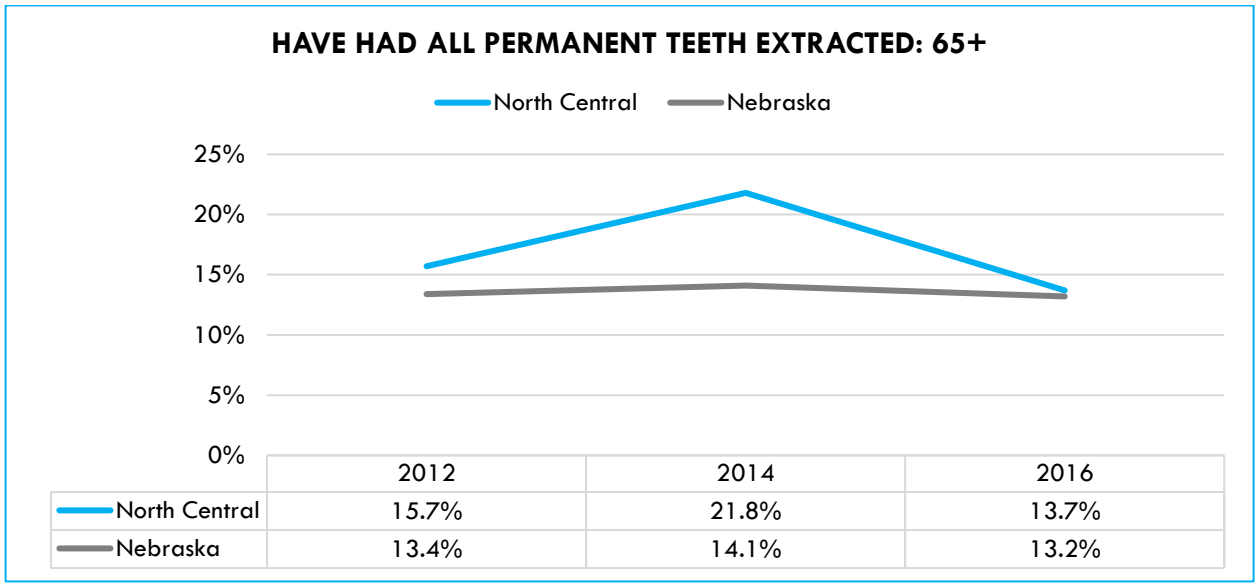
	2012	2014	2016
North Central	65.2%	65.7%	63.1%
Nebraska	67.6%	66.4%	68.7%

*Percentage of adults 18 and older who report that they visited a dentist or dental clinic for any reason within the past year. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

Loss of Permanent Teeth

In 2016, 1 in 7 NCDHD adults 65 and older (13.7%) had all their permanent teeth extracted due to tooth decay or gum disease. This percentage is the lowest when compared to 2012 (15.7%) and 2014 (21.8%). Statewide, adults reported a similar percentage in 2016 when compared to the NCDHD (13.2% and 13.7%, respectively). Figure 125.

Figure 125: Have had All Permanent Teeth Extracted among Adults 65 and Older, NCDHD and Nebraska, 2012-2016*

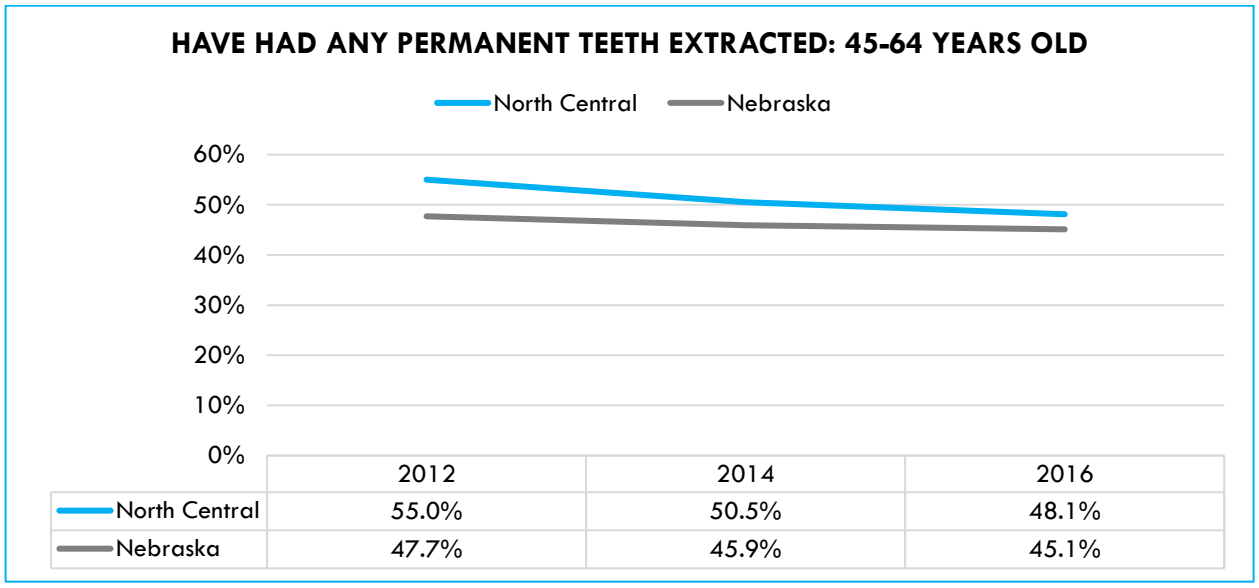


	2012	2014	2016
North Central	15.7%	21.8%	13.7%
Nebraska	13.4%	14.1%	13.2%

*Percentage of adults 65 and older who report that they have had all their permanent teeth extracted because of tooth decay or gum disease, including teeth lost to infection, but not lost for other reasons, such an injury or orthodontics. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

The percentage of Nebraska adults 45-64 years of age reporting that they had any permanent teeth extracted due to tooth decay or gum disease was stable between 2014 (50.5%) and 2016 (48.1%), and it has decreased overall 6.9% since 2012 (Figure 126).

Figure 126: Have had any Permanent Teeth Extracted among Adults 45-64 Years Old, NCDHD and Nebraska, 2012-2016*



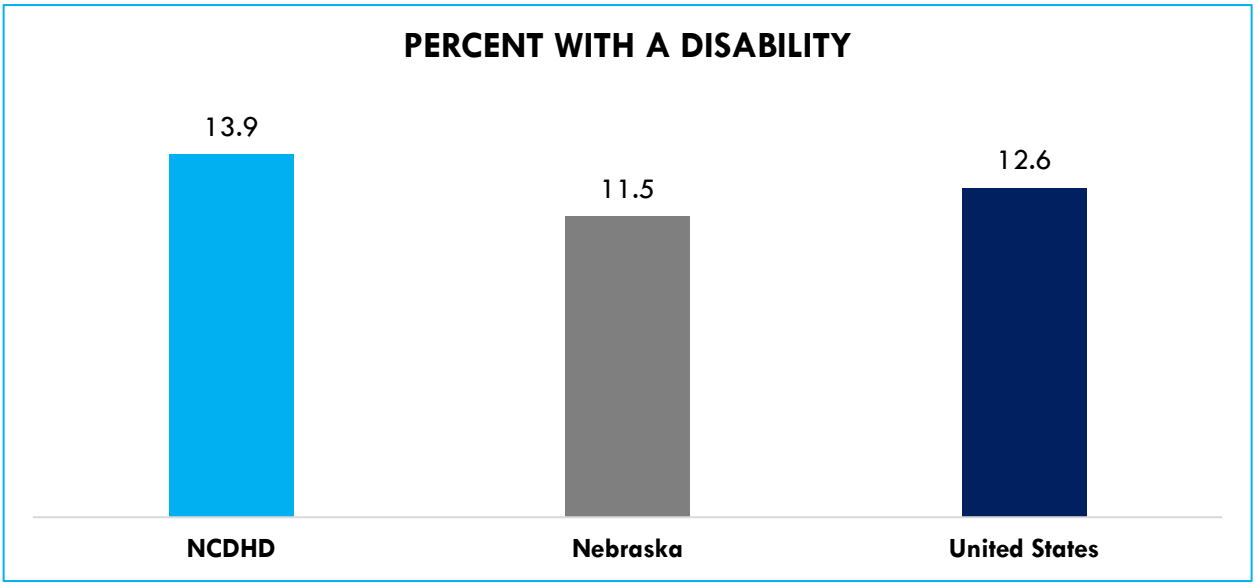
	2012	2014	2016
North Central	55.0%	50.5%	48.1%
Nebraska	47.7%	45.9%	45.1%

*Percentage of adults 45-64 years who report that they have had any of their permanent teeth extracted because of tooth decay or gum disease, including teeth lost to infection, but not lost for other reasons, such an injury or orthodontics. Source: Nebraska Behavioral Risk Factor Surveillance System (BRFSS); November 2018

DISABILITY

According to the American Community Survey (ACS, 5-year estimates, 2013-2017), 13.9 percent of the NCDHD population is affected by a disability (i.e., hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, or independent living difficulty). The prevalence of disabilities among the NCDHD population is 2.4 points higher than the State (11.5%), and 1.3 points higher when compared to the United States (12.6). Figure 127.

Figure 127: Population with a Disability, NCDHD, State, and the United States, ACS 2013-2017



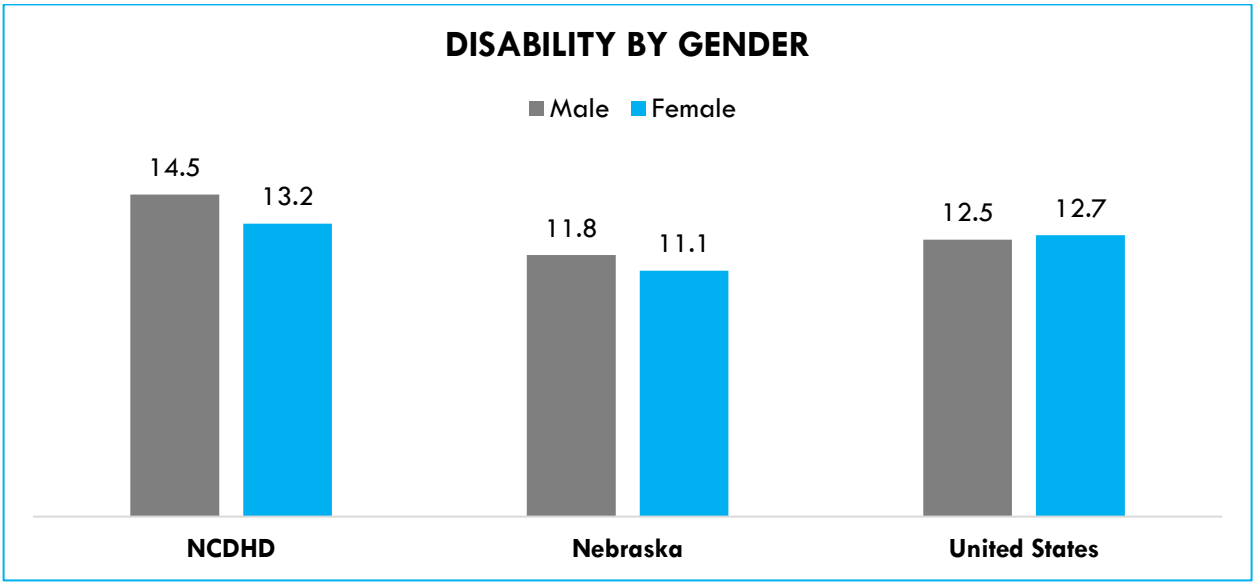
Source: American Community Survey (ACS, 2013-2017. Table S1810).

Disabilities by gender, age, and race/ethnicity

GENDER - Disability

Males are 1.1 times more likely than females to have a disability in the NCDHD (14.5% vs. 13.2%, respectively). Figure 128.

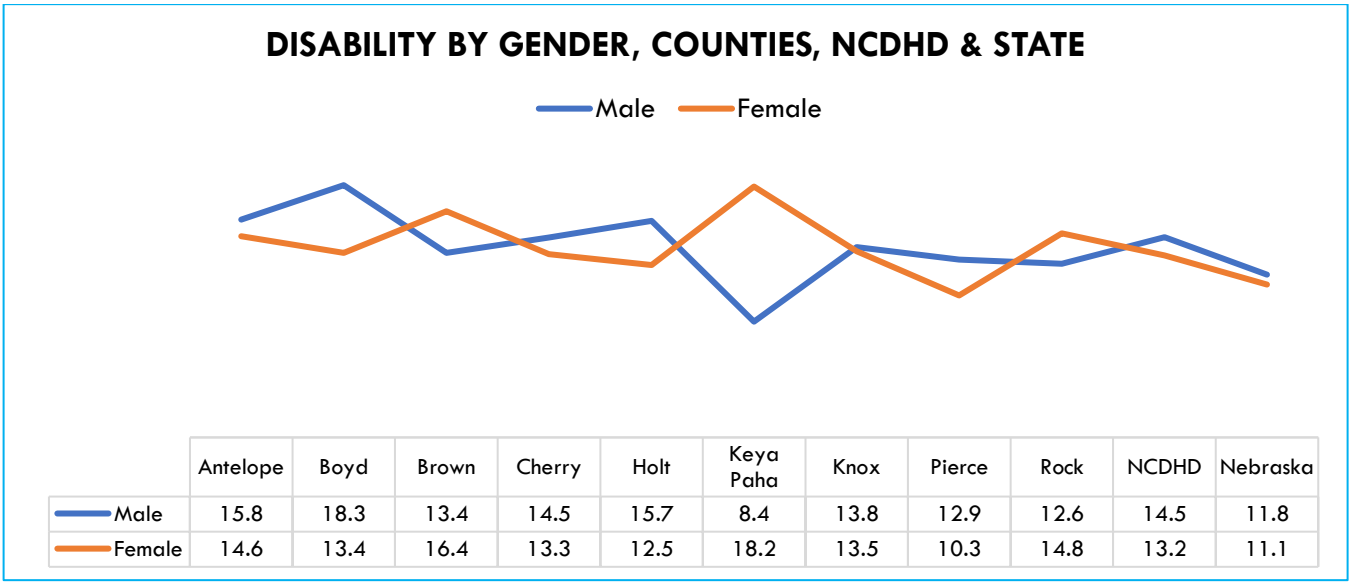
Figure 128: Population with a Disability, NCDHD, State, and the United States, ACS 2013-2017



Source: American Community Survey (ACS, 2013-2017. Table S1810).

Boyd County has the highest prevalence of disability within the male NCDHD population (18.3%), followed by Antelope County (15.8%). Keya Paha County showed the highest prevalence of disabilities among women in the NCDHD (18.2%), followed by Brown County (16.4%). Figure 129.

Figure 129: Population with a Disability (%) by Gender, NCDHD, State, and the United States, ACS 2013-2017



	Antelope	Boyd	Brown	Cherry	Holt	Keya Paha	Knox	Pierce	Rock	NCDHD	Nebraska
Male	15.8	18.3	13.4	14.5	15.7	8.4	13.8	12.9	12.6	14.5	11.8
Female	14.6	13.4	16.4	13.3	12.5	18.2	13.5	10.3	14.8	13.2	11.1

Source: American Community Survey (ACS, 2013-2017. Table S1810).

AGE – Disability

Disability prevalence rates in the NCDHD are higher among the 18 to 34 years age group, 65 to 74 years age group, and 75 years and over age group when compared to the State. Table 27 shows the prevalence rate in detail by age group, and by geographic location (county, NCDHD, and the United States).

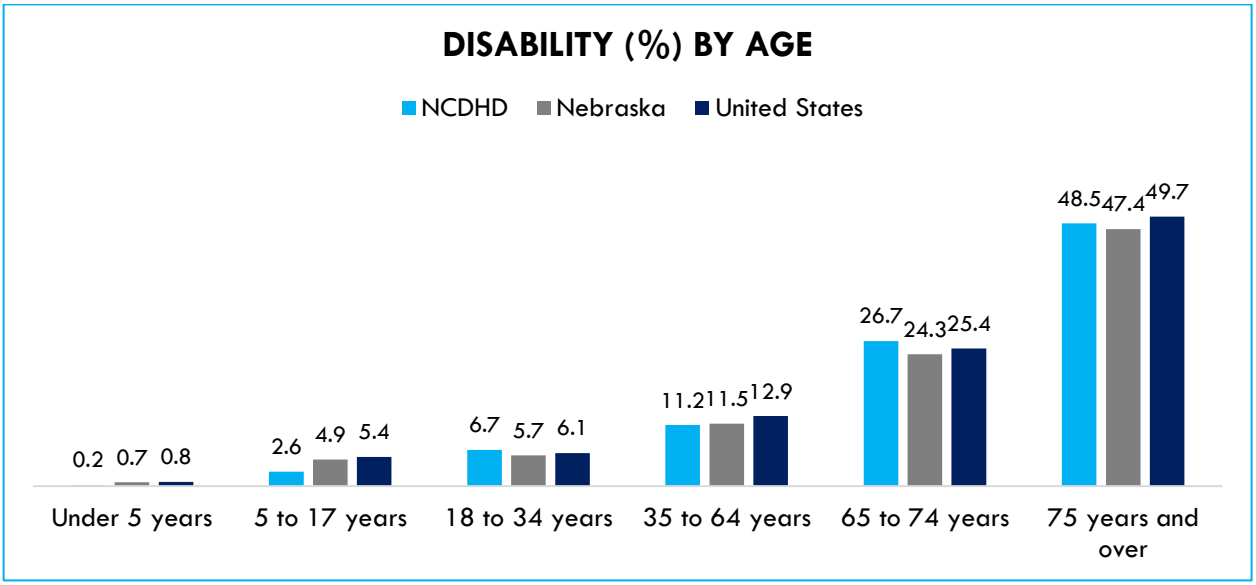
Cherry County showed the highest percentage of people with disabilities in the 65 to 74 years age group (38.0%), followed by Antelope County (28.9%). Brown County showed the highest percentage of people with disabilities in the 75 years and over age group (54.5%), followed by Keya Paha County (52.7%). Figure 130.

Table 27: Disability (%) by Age Group, County, NCDHD, and the United States.

	Under 5 years	5 to 17 years	18 to 34 years	35 to 64 years	65 to 74 years	75 years and over
Antelope	0.7	6	4.7	12.5	28.9	50.1
Boyd	0	4.1	9.1	12.3	25.1	50.9
Brown	0	3.4	4.8	8.8	23.5	54.5
Cherry	0.7	1	9.4	7.7	38.0	48.3
Holt	0	1.3	4.8	13.8	25.8	52.1
Keya Paha	0	0	1.9	7.6	25.6	52.7
Knox	0	3.2	6	11.6	21.2	49.3
Pierce	0	2	10.7	10.5	26.4	33.2
Rock	0	0	2.6	9.4	26.3	48.2
NCDHD	0.2	2.6	6.7	11.2	26.7	48.5
Nebraska	0.7	4.9	5.7	11.5	24.3	47.4
United States	0.8	5.4	6.1	12.9	25.4	49.7

Source: American Community Survey (ACS, 2013-2017. Table S1810).

Figure 130: Disability (%) by Age Group, NCDHD, Nebraska and the United States

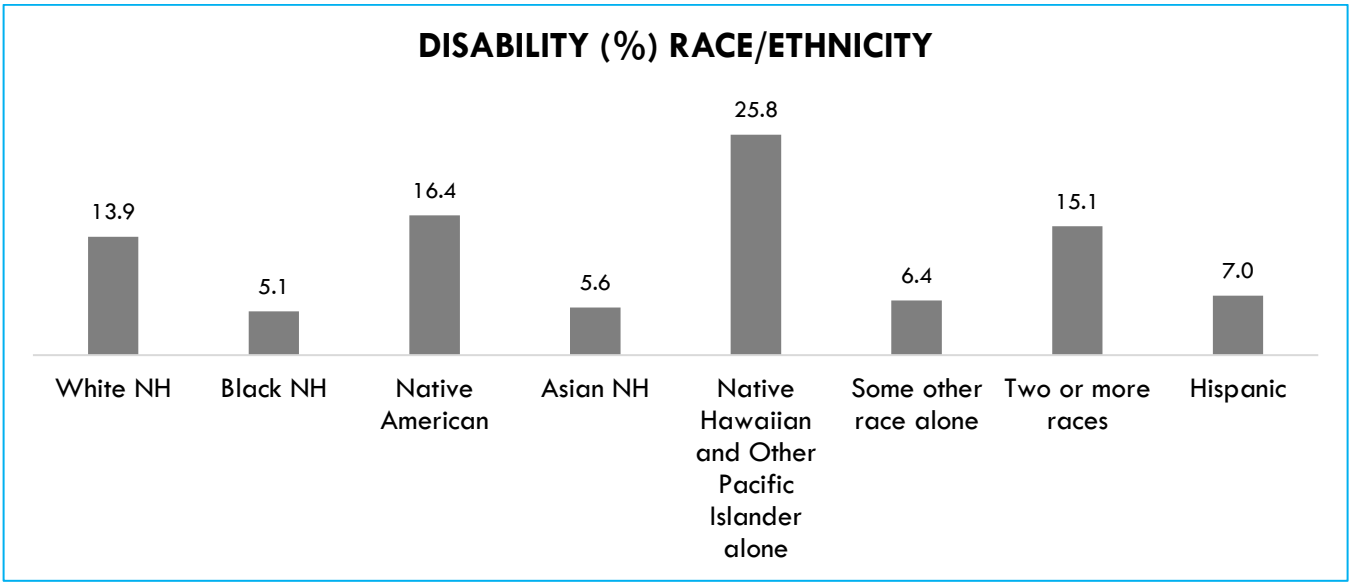


Source: American Community Survey (ACS, 2013-2017. Table S1810).

RACE/ETHNICITY – Disability

Native Hawaiians showed the highest percentage of people with disabilities among all race/ethnicities in the NCDHD (25.8%), followed by Native Americans (16.4%). Figure 131.

Figure 131: Disability (%) Race/Ethnicity in the NCDHD

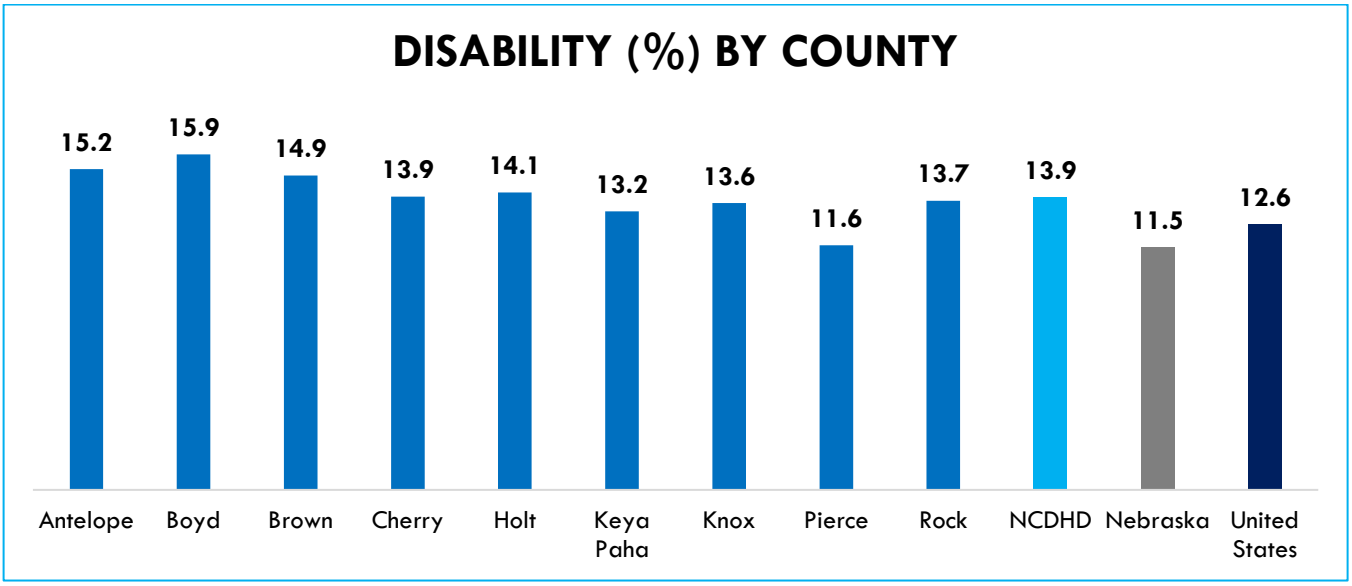


Source: American Community Survey (ACS, 2013-2017. Table S1810).

Disability by NCDHD counties

Overall, Boyd County showed the highest disability prevalence among all counties in the NCDHD (15.9%), followed by Antelope County (15.2%). Figure 132.

Figure 132: Disability (%) by NCDHD County, State and the United States



Source: American Community Survey (ACS, 2013-2017. Table S1810).

Health Indicators (BRFSS)

Nebraska Behavioral Risk Factor Surveillance System (BRFSS)

The following tables show prevalence estimates (percentages) for 27 health indicators collected from NCDHD adults aged 18 and older between 2011 and 2017 through the Nebraska Behavioral Risk Factor Surveillance System (BRFSS) reporting. The summary tables show the current prevalence rates (2017) of health indicators comparing NCDHD with Nebraska outputs. The tables show detailed changes over time of these health indicators, covering seven years of data (2011-2017). Statistically significant changes (cells colored in red or green) are estimated between North Central District Health Department and the State of Nebraska, along with significant gender differences, if any, within the local department (those are included in the narrative of this report). Linear trendlines were added to charts for the NCDHD health assessment report to graphically demonstrate whether changes were positive, negative, or neutral.

"The BRFSS is a telephone survey of adults 18 and older and includes landline telephone and cell phone data collection. To be more representative of all adults, data are weighted according to the CDC BRFSS weighting methodology (i.e. iterative proportional fitting, also known as raking). Responses of "Don't know/Not sure" and "Refused" were removed from the denominators when calculating prevalence estimates for these detailed tables." (Nebraska DHHS, BRFSS, 2018).

Main Findings from the Behavioral Risk Factor Surveillance System (BRFSS)

The following behavioral health indicators have been significantly <u>better</u> in the NCDHD for two or more years when compared to the State since 2011:

Health Care Access and Utilization

- Needed to see a doctor but could not due to cost in past year

Cancer

- Up-to-date on colon cancer screening, 50-75 year olds

Tobacco

- Current cigarette smoking

Mental Health

- Ever told they have depression
- Mental health was not good on 14 or more of the past 30 days (i.e., frequent mental distress)

Alcohol

- Any alcohol consumption in past 30 days
- Binge drank in past 30 days

The following behavioral health indicators have been significantly worse in the NCDHD for two or more years when compared to the State since 2011:

Cardiovascular

- Ever told they had a heart attack or coronary heart disease
- Ever told they have high blood pressure (excluding pregnancy)

Cancer

- Ever told they have cancer (in any form)
- Ever told they have skin cancer

Tobacco

- Current smokeless tobacco use

Nutrition/Physical Activity

- No leisure-time physical activity in past 30 days

Immunization and Infectious Disease

- Had a flu vaccination in past year, aged 18 years and older
- Had a flu vaccination in past year, aged 65 years and older
- Ever been tested for HIV, 18-64 year olds (excluding blood donation)

Oral Health

- Had any permanent teeth extracted due to tooth decay or gum disease

Injury

- Always wear a seatbelt when driving or riding in a car

BRFSS: Selected Health Data, NCDHD and State, 2011 -2017 (%)

	2011		2012		2013		2014		2015		2016		2017	
INDICATORS	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**
General Health Status														
General health fair or poor	14.6	14.3	17.5	14.4	15.4	13.9	13.1	13.2	14.3	13.9	14.5	14.7	14.1	14.9
Physical health was not good on 14 or more of the past 30 days	10.4	9.6	10.1	9.8	10.2	9.2	8.4	9.0	8.8	9.6	9.5	9.8	10.1	10.3
Health Care Access and Utilization														
No health care coverage, 18-64 year olds	17.7	19.1	17.9	18.0	16.4	17.6	10.9	15.3	12.7	14.4	12.8	14.7	13.1	14.4
Needed to see a doctor but could not due to cost in past year^	8.1	12.5	8.2	12.8	11.0	13.0	8.5	11.8	9.3	11.5	7.9	12.1	8.4	11.7
Had a routine checkup in past year	58.4	57.7	60.9	60.4	62.6	61.6	64.4	63.3	59.2	63.9	63.3	65.4	65.0	66.7
Cardiovascular														
Ever told they had a heart attack or coronary heart disease	8.4	6.4	11.6	6.2	8.5	6.2	6.7	6.0	7.1	5.8	9.4	5.8	8.6	6.1
Ever told they had a stroke	3.3	2.6	3.5	2.4	2.8	2.5	2.5	2.6	2.8	2.5	3.5	2.8	2.5	2.9
Had blood pressure checked in past year	-	-	-	-	81.8	84.6	-	-	88.6	88.0	-	-	89.7	86.3
Ever told they have high blood pressure (excluding pregnancy)	33.8	28.5	-	-	37.0	30.3	-	-	35.5	29.9	-	-	37.8	30.6
Had cholesterol checked in past 5 years	-	-	-	-	-	-	-	-	-	-	-	-	84.4	84.4
Ever told they have high cholesterol, among those who have ever had it checked	-	-	-	-	-	-	-	-	-	-	-	-	34.7	31.9
Cancer														
Ever told they have cancer (in any form)	13.7	11.2	14.4	10.8	15.2	11.4	13.5	10.7	14.1	11.6	13.4	11.2	13.5	11.0
Up-to-date on colon cancer screening, 50-75 year olds	-	-	49.2	61.1	57.1	62.8	53.9	64.1	57.1	65.2	63.6	66.0	64.7	68.3
Up-to-date on breast cancer screening, female 50-74 year olds	-	-	71.2	74.9	-	-	74.1	76.1	-	-	72.5	73.4	-	-
Ever told they have skin cancer	7.5	5.6	8.3	5.6	8.6	5.9	7.7	5.7	8.4	6.0	6.4	5.5	7.0	5.6
Tobacco														
Current cigarette smoking	13.0	20.0	14.0	19.7	13.3	18.5	13.0	17.3	15.9	17.1	13.4	17.0	11.8	15.4
Attempted to quit smoking in past year, among current cigarette smokers	46.0	55.6	49.9	57.1	61.5	57.1	56.6	58.2	51.7	59.1	62.5	54.6	70.5	55.6
Current smokeless tobacco use	8.0	5.6	6.8	5.1	6.9	5.3	8.6	4.7	8.4	5.5	8.8	5.7	8.8	5.3
	2011		2012		2013		2014		2015		2016		2017	
INDICATORS	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**
Nutrition/Physical Activity														
Obese (BMI=30+)	32.6	28.4	28.3	28.6	29.2	29.6	31.8	30.2	31.4	31.4	34.6	32.0	32.9	32.8

Overweight or Obese (BMI=25+)	71.4	64.9	67.7	65.0	66.5	65.5	72.0	66.7	69.3	67.0	70.3	68.5	71.2	69.0
Ever told they have diabetes (excluding pregnancy)	9.1	8.4	9.8	8.1	9.7	9.2	10.0	9.2	10.1	8.8	11.5	8.8	9.8	10.1
Consumed fruits less than 1 time per day	-	-	-	-	-	-	-	-	-	-	-	-	33.9	36.9
Consumed vegetables less than 1 time per day	-	-	-	-	-	-	-	-	-	-	-	-	15.0	20.0
No leisure-time physical activity in past 30 days	32.9	26.3	26.4	21.0	30.2	25.3	25.9	21.3	36.3	25.3	27.2	22.4	32.7	25.4
Mental Health														
Ever told they have depression	14.9	16.8	11.0	16.7	12.3	18.2	12.2	17.7	12.4	17.5	11.7	17.8	10.8	19.4
Mental health was not good on 14 or more of the past 30 days (i.e., frequent mental distress)	8.7	9.2	7.5	9.0	7.9	8.9	5.2	8.2	5.5	8.9	6.2	9.5	5.9	10.5
Alcohol														
Any alcohol consumption in past 30 days	56.6	61.8	54.3	61.3	55.9	57.5	54.4	59.2	57.0	57.6	57.6	59.8	55.9	60.2
Binge drank in past 30 days	17.4	22.7	16.9	22.1	18.7	20.0	17.4	20.3	19.4	19.5	17.5	20.0	20.2	20.6
Heavy drinking in past 30 days	7.0	7.5	5.0	7.2	6.3	6.8	4.5	6.4	5.7	5.7	4.6	6.6	6.0	7.0
Immunization and Infectious Disease														
Had a flu vaccination in past year, aged 18 years and older	39.3	41.1	38.5	42.2	39.9	45.2	41.8	43.9	41.8	47.2	36.9	44.4	39.9	46.7
Had a flu vaccination in past year, aged 65 years and older	53.0	61.8	54.7	62.9	58.0	66.2	63.5	64.7	60.2	65.2	53.0	62.7	59.4	65.5
Ever had a pneumonia vaccination, aged 65 years and older^	70.8	70.3	68.0	70.0	66.5	71.7	63.7	72.3	69.9	73.8	73.1	75.9	73.6	78.9
Ever had a shingles vaccination, aged 50 years and older	-	-	-	-	-	-	25.6	27.9	-	-	-	-	31.4	35.2
Ever been tested for HIV, 18-64 year olds (excluding blood donation)	18.2	30.8	18.5	30.9	19.9	31.8	19.0	30.9	22.7	32.0	21.6	31.9	20.0	31.9
Oral Health														
Visited a dentist or dental clinic for any reason in past year^	-	-	65.2	67.6	-	-	65.7	66.4	-	-	63.1	68.7	-	-
Had any permanent teeth extracted due to tooth decay or gum disease	-	-	51.7	39.8	-	-	48.7	39.1	-	-	46.1	38.2	-	-

	2011		2012		2013		2014		2015		2016		2017	
INDICATORS	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**	**NCDHD**	**NE**
Injury														
Always wear a seatbelt when driving or riding in a car	48.9	71.3	50.6	69.7	52.5	74.1	47.5	72.4	52.6	75.4	54.6	73.8	57.0	76.3
Texted while driving in past 30 days	-	-	25.4	26.8	-	-	-	-	19.9	24.9	-	-	22.9	26.6

Talked on a cell phone while driving in past 30 days	-	-	64.6	69.1	-	-	-	-	63.3	67.0	-	-	63.8	66.5
Injured due to a fall in past year, aged 45 years and older	-	-	9.2	9.9	-	-	8.6	8.8	-	-	6.5	10.1	-	-

Red shaded boxes: DCHD statistical significance of **worse** rate than State of Nebraska
Green shaded boxes: DCHD statistical significance of **better** rate than State of Nebraska

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APPENDIX A

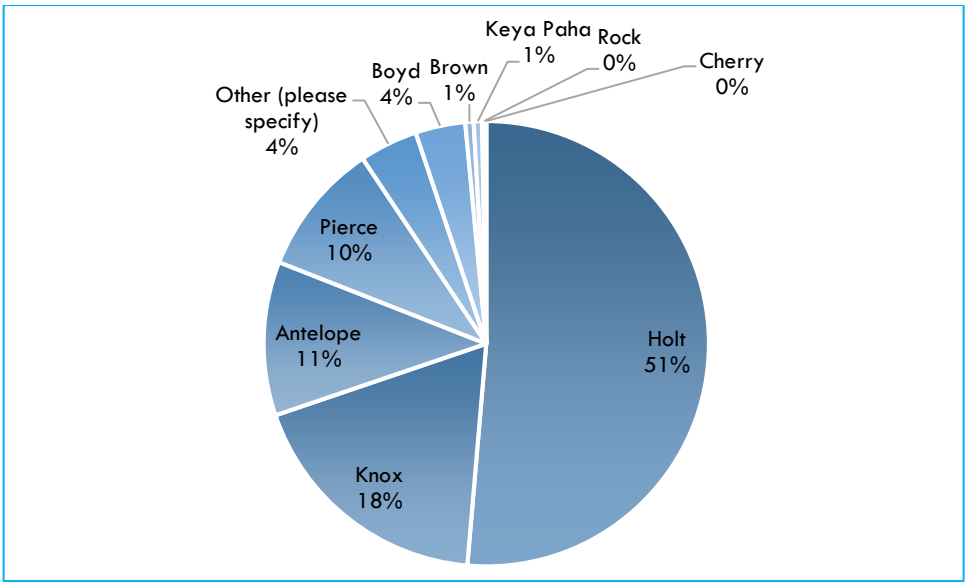
2018 COMMUNITY HEALTH ASSESSMENT: COMMUNITY HEALTH SURVEY

North Central District Health Department administered an online survey via SurveyMonkey to gain the perspective of the NCDHD community regarding health, community health issues, and quality of life. A total of 406 community members answered the survey. Summary of the demographics is as follows:

- Average age: 47; Median: 48.5; Min. age: 19; Max age: 82
- Gender: Females: 90%; Males: 10%
- Race/ethnicity: White: 96.7%; Minorities: 3.3%

- Married: 78.5%
- College degree or higher: 71.6%
- Number of individuals living in home: 53% have 2 to 3 members in their household
- The majority of respondents to the survey are from Holt County (51%), followed by Knox County (18%). See details in Figure 133.

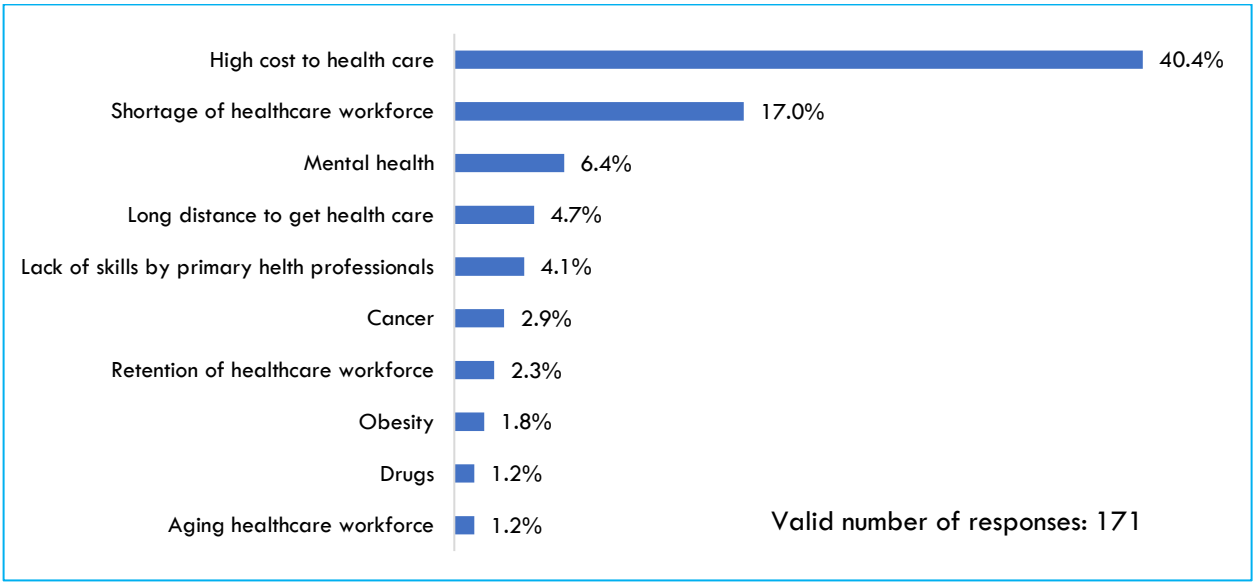
Figure 133: Location of respondents to the community survey by county



CONCERNS ABOUT HEALTH CARE

The highest concern about health care expressed by respondents were related to the high cost of healthcare – 40 percent (e.g., *"People unable to afford health insurance therefore not going to the doctor when needing to and then letting it get so bad that they come to the emergency room"),* followed by shortage of healthcare professionals -17 percent *(e.g., "In Atkinson, I am concerned about the nurse shortage as well as the physician shortage.")*, lack of mental health services in the area – 6.4 percent *(e.g., "Rural area, limited mental health services for medications and counseling. View of using mental health services in the rural area.")*, and lack of accessibility due to long distances to get health care *(e.g., "travel a long way for some health problems")* – 4.7 percent. Figure 134 shows the top ten main concerns to health care expressed by the NCDHD respondents to the survey.

*Figure 134: Top 10 concerns to health care in the NCDHD, 2018**



*Answers were coded into 32 categories. "**Other**" concerns (19.3%) included: "Child neglect" (0.6%), "Insurance coverage" (0.6%), "Lack of community wellness center" (0.6%), "Lack of specialized care" (0.6%), "Long-term care" (0.6%), "No financial assistance" (0.6%), among others. Source: 2018 Community Health Assessment: Community Health Survey (Question #165).

BEHAVIORAL HEALTH

The 2018 Community Health Assessment Survey asked about behaviors that may impact the overall health of the NCDHD community. Over three-fourth of respondents considered "Not enough exercise" as the most important behavior having an impact on the overall health of the community (76.6%), followed by "Texting while driving" (75.8%), and then by "Poor eating habits" (75.8%).

"Not getting vaccinated" (40.7%), "Human trafficking" (39.6%), and "Teenage pregnancy" (37.3%) were considered the least relevant behaviors having an impact on the health of the community. Table 28 shows behaviors that respondents ranked from the most to the least important as having an impact on the overall health of the NCDHD community.

Table 28: Behaviors Having an Impact on the Overall Health of the NCDHD Community, 2018

Behavior	Percentage*	Rank
Not enough exercise	76.6%	1
Texting while driving	75.8%	2
Poor eating habits	75.8%	3
Talking on a cell phone while driving	71.7%	4
Tobacco use (cigarettes, smokeless, e-cigarettes)	71.7%	5
Drug abuse	64.5%	6
Drunk driving	62.4%	7

Alcohol abuse	59.1%	8
Not using seat belts while riding in a vehicle	57.8%	9
Violence (domestic violence, fighting, etc.)	48.2%	10
Not using child safety seats (or improper use)	44.7%	11
Child abuse and neglect	43.5%	12
Texting while walking resulting in injury	40.8%	13
Not getting vaccinated to prevent disease	40.7%	14
Human Trafficking	39.6%	15
Teenage pregnancy	37.3%	16

*Percentages of impact categories labeled 4 to 7 were added (1 = No impact and 7 = Major impact). Source: 2018 Community Health Assessment: Community Health Survey (Question #18).

The 2018 Community Health Assessment Survey asked about how many miles respondents travel to get health professional/services. Distance was mentioned as a top concern to receive health services in the NCDHD. Nearly five out of ten of community members travel more than 45 miles to receive health care services related to "Pediatrics", or for "Oncology/cancer". More than half of respondents travel more than 30 miles to receive services related to "Obstetrics/Oncology". Table 29.

Table 29: Number of miles, one way, traveled to get access to health care services/professionals in the NCDHD*

Health professionals/services:	>30 miles	> 45 miles
Primary Care Health Professional	10.0%	5.62%
Cardiology/Heart	35.1%	25.12%
Orthopedics/Orthopedic surgeon/Urology	42.7%	28.16%
Obstetrics/Gynecology	54.8%	35.49%
Pediatrician	59.3%	44.76%
General Surgery	37.9%	23.79%
Oncology/Cancer	57.6%	45.76%
Mental Health	40.6%	26.11%
Dental Health	19.6%	8.93%
Prescriptions/Pharmacy	8.7%	2.35%
Other	43.2%	27.02%

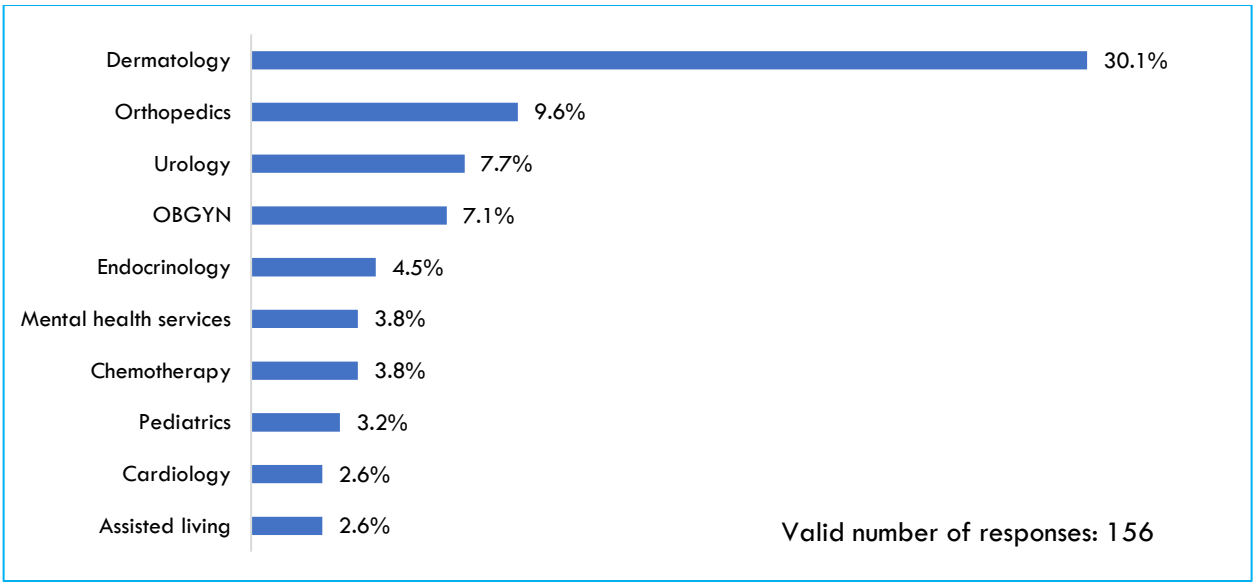
*Categories included: 0-30 miles, 31-45 miles, 46-75 miles, and Over 75 miles. Source: 2018 Community Health Assessment: Community Health Survey (Question #164).

SERVICES THAT ARE NOT CURRENTLY OFFERED AT YOUR HOSPITAL THAT YOU WOULD LIKE TO SEE ADDED

Three out of 10 respondents to the survey mentioned "Dermatology" as one service that they would like to see added to their hospital, followed by "Orthopedics" (9.6%), "Urology" (7.7%), and then by

"OBGYN" (7.1%). The following chart shows the top ten services that respondents from the NCDHD survey would like to see added to their hospitals. Figure 135.

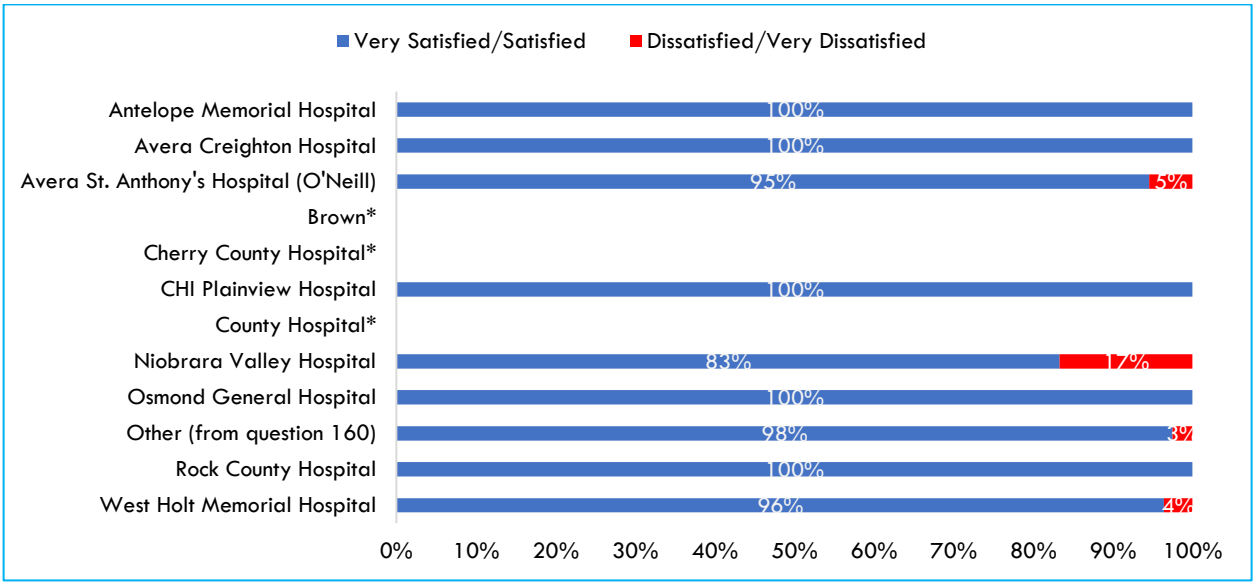
*Figure 135: Top 10 services would like to see added to hospitals in the NCDHD, 2018**



*Answers were coded into 35 categories. "**Other**" services (25.0%) included: "Surgery" (2.6%), "Counseling services" (1.9%), "Health Center with workout equipment and classes that are affordable" (1.9%), "Neurology" (1.9%), among others. Source: 2018 Community Health Assessment: Community Health Survey (Question #166).

Respondents to the survey were asked about their satisfaction level with services received in hospitals located in the NCDHD. Overall, community members feel highly satisfied with services received in hospitals, averaging 97 percent who mentioned they were Very Satisfied or Satisfied with services received. "Osmond General Hospital" received the highest satisfaction level among all hospitals (83.3% were "Very satisfied"), and Niobrara Valley Hospital received the lowest satisfaction level (16.7% were "Very dissatisfied"). Figure 136 shows overall satisfaction levels by hospitals in the NCDHD.

*Figure 136: Level of satisfaction with services received by Hospital in the NCDHD***



*Hospital received less than five answers and was not included in statistical analysis. **Satisfaction levels "Very satisfied" and "Satisfied" were merged into one category, and "Dissatisfied" and "Very dissatisfied" were also merged into one category. (Question #163). Total valid answers: 164. Source: 2018 Community Health Assessment: Community Health Survey.

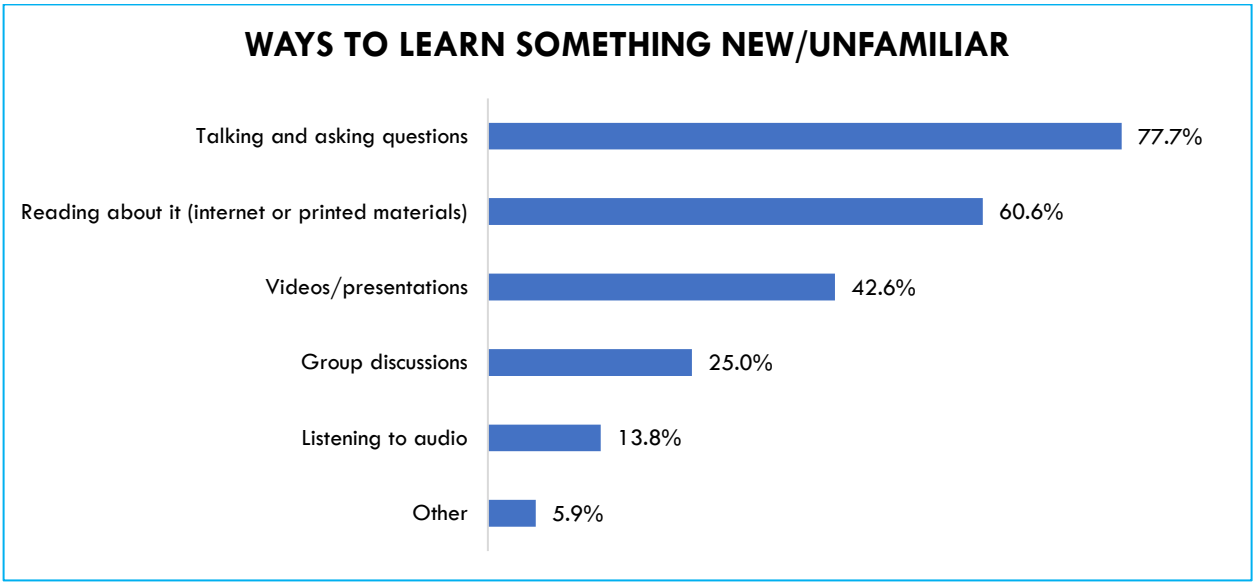
HEALTH INFORMATION LITERACY

Respondents were asked about their level of competency regarding reading health materials (question #22 of the survey). Nearly one-fourth of respondents indicated that they "sometimes" or "often" have trouble reading and understanding health information (23.8%). More than three quarters of respondents indicated that they "never" or "rarely" have trouble reading and understanding health information (76.2%).

Respondents were asked to report if they needed any help from others in filling out forms, reading prescription labels, insurance forms, and/or health education sheets (question #24 of the survey). More than four out of 10 respondents indicated that they needed help "very often" or "sometimes" to perform these tasks (43%), while 57 percent responded that they "never" or "rarely" needed any help.

Finally, respondents were asked to identify the best ways in which they learn new information. The majority, nearly 8 out of 10 respondents (78%) indicated that the best way for them to learn something new was through "Talking and asking questions", followed by "Reading about it (internet or printed materials)" (61%), followed by "Video presentations". The least preferred ways to learn new information for respondents were "listening to audio" (14%), and "Other" (6%). Figure 137.

Figure 137: Best Ways to Learn Something New or Unfamiliar (check all that apply)



Source: 2018 Community Health Assessment: Community Health Survey (Question #24).

Additional Themes and Strengths identified at the March 27th Data Presentation

2019 COMMUNITY THEMES AND STRENGTHS ASSESSMENT

What is important to our community?

What do you believe are the most important characteristics of a healthy community?	
• Access to healthcare (mental and physical)	○ Healthy Water/ Water Treatment Facilities
• Demographic consisting of varying ages	• Waste disposal

What makes you most proud of our community?	
• Low crime rate	• Volunteerism
• Comradery	• Strong community partnerships

What are some specific examples of people or groups working together to improve the health and quality of life in our community?

• Media	• Miles of Smiles
• TeamMates	• Health department partnerships with hospitals (colorectal screening)
• Substance Abuse Coalitions	•

What do you believe are the most important issues that must be addressed to improve the health and quality of life in our community?	
• Personal Accountability	• Socioeconomic education for nutrition
• Healthcare costs	• Measurable goals for health, resources, etc.
• Aging population resources	• Maintaining the workforce
• Nutrition education	• Sedentary lifestyles

What do you believe is keeping our community from doing what needs to be done to improve the health and quality of life?	
• Lack of funding and Resources	• Minimal numbers of qualified professionals to educate and train
• Busy schedules	• Apathy/vision

What actions, policy, or funding priorities would you support to build a healthier community?	
• BMI metric for youth	• Mental health screening in class
• Mental Health funding, work, etc.	• School mental health policies
• Taxes on Vaping	

What would excite you enough to become involved (or more involved) in improving our community?	
• TeamMates	• Befriend Family Mentoring Program

HOW IS QUALITY OF LIFE PERCEIVED IN OUR COMMUNITY?

Are you satisfied with the quality of life in our community?	
• No- lack of physical activity facilities	• Yes- low crime rate
• No- Youth migration out of rural communities	• No- loss of business

Are you satisfied with the health care system in the community?	
• yes	• not very many specialties available
• needing more mental health providers	•

Is there a broad variety of health services in the community? Are there enough health and social services in the community?	
• No- many people have to drive far to get access	○ No- many people don't want people in the community to know their business

Is this community a good place to raise children?	
• Day care in some communities needed	• Low specialty availability
• Good place to raise children	• Mental health services lacking

Is this community a good place to grow old?	
• Lacking social support	• Uncertainty regarding elder care
• Not enough resources for in-home care	Affordable housing for the elderly is lacking
• Lack of respite care	High taxes

Is there economic opportunity in the community?	
• Some people have along commute to work	• Grocery stores are difficult to supply with fresh produce
• Lacking shopping resources	Lacking business growth

Is the community a safe place to live?	
• Cyber security is an issue	Sex trafficking in an issue

Are there networks of support for individuals and families during times of stress and need?	
• Faith sector is strong	○ Lack of awareness of needs

Do all individuals and groups have the opportunity to contribute to and participate in the community's quality of life?	
• Yes- lacking motivation	•

Do all residents perceive that they can make the community a better place to live?	
• Yes- there is a growing language barrier	•

Is there an active sense of civic responsibility and engagement, and of civic pride in shared accomplishments?	
○ Stuart is a great example	• Community run theatres

WHAT ASSETS DO WE HAVE THAT CAN BE USED TO IMPROVE COMMUNITY HEALTH?

Physical/Environmental
• Could be utilized more: cowboy trail
• Community theaters
• Skating rink

Community Resources/ Infrastructure	
• More recreation activities	• Rotary/community clubs
• Education lacking (community awareness)	• Better collaboration between organizations
• News and radio	• Financial limitations
• Healthcare	• Distance learning
• AAA	• Ponca Express
• Senior Centers	• Lions, Elks, etc.
• Economic Development	• Verdigre Improvement Club
• Hospital	• Transportation
• LTC	• Prevention Coalitions
• Daycare	• Hospitals (all counties except Keya Paha)
• AVERA bus	• Valentine Bar Bus

Institutions/Businesses	
• Online education for rural areas	• Northeast Community College and Mid-Plains Community College

People	
• School board	• More participation needed
• City counsel	• Pool resources so programs don't overlap
• Professionals who give education via radio (PSA)	• Elected officials ○ More involvement
• Collaborative efforts needed	• Economic development

Communication	
• Radio stations	• TV stations
• Newspapers	• Fiber Optic
• Internet Speed	

Special Populations Needs Assessment, 2016

COMMUNITY AND INDIVIDUAL HEALTH

Group	Community Health	Individual Health
Non-Whites (n=36)		
Unhealthy	16 (44%)	8 (22%)
Healthy	20 (56%)	28 (78%)
Women (n=119)		
Unhealthy	16 (13%)	7 (6%)
Healthy	103 (87%)	112 (94%)
Men (n=42)		
Unhealthy	7 (17%)	8 (19%)
Healthy	35 (83%)	34 (81%)
65 and Older (n=101)		
Unhealthy	4 (4%)	7 (7%)
Healthy	97 (96%)	94 (93%)
<$20,000 Annual Income (n=70)		
Unhealthy	11 (16%)	7 (10%)
Healthy	59 (84%)	63 (90%)
HS Diploma/GED or Less (n=97)		
Unhealthy	10 (10%)	10 (10%)
Healthy	87 (90%)	87 (90%)

QUALITY OF LIFE

Who Answered "Yes" or "Strongly Yes" to the Following:	65 and Older	Income Less than $20,000	Female	Male	Less than High School	High School Diploma/GED	Community College/VoTech	Bachelors Degree or Higher
Are you satisfied with the quality of life in your community? (Consider your sense of safety, well being, participation in community life and associations, etc.)	43.3%	54.3%	59.7%	52.4%	56.3%	59.3%	50.0%	73.7%
Are you satisfied with the health care system in the community? (Consider access, cost, availability, quality, and options in health care)	38.4%	54.3%	60.5%	57.1%	56.3%	55.6%	58.3%	84.2%
Is this community a good place to raise children? (Consider school quality, day care, after school programs, recreation, etc.)	42.7%	62.9%	62.2%	59.5%	75.0%	67.9%	41.7%	68.4%
Is this community a good place to grow old? (Consider elder-friendly housing, transportation to medical services, churches, shopping; elder day care, social support for the elderly living alone, meals on wheels, etc.)	45.7%	71.4%	68.9%	66.7%	81.3%	71.6%	56.3%	73.7%
Is there economic opportunity in the community? (Consider locally owned and operated businesses, jobs with career growth, job training/higher education opportunities, affordable housing, reasonable commute, etc.)	14.6%	25.7%	23.5%	28.6%	25.0%	22.2%	18.8%	52.6%
Is the community a safe place to live? (Consider residents' perceptions of safety in the home, the workplace, schools, playgrounds, parks, and the mall. Do neighbors know and trust one another? Do they look out for one another?)	51.2%	70.0%	72.3%	71.4%	68.8%	74.1%	64.6%	84.2%
Are there networks of support for individuals and families (neighbors, support groups, faith community outreach, agencies, organizations) during times of stress and need?	36.0%	50.0%	50.4%	54.8%	31.3%	54.3%	45.8%	68.4%
Do all individuals and groups have the opportunity to make the community a better place to live?	37.8%	62.9%	54.6%	59.5%	56.3%	56.8%	47.9%	73.7%
Are there a broad variety of health services in the community?	33.5%	47.1%	51.3%	57.1%	50.0%	51.9%	47.9%	68.4%
Are there enough health and social services in the community?	26.8%	40.0%	42.0%	38.1%	31.3%	43.2%	37.5%	47.4%
Is there an active sense of civic responsibility and engagement, and of civic pride in shared accomplishments?	34.1%	37.1%	43.7%	38.1%	43.8%	42.0%	35.4%	63.2%

SIGNIFICANT HEALTH PROBLEMS IN YOUR COMMUNITY

Significant Health Problems in your community	All Survey Respondents	Non-Whites	Women	Men	65 and Older	<$20,000 Annual Income	HS Diploma/ GED or less
Alcohol abuse	94	25	70	22	53	42	54
Being overweight	87	13	56	28	58	33	47
Drug abuse	75	30	60	14	32	30	40
Lack of exercise	40	4	27	13	30	14	20
Poor eating habits	53	5	39	14	35	25	32
Racism	5	2	2	3	4	3	4
Tobacco use	51	14	32	18	29	23	34
Not using birth control	3	1	3	0	2	0	2
Not using seat belts / child safety seats	27	3	22	5	18	8	18
Unsafe sex	6	4	4	2	2	4	3
Unsecured firearms	2	1	1	1	2	1	2
Not getting "shots" to prevent disease	8	0	5	2	6	3	5
Not using birth control	3	1	3	0	2	0	2
Dropping out of school	9	5	8	1	2	5	6
Lack of maternity care	1	0	1	0	0	0	1

TOP 3 RISKY BEHAVIORS

Top 3 Risky Behaviors	All Survey Respondents	Non-Whites	Women	Men	65 and Older	<$20,000 Annual Income	HS Diploma/ GED or less
Aging problems (e.g., arthritis, hearing/vision loss, etc.)	88	7	61	25	68	37	54
Cancers	79	10	56	22	56	30	45
Heart disease and stroke	37	10	31	5	20	16	20
Diabetes	44	11	34	10	25	16	32
High blood pressure	15	5	12	3	3	9	8
Lack of exercise	2	1	2	0	1	0	1
Mental health problems	9	1	7	2	5	5	6
Respiratory / lung disease	5	3	4	1	0	3	4
Dental problems	65	26	47	17	29	29	38
Teenage pregnancy	2	1	1	1	1	2	0
Child abuse / neglect	0	11	45	23	50	25	35
Sexually Transmitted Diseases (STDs)	5	4	4	1	1	4	3
Suicide	4	1	3	1	1	3	3
Infectious Diseases (e.g., hepatitis, TB, etc.)	10	2	6	4	8	5	6
Motor vehicle crash injuries	8	4	6	2	3	2	5
Drugs	2	2	1	1	0	0	1

MOST IMPORTANT FACTORS FOR A HEALTHY COMMUNITY

Survey Answer Choices	65 and older	HS/GED	Less than $20,000	Women	Non-White Racial Groups	Cumulative
Good place to raise children	15.6%	19.1%	14.9%	16.3%	18.9%	15.7%
Good schools	13.0%	14.9%	12.8%	13.4%	13.2%	13.1%
Access to health care (e.g., family doctor)	12.6%	10.8%	6.4%	8.1%	8.5%	11.5%
Religious or spiritual values	11.3%	10.4%	6.4%	10.0%	8.5%	10.0%
Low crime / safe neighborhoods	10.0%	8.3%	10.6%	10.0%	6.6%	9.4%
Clean environment	6.6%	5.0%	12.8%	6.2%	5.7%	6.3%
Affordable housing	6.6%	7.9%	8.5%	8.6%	7.5%	6.7%
Good jobs and healthy economy	6.0%	3.7%	6.4%	7.2%	6.6%	6.1%
Strong family life	6.0%	7.9%	12.8%	7.2%	10.4%	8.0%
Healthy behaviors and lifestyles	4.3%	5.0%	2.1%	5.7%	8.5%	5.7%
Parks and recreation	3.7%	3.3%	4.3%	2.9%	1.9%	3.3%
Emergency preparedness	2.0%	1.7%	0.0%	1.0%	1.9%	1.8%
Low level of child abuse	1.3%	0.4%	2.1%	1.4%	0.0%	1.0%
Excellent race/ethnic relations	0.3%	0.4%	0.0%	1.0%	0.9%	0.4%
Low adult death and disease rates	0.3%	0.4%	0.0%	0.0%	0.0%	0.2%
Low infant deaths	0.3%	0.4%	0.0%	0.5%	0.0%	0.4%
Arts and cultural events	0.0%	0.4%	0.0%	0.5%	0.9%	0.2%

HEALTHY COUNTY RANKINGS

	Antelope	Boyd	Brown	Cherry	Holt	Keya Paha	Knox	Pierce	Rock	NCDHD	NE	Best of U.S.
Length of Life												
Premature Death	4,900	5,200		4,800	5,200		8,500	4,400		5,500	5,800	5,200
Quality of Life												
Poor or fair health	11%	14%	13%	12.0%	12%	13%	13%	11%	13%	12%	13%	12%
Poor physical health days	2.80	3.00	3.00	2.80	2.80	2.90	2.80	2.60	2.90	2.84	2.90	2.90
poor mental health days	2.60	2.80	2.80	2.70	2.70	2.80	2.90	2.50	2.80	2.73	2.80	2.80
Low birthweight	5%	12%	5%	6.0%	6%		6%	5%		6%	7%	6%
Health Behaviors												
Adult smoking	15%	15%	15%	16.0%	15%	15%	16%	15%	16%	15%	17%	14%
Adult obesity	27%	33%	31%	26.0%	32%	28%	30%	35%	32%	30%	30%	25%
Food environment index	6.90	4.40	7.50	6.90	7.70	3.10	5.30	6.20	7.50	6.17	7.70	8.30
Physical inactivity	28%	30%	31%	31.0%	31%	35%	32%	30%	33%	31%	24%	20%
Access to exercise opportunities	42%	48%	15%	60.0%	45%	13%	59%	34%	2%	35%	80%	91%
Excessive drinking	19%	17%	17%	18.0%	20%	17%	20%	20%	19%	19%	21%	12%
Alcohol-impaired driving deaths	20%	50%	0%	45.0%	56%	100%	73%	29%	50%	47%	35%	14%
Sexually transmitted infections				174.6	77.0		128.3	83.7		115.90	393.5	134.1
Teen Births	18.0		16.0	40.0	20.0		22.0	18.0		22.33	31.0	19.0
Clinical Care												
Uninsured	14%	18%	17%	17%	14%	26%	18%	12%	22%	18%	11%	11%
Primary care physicians	2,150:1	680:1	2,930:1	1,450:1	950:1	790:0	1,710:1	1,190:1	1,410:1	1,422:1	1,350:1	1,040:1
Dentists	3,200:1	2,030:1	2,940:1		950:1	810:0	1,410:1	2,400:1	1,440:0	1,794:1	1,420:1	1,340:1
Mental health providers	3,200:1		1,470:1	5,760:1	450:1	810:0	4,240:1	2,400:1	720:1	1,983:1	410:1	370:1
Preventable hospital stays	68	80	58	61	70		54	66	71	66	51	38
Diabetic monitoring	86%	80%	82%	85%	75%		82%	80%	92%	83%	86%	90%
Mammography screening	62%	66%	60%	58%	58%	65%	66%	65%	76%	64%	62%	71%
Social and Economic Factors												
High school graduation					89%					89%	87%	93%
Some college	71%	65%	73%	70%	76%	69%	65%	77%	66%	70%	70%	72%
Unemployment	2.7%	3.3%	3.4%	2.5%	2.7%	2.8%	3.2%	2.8%	2.6%	2.9%	3.3%	3.5%
Children in poverty	19%	20%	18%	22%	17%	31%	22%	13%	22%	20.4%	16%	13%
Income inequality	4.10	3.70	4.70	3.80	4.20	4.00	4.30	3.30	4.10	4.02	0.04	3.70
Children in single-parent households	22%	7%	28%	13%	17%	23%	23%	16%	29%	19.8%	29%	21%
Social associations	32.5	19.7	20.5	27.6	20.1	12.7	17.5	22.4	35.4	23.16	14.3	22.1
Violent crime	46.0	47.0	42.0	208.0	29.0	0.0	8.0	30.0	44.0	50.44	264.0	59.0
Injury deaths	70		130	77	67		93	39	136	87.43	1	51
Physical Environment												
Air pollution	11.70	11.70	12.30	12.60	11.90	11.80	11.70	11.60	12.20	11.94	12.10	9.50
Drinking water violations	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Severe housing problems	11%	11%	11%	11%	8%	22%	8%	10%	8%	11%	13%	9%
Driving alone to work	74%	67%	76%	63%	73%	52%	75%	78%	65%	69%	81%	71%
Long commute-drive alone	22%	23%	10%	16%	10%	33%	19%	19%	16%	19%	17%	15%

Data Source: County Health Rankings and Road Maps

APPENDIX B

FORCES OF CHANGE ASSESSMENT

CHNA Focus Group Meeting
March 7, 2019

Thirty-six individuals across the service area were invited to a 1hour focus group meeting at the Creighton Library. The meeting was moderated by Diane Selby from the North Central District Health Department.
Attending the meeting: Ruth Vonderohe, Retired Knox County Extension agent; Cathy Hitz, Area Agency on Aging; Lauren Kinney, RN; Todd Consbruck, CEO of Avera Creighton Hospital; and Jean Henes, MSN, RN, Director of Nursing at Avera Creighton Hospital.
Introductions were made and ground rules reviewed. The following questions were discussed:
What are some positive things in your community that contribute to your health? (strengths/assets)
Probes*: what types of things are available here; what activities do you do here?*
Avera Wellness Center, Avera Walkway between hospital and nursing home to walk laps, some community exercise classes

In your community what gives you the greatest concern? *(threats/ weaknesses)*

1. A void for senior options between home and nursing home – have retirement housing but no assisted living.
2. Limited restaurants
3. Limited senior activities at Senior Center
4. Mental health resources
5. Drug abuse in community - Methamphetamine

What resources exist in your community to serve diverse populations? *(elderly, Hispanic, youth, disable individuals*)
Largest diverse population is elderly, Native Americans, disabled individuals.
Plainview Ministerial Association does monthly food distribution.

Do you believe Mental Health is an unmet health need in Knox County?
Participants said yes but were not aware of the Behavioral Health services currently available at Avera Creighton Hospital.
Asked if Alcoholics Anonymous still met in Creighton. There was a group meeting, but no one was sure if that still happens

What can be done to improve the health in Knox County residents? *(opportunities)*
See answers above.

What recreational facilities/opportunities exist to keep residents active year-round?
Golf course, swimming pool, park, walking at the hospital walkway or the school track, Avera Wellness Center

Where do you receive your health care?
No one actually answered this question.

Additional Forces of Change identified in the March 27th Data Presentation Meeting.

2019 FORCES OF CHANGE ASSESSMENT: Identification of Events, Factors, & Trends

	EVENTS	FACTORS	TRENDS
SOCIAL	Town/Community Celebrations	Financial insecurity	Increased substance abuse
			Increase in obesity
	School Consolidation		Increased mental health needs
	Closing of stores/services		Decreased population (age 18-35) moving elsewhere
			Increasing minority populations
			Aging population
ECONOMIC	Closing of all Shopko	Economic devastation in area due to Flood	Closing physical department stores
	Consolidation of schools	Fewer millennials	Online shopping option
	2019 Flood	Impact of farm land from Flood	
	Hospital closure	Impact on ranchers from Flood	

	ICE Raid	Anticipated increased cost of beef and pork	
LEGAL/POLITICAL	Affordable Care Act	Fear of change/term of officials	Dated methods
	New legislation at state level	More government regulations	Do more for less
		Cost of insurance	More healthy living to avoid costs of healthcare
TECHNOLOGICAL/SCIENTIFIC	Technological demands	Internet/social media access	Increased connectivity
	Social media	Marketing choices	Increased screen time
	Specialized industry	Telehealth	Increased knowledge
	Wind energy		Increased computer use
	Fiber optics		
ENVIRONMENTAL	2019 March Flood	Clean water issues who to 2019 Flood	
	Wind farm	Usable roads due to 2019 Flood	
	Obesity	Impact of farm land from Flood	
		Impact on ranchers from Flood	
ETHICAL	Drug use	Focus on how to plan for all stages of life	Increased longevity
	Medical Marijuana	Internet	Vaping popularity with youth
	Cultural competency		Decreased church attendance, spiritual, support systems
	Sex trafficking busts		Exposure to adult themes and illegal activity

FORCES OF CHANGE ASSESSMENT: Assessment of Impact (Threats & Opportunities)

FORCES OF CHANGE	THREATS POSED	OPPORTUNITIES CREATED
EVENTS		
Affordable Care Act	High insurance costs, decreased # insured, won't take needed medications, pre-existing conditions, affordability for middle class	Pre-existing conditions (some help), wellness
Closing of all ShopKo stores	Decrease in resources; more demand for online shopping; more demand for out of town shopping; decreased employment opportunities	Opportunity for new business
2019 March Floods	Contaminated water; destroyed water facilities; destroyed farm land; destroyed livestock; destroyed homes and land; mental health threat; great financial burden on individuals, community, and state; etc.	Collaboration, opportunities to volunteer and show area
ICE Raid	Decreased workforce; economic impact on the employers; restaurant closure; new group of immigrants	Increase in tax generation; increase in documented persons living in area; greater understanding of population; community support
New State Legislation	New RNs waiting for criminal background, impact patient care	Patient protection and proper screening for teachers/coaches
Consolidation of Schools	Increased transportation, financial drain, loss of jobs, decreased tax base, decreased incentive for new	Increased: funding, networking of communities, competitiveness, diversity, resource sharing

	families, community/family division, economic stress	
Internet Access	Decrease small town businesses	Telemedicine/telehealth, education, distance learning
FACTORS		
Increase in elderly population	Not enough people in the workforce to care for such individuals; lack of nursing home access; financial burden to families.	New construction; increase demand for younger population to move back; more available jobs.
Accessibility (Broadband Initiative)	Distraction (general and in vehicles), financial drain, accessibility, exposure to radiation, decreased social skills, isolation, withdrawal from society, decreased physical activity	Marketing, education, access to information, working from home, research, staying connected, safety, convenience, online banking/shopping
Clean Water	Contamination of water and facilities due to flood	
TRENDS		
Closing of Healthcare Facilities	Decreased access to care, decrease ability to draw new residents, increased commuting, increased family stressors loss of jobs, negative impact on retail in community, decreased town image	More expansion at other hospitals
Decreasing Rural Population	Job force, small town businesses, school funding	Urban opportunities
Migration	Stress to healthcare, housing, language barriers	Money to community, diversity
Child Care	Decreased employees, market, social skills	Increased market, social skills, employees

Changing Demographics	**Increased healthcare needs, decreased workforce; increase in language barrier; cultural differences**	**Retention- more opportunity for specialized care; increase in cultural competency training; new friends**
Technological Demands	**Broadband limited, identity theft, cyber security, isolation, misinformation**	**New jobs-fiber optic; education of cyber security; brings a younger generation of workers back**
Health Issues	**Increased obesity and other health issues, increased cost of healthcare**	**Increased need for farmers market, healthcare options, store/shop needs, educational opportunities**
Vaping	**healthcare needs; youth becoming addicted to nicotine at a very young age**	**cessation education; tax on vaping**

APPENDIX C

2018 County Health Rankings Report

North Central District Health Department (NCDHD)

Developed by Wanying Pei

Health Outcomes

Health outcomes are determined by the length and quality of life equally. The table below presents the five underlying measures of health outcomes for NCDHD, NE, and the U.S. The number of premature death and percentage of adults who reported poor or fair health in NCDHD (5,880, 12.8%) is lower than Nebraska (6,000, 14%) but higher than the U.S (5,300, 12%). But the average number of physically and mentally unhealthy days reported in NCDHD (2.96, 2.97) is lower than both Nebraska (3.2, 3.2) and the U.S. (3.0, 3.1). The percentage of low birthweight in NCDHD (6%) is same as the U.S. (6%) but lower than Nebraska (7%).

Health Outcomes					
Measure		Description	NCDHD	NE	U.S.
Length of Life	Premature Death	Years of potential life lost before age 75 per 100,000 population	5,880	6,000	5,300
Quality of Life	Poor or Fair Health	% of adults reporting fair or poor health	12.8%	14%	12%
	Poor Physical Health Days	Average # of physically unhealthy days reported in past 30 days	2.96	3.2	3.0
	Poor Mental Health Days	Average # of mentally unhealthy days reported in past 30 days	2.97	3.2	3.1
	Low Birthweight	% of live births with low birthweight (< 2500 grams)	6%	7%	6%

Health Factors

Health factors represent the key areas that determine how long and how well people live. Health factors include health behaviors (tobacco use, diet and exercise, alcohol and drug use, sexual activity), clinical care (access and quality of care), social and economic factors (education, employment, income, family and social support, community safety), and the physical environment (air and water quality, housing and transit).

1. Health Behaviors

The adult smoking rate in NCDHD (14.9%) is similar to the U.S. (14%) but lower than Nebraska (17%). Adult obesity rate in NCDHD (31.1%) is similar to Nebraska (31%) but higher than the U.S. (26%). The food environment index in NCDHD (6.98) is lower than Nebraska (8.1) and the U.S. (8.6) to some degree, with Boyd (4.8) and Keya Paha (4.4) being the two driving counties. The percentage of physical inactivity in NCDHD (30%) is far higher than Nebraska (23%) and the U.S. (20%), with the lowest percentage of 28% (Antelope, Knox, and Pierce). The percentage of population with adequate access to physical activity locations in NCDHD (44%) lowers significantly than Nebraska (83%) and the U.S. (91%). That's because Boyd (1%) and Rock (0%) have almost no access to physical activity locations, and Keya Paha (33%) has a relatively low level of access.

Percentage of excessive drinking in NCDHD (18.7%) is slightly lower than Nebraska (21%) but higher than the U.S. (13%). The percentage of driving deaths with alcohol involvement in NCDHD (44%) is extremely high when comparing with the U.S. (13%), and the percentage of Nebraska is 37%. This extreme number results from the high variety between the counties (17% in Antelope vs. 100% in Keya Paha). Incidence rate of sexually transmitted infections in NCDHD (201.8) is far less than Nebraska (422.9), but still higher than the U.S. (145.1). Teen births rate in NCDHD (21) is lower than Nebraska (25) but higher than the U.S. (15).

Health Factors					
Measure		Description	NCDHD	NE	U.S.
Health Behaviors	Adult Smoking	% of adults who are current smokers	14.9%	17%	14%
	Adult Obesity	% of adults that report a BMI ≥ 30	31.1%	31%	26%
	Food Environment Index	Index of factors that contribute to a healthy food environment, (0-10)	6.98	8.1	8.6
	Physical Inactivity	% of adults aged 20 and over reporting no leisure-time physical activity	30%	23%	20%
	Access to Exercise Opportunities	% of population with adequate access to locations for physical activity	44%	83%	91%
	Excessive Drinking	% of adults reporting binge or heavy drinking	18.7%	21%	13%

	Alcohol-Impaired Driving Deaths	% of driving deaths with alcohol involvement	44%	37%	13%
	Sexually Transmitted Infections	# of newly diagnosed chlamydia cases per 100,000 population	201.8	422.9	145.1
	Teen Births	# of births per 1,000 female population ages 15-19	21	25	15

2. Clinical Care

Uninsured rate in NCDHD (12%) is higher than Nebraska (9%) and two-times higher than the U.S. (6%). The population/practitioner ratios of primary care physicians, dentists, and mental health providers in NCDHD (1499:1, 1554:1, 2421:1) are far higher than Nebraska (1340:1, 1360:1, 420:1) and the U.S. (1030:1, 1280:1, 330:1), especially for the mental health providers. Preventable hospital stays in NCDHD (55) is slightly higher than Nebraska (48), but still far higher than the U.S. (35). Both the diabetes monitoring and mammography screening rates in NCDHD (82%, 59%) are lower than Nebraska (87%, 62%) and the U.S. (91%, 71%).

Health Factors					
Measure		Description	NCDHD	NE	U.S.
Clinical Care	Uninsured	% of population under age 65 without health insurance	12%	9%	6%
	Primary Care Physicians	Ratio of population to primary care physicians	1499:1	1340:1	1030:1
	Dentists	Ratio of population to dentists	1554:1	1360:1	1280:1
	Mental Health Providers	Ratio of population to mental health providers	2421:1	420:1	330:1
	Preventable Hospital Stays	# of hospital stays for ambulatory-care sensitive conditions per 1,000 Medicare enrollees	55	48	35

	Diabetes Monitoring	% of diabetic Medicare enrollees ages 65-75 that receive HbA1c monitoring	82%	87%	91%
	Mammography Screening	% of female Medicare enrollees ages 67-69 that receive mammography screening	59%	62%	71%

3. Social & Economic Factors

Data of high school graduation rate is unavailable in NCDHD. Percentage of some college degree in NCDHD (71%) is almost the same as Nebraska (71%) and the U.S. (72%). The unemployment rate in NCDHD (2.8%) is lower than both Nebraska (3.2%) and the U.S. (3.2%). Percentage of children in poverty in NCDHD (19%) is higher than Nebraska (14%) and the U.S. (12%). The ratio of income inequality in NCDHD (4.0) is between Nebraska (4.3) and the U.S. (3.7). Percentage of children in single-parent household in NCDHD (19%) is lower than both Nebraska (29%) and the U.S. (20%). Numbers of social associations and injury death in NCDHD (22.7, 80) are higher than Nebraska (13.9, 58) and the U.S. (22.1, 55), but the number of violent crime in NCDHD (50) is far lower than Nebraska (267) and slightly lower than the U.S. (62).

Health Factors					
Measure		Description	NCDHD	NE	U.S.
Social & Economic Factors	High School Graduation	% of ninth-grade cohort that graduates in four years	.	87%	95%
	Some College	% of adults ages 25-44 with some post-secondary education	71%	71%	72%
	Unemployment	% of population aged 16 and older unemployed but seeking work	2.8%	3.2%	3.2%
	Children in Poverty	% of children under age 18 in poverty	19%	14%	12%
	Income Inequality	Ratio of household income at the 80th percentile to income at the 20th percentile	4.0	4.3	3.7

	Children in Single-parent household	% of children that live in a household headed by a single parent	19%	29%	20%
	Social Associations	# of membership associations per 10,000 population	22.7	13.9	22.1
	Violent Crime	# of reported violent crime offenses per 100,000 population	50	267	62
	Injury death	# of deaths due to injury per 100,000 population	80	58	55

4. Physical Environment

The average density of particulate matter in NCDHD (7.4) is higher than the U.S. (6.7) but lower than Nebraska (8.2). Five counties that have drinking water violations are Boyd, Cherry, Holt, Knox, and Rock. Percentage of households with severe housing problems in NCDHD (11%) is lower than Nebraska (13%) but higher than the U.S. (9%). Percentage of workforce that drives alone to work in NCDHD (70%) is lower than both Nebraska (81%) and the U.S. (72%). The percentage of long-commute driving-alone workforce in NCDHD (19%) is slightly higher than Nebraska (18%) and the U.S. (15%).

Health Factors					
Measure		Description	NCDHD	NE	U.S.
Physical Environment	Air Pollution – Particulate Matter	Average daily density of fine particulate matter in micrograms per cubic meter (PM2.5)	7.4	8.2	6.7
	Drinking Water Violations	Indicator of the presence of health-related drinking water violations. Yes - indicates the presence of a violation, No - indicates no violation.	5 Yes	.	.
	Severe Housing Problems	% of households with overcrowding, high housing costs, or lack of kitchen or plumbing facilities	11%	13%	9%
	Driving Alone to Work	% of workforce that drives alone to work	70%	81%	72%

	Long Commute – Driving Alone	Among workers who commute in their car alone, % commuting > 30 minutes	19%	18%	15%

Ranked Measure Sources and Years of Data

	Measure	Source	Years of Data
Health Outcomes			
Length of Life	Premature Death	National Center for Health Statistics – Mortality files	2014-2016
Quality of Life	Poor or Fair Health	Behavioral Risk Factor Surveillance System	2016
	Poor Physical Health Days	Behavioral Risk Factor Surveillance System	2016
	Poor Mental Health Days	Behavioral Risk Factor Surveillance System	2016
	Low Birthweight	National Center for Health Statistics – Natality files	2010-2016
Health Factors			
Health Behaviors			
Tobacco Use	Adult Smoking	Behavioral Risk Factor Surveillance System	2016
Diet and Exercise	Adult Obesity	CDC Diabetes Interactive Atlas	2014
	Food Environment Index	USDA Food Environment Atlas, Map the Meal Gap	2015
	Physical Inactivity	CDC Diabetes Interactive Atlas	2014
	Access to Exercise Opportunities	Business Analyst, Delorme map data, ESRI, & U.S. Census Files	2010 & 2016
Alcohol and Drug Use	Excessive Drinking	Behavioral Risk Factor Surveillance System	2016
	Alcohol-Impaired Driving Deaths	Fatality Analysis Reporting System	2012-2016

Sexual Activity	Sexually Transmitted Infections	National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention	2015
	Teen births	National Center for Health Statistics – Natality files	2010-2016
Clinical Care			
Access to Care	Uninsured	Small Area Health Insurance Estimates	2015
	Primary Care Physicians	Area Health Resource File/American Medical Association	2015
	Dentists	Area Health Resource File/National Provider Identification file	2016
	Mental Health Providers	CMS, National Provider Identification file	2017
Quality of Care	Preventable Hospital Stays	Dartmouth Atlas of Health Care	2015
	Diabetes Monitoring	Dartmouth Atlas of Health Care	2014
	Mammography Screening	Dartmouth Atlas of Health Care	2014
Social and Economic Factors			
Education	High School Graduation	EDFacts	2014-2015
	Some College	American Community Survey	2012-2016
Employment	Unemployment	Bureau of Labor Statistics	2016
Income	Children in Poverty	Small Area Income and Poverty Estimates	2016
	Income Inequality	American Community Survey	2012-2016
Family and Social Support	Children in Single-Parent Households	American Community Survey	2012-2016

	Social Associations	County Business Patterns	2015
Community Safety	Violent Crime	Uniform Crime Reporting – FBI	2012-2014
	Injury Deaths	CDC WONDER mortality data	2012-2016
Physical Environment			
Air and Water Quality	Air Pollution – Particulate Matter	Environmental Public Health Tracking Network	2012
	Drinking Water Violations	Safe Drinking Water Information System	2016
Housing and Transit	Severe Housing Problems	Comprehensive Housing Affordability Strategy (CHAS) data	2010-2014
	Driving Alone to Work	American Community Survey	2012-2016
	Long Commute – Driving Alone	American Community Survey	2012-2016

Steps of finding the data and conducting this report

Go to County Health Rankings website at http://www.countyhealthrankings.org/explore-health-rankings, then type Nebraska under the Find County Rankings and click on search, choose rankings from the bars under Nebraska. From there we can see clearly the ranking of counties and get detailed information for each county by clinking on the name of the county from the left column.
The health data for NCDHD were calculated by averaging data of the nine counties (exclude missing data) within the serving area of NCDHD. The health data for Nebraska and the U.S. were obtained directly from the County Health Rankings website (can be seen within each county). The summary in text for each table was then developed accordingly. The last table (Ranked Measure Sources and Years of Data) was obtained from 2018 County Health Rankings Report – Nebraska at http://www.countyhealthrankings.org/app/nebraska/2018/downloads.