

# Eastern Band of Cherokee Indians Tribal Health Assessment 2018

Published June 01, 2019

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**Eastern Band of Cherokee Indians Public Health & Human Services Division**  
**Vision, Mission, and Values**

**ᐱᐱᐱᐅᐅᐅᐅ**  
**OUR VISION**

**ᑭᑭᑭᑭᑭ ᐅᐅᑭᑭᑭᑭ ᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅ, ᐅᐅᐅ, ᐅᐅ ᐅᐅᐅᐅᐅ**  
*Seven Generations of wellness with families strong in mind, body, and spirit*

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**OUR MISSION**

**ᐅᐅᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅ ᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅ ᐅᐅᐅᐅᐅᐅᐅᐅ,**  
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*HONORING our Cherokee Community by PROVIDING excellent care, PROMOTING health,*  
*and SERVING families in a culturally respectful way*

**ᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅ**  
**OUR CORE VALUES**

|                            |                                      |
|----------------------------|--------------------------------------|
| <b>ᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅᐅ</b>       | <i>Group Harmony</i>                 |
| <b>ᑭᑭᑭᑭᐅᐅ</b>              | <i>Interconnectedness</i>            |
| <b>ᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅ - ᑭᐅᐅᐅᐅ</b> | <i>Strong Individual Character</i>   |
| <b>ᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅ</b>        | <i>Compassionate Service</i>         |
| <b>ᐅᐅᐅᐅᐅ</b>               | <i>Commitment to Stewardship</i>     |
| <b>ᐅᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅ</b> | <i>Respect for Cherokee Heritage</i> |
| <b>ᐅᐅᐅᐅ ᐅᐅᐅᐅᐅᐅ</b>         | <i>Value Families</i>                |
| <b>ᐅᐅᐅᐅᐅ ᐅᐅᐅᐅᐅᐅ</b>        | <i>Sense of Humor</i>                |
| <b>ᐅᐅᐅᐅᐅᐅᐅ</b>             | <i>Generosity</i>                    |
| <b>ᐅᐅᐅᐅᐅᐅᐅ</b>             | <i>Enthusiasm</i>                    |





May 1, 2019

hvi hsv!

Siyo nigada,

On behalf of the Public Health and Human Services Division (PHHS), I am excited to share the results of the Eastern Band of Cherokee Indians 2018 Tribal Health Assessment. Our team is confident that this document presents, not only a comprehensive health assessment of the Eastern Band of Cherokee Indians, but also the inclusion of our community members' views and ideas. The overall goal was to gather information that would help determine the top health priorities of our community so that the PHHS team, along with partners and stakeholders, can develop strategies to address these priorities.

This document is a collaborative effort and would not have been possible without the valuable relationships between PHHS, local and regional partners, volunteers, and the incredible team of PHHS employees. The first Tribal Health Assessment was in 2013, which led to the development of a Tribal Health Improvement Plan (THIP), a set of strategies to address community priorities and improve health. The 2013 THIP addressed the priority areas of depression, substance use, and diabetes. The 2018 THA resumes the Tribal Health Improvement cycle and will use the data collected to, once again, identify the top health priorities and a subsequent THIP.

We hope that this document inspires conversation about health conditions and systematic approaches needed for improvement of health in our community. As you read the document, please consider joining us in the process of addressing the identified health priorities and development of the 2018 Tribal Health Improvement Plan.

I am grateful to be part of such a strong, resilient, caring community that will use this document to make a difference in all our lives.

For more information on how YOU can help make a difference in our community's health, write [thip@nc-chokeee.com](mailto:thip@nc-chokeee.com) or call 828-359-6180.

Sgi and Gvyalielitsehi,

ovv, EcθPRvVθ,

Vickie Bradley, MPH, BSN, RN

Secretary, EBCI Public Health and Human Services Division

# EBCI TRIBAL HEALTH ASSESSMENT



## NOTICE

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The **EBCI Tribal Health Assessment** is a product of the Eastern Band of Cherokee Indians Public Health and Human Services Division (PHHS), in partnership with Cherokee Indian Hospital Authority, Analenisgi Behavioral Health, Cherokee Central Schools, and Western North Carolina Healthy Impact as part of a Tribal health improvement process. The Tribal Health Assessment (THA) Team oversaw and coordinated the process and is responsible for this document.

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*Western Carolina University*

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For grant support, technical assistance, and collaboration we wish to thank the ***National Indian Health Board*** (NIHB), the ***United South and Eastern Tribes (USET)***, and the ***Centers for Disease Control and Prevention*** (CDC) Good Health and Wellness in Indian Country grant.

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For their hard work and commitment to the community survey process and to their everyday missions in PHHS, we thank the dedicated PHHS staff.

And most of all, we thank the Cherokee community for the opportunity to serve you.

*oᎃY!*

*S-gi!*

*Thank you!*

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# EBCI TRIBAL HEALTH ASSESSMENT 2018: EXECUTIVE SUMMARY

## Purpose and Process

Conducting a Tribal community health assessment (THA) is an important part of improving and promoting the health of the Cherokee community. **The Tribal community health assessment is a key step in the ongoing Tribal health improvement process.**

A Tribal health assessment (THA), which is both a process and a product, looks into and explains how healthy the Tribal community is, how we know, what has changed, and what still needs to change to become the healthiest possible EBCI community.

The Eastern Band of Cherokee Indians (EBCI) Public Health and Human Services Division (PHHS) has sponsored and coordinated this 2018 Tribal Health Assessment (THA), the second community health assessment conducted by and for the EBCI community. The first THA was in 2013, and the THA is written and published every five years.



This document is a collaborative product of the Cherokee Health System (EBCI PHHS and Cherokee Indian Hospital Authority [CIHA]), WNC Healthy Impact (via Western North Carolina Health Network [WNCHN]), the United South and Eastern Tribes (USET) Tribal Epidemiology Center (TEC), and our county and state public health partners. The THA is both a process and a document to:

- Collect and present data specific to the health status of the Cherokee community from existing sources, including current assets and resources for health<sup>1</sup>
- Invite and present input from the Cherokee community on health status
- Start a cycle of assessment, analysis, prioritization, improvement, and evaluation to pull together efforts to reach the best possible health for the Cherokee community

For more information on the data in this report, see [Chapter 1](#) and [Appendix A](#).

The THA is most useful when the community shares it widely and has input into the discussion about the community's health and actions to improve it. The THA Team has analyzed data and will facilitate a process to prioritize identified health needs, work closely with Tribal Government, the community, and external partners to take action and determine how the

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<sup>1</sup> For the EBCI Health Resource Directory, a comprehensive listing of local and regional resources for health and wellness, visit <http://cherokee-phhs.com/resource-guide/index.html>.



community is better off for these efforts. This process is the Tribal Health Improvement Process or THIP. The first round of the EBCI THIP was in 2015-17.

## Data Summary

The set of data reviewed for the THA process is comprehensive, though not all of it is presented in this document.<sup>2</sup> This report shares a general overview of health and influencing factors, and then focuses more on top health issues identified through this collaborative process. The THA also highlights some of the EBCI community's strengths and resources available to help address the most pressing issues.

The THA Team has gathered data from a variety of sources. As in the 2013 THA, The Data Team emphasized data specific to the EBCI community. In 2013, the team had difficulty finding and analyzing EBCI-specific data<sup>3</sup>, but by 2018, PHHS, its Tribal and external partners have developed a process to obtain and track large quantities of data that are critical to knowing and defining the health resources and health issues in the Cherokee community. The data includes statistics (quantitative data) from both inside and outside EBCI and input from community members (qualitative data).

The THA Team convened regularly over a period of months to bring together all the data sources, discuss and analyze the data, and pull out areas that the community identified and/or that were important within EBCI and in comparison with other populations (e.g., the Nashville Area, the state of NC, the US) as indicators of the health of the population. The team also used Public Health benchmarks such as Healthy People 2020, Healthy North Carolina 2020,<sup>4</sup> and GPRA (Government Performance and Results Act) measures to analyze Tribal health data. The result is this compilation. For more information on health benchmarks and measures, contact [THIP@nc-chokeee.com](mailto:THIP@nc-chokeee.com).

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<sup>2</sup> The THA dataset is the property of EBCI and is available for use by EBCI Tribal entities by permission of the Secretary of PHHS. For more information, contact [THIP@nc-chokeee.com](mailto:THIP@nc-chokeee.com)

<sup>3</sup> In 2012-13, most readily available data that pertained to EBCI used county and state jurisdictional boundaries to define their populations, which made it difficult to determine how well the data described EBCI. This did not work for EBCI, whose members live in 5 counties in western NC, both on and off Tribal lands, as well as in other locations in the US and abroad. In addition, US Census and NC population data generally do not allow individuals to enter their specific Tribe or to name multiple Tribal ancestries.

<sup>4</sup> <https://www.healthypeople.gov/> Every 10 years, the US Government produces Healthy People, a set of health indicators as goals for the nation, and NC produces Healthy North Carolina in conjunction with this document. The THA Team used Healthy People 2020 and Healthy North Carolina 2020 data to assist in their analysis.

## Community

### Health Outcomes

After the 2013 THA, PHHS led the first community-wide Tribal Health Improvement Process/Plan (THIP), which took place 2015-17. To learn about the process and read the 2015-17 THIP, please visit <http://cherokee-phhs.com/pdfs/THIPFINAL2015.pdf>

The THIP identified three major health priorities:

- Depression
- Substance Abuse
- Diabetes

Three THIP Teams addressed goals, objectives, and activities for each priority issue during the 3-year process. The THIP's final report on progress and challenges in these areas is available in the 2015-17 Tribal Health Improvement Plan Summary Report, available from [THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com) or at [www.cherokee-phhs.com](http://www.cherokee-phhs.com).

In summary, improvements in the conditions identified in the THIP included:

#### Depression:

- Increased screening, referral, and treatment of depression at CIHA and Analenisgi
- Integration of Behavioral Health staff into primary care clinics at CIHA to emphasize that emotional and physical factors are both critical to good health
- Improved communication and coordination between PHHS, CIHA, Analenisgi, and CCS
- The establishment of Family Safety and Family Support in PHHS, which has brought adult and child protective services, social work services, and foster care under Tribal control, and has aligned these services with support for families such as food distribution, emergency pantry, burial funding support, and energy support
- Establishment of the Youth Risk and Resiliency Survey (YRRS) every two years at CCS; questions on depression and resilience will assist CCS to identify and refer students with depression issues
- Elders' Medicine Walks
- Elders-Clinicians Gatherings
- Cherokee Choices Summer Camp attendee surveys to screen for depression and related issues
- Increased attendance at Cherokee Choices Annual Stress and Wellness Retreat with instruction in stress management and self-care

#### Substance Use:

- Convening the “Cultural Identity Task Force” led to the resumption of Elders-Clinicians Gatherings to enable Tribal elders to communicate directly with clinicians in a group setting and discuss health issues.
- The work of the Substance Abuse Team lent support and momentum to the establishment of Kanvwotiyi, ᏊᏊᏍᏔᏂ, “the place where one is healed,” EBCI’s residential treatment center in Snowbird.
- Substance abuse was added to CIHA clinic screening to help identify clients with substance abuse issues and connect them with services.
- Cherokee Central Schools implemented or increased substance abuse prevention programming.

#### Diabetes:

- The majority of persons with Type 2 diabetes enrolled in the Diabetes Education Empowerment Program (DEEP) completed the program.
- The great majority of middle and high school students at CCS get the recommended level of physical activity.
- Cherokee Choices Summer Camp identified children at risk of Type 2 diabetes, taught them healthy activities and nutrition, and provided access to behavioral health services.
- Cherokee Choices Stress and Healing Arts Retreats provided self-care and healthy behavior education and experiences.

#### Populations at risk

Groups in the EBCI community who are at risk of health issues are similar in many ways to the overall population of WNC, but different in significant ways that are discussed in the data below. (See p. 56 for further discussion.) EBCI groups at health risk include but may not be limited to:

- People with diabetes or other chronic diseases, including chronic contagious diseases such as hepatitis C and HIV/ AIDS
- Infants, children, and pregnant women
- Elders
- Persons with sensory deficits such as blindness and deafness
- Persons with physical disabilities
- Persons with, and affected by, substance use disorder
- Persons who are economically disadvantaged
- Persons with low levels of literacy, both in terms of schooling and cultural and traditional knowledge
- Persons who speak English as a second language or have limited English proficiency

For additional discussion of at-risk populations in EBCI, turn to [Chapter 5, p. 56](#).

## Health Priorities

Based on analysis of the multiple data sources above, and with the collaboration of the THA Leadership Team, consisting of PHHS, CIHA, Cherokee Central Schools (CCS), and Analenisgi leadership, PHHS has determined a “Top Ten” list of health priorities for the EBCI community. The priority list below includes both the issue and an assessment of resources that already exist in EBCI to address them. This is called an “assets-based assessment,” which lets the community know currently active resources so that they have a starting point for working toward health improvement.

The next step in the Tribal Health Improvement cycle will be to convene the second community-wide THIP Group to determine the top 2-3 health priorities to address as a community. All of the health priority issues will continue to be addressed in some way by Tribal partners, but in the THIP, the efforts of the entire community will focus on these central, critical priorities.

The THIP Group will determine the priority issues, the results desired for each issue, indicators for success, strategies, and performance measures for each priority issue in an ongoing, facilitated process.

The “Top Ten” issues are:

[Health Priority 1: Substance Abuse and Related Issues](#)

[Health Priority 2: Violence and Abuse](#)

[Health Priority 3: Diabetes](#)

[Health Priority 4: Hepatitis C](#)

[Health Priority 5: Heart Disease](#)

[Health Priority 6: Stress](#)

[Health Priority 7: Tobacco Use](#)

[Health Priority 8: Depression](#)

[Health Priority 9: Food Insecurity](#)

[Health Priority 10: Sexually Transmitted Infections and Teen Pregnancy](#)

For more detail on the Health Priorities, click on the links or turn to [Chapter 8](#).

## General Review of Data and Trends

The THA presents a wide range of data on Cherokee community health status. Since the 2013 THA, PHHS has worked with other partners to greatly expand data that applies directly to EBCI,



not just to the counties or state. This data comes in the form of facts or statistics from the USET Tribal Epidemiology Center, national data sets, Indian Health Service (IHS) Fact Sheets, and North Carolina (NC) state sources, also known as *secondary* data. Over the past five years, PHHS in partnership with CIHA and WNCHN has been able to increase access to data that applies specifically to the Tribe in the form of statistics that originate here and opinions or impressions from members of the community, also known as *primary* data. Primary data is crucial to painting a clear picture of the Cherokee community's health, and in this document, the THA Team has been able to include the voices of youth, elders, families including foster families, men, and the recovery community in a way not possible before.

The EBCI community and partners participated in large numbers in this assessment process, which showed that the community's expressed issues coordinate closely with the available statistics. Different readers will come away with different impressions of the data. Here are some general highlights from the THA chosen by the authors:

- THA data and community input reinforce existing concerns about the looming burden of the economic, personal, family, and social aspects of diabetes and its complications.
- The same is true of obesity and its repercussions through the life cycle, including:
  - The top negative effects on community members' lives are personal health problems and family/ home life stress/ problems with relationships.
  - A theme from the community is the general awareness of obesity's relationship to chronic disease, and the importance of accountability for and access to ways to make lifestyle changes.
- The community has expressed concerns about food access and affordability.
- The community has expressed continuing concerns about receiving respectful clinical care with cultural competence.
- There is a community desire for improved health facilities.
- There are continuing concerns about substance use, including alcohol and drugs, and their effects on families, such as mental/ behavioral health issues and the protection of children and elders.
- EBCI elders are generally satisfied with their quality of life and are appreciative of services available to them.

## Next Steps

This Health Assessment belongs to the community. The THA Team is dedicated to the assessment process and what it teaches about the well-being of all members of the community. The THA establishes a foundation that helps to determine how Tribal resources will be used to address the highest priority health issues and helps increase awareness of the best ways to improve health in the Cherokee community.

PHHS is committed to communicating these findings and issues to the EBCI community. In 2019, PHHS will publish this report publicly for the Cherokee community and will share it with all relevant entities and interest groups. PHHS will also request partners and community members to join the THIP Group and embark on the health improvement process for another cycle. PHHS is deeply grateful for all the assistance from the community in creating this document and relies on the community to move it forward and build an even more vibrant, healthy, strong EBCI.

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*The Tribal Health Improvement Process needs YOU to help improve the community's health! Contact us at 359-6180 or [THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com) to become part of the Tribal Health Improvement Process (THIP).*

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*Seven generations of wellness with  
families strong in mind, body, and spirit*  
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# CHAPTER 1 – TRIBAL HEALTH ASSESSMENT PROCESS

## Purpose and Process

The purpose of the 2018 Tribal Health Assessment (THA) is to inform and engage the EBCI Tribal community about pressing health issues and to use data to find ways to address those risks together. The THA is part of the five-year Tribal health improvement cycle (**Figure 1**):

- Assessing health-related assets and issues through data from statistics and community resources
- Analyzing health needs
- Planning for results through the Tribal Health Improvement Process/ Plan's (THIP) inclusive and collaborative process
- Implementing the plan
- Evaluating the results for the next THA

Conducting a Tribal community health assessment (THA) is an important part of improving and promoting the health of the Cherokee community. **The Tribal community health assessment is a key step in the ongoing Tribal health improvement process.**

A Tribal health assessment (THA), which is both a process and a product, looks into and explains how healthy the Tribal community is; how we know; what has changed; and what still needs to change to become the healthiest possible community.

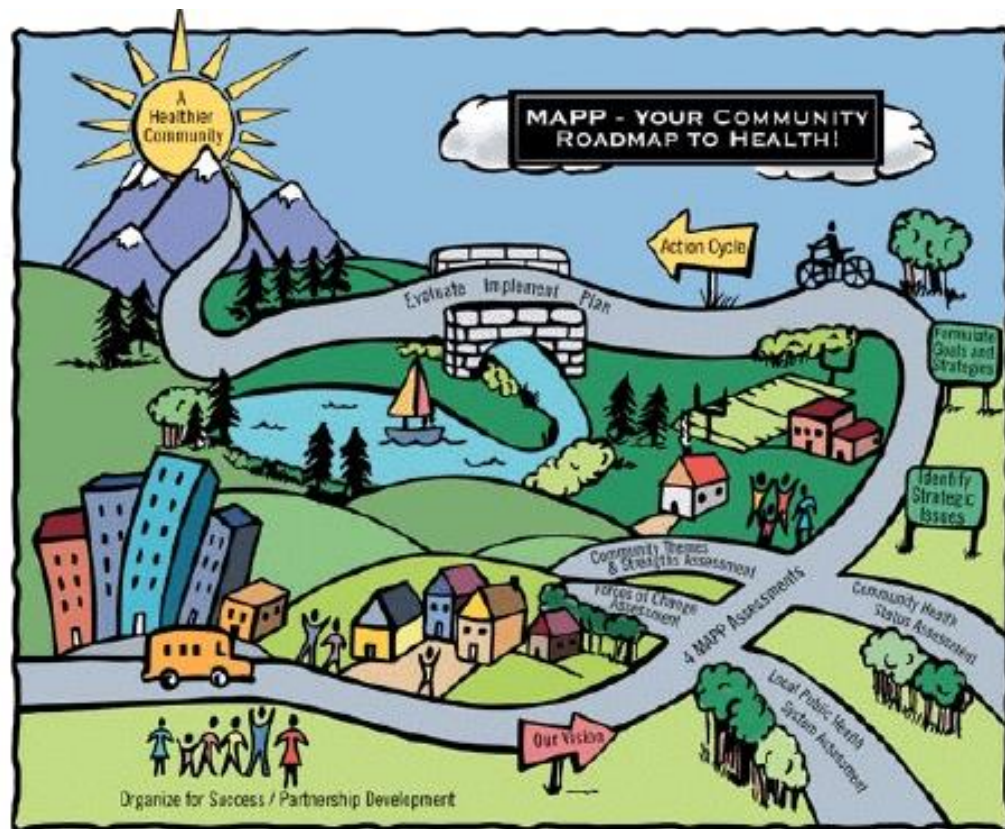
## The THA and THIP Toolkit

PHHS has adopted evidence-based tools to conduct the THA and THIP, that is, tested and proven methods. PHHS uses the Mobilizing for Action through Planning and Partnership (MAPP) process (**Figure 2**) as a framework to conduct the THA and THIP and assure robust community participation. This assessment acts as the *Community Health Status Assessment* in the MAPP flow. PHHS also uses Results Based Accountability (RBA) as the framework for continuous quality improvement in the Division's performance. RBA has been established by EBCI Tribal Resolution as the way to track how much Tribal programs are doing, how well they are doing it, and who is better off for their efforts. Other tools that PHHS has used in the THA



**Figure 1: The Health Improvement Cycle**

process include Healthy People 2020, Health North Carolina 2020,<sup>5</sup> and the Seven Directions Center for Indigenous Public Health’s accreditation resources.<sup>6</sup>



**Figure 2: The MAPP Journey to a Healthier Community**

## Definition of Community

When collecting and analyzing data on EBCI, it is essential to define the “EBCI Tribal community” in a consistent way. The definition used in the THA may be different from how some readers would define the community. For the purposes of the THA, the “EBCI Tribal community” is defined as all persons who live on Tribal trust lands in Cherokee, Graham, Haywood, Jackson, Macon, and Swain Counties, and all enrolled EBCI members who live in WNC outside Tribal lands. This does not discount Tribal members who live outside WNC, but they are not included in the THA data.

For the purpose of data collection and analysis, the THA Data Team has defined the community as all current users of the CIHA hospital system, including Analenisgi Behavioral Health. Those who use CIHA for their clinical and behavioral health care comprise more than 93% of all

<sup>5</sup> <https://www.healthypeople.gov/>

<sup>6</sup> <https://indigenouphi.org/resources-2/> (Public Health Accreditation Guidebook and Roadmap, Guide to Tribal Health Department Self-Assessment for Public Health Accreditation)



enrolled members, making this the most accurate data set available for analyzing statistics on the community's health.

Again, these definitions were chosen to make the THA data as accurate and useful as possible. In no way is the THA Data Team attempting to define enrollment in the Tribe.

## Partners

**WNC Healthy Impact**, a part of WNCHN, is a partnership between hospitals and health departments in western North Carolina to improve community health. PHHS collaborates with WNCHI for technical assistance, data analysis, report writing, and WNC county and state data for this report. **CIHA** uses RPMS (Resource and Patient Management System) to collect and analyze hospital, clinic, and behavioral health data; PHHS collaborates with CIHA on this data. **Cherokee Central Schools**, in collaboration with PHHS, performs the Youth Risk and Resiliency Survey (YRRS) every two years with middle and high school students. **EBCI Division of Agriculture and Natural Resources (DANR)** maintains data on environment and agriculture in EBCI, which are important social determinants of health. **USET TEC** maintains data for 29 Tribes in IHS Region 4 and assists PHHS with data collection and analysis. **National Indian Health Board (NIHB)** supported PHHS in the conduct of qualitative data collection and analysis. **University of NC Gillings School of Public Health—Asheville** is a new regional partner in health assessment and technical assistance. The **Public Health Accreditation Board (PHAB)** has contributed to the “gold standard” guidelines for quality improvement in public health.

## Data Collection

The THA data was gathered in a number of ways from a variety of sources. As in the 2013 THA, The Data Team emphasized data specific to the EBCI community. In 2013, the team had difficulty finding and analyzing EBCI-specific data<sup>7</sup>, but by 2018 PHHS, its Tribal and external partners have developed a process to obtain and track data critical to knowing and defining the health resources and health issues in this community. The data includes statistics and survey results (quantitative data) from both inside and outside EBCI and thoughts, opinions, and observations from community members (qualitative data).

Data for the THA has come from national sources such as the US Census and IHS, state sources such as the NC Division of Public Health, WNC regional sources such as the Western North Carolina Healthy Impact (WNCHI) 17-county regional data collection core, and key local and

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<sup>7</sup> In 2012-13, most readily available data that pertained to EBCI used county and state jurisdictional boundaries to define their populations, which made it difficult to determine how well the data described EBCI. This did not work for EBCI, whose members live in 5 counties in western NC, both on and off Tribal lands, as well as in other locations in the US and abroad. In addition, US Census and NC population data generally do not allow individuals to enter their specific Tribe or to name multiple Tribal ancestries.

Tribal partners such as Cherokee Indian Hospital Authority (CIHA). Tribal-related sources also include data from the United South and Eastern Tribes Tribal Epidemiology Center (USET TEC), which serves Tribes in IHS Region 4 from Maine to Texas.

A complete list of data sources with an explanation of the types of data used for this report is in [Appendix A](#). Understanding and interpreting health data is complex for many reasons. Different entities collect different types of data and may name or group them in ways that do not seem consistent. There may also be different definitions or descriptions of the same data. Some data sets overlap, which can make analysis challenging. This is the case in EBCI, whose Tribal lands overlap with 6 WNC counties (Jackson, Swain, Cherokee, Graham, Haywood, and Macon, though no Tribal members live on Tribal land in Macon County).

The 2018 THA contains highlights of the most pressing Tribal health issues and a summary of current Tribal resources to address them. All data will reside in PHHS and will be useful in PHHS and CIHA disease surveillance and tracking across many dimensions of health and illness. Please see [Chapter 8](#) for the top ten priority health issues. The Health Resources Directory is available at <http://www.cherokee-hmd.com/resource-guide/index.html>, or write [THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com).

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### *What IS Public Health?*

*It is the art and science of promoting health, preventing disease, and increasing healthy lifespan through organized efforts of society.*

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#### Core Dataset Collection

As noted above, the data reviewed as part of the THA came from a wide selection of national, regional, state, Tribal, and county data compiled to reflect a comprehensive look at health. The most important data sources used in the THA include:

- CIHA RPMS (Resource and Patient Management System; electronic health record)
- USET Tribal Epidemiology Center (TEC)
- NC Center for Health Statistics
- WNC Healthy Impact
- Youth Risk and Resiliency Survey (YRRS) through Cherokee Central Schools
- 2017 EBCI Community Health Survey
- 2018 PHHS-sponsored community listening sessions
- EBCI Division of Agriculture and Natural Resources
- Identifying Our Needs: A Survey of Elders VI and V

See [Appendix A](#) for details on the THA data collection methodology.

## Health Resources Directory

PHHS' approach to assessing the health of the community began with describing all the resources available to Tribal community members—starting with strengths rather than problems. The THA team inventoried these resources in 2013 and updated it in 2018 by conducting a review of Tribal Government and community-based services and programs as well as county, state, and federal resources that directly or generally relate to health and public health. Because of its size, the Health Resources Directory is not part of this document, and is available at <http://www.cherokee-hmd.com/resource-guide/index.html>. Paper copies are available through PHHS at [THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com). See [Chapter 7](#) for more details related to this process.

## Community Input & Engagement

Including input from the EBCI Tribal community is a critical element of the Tribal Health Assessment process. PHHS included community input and engagement in several ways:

- Partnership in conducting the health assessment process
- Primary data collection efforts (Community Health Survey, listening sessions, and Youth Risk and Resiliency Survey)
- Identification and prioritization of health issues through listening sessions

These comprise the *Community Themes and Strengths Assessment* in the MAPP process.

PHHS conducted the Community Health Survey in fall 2017, a 34-question survey distributed online, on paper at community gathering places, on social media, and at the Cherokee Indian Fair in October 2017. PHHS received 1,070 responses over 1 month from all Cherokee communities and a wide spectrum of community members. For results, please email [THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com).

Staff from PHHS, CIHA, and Cherokee Central Schools (CCS) collaborated in March 2018 on six listening sessions that addressed issues identified in the Community Health Survey: Foster Care (Snowbird), Men's Health, Harm Reduction, Youth (Junaluska Leadership Council), Education (Kituwah Preservation and Education Program, KPEP), Elders and a virtual Stress listening session. For the results, please email [THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com).

In addition, PHHS, CCS, and Western Carolina University collaborated on the biennial Youth Risk and Resiliency Survey (YRRS) in 2016 and 2018. CCS gave the YRRS to middle and high school students to get the students' input on risk behaviors, social determinants of health, and resilience factors.

PHHS will share THA results, including the survey and listening session results, and ask for additional community input into the Tribal community health improvement process by:

- Discussion at Community Club and Community Club Council meetings
- Meeting with groups and individuals affected by health priority issues
- Actively seeking out groups whose voice may not be heard, such as homeless and youth

- Participating in social media including *The One Feather* and Channel 28

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*PHHS needs YOU to help improve the community's health!*  
*Contact us at 359-6180 or THIP@nc-chokeee.com to become part of the Tribal Health Improvement Process (THIP).*

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### At-Risk & Vulnerable Populations

Groups in the EBCI community who are at risk for health issues are similar in many ways to the overall population of WNC, but different in significant ways that are discussed in the data below. EBCI groups at increased health risk include but may not be limited to:

- People with diabetes or other chronic diseases, including chronic contagious diseases such as hepatitis C and HIV/ AIDS
- Infants, children under 18 years old, and pregnant women
- Elders
- Persons with sensory deficits such as blindness and deafness
- Persons with physical disabilities
- Persons with, and affected by, substance use disorder
- Persons who are economically disadvantaged
- Persons with low levels of education, both in terms of schooling and cultural and traditional knowledge
- Persons who speak English as a second language or have limited English proficiency

The ability of these populations to voice their assets, needs, thoughts, and opinions may be limited compared to other populations, and the THA process has begun to focus on hearing more from them.

Because of the history of the US Government's attempted assimilation and eradication of Native people, all American Indian/ Alaska Natives can be considered an at-risk or vulnerable population. Forced migration, family separation, land appropriation, denial of education, poverty, persistent systemic racism, and more have contributed to adverse health outcomes for over 175 years. The EBCI community has made enormous strides in protecting and rebuilding community and prosperity through homeland, culture, tradition, family, language, and

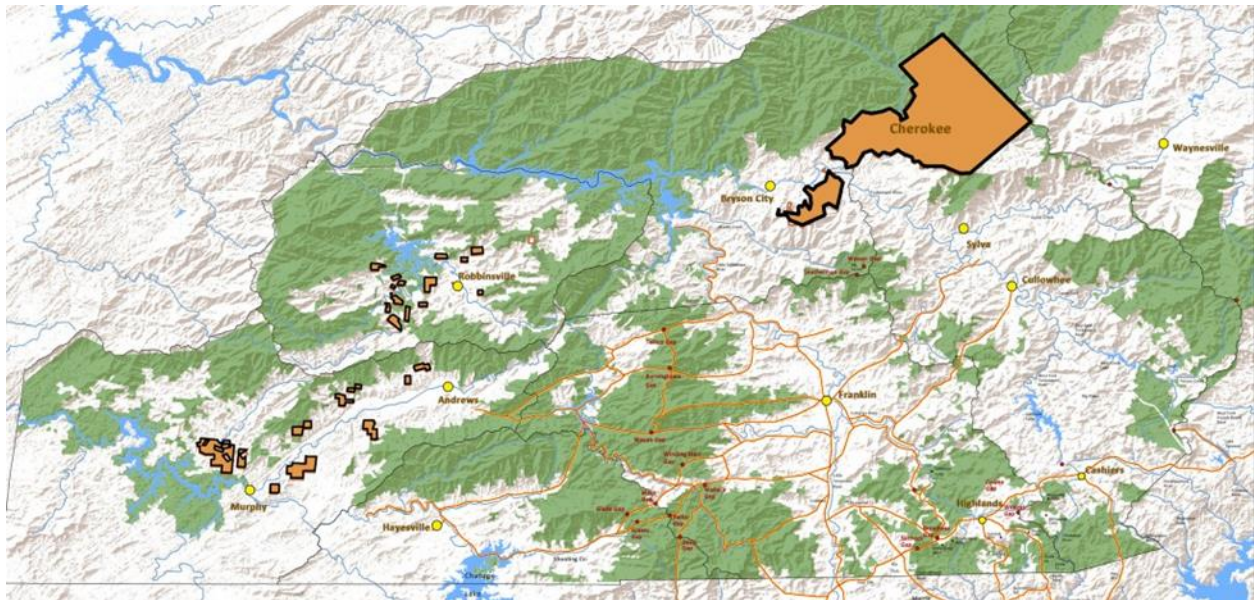
economics, but disparities remain,<sup>8</sup> and the health improvement process will continue to address them.

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<sup>8</sup> For more information on health disparities, read Sarche and Spicer, “Poverty and Health Disparities for American Indian and Alaska Native Children: Current Knowledge and Future Prospects” at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2567901/> and the Indian Health Service “Basis for Health Services” at <https://www.ihs.gov/newsroom/factsheets/basisforhealthservices/> and “Disparities” at <https://www.ihs.gov/newsroom/factsheets/disparities/>

## CHAPTER 2 – EASTERN BAND OF CHEROKEE INDIANS

### Location and History



**Figure 3: EBCI Tribal Lands in North Carolina**

Cherokee Indians once occupied an area encompassing approximately 140,000 square miles that became parts of North Carolina (NC), Tennessee, South Carolina, Georgia, and Alabama. In 1838-39, the U.S. government forcibly removed the Cherokee from their lands in NC, leading them on the infamous Trail of Tears to present-day Oklahoma. A small number of Cherokee people successfully resisted removal, however, by claiming NC citizenship and maintaining the right to remain on lands they owned. These people and their descendants were recognized in 1868 by the federal government as the Eastern Band of Cherokee Indians (EBCI). EBCI is NC's only federally recognized Tribe and the first American Indian/ Alaska Native (AI/AN) Tribe with a written language, created by Sequoyah in 1821.

The jurisdictional boundaries of EBCI include more than 56,000 acres of largely rural, mountainous land in six western NC counties, Cherokee, Graham, Haywood, Jackson, Macon, and Swain Counties. The largest contiguous parcel of EBCI trust land is the Qualla Boundary, which spans the Jackson and Swain County border and includes the town of Cherokee. The Qualla Boundary contains approximately 45,550 acres.

EBCI has over 16,000 enrolled members and a sovereign Tribal government with elected Principal Chief, Vice Chief, and twelve Tribal Council representatives, and a judiciary branch including Tribal Court. Tribal Government comprises 8 Divisions: Housing, Education and Recreation, Human Resources, Agriculture and Natural Resources, Operations, Legal, Finance, and Public Health and Human Services (PHHS). EBCI also has Cherokee Indian Hospital Authority (CIHA), an 18-bed compacted Tribal hospital with a primary care clinic for over

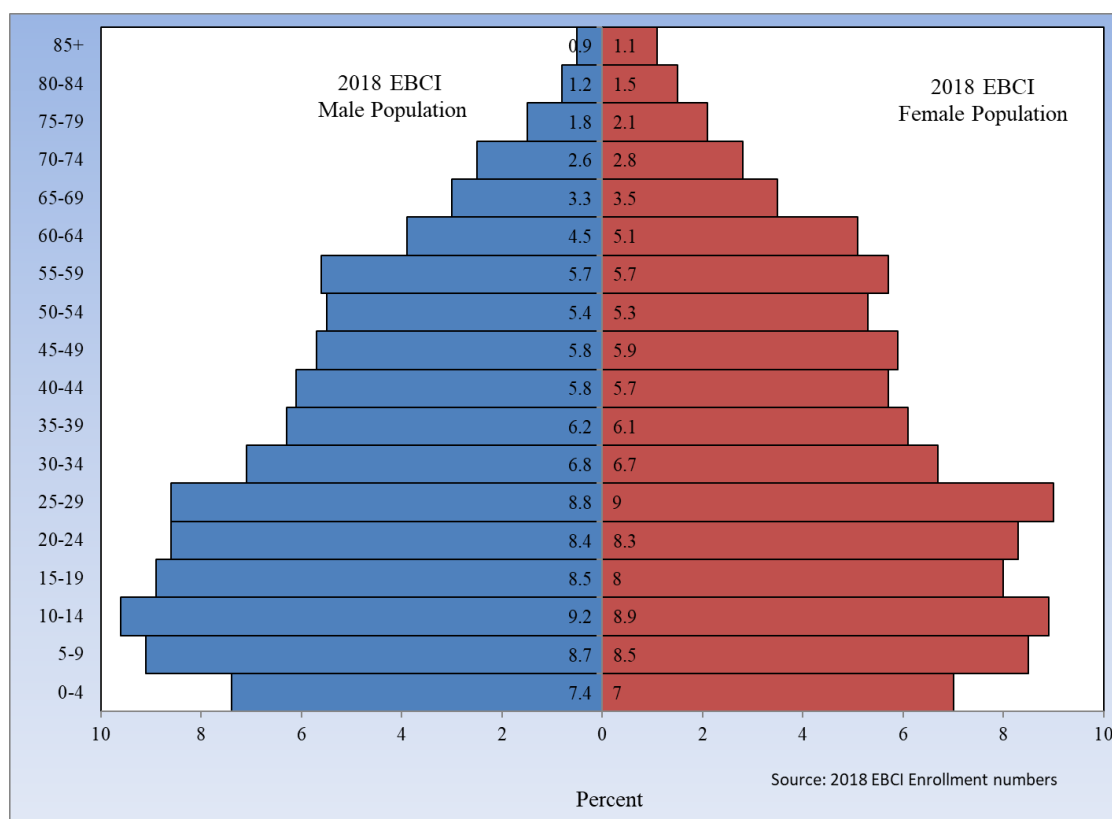


12,000 unique users, and Cherokee Central Schools, a Tribally-owned independent K-12 school system.

EBCI comprises several communities on Tribal trust land: Big Cove, Big Y, Birdtown (including 3200 Acre Tract), Cherokee County Community, Painttown, Snowbird, Wolfetown, Towstring, and Yellowhill. Each community has a Community Club and voting locations for Tribal and general elections.

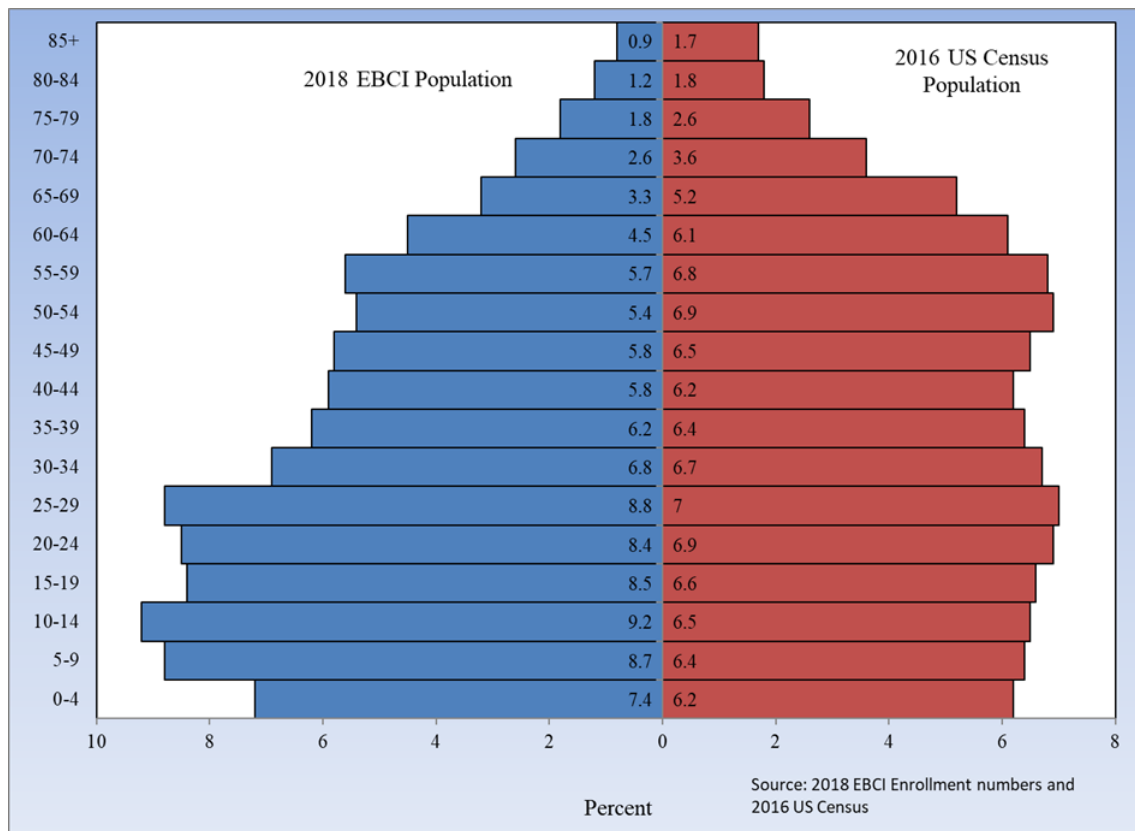
The economy of the Tribe is based on tourism. The Great Smoky Mountains National Park, adjacent to the Tribal boundary, is the nation's most visited park, with over 10 million visitors every year. Harrah's Cherokee Casino Resort in Cherokee is the EBCI-owned gaming operation, with over 3 million annual visitors. A sister casino, Harrah's Cherokee Valley River Casino, opened in 2015 on Tribal lands in Cherokee County.

## Population



**Figure 4: EBCI Population Age Distribution by Gender (Male/Female)**

This population pyramid shows the entire EBCI population by age group and sex. Please note that this data is taken from enrollment numbers and enrollees may become enrolled at any time during their life. Looking at the pyramid, there is a noticeable decline in the male population in the 60-64 age group. This is possibly related to early mortality from health issues such as heart disease, stroke, and cancer.



**Figure 5: EBCI Population Age Distribution Compared to US Census**

Compared to the US population, the EBCI population measured by age group forms an “expansive” pyramid. That is, EBCI has a larger percentage of people in younger age groups, which usually means that they have higher fertility rates and lower life expectancy. The US population has a “stationary” pyramid. That is, the US population has larger percentage of people in older age groups, which usually means that they have lower fertility rates and longer life expectancy. On the EBCI side there is a decrease in population in the 30-34 age group compared to the US Census. A possible reason is early mortality (death rate) in the community, which may be due to substance use, heart disease, hepatitis C, or other health issues.

## CHAPTER 3 – A HEALTHY EBCI COMMUNITY

### What Makes Our Community Strong and Healthy?

The 2017 Community Health Survey included questions about the strengths of the EBCI community. In addition, PHHS received over 200 narrative responses to the open-ended request: “Please share comments or suggestions that you have to improve the health of the community.” Responses included many comments about community strengths. In summary, the majority of respondents agreed or strongly agreed that positive aspects of the Cherokee community include:

- Cherokee culture, language, traditions, and values are the heart of the community:
  - “The language is what makes us who we are...”
  - “Our traditional ways helped us for thousands of years.... Tradition is not going back to buckskin; it’s about going back to those real traditional laws that were written about how to treat each other and how to participate. ...Get back to Stomp Dance People!! Speak your language every day!! When there is dancing, get up and go dance!!”
- The EBCI community is a good place to raise children.
- The EBCI community is a good place to grow old.
- There is economic opportunity in Cherokee.
- The natural environment is high quality.
- The Tribe responds effectively in times of emergency and/or disaster.
- The Tribal community is rich in services to improve health and education.

*“Please extend my appreciation for the gift bag and for everything the Tribe does for us Seniors. This is the best place in the world for us to grow old. We are cared for and we are so blessed to have leaders with compassion and love.”*

*“I have found that striving to live our traditional values gives me a positive outlook on life, has helped me get through cancer of myself, a brother and a love and form to raise food organically and it has become meditative for me in many ways. we need, more attention placed on our values of our ancestors most by living these values.”*

The Community Health Survey also asked: “What things have had the most POSITIVE impact on YOUR OWN quality of life OVER THE PAST MONTH?”

The top three answers were:

- Relationships with family and/or friends
- Access to healthcare services
- Spirituality and faith

About the community, the Survey asked: “Choose FIVE things you think most POSITIVELY affect the health and well-being of the EBCI Tribal community.” The top five answers were:

- Access to health services, mental health services, drug and alcohol services
- Education and/or educational opportunities
- Access to youth or adult activities including physical activity
- Employment opportunities
- Access to assistance for victims and/or offenders of crime related issues (theft, child or elder abuse, violence, domestic violence, sexual assault, illegal drug use)

These snapshots, with the input from the listening sessions, give a picture of what EBCI members find important to health. When PHHS staff return to the community with the THA results, they will also supplement the MAPP *Community Themes and Strengths Assessment*<sup>9</sup> to ask community members about their perceptions of current health and vision for a healthy Tribal community. This vision process will become part of the Tribal Health Improvement Process (THIP).

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<sup>9</sup> The *Community Themes and Strengths Assessment* “provides a deep understanding of the issues the residents feel are important by answering the questions: ‘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?’”

(<https://www.naccho.org/programs/public-health-infrastructure/performance-improvement/community-health-assessment/mapp/phase-3-the-four-assessments> )

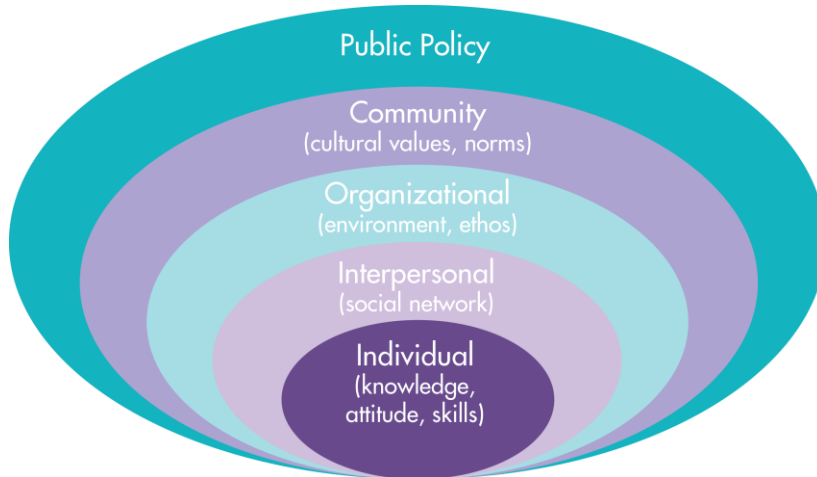
## CHAPTER 4 – SOCIAL & ECONOMIC FACTORS IMPORTANT TO A HEALTHY EBCI COMMUNITY

### What Determines the Health of Our Community?

First, what is “health”? The World Health Organization states:

*Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.*

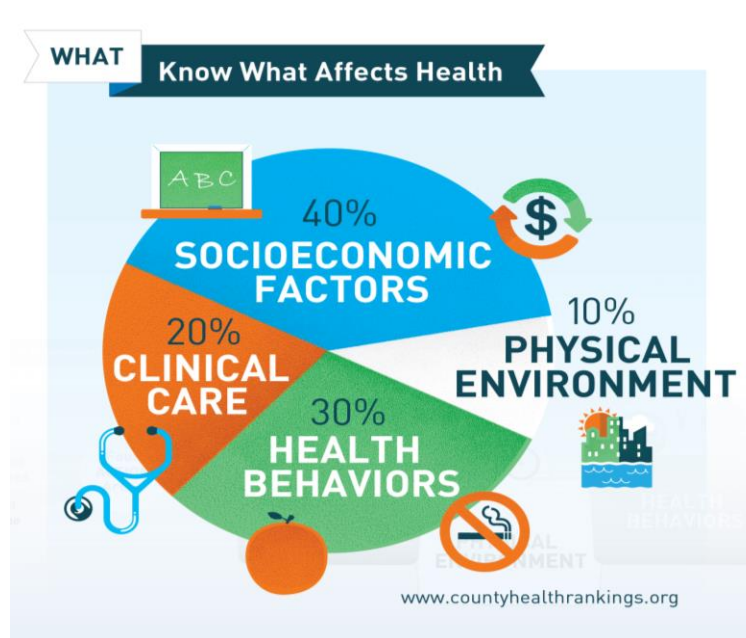
This definition is far wider than just physical or medical wellness and is intuitive in Native communities, where health is tied to culture, tradition, family, and community. This wider view of health is often expressed in a model such as this:



**Figure 6:  
The Socio-  
Ecological Model  
of Health**  
(researchgate.net)

That is, every person comes with his or her own DNA, knowledge, attitudes, and skills. Individuals are surrounded by their close networks such as family, then by organizations such as church and other social institutions, and then the by community. All these circles, in turn, are affected by laws, policies, and practices made or supported by decision-makers. This model shows that the health of individuals is complex and interrelated.

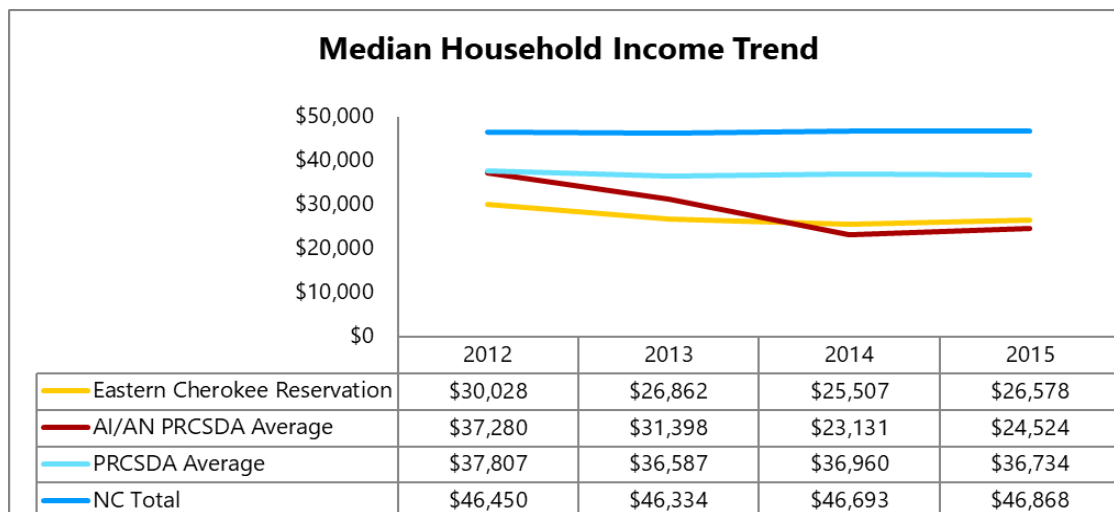
Another way to look at what determines health is to look at the conditions in which people are born, grow, live, work, and age--the **social determinants of health**. Our health depends in part on who we are (age, sex, genetics) and what we do (behavior choices such as smoking, exercise, alcohol, and diet), but 50% of our health depends on social factors such as values, politics, governance, education, occupation, income, race and class, public safety, physical environment, and access to healthcare and public health. They also determine whether everyone has access to the same quality of health.



**Figure 7: Social Determinants of Health**

PHHS is committed to working together to improve the health of the EBCI community by addressing socio-ecological factors, social determinants and historical health inequities in the EBCI community. The following are examples of factors that affect health in EBCI.

## Income

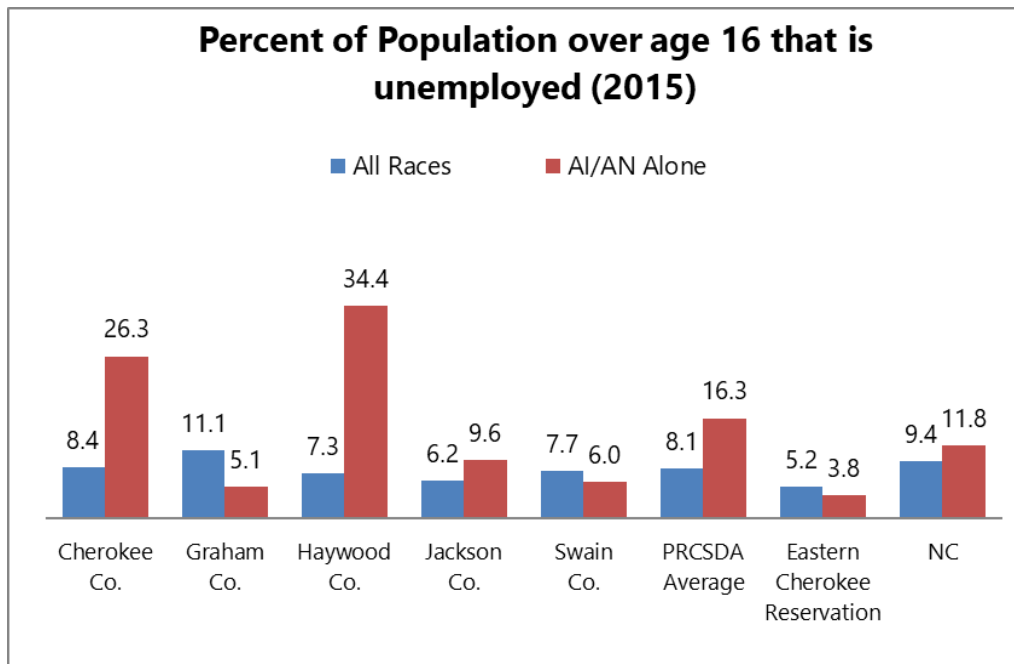


**Figure 8: Median Household Income**

Despite stability in household income for the state and WNC region overall, income for EBCI families has decreased between 2012-2015 (Figure 8). This disparity exists despite Tribal per capita payments and the slow recovery from the 2008 economic crash.

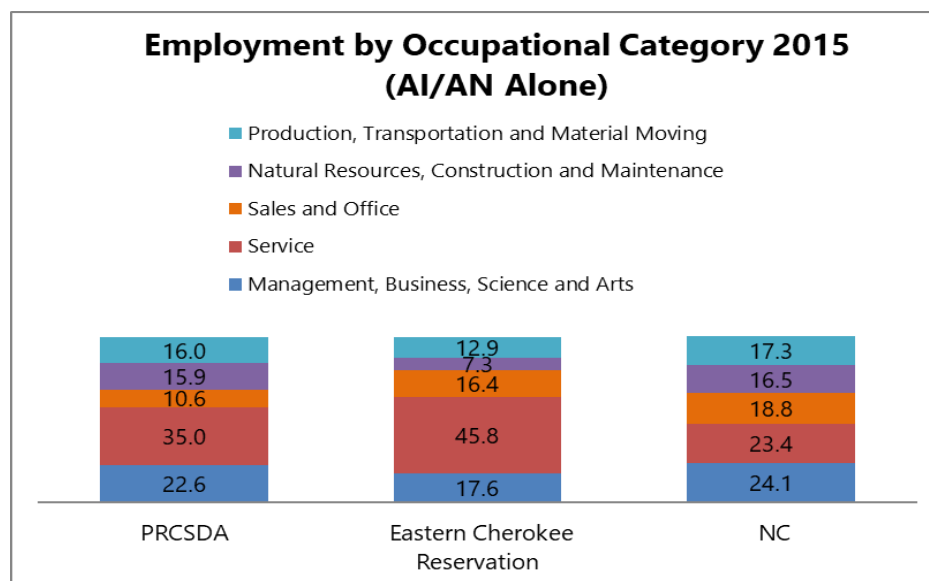


## Employment



**Figure 9: Unemployment Rates**

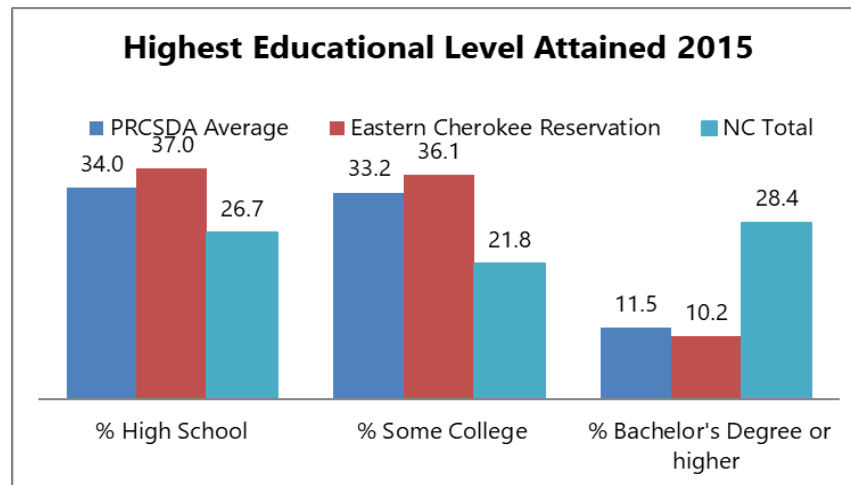
In 2015, even though unemployment on EBCI Tribal lands was very low, AI/AN unemployment in two counties with Tribal lands was more than double the NC state average (Figure 9).



**Figure 10: Occupational Categories**

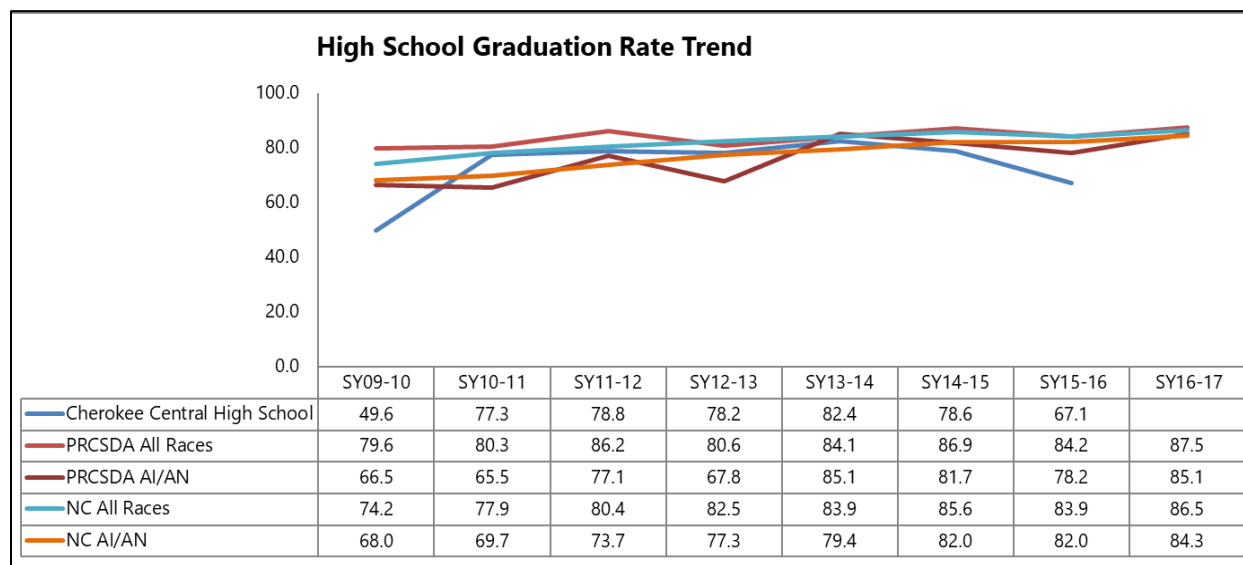
In 2015, the proportion of EBCI members in service jobs was nearly twice the rate for all AI/AN in NC (Figure 10).

## Education



**Figure 11: Educational Attainment**

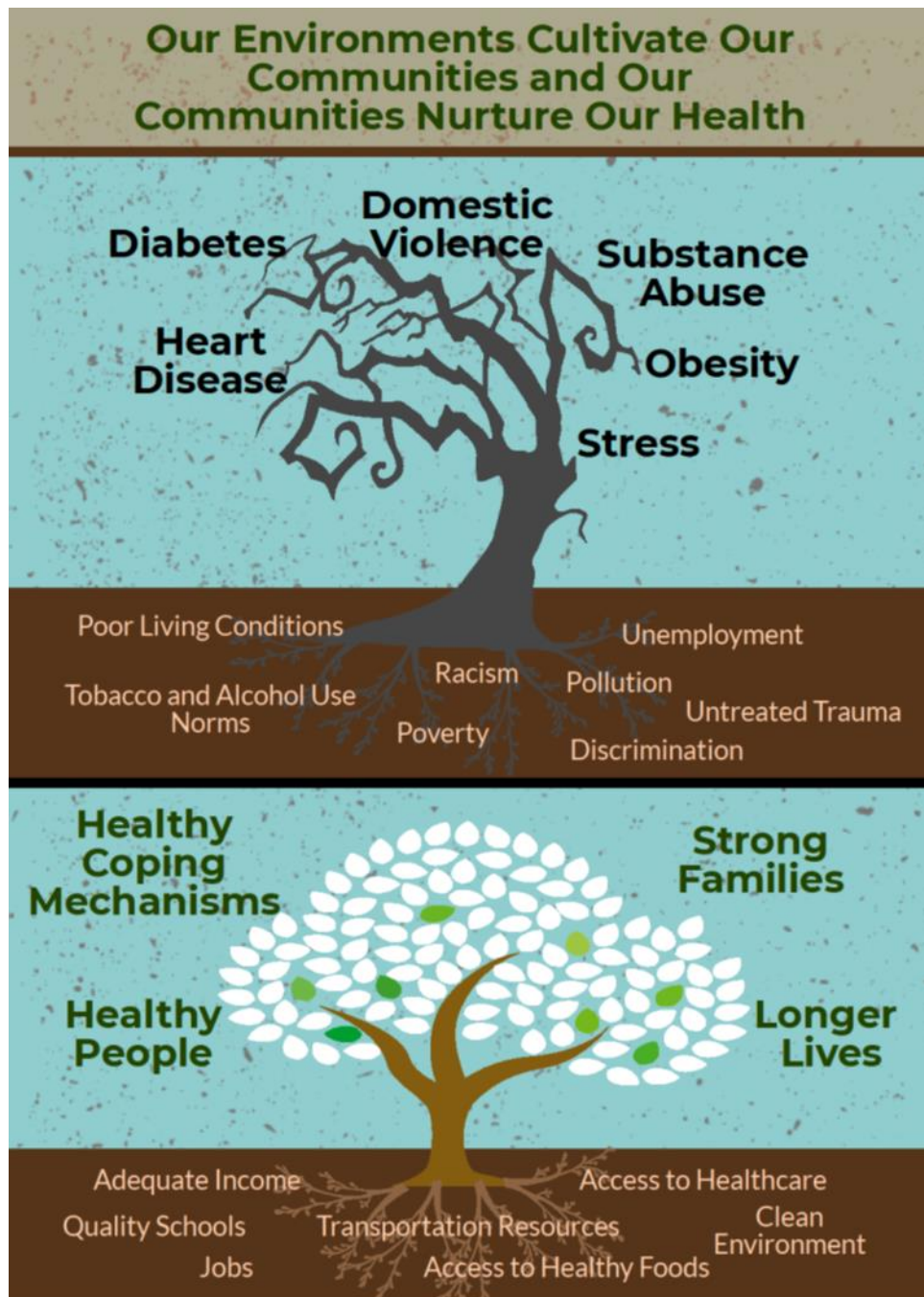
EBCI members had higher rates of high school completion and college course completion than the PRCRSDA and state averages, but the percent of college graduates among EBCI members was just over a third of those in NC as a whole (Figure 11).



**Figure 12: High School Graduation Rates**

Between 2009-2014, the graduation rate for CCS increased dramatically, but fell again between 2014-2016; AI/AN in WNC overall had higher rates, but except for school year 2013-14, the rates are lower than NC as a whole (Figure 12).<sup>10</sup>

<sup>10</sup> EBCI children living in WNC attend either Tribal schools including CCS and Kituwah Academy (language immersion school), county, charter, or private schools.



**Figure 13: The “Root” Causes of Good and Poor Community Health**

In summary, achieving a healthy community requires looking not just at data and services, but at underlying conditions that might be hard to see, and nurturing the community’s roots to grow strong and fruitful.

## CHAPTER 5 – HEALTH DATA FINDINGS SUMMARY

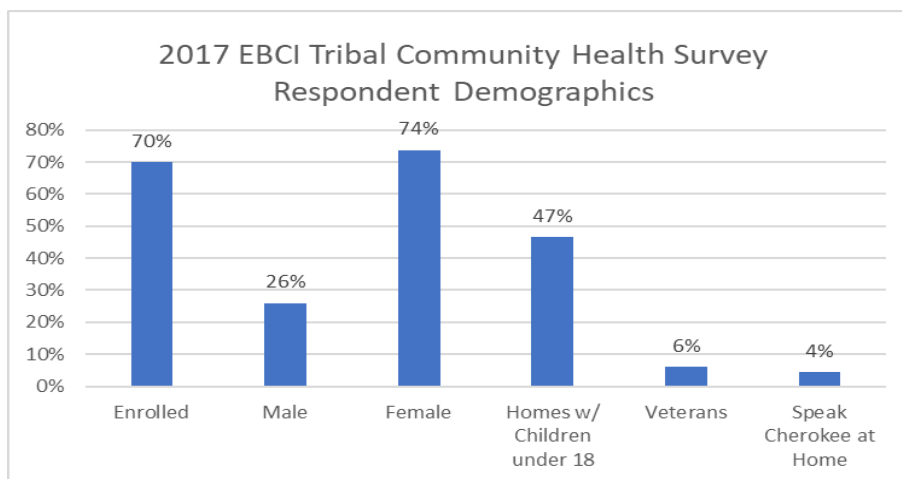
This chapter presents important indicators of the health of the community. First, to assure strong participation in this health assessment by the EBCI community, PHHS collaborated in four surveys, one for the whole community 18 years and up, one for elders, one for youth in middle and high school, and a set of six listening sessions so that participants had time and space to fully express themselves on important issues. These are examples of primary data: the data comes from EBCI community members sharing their own thoughts and opinions on paper and verbally. No one is more of an expert about the community than the community members themselves.

Second, PHHS has worked with multiple partners to collect data in the form of statistics that can help describe many health issues in a way that can be quantified and objective, and that can be tracked over time. This data is primary and secondary quantitative data—it comes both from within and outside EBCI. This report will give highlights of data that particularly indicate the state of the community’s health.

### 2017 Community Health Survey

In fall 2017, PHHS conducted a community-wide health survey for one month with many of the same questions as the 2013 survey. The survey was completely anonymous, and PHHS received 1,070 usable responses to the 34 questions. The last question, “Please share comments or suggestions that you have to improve the health of the community,” received 251 narrative answers. A summary of the findings follows, and to get a copy of the full survey, please email [THIP@nc-chokeee.com](mailto:THIP@nc-chokeee.com).

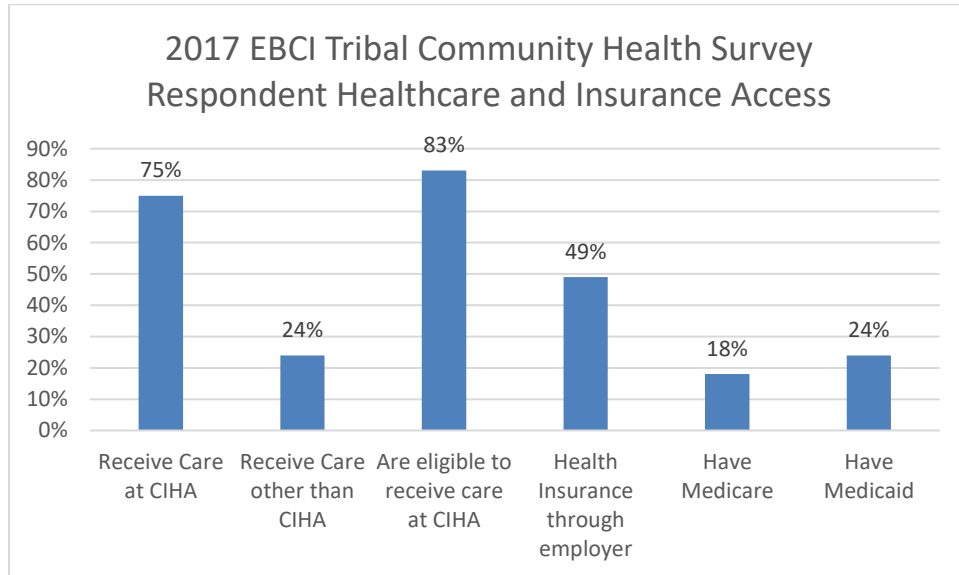
- **Demographics** (*Why is this important?* Demographics tell us about the people in the community and about how they live. See Chapter 4 for more demographic data.)



**Figure 14: Health Survey Demographics**

For survey respondents, the median household size was 3. Note that  $\frac{3}{4}$  of survey takers were female.

- **Healthcare and insurance access** (*Why are these important?* Access to healthcare is an important indicator of people’s ability to stay healthy and get well. Access to insurance means that people have fewer financial barriers to keep them from getting the care they need.)



**Figure 15: Healthcare Access**

In the past year, about 12% were not able to get care when they or a family member needed it, primarily because of cost, issues with hours, waits, or getting appointments, or not having health insurance.

- **Health information** (*Why is this important?* If people don’t understand how to carry out doctor’s instructions or how to take their medicine correctly, it could affect their health negatively.)
  - People get their health information from a number of sources--primarily from their healthcare provider, but over a third get it mainly from the internet or social media.
  - More than half have difficulty understanding health information at least sometimes.
- **Health status and behaviors** (*Why is this important?* People’s health choices are important to their well-being. Knowing their feelings about their own and their families’ health can point to strengths and issues in the community.)
  - 82% feel their health is good to excellent.
  - Biggest concerns about their own health and their family’s health in the past year were lack of physical activity, stress, poor diet or maintaining a healthy weight, and chronic disease. In the future, respondents were worried mainly about those same issues and disability.

- 27% use tobacco products in some form, and 10% used to use them but quit; 62% of those who use tobacco are interested in quitting. Most use cigarettes or cigars; about 6% use e-cigarettes, 20% chew or dip tobacco, and about 5% use tobacco for ceremonial use.
- 69% are prepared to last for 3 days at home without outside help in an emergency.
- **Quality of life** (*Why is this important?* Health is not just the absence of disease. The quality of life is just as important as physical health.)
  - 84% rate their quality of life as good to excellent; the main contributors are family relationships, access to healthcare, and faith or spirituality.
  - Factors that have a negative impact on quality of life include financial and workplace stress, friend or family member with addiction or drug abuse, and having poor health or an ill family member.
  - The top 5 things that **positively** affect the community's health and well-being are:
    - Access to healthcare
    - Educational opportunities
    - Access to youth or adult activities including physical activity
    - Employment opportunities
    - Access to assistance for victims and/or offenders of crime-related issues
  - The top 5 things that **negatively** affect the community's health and well-being are:
    - Drug and/ or alcohol abuse
    - Crime
    - Chronic disease
    - Lack of affordable or quality housing
    - Physical activity
  - 23% did not have enough money for food at least once in the past year.
  - Nearly half find it somewhat or very difficult to get affordable fresh fruits and vegetables, and nearly two-thirds have to drive at least 5 miles to get groceries.
  - About 2/3 believe that EBCI:
    - Is a good place to raise children and grow old
    - Has economic opportunities
    - Is a place where Cherokee culture and traditions are valued and respected
    - Has a good quality natural environment
    - Has effective responses to emergencies and/or disasters

In addition, there were 251 narrative responses to the question “Please share comments or suggestions that you have to improve the health of the community” that could be grouped into the following categories:



- Cherokee Community and Snowbird
- Community action
- Culture and tradition
- Drugs
- Education
- Elderly or disabled
- Health Behaviors
- Hospital
- Housing
- Law enforcement/ crime
- Management
- Nutrition/ food security
- Physical activity/ access
- Politics/ leadership/ economy
- Positive/ gratitude
- Public Health and Human Services
- Services in general
- Transportation

These comments were from community members' hearts, without prompting or filter. For all the comments, please email [THIP@nc-chokeee.com](mailto:THIP@nc-chokeee.com). There are many ideas and comments that could be useful in the THIP process, and it is worth noting that many of the comments were on social determinants of health, not just healthcare. Here is a very brief snapshot of the comments:



## Identifying Our Needs: A Survey of Elders VI

On a four-year cycle, the National Resource Center on Native American Aging (NRCNAA) does a survey of elders 55 years and over. In 2017, the Elders Survey in EBCI had 187 respondents and covered a wide spectrum of health issues. The full survey results are available from [THIP@nc-chokeee.com](mailto:THIP@nc-chokeee.com). The results include the following:

- Most respondents reported that their overall health is good or very good.
- The most commonly reported health issues were hypertension, diabetes, and arthritis.
- One-third had at least one fall in the past year.
- Over 90% had visited a healthcare provider for a routine check-up within the past year.
- Over 80% were non-smokers.
- About three-quarters were overweight or obese.
- About a third participated in cultural practices (traditional food, music, and customs).
- About 40% lived alone.
- About one-third take care of grandchildren, and about 9% of those are primary caregivers.

## Youth Risk and Resiliency Survey (YRRS) 2018

Every two years, PHHS and CCS collaborate to give the CCS middle and high school students a survey that asks about health-related factors, risk behaviors, and factors that help make students resilient. This survey originated in New Mexico and includes many questions from a very large national survey, the Youth Risk Behavior Survey (YRBS), also done every two years by the CDC. However, this survey adds resiliency questions, which help show strengths, and a few EBCI-specific questions. The full survey results are available at [www.ccs-nc.org/apps/pages/index.jsp?uREC\\_ID=368975&type=d&pREC\\_ID=1689945](http://www.ccs-nc.org/apps/pages/index.jsp?uREC_ID=368975&type=d&pREC_ID=1689945). Here are a few data points, shared with CCS permission. Percentages are rounded to the nearest whole percent:

- Personal Safety
  - Texted or emailed while driving – High School Students 33%
  - Never or Rarely Wore a Bicycle Helmet- High School 88%, Middle School 78%
  - Drove after drinking- High School 10%
  - Rode with a driver who had been drinking- High School 23%, Middle School 14%
- Violence
  - Carried a Weapon on School Property- High School 10%
  - Skipped school due to safety concerns- High School 21%, Middle School 19%
  - In a physical fight- High School 25%, Middle School 26%
  - Been in a physical fight at school- High School 15%, Middle School 16%
- Intimate Partner Violence
  - Sexual dating violence- High School 10%, Middle School 4%
  - Forced to have sex- High School 8%, Middle School 3%
  - Physical Dating Violence- High School 11%, Middle School 6%

- Bullying
  - Electronically bullied- High School 17%, Middle School 12%
  - Bullied at school- High School 25%, Middle School 22%
- Mental Health
  - Felt sad or hopeless- High School 31%, Middle School 23%
  - Seriously Considered Suicide- High School 12%, Middle School 11%
  - Attempted Suicide- High School 14%, Middle School 5%
- Tobacco
  - Ever smoked cigarettes- High School 48%, Middle School 24%
  - Current cigarette use- High School 24%, Middle School 7%
  - Current E-cigarette use- High School 38%, Middle School 15%
  - Secondhand Smoke Exposure- High School 43%, Middle School 39%
- Alcohol and Marijuana
  - Current Marijuana use- High School 39%, Middle School 10%
  - Binge Drinking- High School 18%, Middle School 4%
  - Had first drink before age 13- High School 15%, Middle School 16%
- Drugs
  - Current Painkiller use- High School 7%, Middle School 2%
  - Current synthetic marijuana use- High School 7%, Middle School 2%
  - Current inhalant use- High School 5%, Middle School 2%
- Nutrition and Physical Activity
  - 3 or fewer servings of vegetables in the last week- High School 51%, Middle School 53%
  - 3 or fewer servings of fruit or fruit juice in the last week- High School 37%, Middle School 37%
  - No physical activity for at least 60 mins in the last week- High School 20%, Middle School 11%
- Resiliency
  - Adult at home interested in my school work- High School 63%, Middle School 73%
  - Adult at home that believes I will be successful High School 85%, Middle School 90%
  - Adult at home that listens to me High School 73%, Middle School 70%
  - I plan to go to college/some other school after high school High School 72%, Middle School 81%

## Mortality

The life expectancy at birth for AI/AN in the five-county CHSDA between 2003-2010 is 78.39 years.<sup>11</sup> North Carolina's Native American life expectancy is 76.6 years.<sup>12</sup> For US Wide,

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<sup>11</sup> USET Tribal Epidemiology Center data request

<sup>12</sup> CDC Wonder

American Indian and Alaskan Native life expectancy was 73 years in 2010.<sup>10</sup> AI/AN born today have a life expectancy that is 5.8 years less than the U.S all-race population (73 years to 78.8 years).<sup>10</sup>

The top 10 leading causes of death from 2010-2014 for EBCI are listed in Table 1. EBCI was comparable to the Nashville Area Tribes except for greater mortality from diabetes and cerebrovascular disease (for example, stroke).

**Table 1: Top 10 Causes of Death 2010-2014 for EBCI compared with Nashville Area**

| 2010-2014                                |      |       |                |       |
|--|------|-------|----------------|-------|
| Descending Order by Total Number         | EBCI |       | Nashville Area |       |
|  | #    | %     | #              | %     |
| Heart disease                            | 78   | 19.6% | 268            | 21.3% |
| Cancer                                   | 76   | 19.1% | 229            | 18.2% |
| Diabetes mellitus                        | 52   | 13.1% | 118            | 9.4%  |
| Unintentional injuries                   | 40   | 10.1% | 129            | 10.3% |
| Cerebrovascular diseases                 | 23   | 5.8%  | 58             | 4.6%  |
| Chronic liver disease and cirrhosis      | 14   | 3.5%  | 41             | 3.3%  |
| Suicide                                  | 10   | 2.5%  | 22             | 1.8%  |
| Chronic lower respiratory diseases       | 10   | 2.5%  | 36             | 2.9%  |
| Nephritis, nephrotic syndrome, nephrosis | 5    | 1.3%  | 35             | 2.8%  |
| Influenza and pneumonia                  | 5    | 1.3%  | 21             | 1.7%  |

When compared by gender, the leading causes of death differed slightly in 2010-2014 (Table 1). The top five leading causes of death for males were heart disease (21.2%), cancer (19.8%), unintentional injuries (13.2%), diabetes (11.3%), and cerebrovascular diseases (5.8%). The top five leading causes of death for females were cancer (18.3%), heart disease (17.7%), diabetes (15.1%), unintentional injuries (6.5%), and cerebrovascular diseases (6.5%).

**Table 2: Leading Causes of Death from 2010-2014 by Gender**

| Leading Causes of Death (among the NCHS 50 Leading Causes of Death) | 2010-2014 |      |        |                |      |        | 2010-2014 |       |        |                |       |        |
|---|-----------|------|--------|----------------|------|--------|-----------|-------|--------|----------------|-------|--------|
|   | EBCI      |      |        | Nashville Area |      |        | EBCI      |       |        | Nashville Area |       |        |
|   | Total     | Male | Female | Total          | Male | Female | Total     | Male  | Female | Total          | Male  | Female |
| Heart Disease   | 78        | 45   | 33     | 268            | 164  | 104    | 19.6%     | 21.2% | 17.7%  | 21.3%          | 24.6% | 17.7%  |
| Cancer  | 76        | 42   | 34     | 229            | 124  | 105    | 19.1%     | 19.8% | 18.3%  | 18.2%          | 18.6% | 17.8%  |
| Diabetes mellitus   | 52        | 24   | 28     | 118            | 55   | 63     | 13.1%     | 11.3% | 15.1%  | 9.4%           | 8.2%  | 10.7%  |
| Unintentional injuries  | 40        | 28   | 12     | 129            | 84   | 45     | 10.1%     | 13.2% | 6.5%   | 10.3%          | 12.6% | 7.6%   |
| Cerebrovascular diseases  | 23        | 11   | 12     | 58             | 24   | 34     | 5.8%      | 5.2%  | 6.5%   | 4.6%           | 3.6%  | 5.8%   |
| Chronic liver disease and cirrhosis                                 | 14        | 10   | 4      | 41             | 28   | 13     | 3.5%      | 4.7%  | 2.2%   | 3.3%           | 4.2%  | 2.2%   |
| Intentional self-harm (suicide)                                     | 10        | 7    | 3      | 22             | 17   | 5      | 2.5%      | 3.3%  | 1.6%   | 1.8%           | 2.5%  | 0.8%   |
| Chronic lower respiratory diseases                                  | 10        | 2    | 8      | 36             | 12   | 24     | 2.5%      | 0.9%  | 4.3%   | 2.9%           | 1.8%  | 4.1%   |
| Nephrotic syndrome and nephrosis                                    | 5         | 4    | 1      | 35             | 17   | 18     | 1.3%      | 1.9%  | 0.5%   | 2.8%           | 2.5%  | 3.1%   |
| Influenza and pneumonia   | 5         | 2    | 3      | 21             | 9    | 12     | 1.3%      | 0.9%  | 1.6%   | 1.7%           | 1.3%  | 2.0%   |

In Table 3, the leading causes of death are based on age-adjusted death rates per 1,000 and per 100,000. Age-adjusting rates is a way to make fairer comparisons between populations that have different age distributions. For example, a county with a higher elder population may have a higher rate of death or hospitalizations than a county with a younger population, simply

because the elderly are more likely to die or be hospitalized. Using age-adjusted death rates makes different groups or populations more comparable. For more information, please visit <https://wonder.cdc.gov/wonder/help/faq.html#6> . From this data, we can see that the EBCI population has a higher age-adjusted death rate than the PRCSDA (Purchased and Referred Care Service Delivery Area, formerly CHSDA, Contract Health Services Delivery Area) on all issues. Note an area of great concern is EBCI's diabetes age-adjusted death rates, which are 8.95x greater than the PRCSDA all-races rates.

Table 3: Leading Causes of Death, Age-Adjusted Death Rates per 100,000 Population (5-Year Aggregate 2010-2014)

| Leading Causes of Death                   | 2010-2014                                    |                |                  |              |  |                |                  |               |
|---|--|----------------|------------------|--------------|--|----------------|------------------|---------------|
|   | Age-Adjusted Death Rate per 1,000 population |                |                  |              | Age-Adjusted Death Rate per 100,000 population |                |                  |               |
|   | EBCI   | Nashville Area | PRCSDA All Races | PRCSDA AI/AN | EBCI   | Nashville Area | PRCSDA All Races | PRCSDA AI/AN  |
| Heart disease                             | 5.75   | 5.10           | 1.9              | 2.4          | 575.0  | 510.0          | 192.4            | 236.8         |
| Cancer                                    | 5.03   | 4.45           | 1.8              | 2.0          | 503.0  | 445.0          | 175.4            | 200.2         |
| Diabetes mellitus                         | 2.48   | 2.26           | 0.3              | 1.5          | 248.0  | 226.0          | 27.7             | 150.8         |
| Unintentional injuries                    | 1.96   | 2.50           | 0.6              | n/a          | 196.0  | 250.0          | 55.4             | n/a           |
| Cerebrovascular diseases                  | 1.56   | 1.11           | 0.4              | n/a          | 156.0  | 111.0          | 43.6             | n/a           |
| Chronic liver disease and cirrhosis       | 0.72   | 0.77           | 0.1              | n/a          | 72.0   | 77.0           | 14.0             | n/a           |
| Chronic lower respiratory diseases        | 0.65   | 0.70           | 0.6              | n/a          | 65.0   | 70.0           | 57.2             | n/a           |
| Nephritis, nephrotic syndrome, nephrosis  | 0.63   | 0.68           | 0.2              | n/a          | 63.0   | 68.0           | 16.3             | n/a           |
| Suicide                                   | 0.54   | 0.39           | 0.2              | n/a          | 54.0   | 39.0           | 19.0             | n/a           |
| Alzheimer's disease                       | 0.35   | 0.21           | 0.3              | n/a          | 35.0   | 21.0           | 26.8             | n/a           |
| Septicemia                                | 0.34   | 0.42           | 0.1              | n/a          | 34.0   | 42.0           | 8.9              | n/a           |
| Influenza and pneumonia                   | 0.33   | 0.40           | 0.2              | n/a          | 33.0   | 40.0           | 19.2             | n/a           |
| Homicide                                  | 0.09   | 0.19           | 0.1              | n/a          | 9.0  | 19.0           | 6.0              | n/a           |
| <b>TOTAL</b>                              | <b>26.89</b>                                 | <b>24.24</b>   | <b>8.6</b>       | <b>15.7</b>  | <b>2689.0</b>                                  | <b>2424.0</b>  | <b>856.8</b>     | <b>1567.6</b> |
| Source: USET Data Portal, Mortality Query |  |                |                  | calculated   |  |                |                  |               |

NOTE: EBCI includes unintentional motor vehicle injuries (MVI) in their unintentional injury statistics; PRCSDA and NC statistics do not include MVI (they are presented separately).

## Health Status & Behaviors

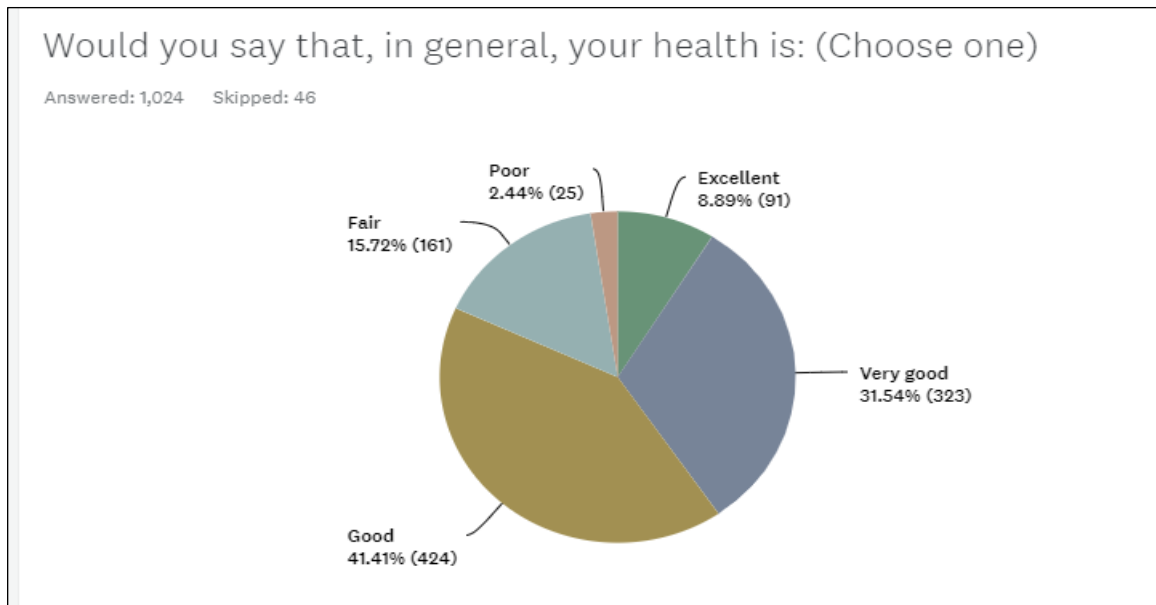
### Overall Health Status

According to the 2017 American's Health Rankings, the state of NC ranked 33<sup>th</sup> overall out of 50 United States of America (1<sup>st</sup> is "best"). For EBCI's PRCSDA, which includes Cherokee, Graham, Haywood, Jackson, and Swain Counties, the Top 100 North Carolina County Health Rankings are as followed (1<sup>st</sup> is best):

- Cherokee County- 87<sup>th</sup>
- Graham County- 58<sup>th</sup>
- Haywood County- 44<sup>th</sup>
- Jackson County- 37<sup>th</sup>
- Swain County- 93<sup>rd</sup>



According to EBCI's 2017 Tribal Health Survey, 81.84% of respondents said they were in excellent, very good, or good health.



**Figure 16: Self-reported Overall Health Status (EBCI Tribal Health Survey 2017)**

The National Resource Center on Native American Aging, which conducts nationwide Tribal elder surveys, administered surveys in 2013 and in 2016 to EBCI Tribal elders (55 and older)<sup>13</sup>. In the chart below, EBCI and Tribal Aggregate data were collected by the National Resource Center on Native American Aging. National data were taken from CDC's 2011 Behavioral Risk Factor Surveillance System survey data (BRFSS) and listed for comparison. Below are the survey results for the question "Would you say your health, in general, is excellent, very good, good, fair, or poor?" According to the survey results, 66.2% of respondents were in excellent, very good, or good health in 2016, whereas Tribal aggregate for these same factors was 65.6% and national was 75%. Note that in 2013, 80.1% said their health was excellent, very good, or good, which equates to a 13.9% decrease from 2013 to 2016.

<sup>13</sup> EBCI defines Tribal elders as 59 ½ years old and greater.

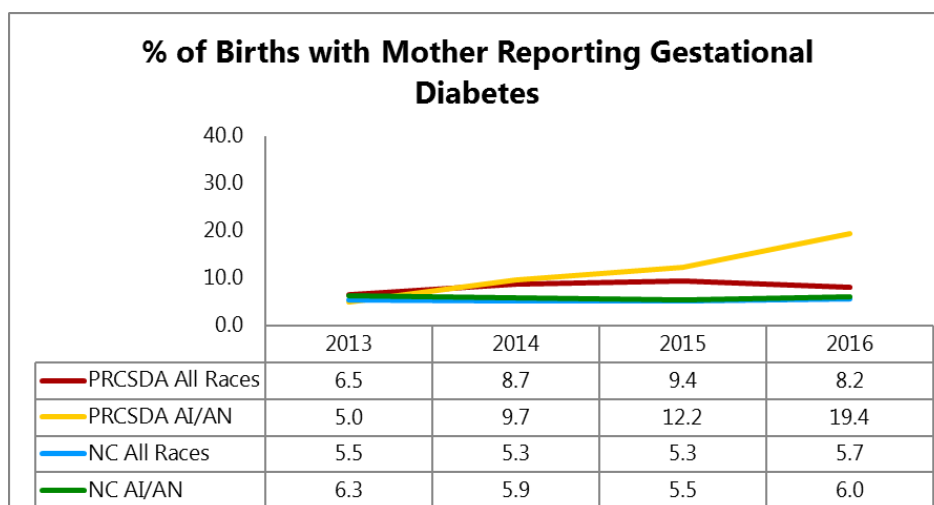
**Table 4: National Resource Center on Native American Aging EBCI Elder (55+) Survey**

| Would you say your health, in general, is excellent, very good, good, fair, or poor?   |       |                  |          |       |                  |          |
|--|-------|------------------|----------|-------|------------------|----------|
|  | 2013  |                  |          | 2016  |                  |          |
|  | EBCI  | Tribal Aggregate | National | EBCI  | Tribal Aggregate | National |
| <b>Excellent</b>   | 5.2%  | 5.2%             | 13.8%    | 3.7%  | 6.0%             | 13.8%    |
| <b>Very Good</b>   | 37.5% | 19.0%            | 29.2%    | 29.9% | 19.9%            | 29.2%    |
| <b>Good</b>  | 37.4% | 38.5%            | 32.0%    | 32.6% | 39.7%            | 32.0%    |
| <b>Fair</b>  | 29.1% | 28.3%            | 16.8%    | 30.5% | 26.8%            | 16.8%    |
| <b>Poor</b>  | 9.3%  | 8.9%             | 7.8%     | 3.2%  | 7.6%             | 7.8%     |
| <b>Source: NRCNAG Elder Survey Data (2013 and 2016)</b><br><b>EBCI: n = 289 in 2013 and 187 in 2016;</b><br><b>Tribal Aggregate: n= 17,049 in Cycle V 2011-2014 and 18,134 in Cycle VI 2014-2017</b> |       |                  |          |       |                  |          |

### Maternal & Infant Health

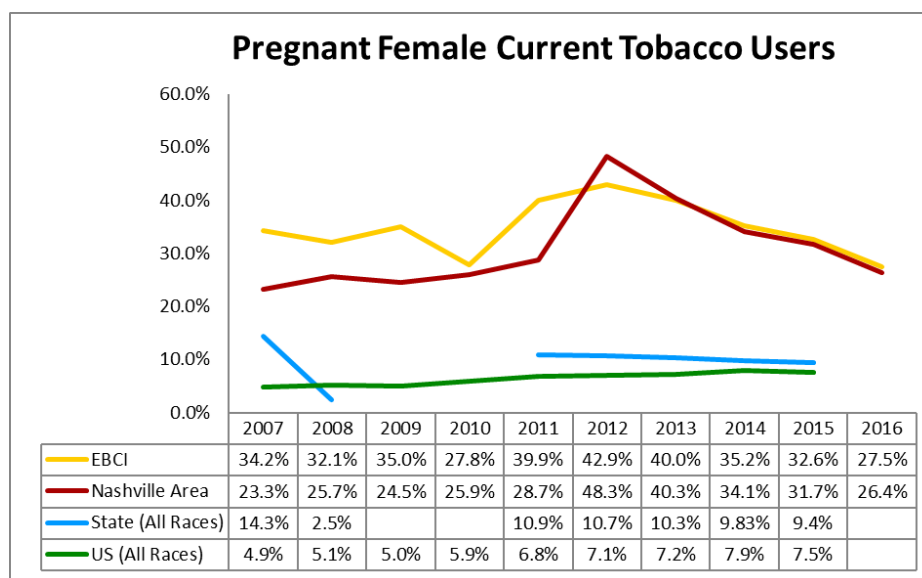
There are a few pregnancy risk factors to note for EBCI. First, gestational diabetes rates for PRCSA AI/AN have seen a dramatic rise since 2013 (Figure 17). In 2013, PRCSA AI/AN gestational diabetes rates were 5% and in 2016 climbed to 19.4%. Gestational diabetes can result in pregnancy complications that affect the mother and the baby. For the mother, there is an increased risk of high blood pressure, preeclampsia, and acquiring type 2 diabetes later in life. For the baby, there is an increased risk of excessive birth weight, preterm labor, hypoglycemia, and an increased risk of developing obesity and type 2 diabetes later in life.<sup>14</sup> Eating healthy and keeping active before and during pregnancy and losing excess weight before pregnancy can help prevent gestational diabetes.

<sup>14</sup> <https://www.mayoclinic.org/diseases-conditions/gestational-diabetes/symptoms-causes/syc-20355339>.



**Figure 17: Gestational Diabetes**

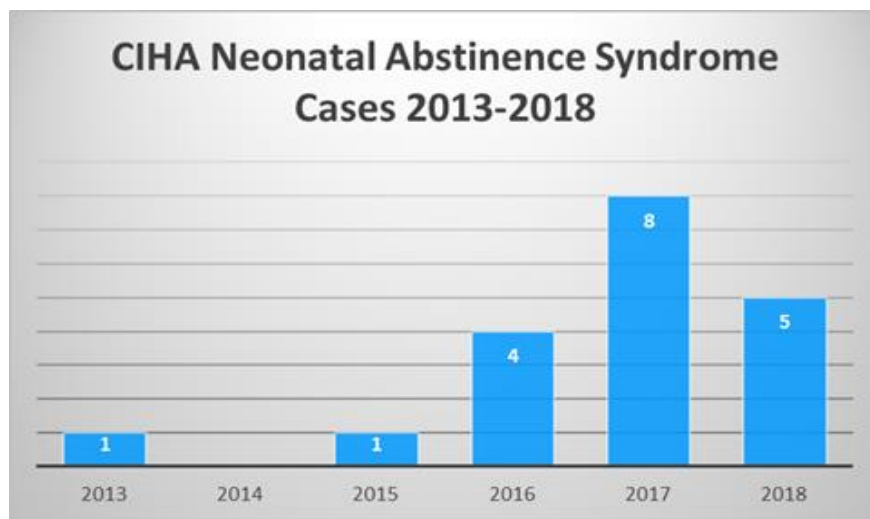
Smoking while pregnant (Figure 18) is a pregnancy risk factor that has had a greater negative impact on EBCI than North Carolina and US populations. Smoking while pregnant increases numerous pregnancy complications, such as premature birth, low birth weight, birth defects, miscarriage, and an increased risk of sudden infant death syndrome (SIDS). The complications of smoking with pregnant are not limited to commercial tobacco use. E-cigarettes can also cause pregnancy issues for the developing baby.<sup>15</sup>



**Figure 18: Commercial Tobacco Use During Pregnancy**

<sup>15</sup> <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/tobaccousepregnancy/index.htm>

Neonatal Abstinence Syndrome (NAS) is a growing problem in EBCI and in the rest of the US (Figure 19). The numbers are small, but there has been a significant increase. NAS occurs when newborn babies experience withdrawal symptoms after being exposed to drugs in the mother's womb. NAS can cause low birth weight and other complications leading to prolonged hospitalization. NAS can be the result of both illicit and prescription drug abuse including some prescription painkillers.<sup>16</sup> Fortunately, EBCI has many resources that can help prevent or lessen the effects of NAS. CIHA and its Analenisgi Recovery Center offer substance abuse treatment, classes and support groups, therapy, a recovery center, detox, psychiatric evaluation, medication management, and other resources.



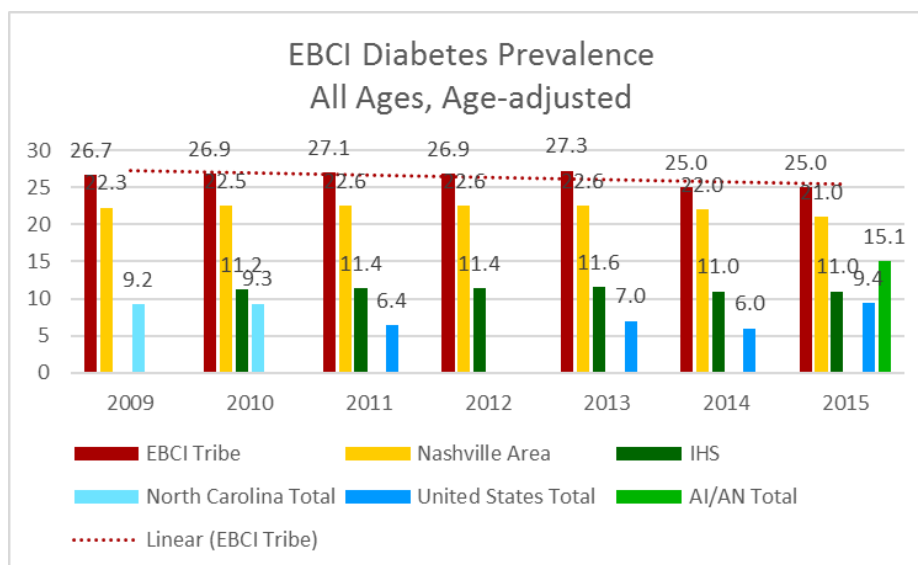
**Figure 19: Neonatal Abstinence Syndrome**

#### Chronic Disease (including cardiovascular disease and cancer)

Figure 20 shows that EBCI's age-adjusted diabetes prevalence (the rate of diabetes in a given population) has had a slightly decreasing trend over recent years. In 2015, EBCI's prevalence was at 25%, whereas Nashville area tribes were at 21%, national AI/AN were at 15.1%, and the national average was at 9.4%. The slow decrease in diabetes prevalence is good news, but the increased prevalence in EBCI is of concern.

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<sup>16</sup> <https://www.cdc.gov/grand-rounds/pp/2016/20160816-neonatal-addiction.html>



**Figure 20: Diabetes Prevalence, All Ages**

Table 5 details the incidence of diabetes (the rate of new cases diagnosed) in EBCI from 2013 through 2015, which remained stable. Diabetes is often related to lack of physical activity and excess weight. Prevention of diabetes has many contributing components, including maintaining a healthy diet, staying physically active, and being part of a social support group. PHHS and CIHA provide information and help with diabetes prevention and management.

| DIABETES MELLITUS INCIDENCE   |        |        |        |
|---|--------|--------|--------|
| EBCI  |        |        |        |
| Measure   | 2013   | 2014   | 2015   |
| Total User Population   | 11,027 | 11,178 | 11,344 |
| # with Diabetes Mellitus diagnoses in the past year                                 | 1,838  | 1,872  | 1,878  |
| % Incidence   | 16.7   | 16.7   | 16.6   |
| Source: personal communication from Martha Sellers to Annika Pfeender, July 8, 2016 |        |        |        |

**Table 5: Diabetes Incidence**

Cancer mortality rates in AI/AN PRCSA have consistently been slightly higher than PRCSA, total for the state of NC, and total AI/AN in NC. While not significantly higher than other NC populations, cancer mortality is a concern for EBCI. Many forms of cancer are associated with personal lifestyles – such as smoking, diet, and other environmental factors- and for some, preventive measures are known. Other factors, such as age, gender, family history, are also associated with the development of cancer. To help prevent cancer, live a healthy lifestyle, get recommended screening tests such as mammograms and colonoscopy, and notify your healthcare provider as soon as you think there may be a problem. Some forms of cancer spread rapidly and early detection aids in successful treatment.

| CANCER MORTALITY RATES  |               |              |               |              |               |              |               |              |               |              |
|---|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|
| Age-Adjusted Rates per 100,000 Population   |               |              |               |              |               |              |               |              |               |              |
| All Races   | 2008-2012     |              | 2009-2013     |              | 2010-2014     |              | 2011-2015     |              | 2012-2016     |              |
|   | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         |
| Cherokee  | 410           | 182.3        | 413           | 182.2        | 416           | 180.9        | 394           | 167.6        | 396           | 165.7        |
| Graham  | 106           | 169.9        | 100           | 157.8        | 106           | 164.2        | 107           | 162.7        | 122           | 180.9        |
| Haywood   | 742           | 162.4        | 733           | 158.4        | 756           | 159.0        | 776           | 159.3        | 758           | 151.3        |
| Jackson   | 387           | 167.4        | 420           | 177.8        | 414           | 169.0        | 403           | 159.3        | 414           | 161.0        |
| Swain   | 194           | 219.5        | 196           | 216.5        | 188           | 204.0        | 180           | 188.4        | 176           | 178.1        |
| <b>Total PRCSDA</b>   | <b>1,839</b>  | <b>180.3</b> | <b>1,862</b>  | <b>178.5</b> | <b>1,880</b>  | <b>175.4</b> | <b>1,860</b>  | <b>167.1</b> | <b>1,866</b>  | <b>167.4</b> |
| <b>Total NC</b>   | <b>89,505</b> | <b>175.9</b> | <b>70,717</b> | <b>173.3</b> | <b>92,542</b> | <b>171.8</b> | <b>93,838</b> | <b>169.1</b> | <b>95,163</b> | <b>166.5</b> |
| Pulled from Health Impact dataset to save time but available in Race-Specific and Sex-Specific Age-Adjusted Death Rates by County report in County Health Databooks |               |              |               |              |               |              |               |              |               |              |
|   |               |              |               |              |               |              |               |              |               |              |
| AI/AN   | 2008-2012     |              | 2009-2013     |              | 2010-2014     |              | 2011-2015     |              | 2012-2016     |              |
|   | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         |
| Cherokee  | 7             | n/a          | 5             | n/a          | 5             | n/a          | 5             | n/a          | 2             | n/a          |
| Graham  | 3             | n/a          | 3             | n/a          | 3             | n/a          | 3             | n/a          | 3             | n/a          |
| Haywood   | 1             | n/a          | 2             | n/a          | 2             | n/a          | 2             | n/a          | 1             | n/a          |
| Jackson   | 21            | 129.3        | 26            | 187.5        | 22            | 130.1        | 28            | 155.9        | 32            | 183.0        |
| Swain   | 43            | 285.7        | 46            | 279.6        | 45            | 270.3        | 41            | 235.2        | 38            | 212.4        |
| <b>Total AI/AN PRCSDA</b>   | <b>75</b>     | <b>207.5</b> | <b>82</b>     | <b>233.6</b> | <b>77</b>     | <b>200.2</b> | <b>79</b>     | <b>195.6</b> | <b>76</b>     | <b>197.7</b> |
| <b>Total AI/AN NC</b>   | <b>759</b>    | <b>165.5</b> | <b>786</b>    | <b>163.1</b> | <b>798</b>    | <b>159.7</b> | <b>822</b>    | <b>156.7</b> | <b>880</b>    | <b>158.7</b> |
| Race-Specific and Sex-Specific Mortality Rates report in County Health Databooks, NC SCHS   |               |              |               |              |               |              |               |              |               |              |

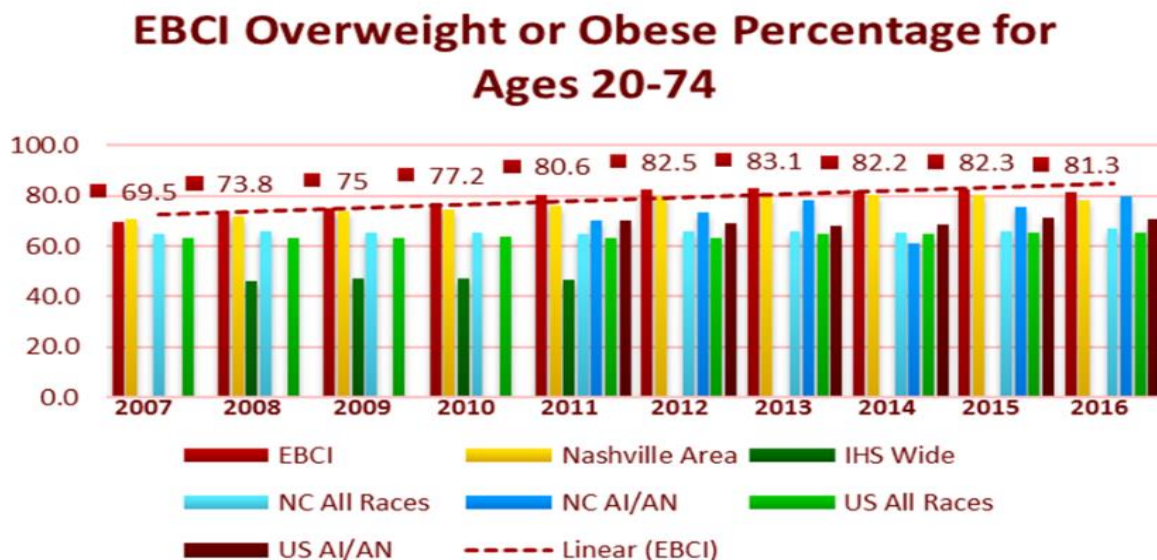
**Table 6: Cancer Mortality Rates**

While diabetes and cancer are two of the top ten leading causes of death for EBCI, heart disease is the number one leading cause of death in the community and PRCSDA AI/AN rates are constantly above the total PRCSDA rates (Table 7). Factors that can help prevent heart disease, include maintaining a healthy diet, being physically active, maintaining a healthy weight, and not smoking.

| HEART DISEASE MORTALITY RATES   |               |              |               |              |               |              |               |              |               |              |
|---|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|
| Age-Adjusted Rates per 100,000 Population   |               |              |               |              |               |              |               |              |               |              |
| All Races   | 2008-2012     |              | 2009-2013     |              | 2010-2014     |              | 2011-2015     |              | 2012-2016     |              |
|   | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         |
| Cherokee  | 427           | 201.9        | 426           | 192.9        | 435           | 195.5        | 462           | 203.3        | 463           | 201.4        |
| Graham  | 136           | 215.9        | 130           | 199.6        | 129           | 196.1        | 139           | 208.9        | 132           | 197.3        |
| Haywood   | 865           | 189.9        | 884           | 190.7        | 897           | 190.9        | 940           | 195.7        | 943           | 191.1        |
| Jackson   | 357           | 162.1        | 362           | 163.0        | 373           | 164.7        | 354           | 162.3        | 363           | 151.7        |
| Swain   | 215           | 251.5        | 217           | 245.0        | 194           | 215.0        | 184           | 197.1        | 181           | 189.4        |
| <b>Total PRCSDA</b>   | <b>2,000</b>  | <b>204.3</b> | <b>2,019</b>  | <b>198.2</b> | <b>2,028</b>  | <b>192.4</b> | <b>2,079</b>  | <b>191.5</b> | <b>2,082</b>  | <b>186.2</b> |
| <b>NC</b>   | <b>85,890</b> | <b>174.4</b> | <b>86,285</b> | <b>170.0</b> | <b>86,699</b> | <b>165.9</b> | <b>88,076</b> | <b>163.7</b> | <b>89,393</b> | <b>161.3</b> |
| Pulled from Health Impact dataset to save time but available in Race-Specific and Sex-Specific Age-Adjusted Death Rates by County report in County Health Databooks |               |              |               |              |               |              |               |              |               |              |
|   |               |              |               |              |               |              |               |              |               |              |
| AI/AN   | 2008-2012     |              | 2009-2013     |              | 2010-2014     |              | 2011-2015     |              | 2012-2016     |              |
|   | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         | #             | Rate         |
| Cherokee  | 10            | n/a          | 9             | n/a          | 7             | n/a          | 8             | n/a          | 7             | n/a          |
| Graham  | 5             | n/a          | 5             | n/a          | 6             | n/a          | 5             | n/a          | 7             | n/a          |
| Haywood   | 1             | n/a          | 1             | n/a          | 1             | n/a          | 2             | n/a          | 4             | n/a          |
| Jackson   | 21            | 148.4        | 26            | 187.5        | 31            | 208.7        | 28            | 174.7        | 33            | 202.6        |
| Swain   | 43            | 277.0        | 42            | 263.4        | 42            | 264.8        | 44            | 276.1        | 41            | 245.6        |
| <b>Total AI/AN PRCSDA</b>   | <b>80</b>     | <b>212.7</b> | <b>83</b>     | <b>225.5</b> | <b>87</b>     | <b>236.8</b> | <b>87</b>     | <b>225.4</b> | <b>92</b>     | <b>224.1</b> |
| <b>Total AI/AN NC</b>   | <b>790</b>    | <b>191.5</b> | <b>847</b>    | <b>196.5</b> | <b>863</b>    | <b>190.4</b> | <b>901</b>    | <b>190.5</b> | <b>904</b>    | <b>182.0</b> |
| Race-Specific and Sex-Specific Mortality Rates report in County Health Databooks, NC SCHS   |               |              |               |              |               |              |               |              |               |              |

**Table 7: Heart Disease Mortality Rates**

As mentioned above, diabetes, cancer, and heart disease are often associated with excess weight. Figure 21 shows EBCI overweight and obesity percentages for ages 20-74. EBCI and the IHS Nashville Area have higher rates than the other listed groups. Over a period of 10 years, EBCI overweight and obesity rates have increased from 69.5% in 2007 to 81.3% in 2016.



**Figure 21: EBCI Overweight and Obesity in Adults**

## Injury & Violence

Every year, over 200,000 people die from injury and violence in the US, which is equal to 1 person every 3 minutes.<sup>17</sup> Each year millions of people get injured and survive, yet they may experience life-long mental, physical, and financial problems. Injury and violence can come in many different forms such as motor vehicle accidents, trips and falls, sports- and recreation-related injuries, prescription opioid overdose, and physical altercations including assault, abuse and neglect, intimate partner violence, and sexual violence. Many of these issues will be discussed in more detail later in this chapter and in other chapters in the THA. EBCI mortality statistics for injuries have consistently shown a higher rate than the average total of PRCSDA and North Carolina. From 2012-2014, injuries accounted for 11.5% of EBCI's total mortality, while the rate was 7.7% for both PRCSDA and North Carolina.

<sup>17</sup> [https://www.cdc.gov/injury/wisqars/overview/key\\_data.html](https://www.cdc.gov/injury/wisqars/overview/key_data.html)

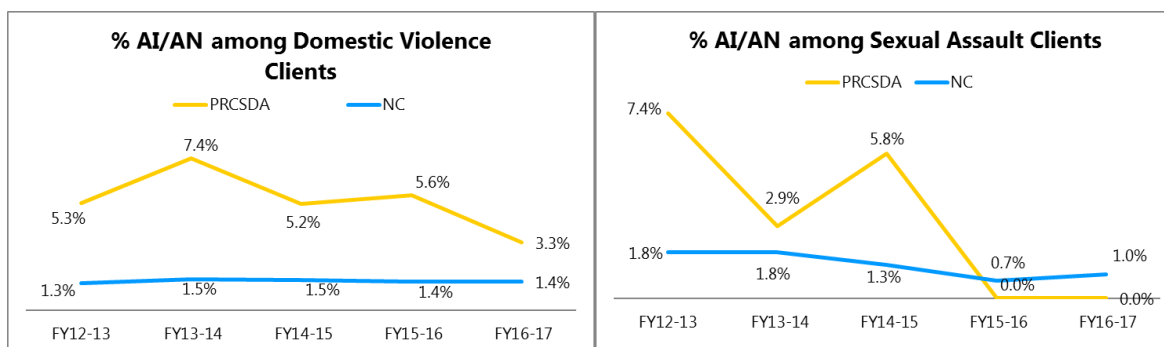


| DEATHS DUE TO INJURY (Detailed Mortality Statistics) |            |              |           |              |            |              |             |              |            |             |               |             |
|--|------------|--------------|-----------|--------------|------------|--------------|-------------|--------------|------------|-------------|---------------|-------------|
| By Cause   |            |              |           |              |            |              |             |              |            |             |               |             |
| Cause of Death                                       | EBCI       |              |           |              |            |              | USET Region |              | PRCSDA     |             | NC            |             |
|  | 2002-2011  |              | 2012-2014 |              | 2002-2014  |              | 2002-2014   |              | 2012-2014  |             | 2012-2014     |             |
|  | #          | %            | #         | %            | #          | %            | #           | %            | #          | %           | #             | %           |
| Motor vehicle accidents                              | 29         | 23.0%        | 9         | 33.3%        | 38         | 24.8%        | 169         | 41.8%        | 58         | 14.5%       | 4,231         | 22.1%       |
| All other accidents and adverse affects              | 68         | 54.0%        | 12        | 44.4%        | 80         | 52.3%        | 160         | 39.6%        | 216        | 54.1%       | 8,724         | 45.5%       |
| Intentional self harm                                | 16         | 12.7%        | 6         | 22.2%        | 22         | 14.4%        | 48          | 11.9%        | 97         | 24.3%       | 3,892         | 20.3%       |
| Assault  | 12         | 9.5%         | 0         | 0.0%         | 12         | 7.8%         | 27          | 6.7%         | 18         | 4.5%        | 1,654         | 8.6%        |
| Other external causes                                | 1          | 0.8%         | 0         | 0.0%         | 1          | 0.7%         | 4           | 1.0%         | 10         | 2.5%        | 663           | 3.5%        |
| <b>Total deaths due to injury</b>                    | <b>126</b> | <b>16.7%</b> | <b>27</b> | <b>11.5%</b> | <b>153</b> | <b>15.5%</b> | <b>404</b>  | <b>13.6%</b> | <b>399</b> | <b>7.7%</b> | <b>19,164</b> | <b>7.7%</b> |
| Source: TEC 7/19/2016, TEC Request August 2016       |            |              |           |              |            |              |             |              |            |             |               |             |

**Table 8: Deaths Due to Injury by Cause**

### Domestic Violence and Sexual Assault

In the PRCSDA counties, reported domestic violence and sexual assault were above North Carolina averages from 2012-17 for DV and 2012-2015 for SA (Figure 22). There has been a decline in both sexual assault and domestic violence clients in recent years. However, these are still significant issues for EBCI, and help is available to those that are affected. The 24/7 hotline number to report DV or SA is 828-488-5527 or toll-free at 800-264-9611. If an emergency, call Cherokee Police Dispatch at 828-497-4131.



**Figure 22: Domestic Violence and Sexual Assault Reports**

### Mental Health & Substance Use

CIHA data on patients who were diagnosed with substance use and received services showed a large increase from 2014 to 2015 and a drop from 2015 to 2016 (Table 9). In 2016, the number of patients who were diagnosed with substance use and received services was 1,283, which is approximately 8.73% percent of EBCI's total enrolled population.

Behavioral health visits for substance use clients have gone up significantly since 2014. There was a large increase in behavioral health visits from 2014 to 2015, but the following year's substance use diagnosis rates were down. The reasons for this are unknown; it may indicate that CIHA's behavioral health program, as well as other Tribal efforts, has made a positive impact on this issue, or that substance use in the community has declined for other reasons.

| <i>CIHA SUBSTANCE Use Diagnosis (Dx) AND Received Services</i>                                    | <i>2014</i>  | <i>2015</i>   | <i>2016</i>   |
|---|--------------|---------------|---------------|
| <i>Patients with Substance Use Dx AND Received Services</i>                                       | <i>972</i>   | <i>1,785</i>  | <i>1,283</i>  |
| <i>Percent of EBCI Population with Substance Use Dx And Received Services Per Year1</i>           | <i>8.8%</i>  | <i>16.2%</i>  | <i>11.6%</i>  |
| <i>Behavioral Health Visits for Substance Use Dx Patients</i>                                     | <i>6,942</i> | <i>13,150</i> | <i>13,239</i> |
| <i>Source cited in 2018: personal communication from Cherokee Hospital to PHHS, June 14, 2018</i> |              |               |               |
| <i>CIHA user population 2012- 11,016.</i>   |              |               |               |

**Table 9: CIHA Substance Use Diagnoses and Received Services**

Depression diagnoses and visits saw an uptick in 2015 and then they slightly declined in 2016. More longitudinal data is needed to see clear trends in depression incidence and prevalence.

| <i>CIHA DEPRESSION Dx AND Received Services</i>   | <i>2014</i>  | <i>2015</i>  | <i>2016</i>  |
|---|--------------|--------------|--------------|
| <i>Patients with Depression Dx AND Received Services</i>  | <i>1,369</i> | <i>1,665</i> | <i>1,503</i> |
| <i>Percent of EBCI Population with Depression Dx AND Received Services Per Year1</i>              | <i>12.4%</i> | <i>15.1%</i> | <i>13.6%</i> |
| <i>Behavioral Health Visits for Patients with Depression Dx</i>                                   | <i>4,619</i> | <i>7,592</i> | <i>5,746</i> |
| <i>Source cited in 2018: personal communication from Cherokee Hospital to PHHS, June 14, 2018</i> |              |              |              |
| <i>1CIHA user population 2012- 11,016.</i>  |              |              |              |

**Table 10: CIHA Depression Diagnoses and Received Services**

The 2017 Tribal Community Health Survey identified anxiety, depression, and mental and behavioral health issues as leading health concerns in EBCI. Of the 1,070 survey respondents,

19.11% stated these issues affected their overall health, 19.2% said that they were concerned these issues would affect their overall health in the next five to ten years, and 19.96% said they were concerned these issues were affecting their family's health.

## Oral Health

Only 33% of CIHA's active user population had a documented dental visit in 2017. While this exceeds the target of 29.7%, it still falls well short of the North Carolina, North Carolina AI/AN, and the US All-Races rates, which averaged, respectively, 63.6%, 57.0%, and 66.3% in 2016. Dental visits are important to overall health: oral diseases such as cavities, gum disease, and oral cancer can cause pain and disability, but oral diseases are also associated with systemic health issues such as premature birth, cardiovascular disease, and dementia. The CDC estimates that 1 in 4 adults have an untreated cavity and nearly 50% of all adults aged over 30 have signs of gum disease.<sup>18</sup> Periodic dental visits and brushing and flossing every day are two ways to help improve overall oral health.

| PERCENTAGE OF POPULATION WITH DOCUMENTED DENTAL VISITS  |      |      |      |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|------|------|------|
| User Population (All Patients)  |      |      |      |      |      |      |      |      |      |      |      |
|   | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| EBCI  | 36.1 | 38.9 | 44.0 | 44.2 | 46.9 | 45.9 | 41.0 | 40.0 | 36.4 | 36.5 | 33.0 |
| Nashville Area  | 36.0 | 37.4 | 40.6 | 40.7 | 41.8 | n/a  | 39.0 | 39.0 | 38.2 | 38.6 | 35.0 |
| Target  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | 26.9 | 29.2 | 27.9 | 29.3 | 29.7 |
| Indian Health Services  | 25.0 | 25.0 | 25.0 | 25.0 | 26.9 | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  |
| NC All Races  | n/a  | 68.5 | n/a  | 68.4 | n/a  | 64.9 | n/a  | 64.2 | n/a  | 63.6 | n/a  |
| NC AI/AN  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | 57.0 | n/a  |
| US All Races  | n/a  | 71.2 | n/a  | 69.6 | n/a  | 67.2 | n/a  | 65.3 | n/a  | 66.3 | n/a  |
| Source cited in 2013: IHS RPMS, TEC   |      |      |      |      |      |      |      |      |      |      |      |
| Source: USET Data Portal, GPRA Highlight Report   |      |      |      |      |      |      |      |      |      |      |      |
| Source for NCUS: CDC's BRFSS Prevalence and Trends Data tool: <a href="https://www.cdc.gov/brfss/brfssprevalence/index.html">https://www.cdc.gov/brfss/brfssprevalence/index.html</a> |      |      |      |      |      |      |      |      |      |      |      |
| NCUS is visited the dentist or dental clinic within the past year for any reason  |      |      |      |      |      |      |      |      |      |      |      |

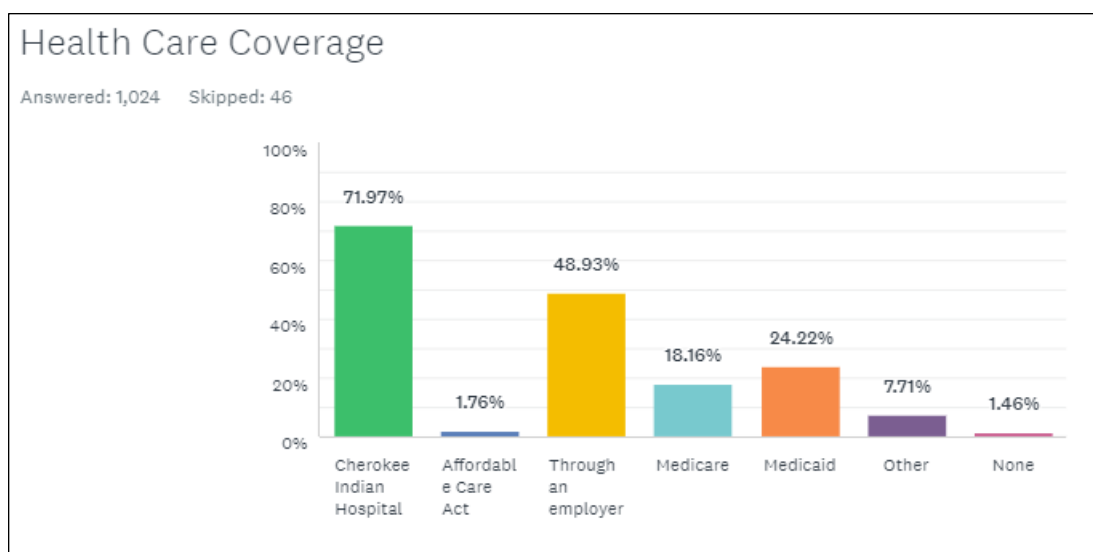
**Table 11: Dental Visits**

## Clinical Care & Access

### Health Insurance

Cherokee Indian Hospital Authority (CIHA) provides health care coverage to all Tribal enrolled members. However, not everyone in the Cherokee community is qualified to receive primary medical care through CIHA. In the 2017 Tribal Community Health Assessment, we asked the question on the community's health care coverage and many respondents had access to multiple health care coverage options. The majority of respondents, 71.97%, stated that they can access healthcare at CIHA and only 1.46% stated they do not have access to any healthcare coverage. It is important to note that individuals without healthcare coverage by law can still be seen at any emergency room during a medical emergency.

<sup>18</sup> <https://www.cdc.gov/chronicdisease/pdf/aag-oral-health.pdf>



**Figure 23: Healthcare Coverage (Tribal Community Health Survey 2017)**

### Healthcare Provider to Patient Ratios

There were 15 healthcare providers at CIHA as of July 2013. With a user population (as of July 1, 2013) of 11,088, that is a ratio of 135:100,000. In 2012, North Carolina had a ratio of 236:100,000 and in the US, it is 244:100,000.<sup>19</sup> In rural America, the ratio is estimated at 40:100,000.<sup>20</sup> Note that North Carolina and the US include medical students in their ratios.

### Survey Data on Self-Reported Access to Care and Barriers

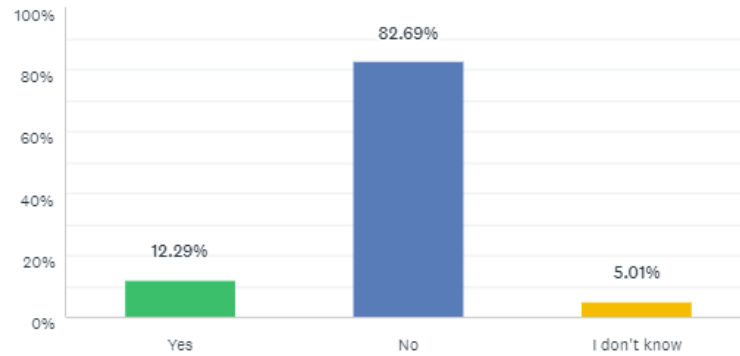
The 2017 Tribal Community Health Survey asked: “In the past 12 months, did you or a family member need medical care but couldn’t get it?” (Figure 24) 12.29% of respondents said yes, 82.69% said no, and 5.01% said they didn’t know. Of the 119 that said yes, the main reasons were: cost 38.66%, office hours 36.13%, and not having health insurance 28.57%.

<sup>19</sup> [https://www.aamc.org/download/152162/data/north\\_carolina.pdf](https://www.aamc.org/download/152162/data/north_carolina.pdf)

<sup>20</sup> <https://www.ruralhealthweb.org/about-nrha/about-rural-health-care>

In the past 12 months, did you or a family member need medical care but couldn't get it?

Answered: 1,017 Skipped: 53



Yes responses included:

|   |        |    |
|---|--------|----|
| ▼ Inconvenient office hours, long wait times, or health care facility did not have any openings | 36.13% | 43 |
| ▼ Costs too much  | 38.66% | 46 |
| ▼ Lack of child care or elder care  | 10.08% | 12 |
| ▼ Lack of physical access for the disabled  | 5.04%  | 6  |
| ▼ Language barrier or misunderstood by providers and/or staff                                   | 0.84%  | 1  |
| ▼ Not having health insurance   | 28.57% | 34 |
| ▼ Services or medication not available  | 14.29% | 17 |
| ▼ Transportation issues   | 12.61% | 15 |
| ▼ Other   | 19.33% | 23 |
| Total Respondents: 119  |        |    |

**Figure 24: Access to Medical Care (Tribal Community Health Survey 2017)**

## At-Risk Populations

EBCI at-risk populations include, but are not limited to those who have:

- Economic disadvantages
- Language and literacy issues
- Medical issues including chronic disease or disability
- Serious and persistent mental illness
- Intellectual development disorders
- Social isolation
- Sensory deficits such as low vision or hearing difficulties
- Substance use disorder

Transitional-age children (ages 16-25), children in foster care, and persons integrating back into the community from incarceration or treatment are also at vulnerable or at risk, as are infants and children in general, pregnant women, and elders.

Economically disadvantaged populations are those at or below the poverty level. Poverty affects residents in numerous ways, such as not getting enough to eat, not eating healthy food, not having access to transportation, and not having a place to sleep. The 2017 Community Health Survey found that 24% of respondents did not have enough money for food at least once in the previous year. This is essentially unchanged from 2013 (23%).

Language and literacy at-risk populations are those that may not be able to communicate adequately to meet their needs, such as those with low English proficiency or limited ability to read. This can affect the ability to receive proper medical treatment, read, gain employment, and understand important messages and announcements. Cherokee speakers generally are fluent in English but may have an understanding of English words and concepts that is unique to Cherokee culture and tradition.

Populations with medical issues and/or disability can have challenges or limitations regarding what they can do or what they can understand. The CDC estimates that around 14% of the US population is affected by hearing, vision, or mobility limitations.<sup>21</sup> Persons with serious and persistent mental illness or intellectual development disorders may experience stigma in the community, financial instability, and encounter barriers in access to services.

Isolation is an issue particularly since EBCI is in a rural area. Social isolation can have a greater effect in Tribal communities such as Snowbird, Cherokee County, and Big Cove, as residents in these communities may have barriers to travel for medical care, less access to technology such as Internet and cell phone services, and may have less access to affordable and healthy food options than more centrally-located communities.

One of the challenges that PHHS will address during the THIP is improved quantification of these populations in EBCI. Some at-risk groups are difficult to identify and estimating population rates may not be attainable.

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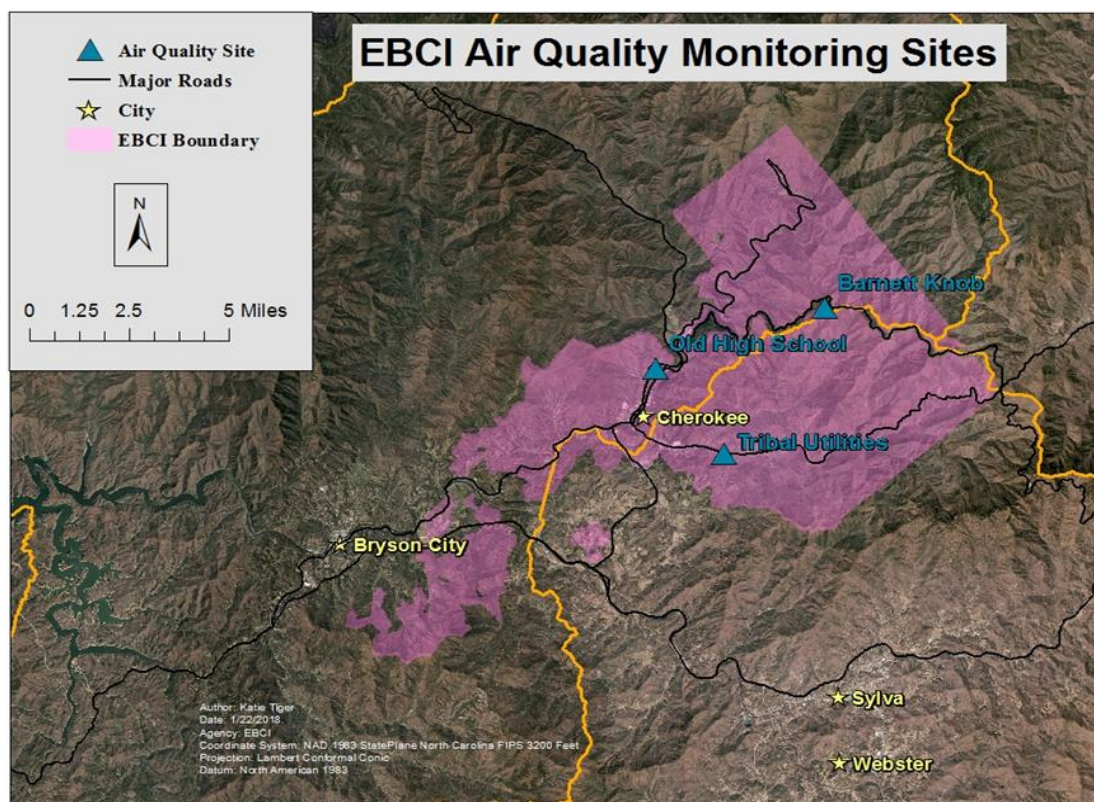
<sup>21</sup> [https://emergency.cdc.gov/workbook/pdf/ph\\_workbookfinal.pdf](https://emergency.cdc.gov/workbook/pdf/ph_workbookfinal.pdf)

## CHAPTER 6 – PHYSICAL ENVIRONMENT

### Air Quality

The EBCI has operated an Air Quality Program (AQP) since 1999. The primary pollutants of concern are ozone (O<sub>3</sub>) and particulate matter (PM<sub>2.5</sub>). The EBCI AQP operates three monitoring sites on the Qualla Boundary (Figure 25):

1. Barnett Knob: High elevation O<sub>3</sub> site established in 1999. Captures transport O<sub>3</sub> and is not representative of the daily O<sub>3</sub> exposure of the EBCI population.
2. Tribal Utilities (Natural Resources Office): Population exposure PM<sub>2.5</sub> site established in 2000. Captures PM<sub>2.5</sub> concentrations that most of the EBCI population is exposed to.
3. Old High School (OHS): Population exposure O<sub>3</sub> site established in 2011. Captures O<sub>3</sub> concentrations that most of the EBCI population is exposed to daily.



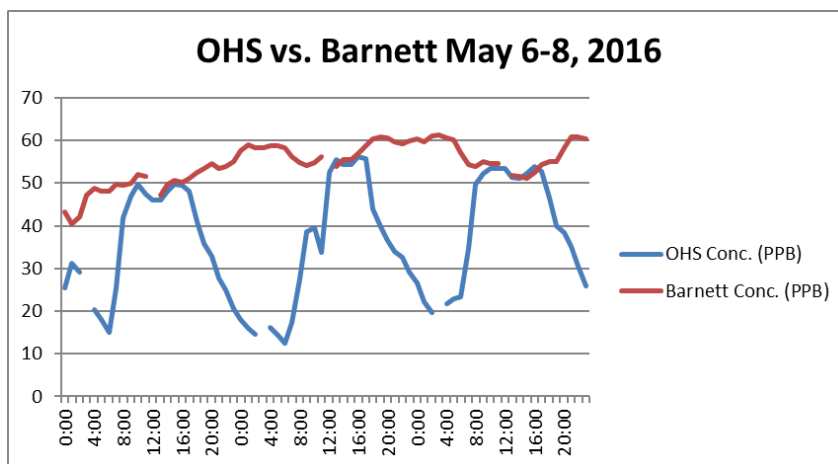
**Figure 25: EBCI Air Quality Monitoring Sites**

#### Ozone Data: Barnett Knob vs. Old High School

The ozone data collected at the Old High School monitoring site is used for compliance with the Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS). The ozone data collected at the Barnett Knob monitoring site is used for research studies and is



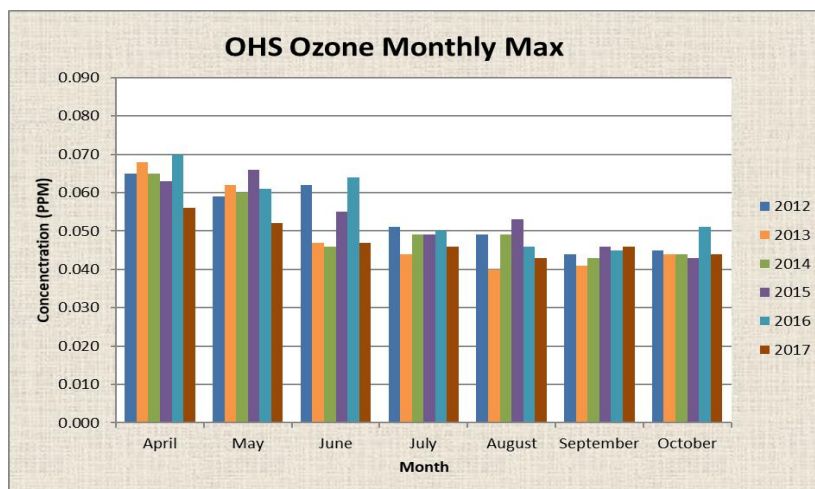
not used for compliance purposes because the site captures transport ozone, which is not a good representation of what the EBCI population is exposed to daily. Due to the way ozone is formed ( $\text{VOCs} + \text{NO}_x + \text{SUNLIGHT} = \text{O}_3$ ), concentrations typically follow a diurnal pattern, increasing during the heat of the day and decreasing at night (Figure 26). This pattern is seen clearly with the data collected at the OHS site, but Barnett data shows the opposite, concentrations increasing at night and decreasing during the day. The graph below shows a comparison of the two ozone sites during May 2016.



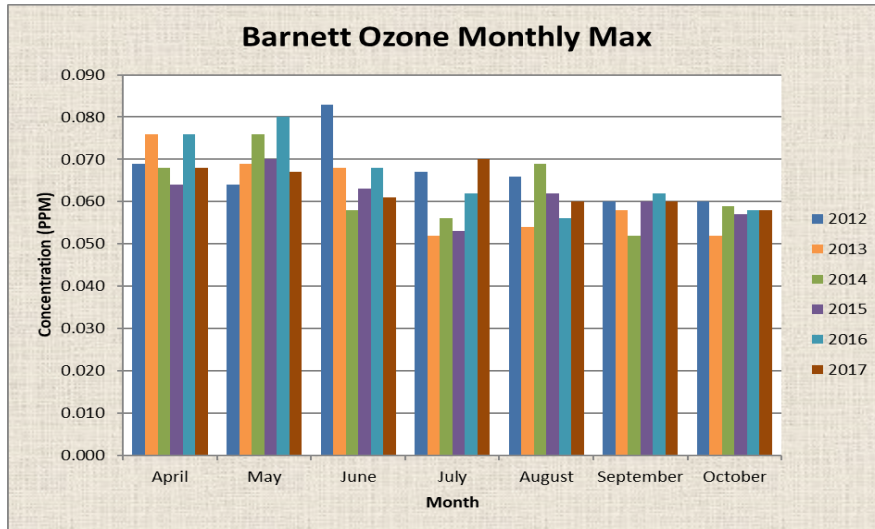
**Figure 26: Old High School vs. Barnett Knob Air Quality 2016**

#### Ozone Data: Monthly Maximums

When the monthly maximum ozone concentrations are compared for each year (2012-2017), it is clear that Barnett Knob captures higher ozone concentrations than the Old High School site (Figures 27, 28). The graphs below also show that EBCI ozone concentrations are generally decreasing each year. Please note, the increase in the October 2016 OHS concentrations reflect the multiple wildfires in the area during that time.



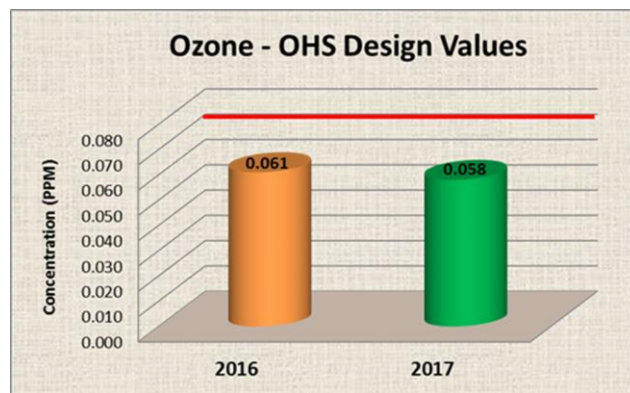
**Figure 27: Old High School Ozone Monthly Maximum 2012-2017**



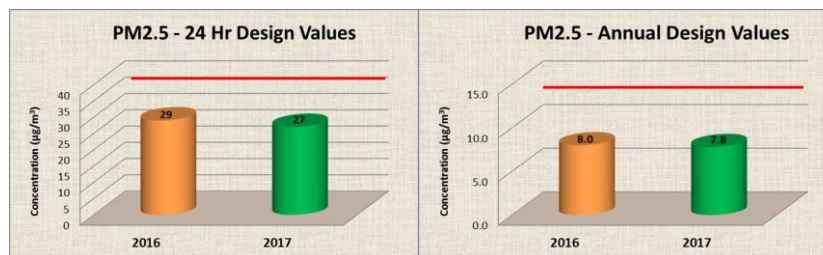
**Figure 28: Barnett Knob Ozone Monthly Maximum 2012-2017**

#### Ozone and Particulate NAAQS Comparisons

EPA uses a monitoring site's Design Value to compare to the National Ambient Air Quality Standards (NAAQS). A Design Value is a statistic that is based off 3 consecutive years of data for a location. Figures 29-30 show the design values for the OHS site and Tribal Utilities site compared to the NAAQS (represented by the red line). Both sites are classified attainment, meaning they are in compliance with the NAAQS.



**Figure 29: Ozone--OHS Design Values 2016-2017**



**Figure 30: PM2.5 24-hr and Annual Design Values**

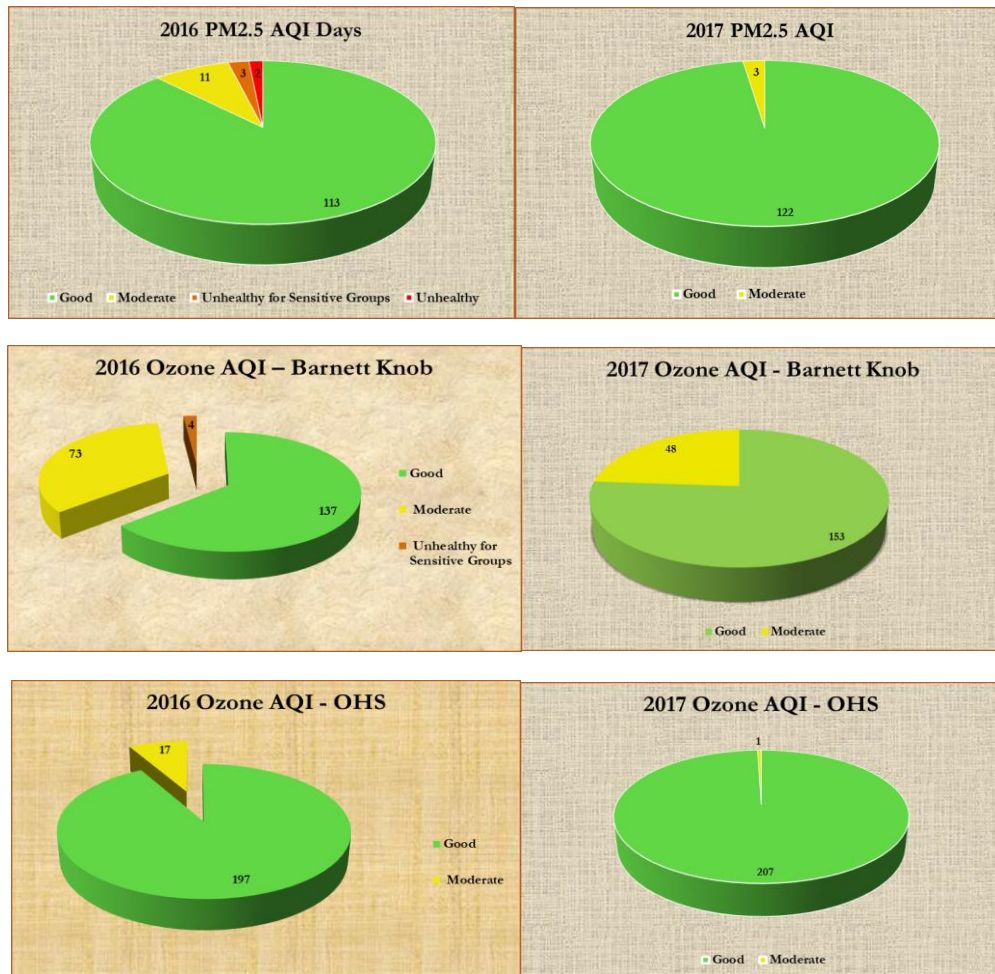
## Air Quality Index Ozone and Particulate Matter

The air quality index (AQI, Figure 31) is used by government agencies to communicate to the public how clean or polluted the air is. The AQI focuses on health effects people may experience within a few hours or days after breathing polluted air. As the AQI increases, a larger percentage of the population is likely to experience increasingly severe adverse health effects.

| Air Quality Index Levels of Health Concern | Numerical Value | Meaning  |
|--|-----------------|--|
| Good                                       | 0 to 50         | Air quality is considered satisfactory, and air pollution poses little or no risk  |
| Moderate                                   | 51 to 100       | Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution. |
| Unhealthy for Sensitive Groups             | 101 to 150      | Members of sensitive groups may experience health effects. The general public is not likely to be affected.  |
| Unhealthy                                  | 151 to 200      | Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.   |
| Very Unhealthy                             | 201 to 300      | Health alert: everyone may experience more serious health effects  |
| Hazardous                                  | 301 to 500      | Health warnings of emergency conditions. The entire population is more likely to be affected.  |

**Figure 31: Air Quality Index**

Figure 32 displays the AQI days for both ozone and particulate matter for 2016-2017. Note that the 2016 chart shows redder (unhealthy), orange (unhealthy for sensitive groups) and yellow (moderate) days as a result of the wildfires in October-November.



**Figure 32: Air Quality Index 2016-2017**

## Water

### Surface Water

The EBCI Division of Agriculture and Natural Resources (DANR) has a monitoring system for surface water—public streams, creeks, reservoirs, lakes, and rivers—that covers 30 locations on Tribal lands. DANR monitors several data points, including the presence of *E. coli*, a kind of bacteria that can affect human health. Streams are not suitable for drinking water: nature is not sterile, and caution should be exercised when in contact with surface water, such as while swimming or fishing, especially during times of high turbidity (when the water has increased particles floating in it, such as after heavy rains) and in locations where livestock may be close to a stream.

Water quality is good in the EBCI community thanks to initiatives like the Big Cove Sewer Project, which was a water quality-driven federal grant to the EBCI to provide sixteen miles of trunk line sewer service to the residents in the Raven Fork watershed. The EBCI water quality



laboratory is always willing to sample surface waters that may be a source of concern to the community.

### Drinking Water

Water produced at the Cherokee Water Plant meets and consistently exceeds the requirements set forth by the Federal Government's Safe Drinking Water Act (SDWA) which is enforced by the US Environmental Protection Agency (EPA). With clean, safe drinking water being at the forefront of EPA's mission and ever tightening of regulations to maintain public health, we have technologically, educationally and procedurally made improvements to the entire water system to ensure that EBCI water quality continues to meet or exceed Federal Standards. The Cherokee water system has not been issued a drinking water violation in many years. Quality is maintained thorough the due diligence of highly trained and certified plant operators and continuous testing by the Cherokee Water Laboratory. The Lab is located within the secure Cherokee Water Treatment facility and is certified through the United States EPA and the state of North Carolina. Each year the Lab drafts a consumer confidence report (CCR) that is available to the public and explains how our water systems performed for the prior year. We publish the CCR in the *One Feather* every June and keep copies that are available on request.

The Cherokee Water Plant monitors and tests for:

- Turbidity (NTU): Suspended solids, color and/or cloudiness of water
- pH: measure of the acidity or alkalinity of a solution
- Chlorine: disinfection additive measured to maintain a federally mandated residual for safe distribution and storage of drinking water
- Temperature: monitored due to the direct effect it has on pH stabilization and chlorine residuals. It also can be used as an indicator for water age in the storage and distribution system.

EBCI operates 4 water systems. Three are ground water systems (well water) and one is a surface water plant (water from the river). Monitoring in these systems includes:

- Hourly NTU, Chlorine, pH, and temperature testing at the water treatment plant
- Daily NTU, Chlorine, pH, and temperature testing for the well and distribution systems
- Monthly Cryptosporidium, Giardia, and Coliform bacteria testing
- Annual lead, copper, nitrate, nitrite, and disinfection by-products testing

How Does the Water Treatment Process Work?

- Coagulation: charging of suspended particles so they attract to each other
- Flocculation: the clumping together of charged particles into cloud like masses known as "floc"
- Sedimentation: process by which the floc and the heaviest of particles can be settled out of the water, or trapped into a coarse media
- Filtration: process where all remaining fine particles are removed

- UV (ultraviolet light): destroys 99.99% of pathogens.
- Disinfection: the addition of chlorine to kill bacteria that may have made it through the filter process and to ensure no pathogens grow in the distribution system.

Water is pumped from the river to the water treatment plant. As water enters the plant, treatment additives are injected to begin the coagulation, flocculation, sedimentation, filtration and disinfection process. Once the coagulated particles have formed a “floc,” they are given time to settle before the water is pumped to a clarifier. When the water reaches the clarifier, it passes through adsorption media for a second stage clarification process. From the clarifier the water is then allowed to flow through a mixed media filter, so that all the remaining solids can be removed. Once the water has gone through the filter it passes through an ultraviolet (UV) light for a first stage disinfection and then chlorine is added right before it goes to a clear well where the water is stored for a short period of time so that the chlorine has the appropriate contact time with the water. The water is then pumped to the main storage tanks and sent to the distribution system.

Figure 33 depicts the performance of the treatment process for calendar year 2018. The red line is the raw water or water that is in the river at any given time. Raw water is what the treatment plant starts with. The black line is settled water: water that has been through the clarification process. Notice that the black has less turbidity in it than the red line has. The blue lines represent the water that has been filtered and that gets distributed to customers on the water system. This graph demonstrates that the water treatment process is successful and that by having the blue line below 0.10 NTU we have a removal rate of 99.999% for cryptosporidium, a microscopic organism that can have negative effects on human health. Cryptosporidium levels are used as a marker for the effectiveness of drinking water treatment.

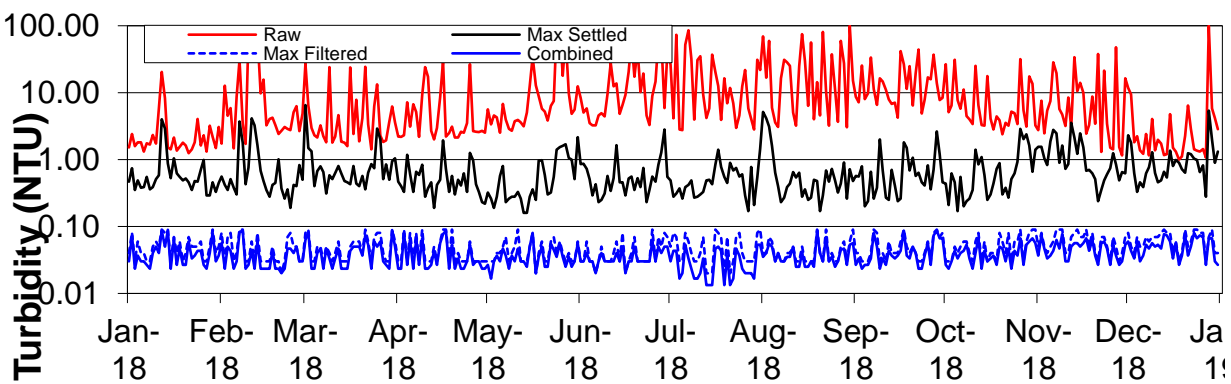


Figure 33: Cherokee Water Treatment Testing 2018

## Access to Healthy Food & Places

Because of its rural location, options for healthy food are limited on Tribal lands. There is one full-service grocery store on EBCI Tribal lands, located in Cherokee. There are four stores in Cherokee that sell a limited selection of groceries, and no food outlets in Snowbird or the Cherokee County Community. The closest full-service grocery stores outside Cherokee are in Bryson City, about a 15-minute drive from Cherokee, and in Sylva, about a 20-minute drive from Cherokee. There are eleven national chain fast food restaurants on the Qualla Boundary (separate from the Casino).

In the 2017 Community Health Survey, 23% of respondents reported that they had not had enough money for food at least once in the past year, the same as in the 2013 survey. EBCI PHHS includes two programs to assist families to obtain food:

- **Family Support Services** operates an emergency food pantry for eligible enrolled families to receive meals for three days up to three visits per year; includes frozen meats, canned and dry goods.
- **Tribal Food Distribution** distributes nutritious foods to eligible enrolled households on Tribal lands within USDA regulations; includes dry goods, canned fruits and vegetables, frozen meats including traditional choices, and fresh produce.

EBCI Tribal lands are blessed to be among the most beautiful natural areas in North Carolina. For resources in the natural environment on Tribal lands, see Priority 6- Stress, [Natural Environment](#) section.



## CHAPTER 7- HEALTH RESOURCES

### Health Resources

#### Process

The THA Data Team researched Tribal, county, nonprofit, faith-based, private, and other resources that addressed health in the six-county Tribal region in 2013. For the 2018 report, PHHS staff updated the list, which includes not only resources that directly address healthcare and public health, but also health behaviors and social determinants. The result is the “Tribal Health Resources Directory,” which because of its length is not included in this report. The Resources Directory is available online at <http://www.cherokee-hmd.com/resource-guide/index.html> and as paper copies from [THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com).

#### Findings

EBCI is blessed with a wide variety of health resources of many types. Categories listed in the Health Resources Directory include:

- **Healthcare:** Cherokee Indian Hospital Authority (CIHA) provides primary care to enrolled members of EBCI or any other federally recognized Tribe, non-enrolled children of enrolled Tribal members, non-enrolled pregnant women where the father is enrolled, CIHA staff, and emergency department patients. Services include medical, pediatric, vision, dental, palliative, emergency, and some prenatal care. Eligible patients may receive referrals for purchased/ referred care (PRC) for services not offered by CIHA.
- **Behavioral health care:** Analenisgi Behavioral Health is integrated into CIHA primary care and offers family and individual therapy; support groups; MAT (medication-assisted treatment); and Kanvwotiyi, an inpatient recovery center in the Snowbird Community.<sup>22</sup> Other services and partnerships include: EBCI Detention center, Wellness Court, and Justice Center services; Integrated Classrooms at CCS (Middle and Elementary Schools); Integrated Child Welfare and Juvenile Services teams; Domestic Violence Offender Program; DWI services; outpatient substance abuse treatment; Crisis Services; Recovery Center (Peer Support-led services); psychiatric evaluation and medication management.
- **Public health:** PHHS public health programs include WIC (Women Infants and Children), women’s wellness services, health education, diabetes prevention, Nurse-Family Partnership, in-home, children’s dental, epidemiology, Syringe Services, veteran services, and Community Health Representative (CHR) services.

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<sup>22</sup> In March 2019, construction will begin of an 18-bed (4 high acuity) Crisis Stabilization Unit to treat persons (adults) that need to detox from substances and/or that need acute inpatient psychiatric care. This facility will be adjacent to the new hospital. Women’s Home construction is slated to be complete by end of 2019. This home will house up to 8 women and four children (under age of 8). A Men’s Home location is still being explored at the time of publication.

- Family safety and support: PHHS includes a full-service human services department that includes child and adult protective services, domestic violence, child advocacy, and juvenile services, food distribution, and foster care.
- Tribal Government
- Education, including Head Start and Early Head Start
- Parks and recreation
- Public Safety
- Churches
- Free or reduced cost healthcare for non-enrolled members of the EBCI community
- Animal services

## Resource Gaps

Although EBCI has many resources, PHHS and Tribal and community partners together have identified these gaps, including in the Community Health Survey and listening sessions:

- Coordination of services to decrease duplication and gaps
- Communication between partners to make services more efficient
- Universally results-based practices
- Community awareness of available resources
- Cohesive, Tribal wide coordination on prevention, treatment, and recovery from substance use
- Family-centered prenatal care
- Support for foster families, including kinship placements
- Men's health issues
- Housing

In addition, in 2018, EBCI instituted a Tribal Action Plan (TAP) to address substance use in the EBCI community, and conducted an assets and gaps analysis for the opioid use issue in the community. The TAP will continue to engage the community and Tribal Government partners in this initiative. For more information on Tribal Action Plans, visit

<https://www.samhsa.gov/tloa/tap>.

## CHAPTER 8 – IDENTIFICATION OF HEALTH PRIORITIES

### Health Issue Identification

#### Process

To identify the most significant health issues in the EBCI community, the THA team (PHHS and key partners from Cherokee Central Schools, CIHA, and Analenisgi) reviewed data and the status of the community's health from their organizational perspectives. The team analyzed data from statistics inside and outside EBCI (primary and secondary quantitative data) and input from the community (primary qualitative data) - the Community Health Survey, Youth Risk and Resiliency Survey, listening sessions, and Identifying Our Needs: A Survey of Elders - and used the following criteria to identify significant health issues:

- Tribal data deviates notably from the region, state or benchmark
- Significant disparities exist
- Data reflects a concerning trend related to burden, scope or severity
- Surfaced as a priority community concern

#### Identified Issues

The THA team determined ten major community health priority issues through the above process:

- Substance Abuse and Related Issues
- Violence and Abuse
- Diabetes
- Hepatitis C
- Heart Disease
- Stress
- Tobacco Use
- Depression
- Food Insecurity
- Sexually Transmitted Infections and Teen Pregnancy

A full description of each of the “top ten” health priorities follows. References follow each health priority description.

## EBCI HEALTH PRIORITY 1: SUBSTANCE USE AND RELATED ISSUES



The World Health Organization (WHO) defines Substance Abuse as:

The harmful or hazardous use of psychoactive (affecting the mind) substances, including alcohol and illicit drugs. Psychoactive substance use can lead to dependence syndrome - a cluster of behavioral, cognitive, and physiological phenomena (incidents) that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use,

persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.<sup>23</sup>

Related issues to substance abuse can refer to several different issues, including death from overdose. The main cause of overdose deaths in the US and in WNC is opioids, a class of drugs for pain relief that includes prescription drugs (e.g. oxycodone), synthetics (e.g. fentanyl), and heroin. Current accepted terminology for addiction and misuse of illicit substances is “substance use disorder.”

Substance Abuse was a priority during our 2015-2017 Tribal Health Improvement Plan and EBCI made progress in helping raise awareness and accessing services. This period saw an increase in the number of patient behavioral health visits from 6,942 in 2014 to 13,150 in 2015, and in 2016 to 13,239.

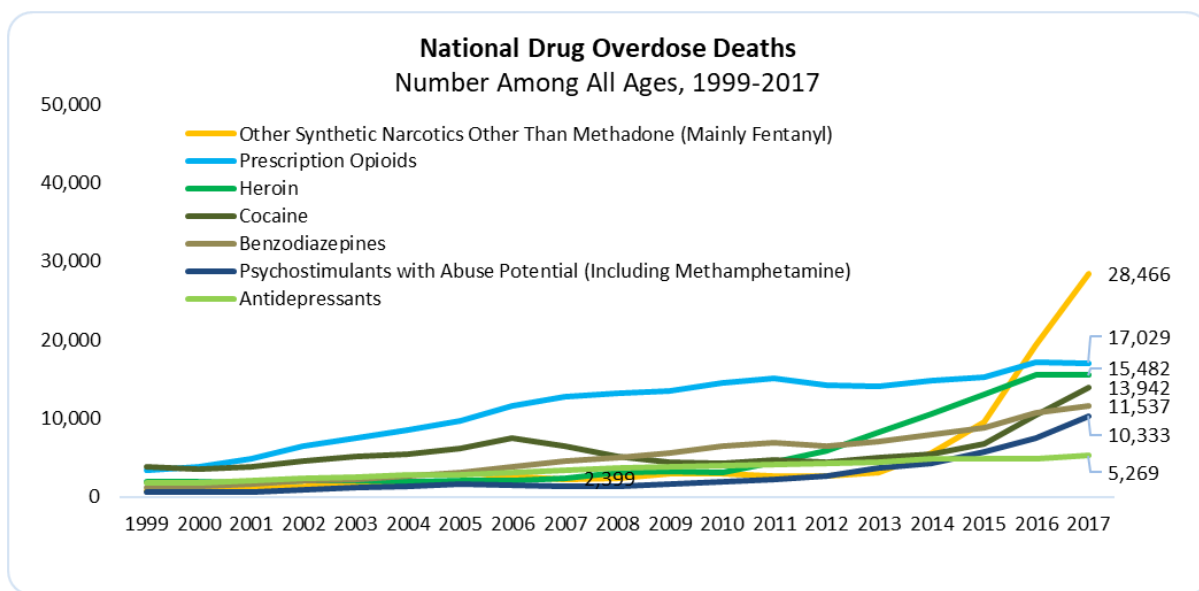
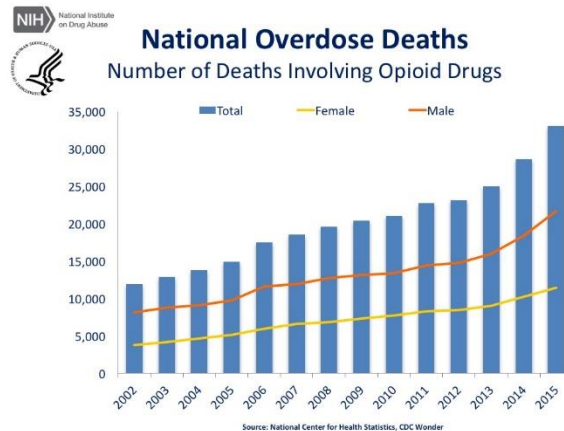
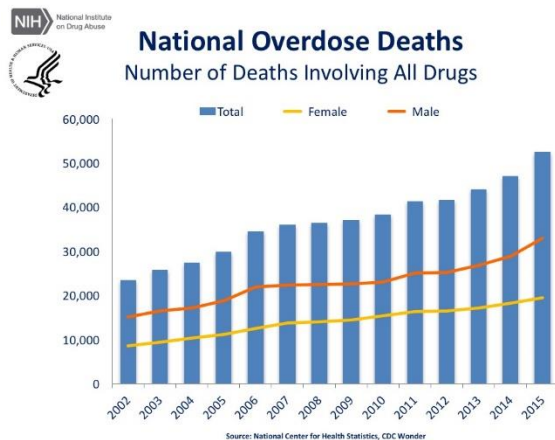
### Data Highlights

#### Health Indicators

In the US, overdose deaths have been on the rise with more than 350,000 people dying between 1999-2016.<sup>24</sup> Of the 63,600 nationwide overdose deaths in 2016, opioids have accounted for 66%, and on average 115 Americans die every day from opioid overdose.<sup>22</sup> Synthetic opioids, mainly fentanyl, have emerged as the leading cause of overdose in the US.

<sup>23</sup> [http://www.who.int/topics/substance\\_abuse/en/](http://www.who.int/topics/substance_abuse/en/)

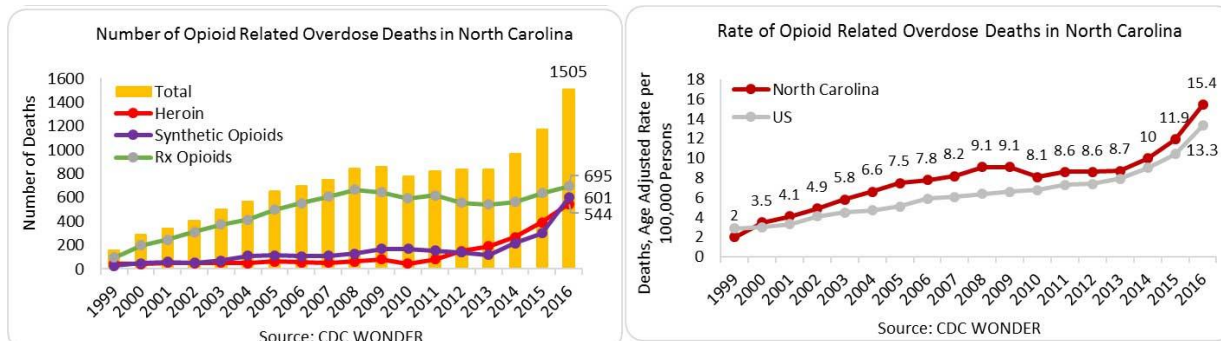
<sup>24</sup> <https://www.cdc.gov/drugoverdose/epidemic/index.html>



North Carolina has been highly affected by substance abuse and overdose deaths. In 2016, there were 1,505 opioid-related overdose deaths in NC, a rate of 15.4 per 100,000. This was higher than the national average of 13.3 deaths per 100,000.<sup>25</sup> In a 2018 CDC report, NC's overdose emergency department visits increased 31% from 2016 to 2017.<sup>26</sup> North Carolina was identified as one of 10 states with significant increase during that period.<sup>24</sup> The rise in NC overdose emergency department visits has been seen all over the state, including rural and metropolitan areas.<sup>24</sup>

<sup>25</sup> <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/north-carolina-opioid-summary>

<sup>26</sup> <https://www.cdc.gov/media/releases/2018/p0306-vs-opioids-overdoses.html>

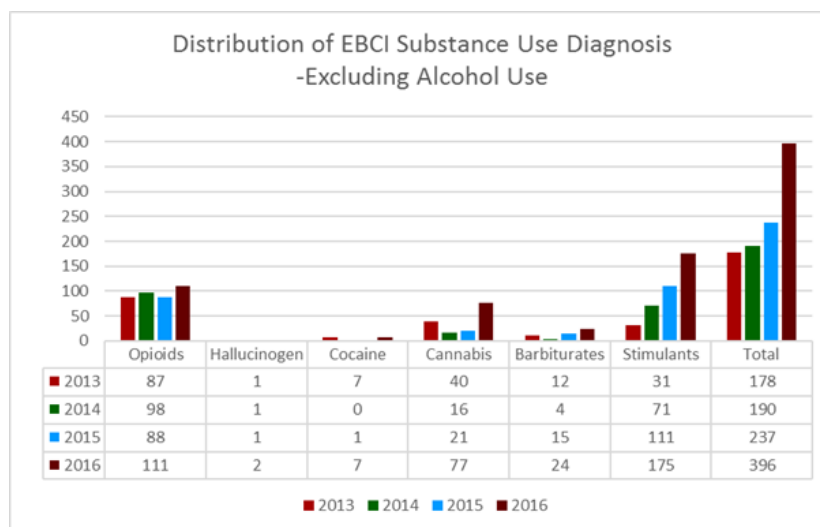


Western North Carolina and EBCI have been heavily impacted by substance use and overdose. The 5-county PRCSDA (Purchased and Referred Care Service Delivery Area) (all races) age-adjusted unintentional poisoning mortality rate of 24.4% far exceeded that of NC 13.7% rate from 2012-2016.

| UNINTENTIONAL POISONING MORTALITY RATE   |           |      |           |      |           |      |           |      |
|--|-----------|------|-----------|------|-----------|------|-----------|------|
| Age-Adjusted Rate per 100,000 Population |           |      |           |      |           |      |           |      |
| All Races                                | 2009-2013 |      | 2010-2014 |      | 2011-2015 |      | 2012-2016 |      |
|  | #         | Rate | #         | Rate | #         | Rate | #         | Rate |
| Cherokee                                 | 41        | 35.8 | 40        | 36.8 | 32        | 30.5 | 24        | 23.0 |
| Graham                                   | 14        | n/a  | 13        | n/a  | 11        | n/a  | 11        | n/a  |
| Haywood                                  | 60        | 23.5 | 60        | 23.1 | 64        | 23.4 | 77        | 27.2 |
| Jackson                                  | 34        | 18.8 | 31        | 17.1 | 28        | 16.1 | 37        | 23.1 |
| Swain                                    | 22        | 32.4 | 21        | 30.4 | 10        | n/a  | 9         | n/a  |
| PRCSDA                                   | 171       | 27.6 | 165       | 26.9 | 145       | 23.3 | 158       | 24.4 |
| NC                                       | 5,346     | 11.1 | 5,531     | 11.4 | 6,015     | 12.3 | 6,697     | 13.7 |

Unintentional Poisoning Mortality Rates per 100,000 [years as noted]. NC SCHS County Health Databook.  
<http://www.schs.state.nc.us/data/databook/>

Substance use diagnosis (excluding alcohol use) has gone up dramatically from 2013 to 2016. In 2013 there were a total of 178 diagnoses with substance use/misuse and in 2016 there were 393. Stimulants, such as methylphenidate (Ritalin®), have seen the largest increase in the EBCI area, from 31 in 2013 to 175 in 2016.



From 2002 to 2014, there have been 131 deaths due to drug use in EBCI, 13.2% of all EBCI deaths. This rate is over 4% greater than that of the overall USET region. These rates are those

reported in RPMS as a death due to drug use. Note that cause of death is often not captured correctly in drug use deaths, meaning that the rates for drug use mortality may be inaccurately low.

| Age at Death, Between 2002 - 2014 | EBCI |       | USET Region |       |
|-----------------------------------|------|-------|-------------|-------|
|                                   | #    | %     | #           | %     |
| under 1 year old                  | 1    | 0.8%  | 1           | 0.4%  |
| 1-14                              | 0    | 0.0%  | 1           | 0.4%  |
| 15-24                             | 21   | 16.0% | 32          | 13.2% |
| 25-34                             | 17   | 13.0% | 34          | 14.0% |
| 35-44                             | 22   | 16.8% | 54          | 22.3% |
| 45-54                             | 42   | 32.1% | 73          | 30.2% |
| 55-64                             | 21   | 16.0% | 34          | 14.0% |
| 65+                               | 7    | 5.3%  | 13          | 5.4%  |
| Total deaths due to substances    | 131  | 13.2% | 242         | 8.1%  |
| Total deaths due to all causes    | 990  |       | 2,972       |       |

## Understanding the Issue

Highlights from 2017 Tribal Health Survey:

- 16% of respondents selected “addiction and/or drug use” among their biggest concerns about the health of their family.
- 25% of respondents identified “personal, friend or family member’s addiction and/or drug use” among the top three things negatively impacting their own quality of life in the past month.
- 78% of respondents identified “drug and/or alcohol abuse” among the top issues most negatively affecting the health and well-being of the EBCI Tribal community.

Of the 251 written comments received, 59 were aimed at substance use in the community. Below are a few of their responses:

- “We need more concern over drug addiction.”
- “Get rid of the drugs”
- “Work on the rampant drug abuse.”
- “More emphasis on the drug and alcohol issues facing the youth of the community.”
- “More concern over drug addiction.”
- “Help for people with addictions.”

## Specific Populations at Risk

American Indians and Alaska Natives (AI/AN) have the highest rate of substance abuse compared to other races.<sup>27</sup> AI/AN may have higher rates than other populations in part because of Tribes’ rural locations, historical grief and trauma experienced by AI/AN, health and other services not congruent to AI/AN cultures, and high rates of poverty, unemployment, and homelessness.<sup>25</sup>

<sup>27</sup> <https://www.ncbi.nlm.nih.gov/books/NBK83240/>



### Health Resources available/needed

Cherokee Indian Hospital's Analenisgi Recovery Center uses evidence-based practices including Cognitive Behavioral Therapy, Matrix Model, Seeking Safety, Motivational Interviewing, Narrative Therapy, Dialectical Behavioral Therapy, Trauma Informed Cognitive Behavioral Therapy, Parent-Child Interactive Therapy, Child-Parent Psychotherapy, and Anger Replacement Therapy. In addition to these, Analenisgi staff use several resources very helpful in Indian Country such as White Bison, The Red Road to Wellbriety, and works by noted Native American author Eduardo Duran.

Kanvwotiyi ᏊᏊᏊᏊᏊ, "the place where one is healed," EBCI's residential treatment center in Snowbird, is an inpatient substance use treatment center administered by CIHA in the Snowbird community. Kanvwotiyi is a 20 bed, 20,000 square foot facility. For more information on Kanvwotiyi, contact Analenisgi (828) 497-9163 ext. 7550.

Some of the services offered by Analenisgi include classes and peer support, psychiatric evaluation, medication management assistance, intensive outpatient substance abuse treatment, and outpatient individual, group, and family therapy. Analenisgi's hours of operation are from 8:00 am to 4:30 pm Monday through Friday. Analenisgi is also open after-hours on Mondays and Wednesdays till 6:00 pm. Analenisgi's location and contact information is:

Location: 375 Sequoyah Trail. Cherokee, NC 28719

Phone: 828-497-9163 Ext. 7550

Fax: 828-497-6977

CIHA Behavioral Health has efforts in process to address cycles of abuse that are culturally relevant in coordination with Southcentral Foundation's Family Wellness Warrior Initiative (Beauty for Ashes).

Unity Healing Center provides a long-term intensive residential treatment program for youth ages 13-18 years with a diagnosis of substance use disorder or dependence. They offer counseling services, education, cultural and spiritual programs, medical and dental care, follow-ups, and continuing care. The average length of stay is 80-90 days depending on need. For more information, Unity Healing Center can be contacted at 828-497-3958 or <https://www.ihs.gov/Nashville/healthcarefacilities/unity/>

Public Health and Human Services' Syringe Services Program is a community-based public health program for people who use drugs by injection. The program provides comprehensive harm reduction services such as providing participants with sterile syringes and clean injection equipment. Syringe service programs help to ensure that syringes and needles are disposed of safely, thereby reducing the number of discarded syringes in local playgrounds, parks, and community gathering spaces.

Syringe Services offers syringes, safer injection supplies, biohazard/sharps containers, HIV and HCV (hepatitis C) testing and referrals for care, naloxone (Narcan©) by referral, safer injection education, referrals for drug treatment and medical care, community resources per request, and community syringe disposal. The program's goals are to provide a safe, non-judgmental environment for anyone participating in the program, and to develop meaningful relationships with participants in hopes of nurturing the need to recover.

Syringe Services is open Monday, Thursday, and Friday from 11:00 am to 5:30 pm. Syringe Services' location and contact information is:

Location: 174 John Crowe Hill Dr. Cherokee, NC 28719

Phone: 828-359-6879

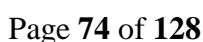
Fax: 828-497-8178

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Survey conducted by the US Department of Justice. Abuse refers to a variety of behaviors but includes intimate partner violence, elder abuse, and child abuse. The effects of abuse do not end when the abuse does; there are lasting physical, emotional, and psychological effects. Beyond the individual effects, violence and abuse damage communities by reducing productivity, decreasing property values, and disrupting social services. Violence is a preventable public health problem, and EBCI is committed to reducing rates of violence and abuse.

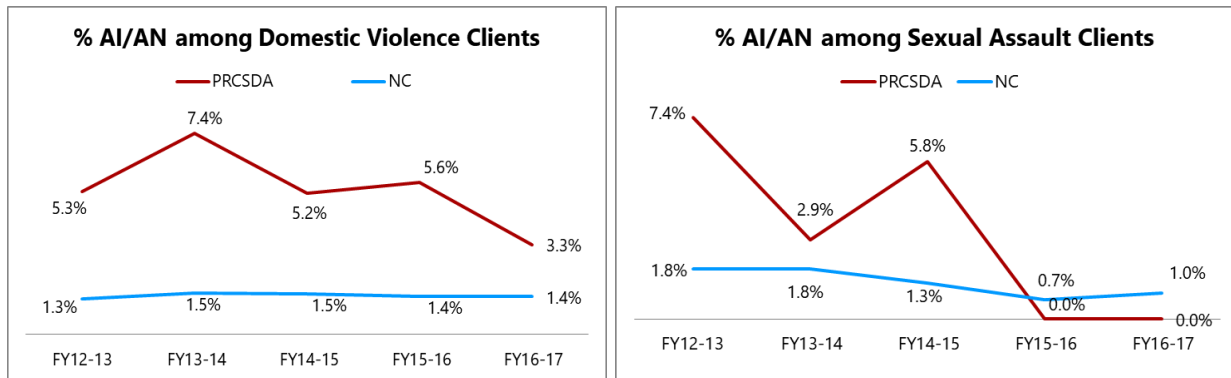
## Health Indicators

Crime rates in the PRCSDA trended slightly upward from 2012 to 2016, the most recent year we have data for. This increase was due primarily to property-crime, which consists of burglary, larceny-theft, and motor vehicle theft. However, rates of rape tripled between 2014 and 2015.



## Trends: Domestic Violence and Sexual Assault

Rates of reported domestic violence and sexual assault for AI/AN in the PRCSDA decreased between 2012 and 2016.



## Understanding the Issue

### *EBCI 2017 Community Health Survey*

5% of respondents to the 2017 EBCI Community Health Survey identified “domestic violence, child abuse, or elder abuse” among the top three things most negatively impacting their life over the past month. A similar proportion identified “theft and/or violent crime (assault, sexual assault) among the concerns most negatively impacting their life. 34% of respondents identified “Access to assistance for victims and/or offenders of crime related issues (theft, child or elder abuse, violence, domestic violence, sexual assault, illegal drug use)” among the things positively impacting the health and well-being of the EBCI Tribal community. Another 11% identified “Lack of or low crime (theft, violence, illegal drug use” among the positive aspects among the EBCI Tribal community.

### *Cherokee Central Schools 2018 YRRS*

In the 2018 YRRS, 21% of high school students and 19% of middle school students reported that they had skipped school due to safety concerns at least once in the last 30 days. Approximately ¼ of students reported that they had been in a physical fight, and 15% reported that they had been in a physical fight on school property. 10% of high schoolers reported that they had experienced sexual dating violence, and 11% reported they had experienced physical dating violence. 8% of high school students reported that they had been forced to have sex.

### *Eastern Band of Cherokee Indians Domestic Violence Program (DVP)*

Ernestine Walkingstick Domestic Violence Shelter defines domestic violence as “a pattern of coercive behavior that is used by a person against family, household members or dating partners to gain power or control over the other party in a dating relationship.” The shelter served 135 individuals in 2017, the vast majority of which were over the age of 18, female, and Native American. They provided 3525 services for these individuals. The most common perpetrators of domestic violence were those with whom the individual was intimate with or married to.

| 2015 |     |       |            |          | 2016 |     |       |            |          | 2017 |     |       |            |          |
|------|-----|-------|------------|----------|------|-----|-------|------------|----------|------|-----|-------|------------|----------|
| <18  | F   | AI/AN | Total      | Services | <18  | F   | AI/AN | Total      | Services | <18  | F   | AI/AN | Total      | Services |
| 1    | 186 | 152   | <b>204</b> | 5219     | 3    | 125 | 100   | <b>138</b> | 3516     | 2    | 122 | 103   | <b>135</b> | 3525     |

### *Adult Protective Services (APS)*

APS records allegations of elder abuse for adults 60 years and older. Between Oct 2015 and May 2018, there were 25 allegations of abuse, 129 allegations of neglect, and 48 allegations of exploitation. From the APS Unit: “When reports of abuse, neglect, or exploitation are received involving elderly and/or disabled adults, a Family Safety Adult Protective Services social worker will make an investigation. This investigation includes but is not limited to investigations, mental or physical health evaluations and mobilization of essential services, social services, case management or other protections.”

|  | Abuse | Neglect | Exploitation | Total |
|--|-------|---------|--------------|-------|
| Oct.1, 2015- Sept. 2016  | 6     | 36      | 15           | 57    |
| Oct. 1, 2016 – Sept. 2017  | 13    | 51      | 27           | 91    |
| Oct. 1, 2017 – May 31, 2018  | 16    | 42      | 16           | 74    |
| Totals:  | 35    | 129     | 48           |       |
| * A report may have more than one type of allegation; therefore, the total number of allegations are higher than the number of reports |       |         |              |       |

### [Health Resources available/needed](#)

#### *Ernestine Walkingstick Domestic Violence Shelter*

From the EBCI PHHS Domestic Violence Webpage: “The Ernestine Walkingstick Domestic Violence Shelter was established on June 3, 2002. The Shelter is a non-profit organization and is

a program of the Eastern Band of Cherokee Indians that is funded primarily by Federal grants and supplemented by Tribal monies.” They provide the following services: victim advocacy, legal assistance, court accompaniment, transportation assistance, emergency shelter services 24/7, relocation services, crisis counseling, prevention education, and outreach activities. The shelter hotline number is 828-488-5527.

#### *R.E.A.C.H of Macon County*

R.E.A.C.H stands for resources, education, assistance, counseling, and housing. R.E.A.CH of Macon County provides “intervention, prevention, and coordinated community response to Domestic Violence and Sexual Assault in Macon and Jackson Counties.” The services they provide include: “24 HR Emergency Hotline, Court Advocacy, Youth Advocacy, Rape Prevention Education and Anti-Bullying, Shelter for Domestic Violence and Sexual Assault victims, [and] Latino Outreach.” Their Macon County Hotline number is 828-369-5544. Their Jackson County Hotline number is 828-586-8969.

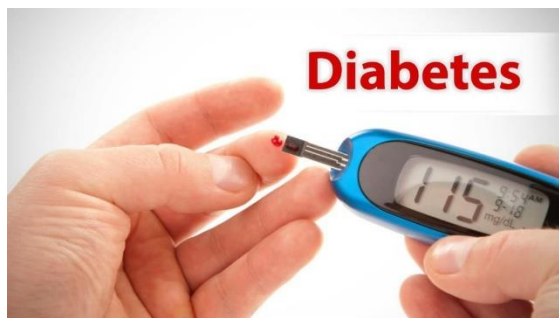
#### *National Domestic Violence Hotline*

The National Domestic Violence Hotline was established in 1996. From their website: “We provide confidential, one-on-one support to each caller and chatter, offering crisis intervention, options for next steps and direct connection to sources for immediate safety. Our database holds over 5,000 agencies and resources in communities across the country. Bilingual advocates are on hand to speak with callers, and our Language Line offers translations in 170+ different languages.” They have both a phone hotline, 800-799-SAFE, and live chat services at [www.thehotline.org](http://www.thehotline.org)

#### *EBCI Family Safety Program*

The Family Safety Program offers child and adult protective services to the children and families in the Cherokee community. Family Safety works jointly with programs such as Analenisgi, Safe Babies, Transitional Housing, and other local Cherokee resources through services in the home and community. They provide child and adult protective services for the community and maintain the EBCI foster care program. They can be contacted at 828-359-1520.

## EBCI HEALTH PRIORITY 3: DIABETES



Diabetes is a chronic disease that affects how the body turns food into energy. Normally, food is broken down into sugar and released into the bloodstream; the pancreas makes a hormone called insulin which acts as a key to let the blood sugar into cells to use as energy. In diabetes, the body either does not make enough insulin or it cannot use the insulin it makes as well as it should. When the

body does not have enough insulin, the blood sugar stays in the bloodstream and over time leads to serious health problems such as heart disease, vision loss, and kidney disease.<sup>28</sup>

While there is no cure for diabetes, healthy lifestyle habits, keeping medical appointments, learning how to self-manage the disease, and proper use of medication can greatly reduce the impact of diabetes on one's life.

Diabetes was one of the three focus areas for the 2015-2017 Tribal Health Improvement Plan (THIP). The diabetes team worked to improve community outcomes by increasing physical opportunities, lessening the number of sugar-sweetened beverages consumed in the community, and helping support community members' diabetes self-management.

### Data Highlights

#### Health Indicators

##### Diabetes by the numbers

- 30.3 million Americans have diabetes, and 1 in 4 do not know they have it.
- Diabetes is the seventh leading cause of death in the United States.
- Diabetes is the No. 1 cause of kidney failure, lower-limb amputations, and adult-onset blindness.
- The number of diagnosed diabetes diagnoses has more than tripled in the United States over the past 20 years as the population has aged and become more overweight or obese.

<sup>29</sup>

#### Types of diabetes

There are three types of diabetes, type 1, type 2, and gestational.

1. Type 1 diabetes is normally found in children, teens, and young adults. Currently, it is unknown how to prevent type 1 diabetes.

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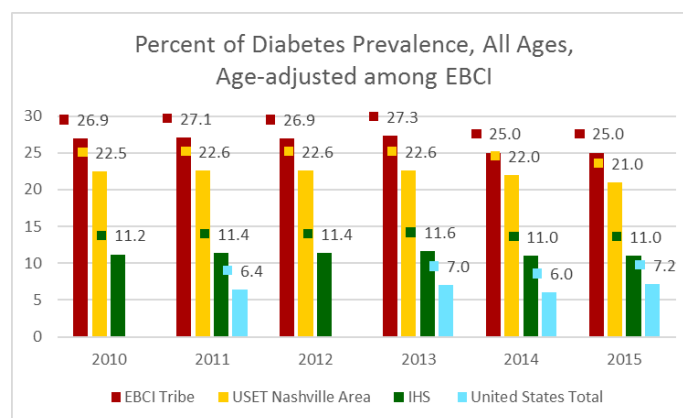
<sup>28</sup> <https://www.cdc.gov/diabetes/basics/diabetes.html>

<sup>29</sup> <https://www.cdc.gov/diabetes/basics/diabetes.html>

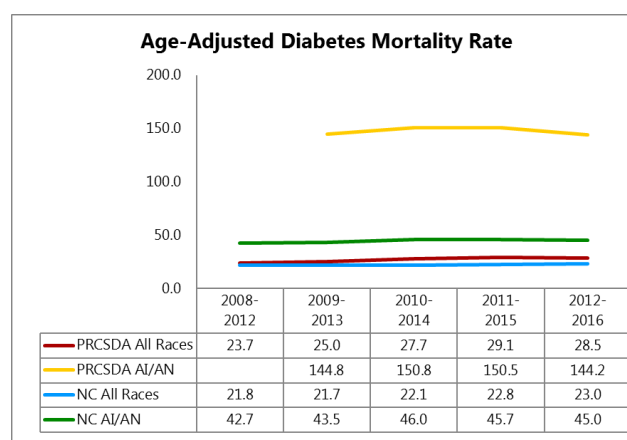


2. Type 2 diabetes is most commonly seen in adults (though it has been increasing in children, teens, and young adults). Type 2 diabetes can be prevented or delayed by eating healthy, losing weight if overweight, and getting regular physical activity.
3. Gestational diabetes develops in pregnant women who have never had diabetes. Gestational diabetes usually goes away after the baby is born, but the mother's risk of developing type 2 diabetes later in life increases. The baby is more likely to become obese as a child or teen, and more likely to develop type 2 diabetes later in life.<sup>30</sup>

In 2015, 25% of the EBCI population had diabetes, compared to the rates in the USET Nashville Area, Indian Health Services, and the United States, which were 21.0%, 11%, and 7.2% respectively. The good news is that diabetes prevalence (the rate of cases in a population) has seen a slight decline since its high of 27.3% in 2013.

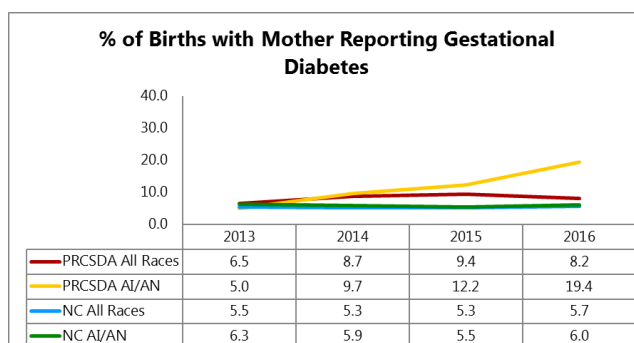


Diabetes can lead to serious health problems that may result in early death. The chart below shows that EBCI's high prevalence of diabetes has led to a higher diabetes mortality rate for AI/AN in the PRCSDA (Cherokee, Graham, Haywood, Jackson, and Swain counties).



<sup>30</sup> <https://www.cdc.gov/diabetes/basics/diabetes.html>

While diabetes prevalence has seen a decline over the past few years, gestational diabetes incidence has seen the opposite, rising from 5% incidence in 2013 to 19.4% in 2016.



## Understanding the Issue

Below are some of the diabetes-related survey statistics from the 2017 Tribal Community Health Survey and the 2016 Tribal Elder Survey.

- 2017 Tribal Community Health Survey
  - Respondents were asked to choose their top health concerns
    - The top response (37.04%) was “Lack of physical activity.”
    - The number three response (33.5%) was “Poor diet or maintaining a healthy weight.”
    - The number four response was “chronic disease (examples: diabetes, high blood pressure, heart disease, obesity, and cancer).”
  - Respondents were asked what their biggest health concern in the near future (5-10 years), and the top response was chronic disease (45.1%).
  - Respondents were asked what their biggest concern was for their family’s health, and the top concern was chronic disease (44.81%).
- Identifying Our Needs: A Survey of Elders VI – EBCI Respondents
  - 43% stated that they have been diagnosed with diabetes (compared to 39% aggregate tribal data and 18% nationwide).

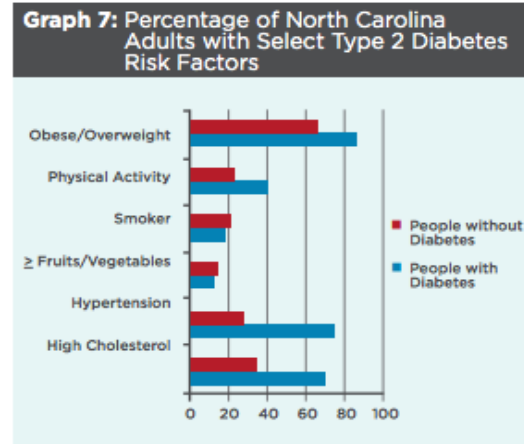
## Specific Populations at Risk

Scientists are not sure of the exact mechanism that causes the body to ignore or stop making enough insulin. However, below are known risk factors for the disease:

- Being overweight: High levels of fatty tissue are associated with cells becoming resistant to insulin<sup>31</sup>

<sup>31</sup> <https://www.chlpi.org/wp-content/uploads/2014/05/2014-New-Carolina-State-Report-Providing-Access-to-Healthy-Solutions-PATHS.pdf>

- Fat distribution: If the body stores fat in the abdomen, the risk is greater than if the fat is stored in the hips or thighs.
- Physical inactivity: Being active helps the body become more sensitive to insulin and helps with weight control and using glucose as energy.
- Age: Individuals over age forty-five are at higher risk, although this may be largely due to older people being less physically active. However, type 2 diabetes is becoming more common among children and adolescents.
- Family history.
- Gestational diabetes.
- Giving birth to a baby over nine pounds.
- Smoking.
- High blood pressure.
- Abnormal lipid metabolism (cholesterol).



Source: 2011 and 2012 BRFSS Survey Results: North Carolina, N. C. STATE CTR. FOR HEALTH STATISTICS

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### Health Resources available/needed

EBCI's Public Health and Human Services has many programs that help with nutrition, diet and exercise, and diabetes prevention and management, including Cherokee Choices, Home Health, Tsalagi Public Health, Tribal Food Distribution, Senior Citizens Program, and Tsali Care. More information about PHHS' services is at <http://www.cherokee-hmd.com> or 828-359-6180.

Cherokee Indian Hospital Authority also offers diabetes services including the Healthy Heart Initiative, which offers education on diabetes self-management, exercise plans, special activities, nutrition counseling, and individualized education to meet patients' goals. For more information, contact a CIHA provider, call 828-497-9163, or visit the website at [http://cherokeehospital.org/page?title=Healthy-Heart-Initiative-\(HHI\)](http://cherokeehospital.org/page?title=Healthy-Heart-Initiative-(HHI)).

CIHA also recently received the Special Diabetes Program for Indians (SDPI) grant in 2016. This grant is aimed at implementing diabetes prevention and treatment interventions in American Indian and Alaskan Native communities. For more information about the SDPI, visit: <https://www.ihs.gov/sdpi/>

The North Carolina Cooperative Extension also provides many services for healthy eating and living. To find out more, visit <https://ebci.ces.ncsu.edu/> or call 828-359-6939.

<sup>32</sup> <https://www.chlpi.org/wp-content/uploads/2014/05/2014-New-Carolina-State-Report-Providing-Access-to-Healthy-Solutions-PATHS.pdf>

## EBCI HEALTH PRIORITY 4: HEPATITIS C



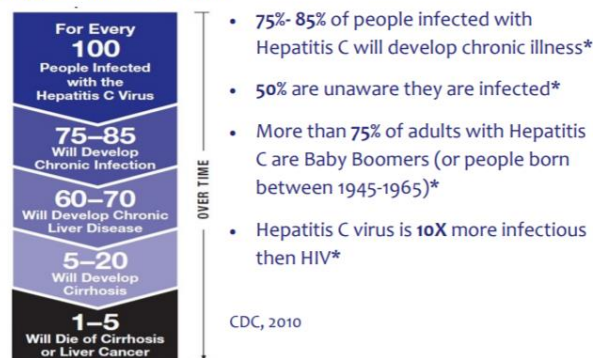
Hepatitis C is a liver infection caused by the hepatitis C virus (HCV). Hepatitis C is a blood-borne virus and most become infected with HCV by sharing needles or other equipment to inject drugs. For some, hepatitis C is a short-term illness, but for 75%-85% of people who are infected with hepatitis C, it becomes a long-term, chronic infection. The majority of those that are infected are not aware that they have an infection, because the infected rarely show signs of illness.<sup>33</sup>

### Data Highlights

#### Health Indicators

Hepatitis C starts with an acute infection which usually lasts between 2 to 12 weeks with an average of six to seven weeks. Hepatitis C can be a short-term illness, but in most patients, 75%-85%, acute infection leads to a chronic infection. Patients with acute hepatitis C virus infection usually don't have symptoms or their symptoms are very mild, making it difficult to identify without testing.<sup>34</sup>

Progression of Hepatitis C\*



From the 42 states where acute hepatitis C is reportable, there were 2,967 identified cases in 2016, although the CDC estimates there were over 41,000 cases acute hepatitis C in 2016. In North Carolina, there were 185 reported cases of acute hepatitis C in 2016 and North Carolina estimates that acute cases were approximately 14 times the reported rate. In EBCI, there were 8 reported acute hepatitis C cases in 2016.<sup>35, 36</sup>

Chronic hepatitis C is not reportable in the US, but the CDC estimated that there were 3.5 million people living with chronic hepatitis C in 2010. In North Carolina, there are an estimated 110,000 people living with chronic hepatitis C.<sup>37, 38</sup>

<sup>33</sup> <https://www.cdc.gov/hepatitis/hcv/cfaq.htm>

<sup>34</sup> <https://www.cdc.gov/hepatitis/hcv/cfaq.htm>

<sup>35</sup> <http://epi.publichealth.nc.gov/cd/stds/figures.html>

<sup>36</sup> [http://epi.publichealth.nc.gov/cd/hepatitis/HepatitisCFactSheet2016\\_rev2.pdf](http://epi.publichealth.nc.gov/cd/hepatitis/HepatitisCFactSheet2016_rev2.pdf)

<sup>37</sup> <http://epi.publichealth.nc.gov/cd/stds/figures.html>

<sup>38</sup> [http://epi.publichealth.nc.gov/cd/hepatitis/HepatitisCFactSheet2016\\_rev2.pdf](http://epi.publichealth.nc.gov/cd/hepatitis/HepatitisCFactSheet2016_rev2.pdf)

As of the writing of this report, CIHA reported a total of 414 cases of chronic hepatitis C. Of the 414 persons with chronic hepatitis C, 49.5% were males and 50.5% were females. Over half of the 414 were between the ages of 25 and 36.

| High Viral Loads (>15 RNA) by Age Group as of 6/27/2018 |          |           |            |           |           |           |           |           |            |
|---|----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|------------|
|   | 0-17     | 18-24     | 25-30      | 31-36     | 37-42     | 43-48     | 49-54     | 55+       | Total      |
| Male  | 0        | 18        | 51         | 42        | 29        | 21        | 14        | 30        | 205        |
| Female  | 1        | 23        | 67         | 51        | 25        | 16        | 9         | 17        | 209        |
| <b>Total</b>  | <b>1</b> | <b>41</b> | <b>118</b> | <b>93</b> | <b>54</b> | <b>37</b> | <b>23</b> | <b>47</b> | <b>414</b> |

Out of the 14,079 CIHA user population, 812, or 5.8%, have ever been diagnosed with Hepatitis C and 2.9% are currently infectious with high viral loads.

| Percent of CIHA User Population Ever Diagnosed with HCV   |                |                    |  |  |
|---|----------------|--------------------|--|--|
| Population <sup>1</sup>   | Ever Diagnosed | Current High Viral | Total Ever Diagnosed Percentage <sup>2</sup> | Current High Viral Percentage <sup>3</sup> |
| 14,079  | 812            | 414                | 5.8%   | 2.9%                                       |
| <sup>1</sup> Population given by CIHA June 2018<br><sup>2</sup> Percentage taken from total HCV cases (<15 RNA and >15 RNA).<br><sup>3</sup> Percentage taken from total >15 RNA HCV cases. |                |                    |  |  |

The total new identified cases of HCV per year for 2017 was 96. This was down slightly since 2015, but still significantly higher than in 2011.

| EBCI- Number of Newly Identified Cases of HCV Per Year |      |      |      |      |      |      |      |
|--|------|------|------|------|------|------|------|
| Year   | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| Number   | 41   | 59   | 60   | 88   | 110  | 107  | 96   |

In the US, it is estimated that 73.4% of intravenous drug users have or have had Hepatitis C. Using this estimate, nearly 600 of the 812 patients diagnosed with hepatitis C may have been intravenous drug users.<sup>39</sup>

## Understanding the Issue

While we do not have any survey data on hepatitis C in EBCI, we do know that drug users, specifically intravenous drug users, are at the most risk for acquiring hepatitis C. Below are some of the drug use highlights from the 2017 Tribal Community Health Survey:

- 16% of respondents selected “addiction and/or drug use” among their biggest concerns about the health of their family.

<sup>39</sup> <https://www.cdc.gov/hepatitis/hcv/cfaq.htm>

- 25% of respondents identified “personal, friend or family member’s addiction and/or drug use” among the top three things negatively impacting their own quality of life in the past month.
- 78% of respondents identified “drug and/or alcohol abuse” among the top issues most negatively affecting the health and well-being of the EBCI Tribal community.

Of the 251 written comments received, 59 were aimed at substance use in the community. Below are a few of their responses.

- “We need more concern over drug addiction.”
- “Get rid of the drugs”
- “Work on the rampant drug abuse.”
- “More emphasis on the drug and alcohol issues facing the youth of the community.”
- “More concern over drug addiction.”
- “Help for people with addictions.”

### Specific Populations at Risk

The populations at increased risk for having hepatitis C include:

- Current or former injection drug users, including those who injected only once many years ago
- Those born from 1945 through 1965
- Recipients of clotting factor concentrates made before 1987 when less advanced methods for manufacturing those products were used
- Recipients of blood transfusions or solid organ transplants prior to July 1992, before better testing of blood donors, became available
- Hemodialysis patients
- People with known exposures to the hepatitis C virus, such as
- Health care workers after needle sticks involving blood from someone who is infected with the hepatitis C virus
- Recipients of blood or organs from a donor who tested positive for the hepatitis C virus
- People with HIV infection
- Children born to mothers infected with the hepatitis C virus
- People who are incarcerated
- People who use intranasal drugs
- People who received body piercing or tattoos done with non-sterile instruments

### Health Resources available/needed

Cherokee Indian Hospital’s Analenisgi Recovery Center uses evidence-based practices including Cognitive Behavioral Therapy, Matrix Model, Seeking Safety, Motivational Interviewing, Narrative Therapy, Dialectical Behavioral Therapy, Trauma Informed Cognitive Behavioral

Therapy, Parent-Child Interactive Therapy, Child-Parent Psychotherapy, and Anger Replacement Therapy. In addition, Analenisgi staff use several resources very helpful in Indian Country such as White Bison, The Red Road to Wellbriety, and works by noted Native American author Eduardo Duran.

Some of the services offered by Analenisgi include outpatient individual, group, and family therapy. A recovery center offers classes and peer support, psychiatric evaluation, medication management assistance, and intensive outpatient substance abuse treatment. Analenisgi's hours of operation are from 7:45 am to 4:30 pm Monday through Friday. Analenisgi's location and contact information is:

Location: 375 Sequoyah Trail. Cherokee, NC 28719

Phone: 828-497-9163 Ext. 7550

Fax: 828-497-6977

Kanvwotiyi ᏊᏊᏊᏊᏊ, "the place where one is healed," EBCI's residential treatment center in Snowbird, is an inpatient substance use treatment center administered by CIHA in the Snowbird community. Kanvwotiyi is a 20 bed, 20,000 square foot facility. For more information on Kanvwotiyi, contact Analenisgi (828) 497-9163 ext. 7550.

Public Health and Human Services' Syringe Services Program is a community-based public health program for people who use drugs by injection. The program provides comprehensive harm reduction services such as providing participants with sterile syringes and clean injection equipment. Syringe service programs help ensure that syringes and needles are disposed of safely, therefore, reducing the number of discarded syringes in playgrounds, parks, and community gathering spaces.

Syringe Services offers syringes, safer injection supplies, biohazard/sharps containers, HIV and HCV testing and referrals for care, naloxone (Narcan©) by referral, safer injection education, referrals for drug treatment and medical care, community resources per request, and community syringe disposal. The program's goals are to provide a safe, non-judgmental environment for anyone participating in the program, and to develop meaningful relationships with participants in hopes of nurturing the need to recover.

Syringe Services is open Monday, Thursday, and Friday from 11:00 am to 5:30 pm. Syringe Services location and contact information is:

Location: 174 John Crowe Hill Dr. Cherokee, NC 28719

Phone: 828-359-6879

Fax: 828-497-8178



## EBCI HEALTH PRIORITY 5: HEART DISEASE



Heart disease is the leading cause of death in the United States, accounting for one in every four deaths in this country.<sup>40</sup> The term “heart disease” refers to several types of heart conditions with the most common type being coronary artery disease which can cause a heart attack. Other kinds of heart disease may involve issues with heart valves and issues with the heart not pumping properly.

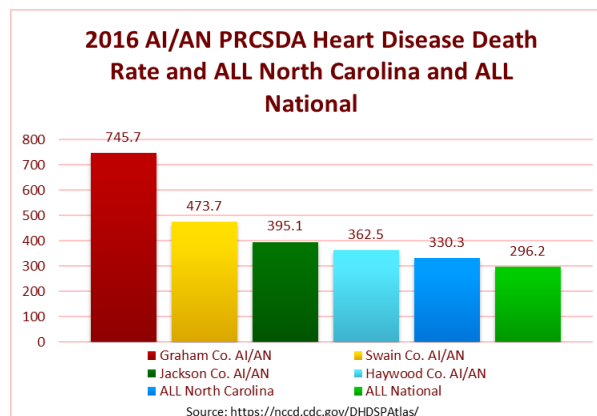
Heart disease often occurs when plaque builds up in the arteries and reduces the blood flow to the heart. Smoking, eating an unhealthy diet, not getting enough exercise, and a family history of heart disease can increase your risk of developing heart disease. Heart disease can be prevented or treated by improving one’s diet, exercising, quitting smoking, and following your healthcare provider’s guidelines.

### Data Highlights

#### Health Indicators

##### Heart Disease by the numbers

- National
  - Heart disease is the leading cause of death, killing 610,000 people every year.
  - Heart disease accounts for 1 in every 4 deaths.
  - Heart disease is the leading cause of death in both men and women.
  - Coronary artery disease, also called coronary heart disease, is the most common type of heart disease, killing over 370,000 Americans annually.
  - Every year about 735,000 Americans have a heart attack.<sup>41</sup>
- North Carolina
  - Accounting for 18,474 deaths in 2015, heart disease was the second leading cause of death in North Carolina with 20.7% of all deaths.<sup>42</sup>

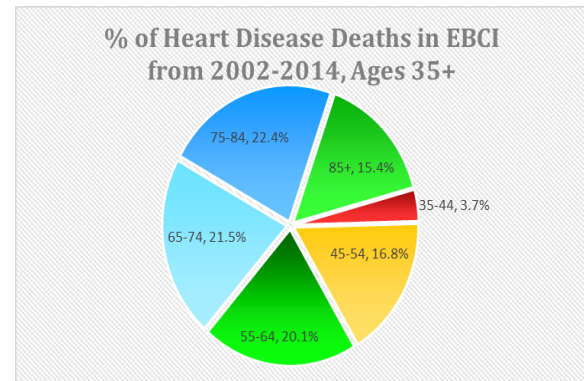


<sup>40</sup> [https://www.cdc.gov/heartdisease/docs/ConsumerEd\\_HeartDisease.pdf](https://www.cdc.gov/heartdisease/docs/ConsumerEd_HeartDisease.pdf)

<sup>41</sup> [https://www.cdc.gov/heartdisease/docs/ConsumerEd\\_HeartDisease.pdf](https://www.cdc.gov/heartdisease/docs/ConsumerEd_HeartDisease.pdf)

<sup>42</sup> [https://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm\\_492900.pdf](https://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_492900.pdf)

- From 2014-2016, the heart disease death rate in North Carolina was 307.7 compared to the National rate of 324.3.<sup>43</sup>
- The death rate for AI/AN in North Carolina was 330.3 with a national average of 296.2.<sup>44</sup>
- EBCI
  - Accounting for 21% of all deaths between 2002-2014, heart disease is the leading cause of death for EBCI.
  - In EBCI, over 40% of heart disease deaths between 2002-2014 happened to those under the age of 65.
  - In EBCI from 2010-2014, there were 81 heart disease deaths of which 55.6% were males and 44.4% were females.



## Understanding the Issue

- 2017 Tribal Community Health Survey
  - 33.2% of respondents said that chronic disease, including heart disease, was one of their biggest concerns related to their health.
  - 45.1% of respondents said that chronic disease, including heart disease, was one of their biggest concerns related to their health in the near future (5-10 years).
  - 44.81% of respondents said that chronic disease, including heart disease, was one of their biggest concerns for their family's health.
  - 61.8% of respondents said that chronic disease, including heart disease, negatively affected the EBCI community's overall health and wellbeing.
- Identifying Our Needs: A Survey of Elders VI – EBCI Respondents
  - 9.1% of respondents said that they have been diagnosed with congestive heart failure. The national average for over 55 is 8.2%.
  - 61.0% of respondents said that they have been diagnosed with high blood pressure. The national average is 55.2%.
  - 13.6% of respondents said that they smoke cigarettes every day. The national average is 19.5%.

<sup>43</sup> <https://www.cdc.gov/nchs/pressroom/states/northcarolina/northcarolina.htm>

<sup>44</sup> <https://nccd.cdc.gov/DHDSPAtlas/>

### Specific Populations at Risk

Heart disease often occurs when plaque builds up in the arteries and reduces the blood flow to the heart. Some of the risk factors for plaque build-up include:

- Tobacco Use
- Obesity
- Unhealthy diet
- Family history
- Diabetes
- Age
- Hypertension
- Abnormal level of lipids
- Physical inactivity
- Gender
- Ethnicity
- Socioeconomic status

### Health Resources available/needed

- EBCI's Public Health and Human Services has many programs that help with nutrition, diet and exercise, and diabetes prevention and management, including Cherokee Choices, Home Health, Tsalagi Public Health, Tribal Food Distribution, Senior Citizens Program, and Tsali Care. For more information about PHHS' services, visit <http://www.cherokee-hmd.com> or call us at 828-359-6180 to connect to services.
- Cherokee Indian Hospital Authority also offers heart disease help through their Healthy Heart Initiative. This initiative provides education on diabetes self-management, exercise plans, special activities, nutrition counseling, and individualized education to meet the patient's goals. For more information, ask a CIHA provider, call 828-497-9163, or visit [http://cherokeehospital.org/page?title=Healthy-Heart-Initiative-\(HHI\)](http://cherokeehospital.org/page?title=Healthy-Heart-Initiative-(HHI)).
- The North Carolina Cooperative Extension also provides many helpful services to promote healthy eating and living. Visit <https://ebci.ces.ncsu.edu/> or call 828-359-6939.

## EBCI HEALTH PRIORITY 6: STRESS



In the 2017 EBCI Community Health Survey, 35% of participants selected stress as one of their biggest health concerns. Stress is related to a wide array of negative health outcomes, including preterm birth, being overweight and obese, tobacco use, and cardiovascular illnesses. Particularly damaging is chronic stress, which occurs when a person exposed to stress for long periods of time. Chronic stress may affect the body's ability to turn off the stress response, even when no longer in a stressful situation. This

increases the wear and tear on an individual's body as it consistently tries to address potential dangers. Socioeconomic status affects the stressors individuals face and their response to those stressors. Individuals in low-income families are more likely to face financial stress and are exposed to more physical hardships.<sup>45</sup>

In addition to these stressors, Native American families may also face racism and historical trauma relating to forced removal from their homes, boarding schools, and colonization.<sup>46</sup>

Historical trauma describes the way in which traumatic events that happened in the past, such as forced migration and colonization, affect individuals, communities, and cultures throughout generations. Historical trauma is linked to poor physical and behavioral health, such as increased rates of cardiovascular disease, substance use disorder, depression and suicide, and self-destructive behaviors. Historical trauma is also associated with a weakening of the family unit and damage to cultural identity.<sup>47</sup>

### Data Highlights

#### Health Indicators

##### 2017 EBCI Community Health Survey

- 33% of respondents identified stress a concern impacting their future health.
- 21% of respondents identified stress as a concern impacting their family's health.

<sup>45</sup> <https://www.rwjf.org/en/library/research/2011/03/how-social-factors-shape-health.html>

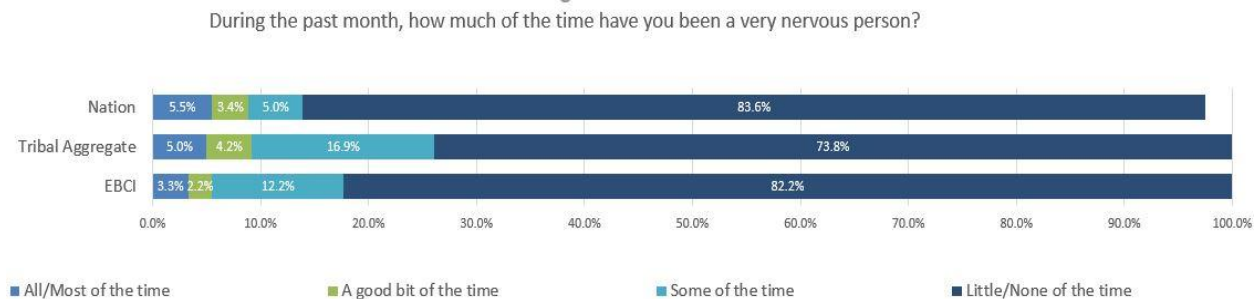
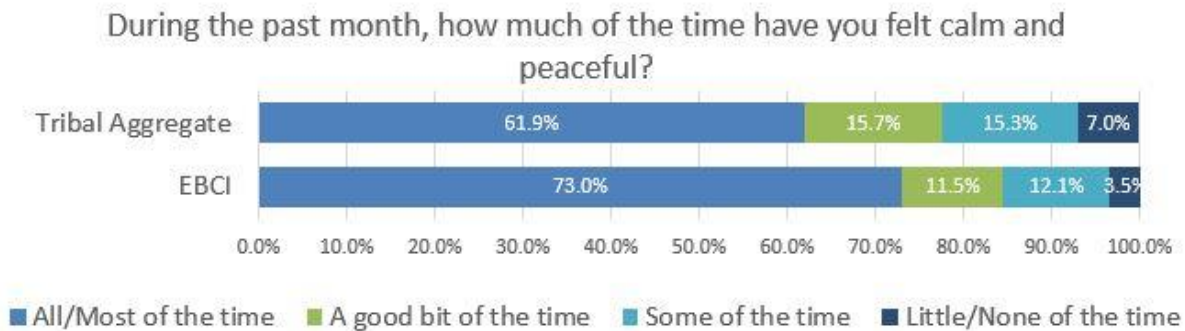
<sup>46</sup> <https://www.acf.hhs.gov/trauma-toolkit/trauma-concept>

<sup>47</sup> <https://www.acf.hhs.gov/trauma-toolkit/trauma-concept>

- 37% of respondents identified “financial stress, work stress, and/or employment struggles” among the top 3 things negatively impacting their quality of life.

#### Identifying Our Needs: A Survey of Elders VI – EBCI Respondents

- EBCI elders were more likely than the tribal aggregate to report feeling calm and peaceful “all/most of the time.”
- EBCI elders were more likely than the tribal aggregate to report that they were rarely a nervous person.



#### 2018 EBCI PHHS Employee Work-Related Stress Survey

PHHS conducted an employee work-related stress survey in 2018 with 86 respondents. The top 3 issues that caused the most stress, weighted average from highest to lowest, were:

- Workload
- Connectivity issues – Internet, phone, email issues
- Tied for #3: Coworker behavior
- Tied for #3: Work hours

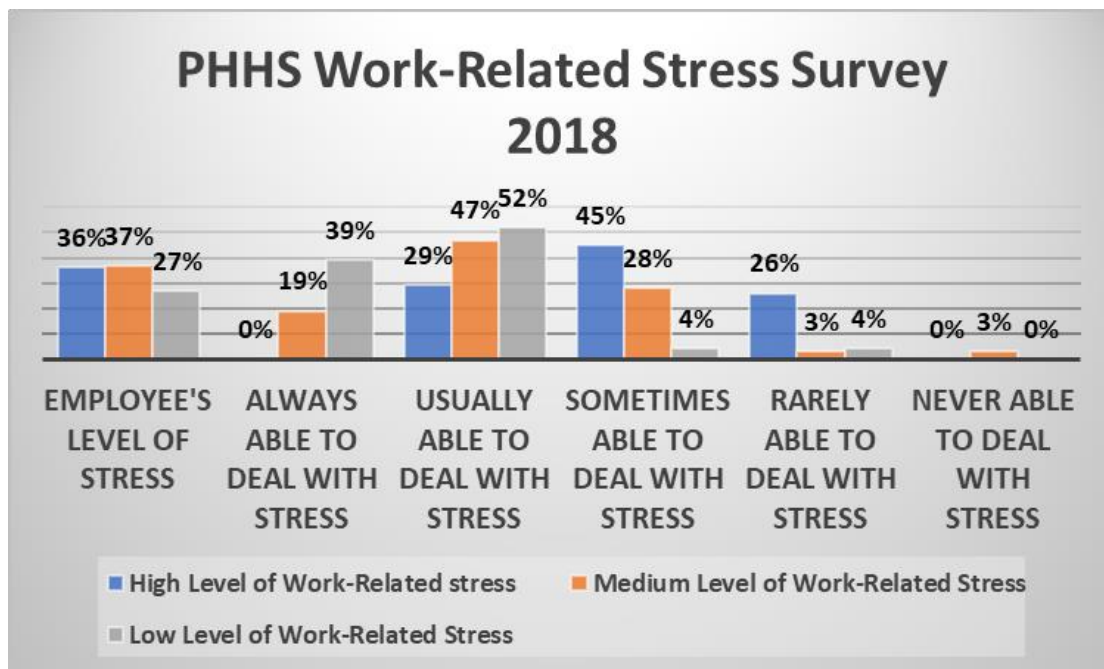
Unhealthy ways employees cope with work-related stress included:

- “Close myself off from co-workers”
- “Keep everything inside”

- “Take the stress home to my loved ones and lash out on the ones whom didn’t create the stress”
- “Worry about the stress and in some cases lose sleep”
- “Be unproductive”
- “Eat snacks”

Healthy ways employees cope with work-related stress included:

- “Walk outside”
- “Utilize Cherokee Fitness Center to exercise.”
- “Talk to co-workers.”
- “Find time to relax.”
- “Remove myself from the negative talk/gossip.”
- “Organization”



## Understanding the Issue

American Psychological Association Stress in America™ Survey

The American Psychological Association conducts the Stress in America™ Survey each year. In 2017, 75% of adults reported experiencing at least one symptom of stress in the past month. The number of Americans reporting stress has risen over the past 2 years, although the levels of stress that individuals face has remained the same. The future of the nation is the most common source of stress for individuals, followed closely by money and work.



### *Income and Inequality*

Income and inequality are linked to stress; studies show that poor people experience more stress than rich people do. Further, greater income inequality is associated with greater levels of stress in a community. On the Qualla Boundary, the GINI Index, a measurement of inequality on a scale from 0 (no inequality) to 1 (one person has all the wealth), is 0.4589, which is lower than the NC score of 0.4748 but higher than the national average of 0.4150 (Finder). In 2015, Tribal unemployment rates were low, less than 1/3 that of North Carolina and less than 1/4 that of the PRCSDA average. Despite this, the median income on the Eastern Cherokee Reservation was nearly \$6000 less than that of North Carolina.

This may be related to education levels. In 2016, the high school graduation rate in EBCI was 79.90%, 3 percentage points lower than the PRCSDA average and 6 points lower than the state average. The graduation rate has fluctuated since 2012, with 2012 having the lowest graduation rate of 75.9%.

### *Adverse Childhood Experiences (ACEs)*

ACEs impact an individual's future violence victimization and perpetration, and lifelong health and opportunities. According to the CDC, ACEs have been linked to risky health behaviors, chronic health conditions, low life potential, and early death. As the number of ACEs increases, so does the risk for these outcomes.





### *Other Stressors*

Other stressors include the burgeoning opioid epidemic and its perceived relation to violence and crime, experiences of racism, intratribal conflict, healthcare, and family. Certain populations such as veterans and survivors of violence may face additional stressors or deal with post-traumatic stress disorder.

### [Health Resources available/needed](#)

#### Cherokee Choices

Cherokee Choices offers a variety of services to the community. Tribal members can attend free, daily lunchtime yoga classes, which is one of a variety of methods that address stress. In addition to yoga, Cherokee Choices holds a yearly Stress and Healing Arts Retreat. At the retreat, participants learn “what stress is, how to identify it, and healthy ways to manage it.” These include acupuncture, healing touch, yoga, and talking circles.

#### Natural Environment

##### Trails

Cherokee, NC is the gateway to the Great Smoky Mountains National Park. The park contains over 800 miles of trails. Beyond these trails, the Oconaluftee River Trail is a 1.5-mile trail on the Qualla Boundary. Mingo Falls is a slightly more difficult trail located around 5 miles from Saunooke Village. The newest trails in Cherokee, Fire Mountain Trails, opened in 2017 and provide 10.5 miles of multi-use trails. There are many more trails in the area surrounding Cherokee, making it an ideal place to clear one’s head.

##### Water

Cherokee is home to multiple rivers and waterfalls. Mingo Falls is, according to the EBCI Visitors’ Site, “arguably the most stunning cascade in the region.” Soco Falls is another well-known Cherokee waterfall, located on Soco Mountain. The Oconaluftee Islands Park offers “shady picnic spots, swimming, tubing, trout fishing, or the pleasant option of simply basking and splashing around with friends and family” on the Oconaluftee River. In addition to the Oconaluftee, there are nearly 30 miles of tribal waters with many opportunities for rest, relaxation, and stress reduction.

## EBCI HEALTH PRIORITY 7: TOBACCO USE



Commercial tobacco use may be defined as any habitual use of the tobacco plant leaf and its products. The predominant use of tobacco across the US is by smoke inhalation of cigarettes, electronic cigarettes, pipes, and cigars. Smokeless tobacco refers to a variety of tobacco products that are either sniffed, sucked, or chewed. Electronic cigarettes, also sometimes referred to as e-cigs, vape pens, and vapes, are devices that produce an aerosol by heating a liquid that usually contains nicotine flavorings and other chemicals.<sup>48</sup>

In Native communities across the US, commercial tobacco use is distinct from traditional or sacred tobacco use, i.e., use of tobacco grown or harvested by AI/AN for ceremonial and/or medicinal purposes. This report is concerned with commercial tobacco use, nicotine addiction, and their effects.

### Data Highlights

#### Health Indicators

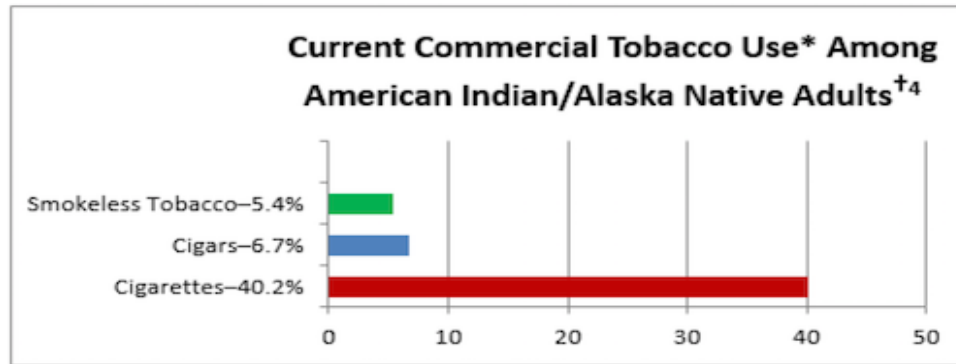
Commercial tobacco use harms nearly every organ of the body, causes many different diseases, and reduces the overall health of the smoker. Quitting commercial tobacco lowers your risk of smoking-related diseases and can add years to your life. Cigarette smoking, the main use of commercial tobacco, is the leading preventable cause of death in the United States. Cigarette smoking causes more than 480,000 deaths each year in the United States, which is nearly equivalent to one out of every five deaths in the United States.<sup>49</sup>

American Indians/Alaska Natives (AI/AN) have the highest prevalence of commercial tobacco use compared to all other racial/ethnic groups in the US. In 2013, 43.8% of AI/AN adults reported current use of commercial tobacco.<sup>50</sup> Traditional tobacco use is not included in the below data.

<sup>48</sup> <https://www.ncbi.nlm.nih.gov/books/NBK362/>

<sup>49</sup> [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/health\\_effects/effects\\_cig\\_smoking/index.htm](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/index.htm)

<sup>50</sup> <https://www.cdc.gov/tobacco/disparities/american-indians/index.htm>



\* “Current Use” is defined as self-reported consumption of cigarettes, cigars, or smokeless tobacco in the past month.

† Data taken from the National Survey on Drug Use and Health, 2013, and refer to American Indians/Alaska Natives aged 18 years and older.

Due to the high prevalence of commercial tobacco use, AI/AN have a higher risk of commercial tobacco-related disease and death.<sup>38</sup> The risk of cardiovascular disease, lung cancer, and diabetes are all increased by commercial tobacco use.<sup>38</sup> Commercial tobacco smokers have a 30-40% higher risk of contracting diabetes than their non-smoking counterparts.<sup>38</sup>

In EBCI, 32.4% of active clinical patients used commercial tobacco in 2016, significantly greater than in NC (22%) and nationwide (21%). EBCI’s percentage has risen slightly since 2007, while North Carolina and United States percentages have decreased.<sup>51</sup>

| PERCENTAGE OF CURRENT TOBACCO USERS (SMOKING AND SMOKELESS TOBACCO) |      |      |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|------|------|
| Active Clinical Population  |      |      |      |      |      |      |      |      |      |      |
| Population Group  | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| EBCI Tribe  | 30.5 | 30.3 | 34.1 | 29.8 | 32.0 | 38.2 | 35.2 | 36.1 | 33.2 | 32.4 |
| Nashville Area  | 20.5 | 22.6 | 23.1 | 23.8 | 24.2 | 32.3 | 29.3 | 35.1 | 34.1 | 32.3 |
| Indian Health Service   | n/a  | 29.0 | 26.0 | 27.0 | 31.6 | 30.7 | 28.6 | 28.1 | 27.4 | 25.7 |
| North Carolina  | 31.0 | 31.6 | 20.3 | 19.8 | n/a  | 20.9 | 24.6 | 23.5 | 23.9 | 22.0 |
| United States   | 29.1 | 28.5 | 33.1 | 32.8 | n/a  | 19.6 | 23.2 | 22.2 | 21.4 | 21.0 |

Source: TEC Request, CRS

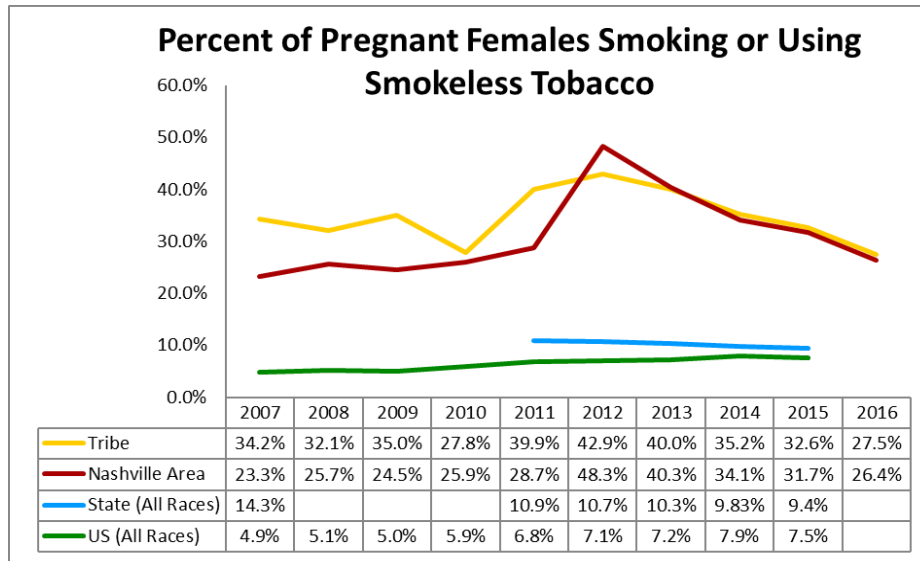
Source for NC/US: Taken from BRFSS data tool on 1/11/2017. Please note, in 2011-2012 there was no smokeless data for BRFSS.

The categories in the smokeless question ‘Every day’ and ‘Some days’ were combined into ‘yes’.

Using commercial tobacco while pregnant can lead to additional health problems, including premature birth, birth defects such as cleft lip or cleft palate, problems with the placenta, and sudden infant death syndrome (SIDS). With 27.5% of EBCI’s pregnant women smoking or using smokeless tobacco in 2016, commercial tobacco use while pregnant is a significant health issue in EBCI. The use of e-cigarettes is not a safe alternative to cigarettes, especially while pregnant. Nicotine in e-cigarettes and flavorings can affect fetal brain and lung development.<sup>52</sup>

<sup>51</sup> USET TEC Special Request

<sup>52</sup> <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/tobaccousepregnancy/index.htm>

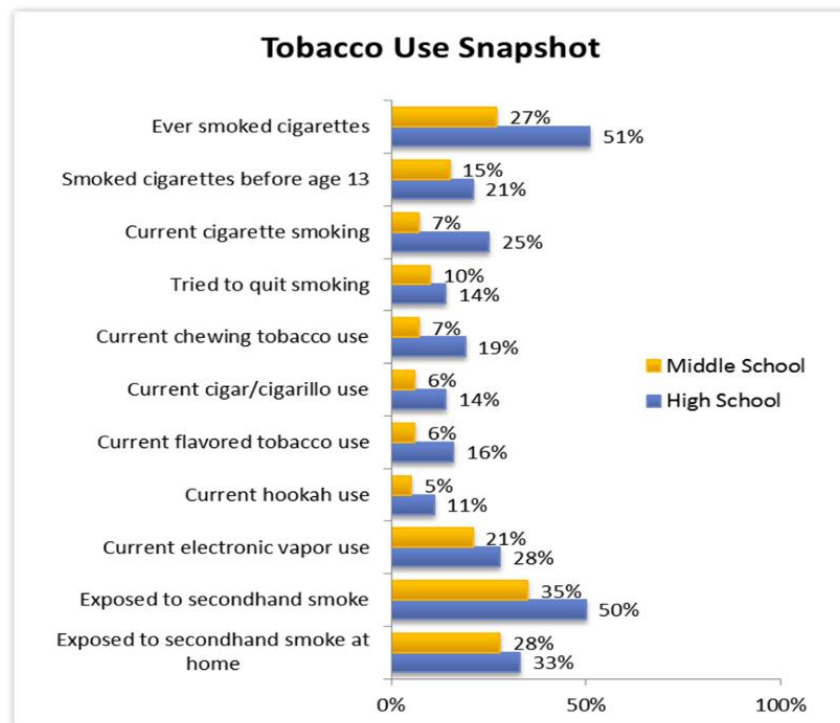


Source: TEC Request: Cherokee and Nashville Area taken from CRS reports.

State and US taken from data queried from CDC Wonder on 1/9/2018.

## Understanding the Issue

In the 2016 Cherokee Central Schools Youth Risk and Resiliency Survey, 51% of high school students and 27% of middle school students admitted to having ever smoked a cigarette. Current cigarette use was 25% of high school students and 7% of middle school. This data includes only commercial tobacco use.



The 2013 and 2016 Elder Survey of those 55 and older by the National Resource Center on Native American Aging shows that EBCI elders smoke less than the tribal aggregate and less than the national average.

| Do you smoke cigarettes now?  |      |           |        |      |           |        |
|---|------|-----------|--------|------|-----------|--------|
|   | 2013 |           |        | 2016 |           |        |
|   | EBCI | Aggregate | Nation | EBCI | Aggregate | Nation |
| Yes, everyday   | 16.7 | 18.3      | 19.5   | 13.6 | 17.5      | 19.5   |
| Yes, some days  | 4.1  | 6.1       | 5.9    | 5.6  | 7.3       | 5.9    |
| No  | 79.3 | 75.6      | 74.5   | 80.9 | 75.3      | 74.5   |
| Source: Elder Survey Data (2013 and 2016) reports provided by Abby Holmes |      |           |        |      |           |        |
| EBCI: n = 289 in 2013 and 187 in 2016                                     |      |           |        |      |           |        |

For the 2012 and 2015 WNC Healthy Impact phone survey, the self-reported tobacco use rates for AI/AN in the WNC region were the highest out of all populations and higher than WNC overall, NC, and US rates. E-cigarette use was also higher for AI/AN in the WNC region.

| SELF-REPORTED TOBACCO USE                              |       |       |       |          |       |       |       |          |        |         |         |       |
|--|-------|-------|-------|----------|-------|-------|-------|----------|--------|---------|---------|-------|
| Self-Reported Responses to Healthy Impact Phone Survey |       |       |       |          |       |       |       |          |        |         |         |       |
| Current Smokers  |       |       |       |          |       |       |       |          |        |         |         |       |
| WNC Region   | White | AI/AN | Black | Hispanic | WNC   | NC    | US    | Cherokee | Graham | Haywood | Jackson | Swain |
| 2012   | 19.5% | 40.9% | 27.4% | 22.1%    | 20.6% | 19.8% | 16.6% | 19.9%    | 27.5%  | 19.6%   | 26.2%   | 29.0% |
| 2015   | 19.2% | 32.9% | 28.7% | 5.6%     | 19.3% | 20.3% | 14.9% | 16.7%    | 20.1%  | 24.1%   | 22.0%   | 28.6% |
| Currently Use Smokeless Tobacco Products               |       |       |       |          |       |       |       |          |        |         |         |       |
| WNC Region   | White | AI/AN | Black | Hispanic | WNC   | NC    | US    | Cherokee | Graham | Haywood | Jackson | Swain |
| 2012   | 5.3%  | 1.5%  | 4.9%  | 4.4%     | 5.2%  | n/a   | 2.8%  | 8.9%     | 8.2%   | 4.6%    | 5.7%    | 4.7%  |
| 2015   | 4.4%  | 5.5%  | 0.2%  | 3.2%     | 4.3%  | 4.3%  | 4.0%  | 5.0%     | 14.9%  | 11.2%   | 4.3%    | 8.7%  |
| Currently Use E-Cigarettes                             |       |       |       |          |       |       |       |          |        |         |         |       |
| WNC Region   | White | AI/AN | Black | Hispanic | WNC   | NC    | US    | Cherokee | Graham | Haywood | Jackson | Swain |
| 2015   | 6.8%  | 13.3% | 2.0%  | 1.2%     | 6.6%  | n/a   | n/a   | 1.7%     | 4.1%   | 5.3%    | 6.6%    | 7.6%  |
| Source: WNC Healthy Impact Phone Survey 2012 and 2015  |       |       |       |          |       |       |       |          |        |         |         |       |

In the 2017 Tribal Community Health Survey, 26.66% of respondents stated that they currently use tobacco products including cigarettes, cigars, e-cigarettes, vaping, chewing tobacco, snuff, dip, or tobacco for ceremonial use. Of that 26.66%, 77.74% said they smoked cigarettes or cigars, 6.04% said they used e-cigarettes or vaporizers, 19.62% said they used chewing tobacco, snuff, snus, or dip, and 4.53% said they use tobacco for ceremonial purposes. Also, of the 26.66% that currently use tobacco products, 63.39% said that they are either interested or may be interested in quitting tobacco.

### Specific Populations at Risk

Commercial tobacco-related disparities affect many different populations based on socially determined circumstances and characteristics like age, disability, education, income, occupation, geographic location, race, ethnicity (including AI/AN), sex, sexual orientation, gender identity, mental health status, substance abuse, and military status. AI/AN have a higher prevalence of tobacco use (i.e., the proportion of a population group that uses tobacco), lower cessation rates,

and poorer health outcomes. Tobacco-related disparities have also been reported among people who are homeless and those who are incarcerated.<sup>53</sup>

#### Health Resources available/needed

Among the available state and national level smoking cessation resources are:

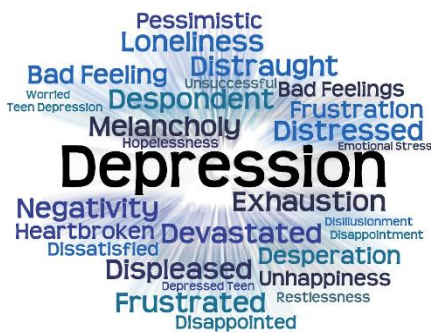
- Smoke-free [www.smokefree.gov](http://www.smokefree.gov)
- QuitlineNC [www.quitlinenc.com](http://www.quitlinenc.com), 1-800-QUIT-NOW (1-800-784-8669)
- North Carolina Tobacco Prevention and Control Branch  
<https://www.tobaccopreventionandcontrol.ncdhhs.gov/>
- National Native Network [www.keepitsacred.org](http://www.keepitsacred.org)
- CDC, Tobacco Use and Pregnancy: Resources  
<https://www.cdc.gov/reproductivehealth/maternalinfanthealth/tobaccousepregnancy/resources.htm>
- Campaign for Tobacco-Free Kids <https://www.tobaccofreekids.org/>
- Be Tobacco Free [www.betobaccofree.hhs.gov](http://www.betobaccofree.hhs.gov)

In EBCI, Cherokee Indian Hospital Authority offers tobacco cessation counseling, cessation medication, and outside referrals. PHHS' Tsalagi Public Health offers a women's wellness program that focuses on disease prevention including tobacco cessation. Tsalagi Public Health also provides maternity care coordination and provides resources and necessary support services for expectant mothers.

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<sup>53</sup> <https://www.cdc.gov/tobacco/stateandcommunity/best-practices-health-equity/pdfs/bp-health-equity.pdf>

## EBCI HEALTH PRIORITY 8: DEPRESSION



Depression is a common but serious mood disorder. Depression is more than feeling down or having a bad day. When a sad mood lasts for at least two weeks and interferes with normal, everyday functions, it may be depression. Major depressive episodes are defined as depression lasting for a period of two weeks or longer with at least four other symptoms that reflect a change in functioning such as problems sleeping, eating, energy, concentration, self-image, or recurrent thoughts of death or suicide.<sup>54,55</sup>

Depression was one of EBCI's Tribal Health Improvement Plan 2015-17 (THIP) priority issues. The THIP had three depression objectives: to increase awareness of depression among the EBCI community, to increase the number of visits to behavioral health providers in all EBCI programs and agencies, and to increase participation of tribal members in sharing traditional Cherokee beliefs and values. The 2015-17 THIP Summary Report, available from PHHS, reviews the THIP's outcomes.

### Data Highlights

#### Health Indicators

##### Depression by the numbers

- National
  - 7.6% of persons aged 12 and over experience depression in any 2-week period (2009-2012).
  - 10.4% of physician office visit patients have depression on their medical record.
  - 44,193 suicide deaths in 2015 at a rate of 13.7 per 100,000 population.
  - 6.7% of the US population has had a major depressive episode.
    - Ages 18-25 has the highest rate of major depressive episodes with 10.5%
  - 8.7% of AI/AN have had a major depressive episode in 2016, compared to 7.4% of the white population.
  - 11% of adolescents aged 12-17 experienced a major depressive episode between 2013-2014.
  - 3.9% of adults 18 or older have had thoughts of suicide.

<sup>54</sup> <https://www.cdc.gov/nchs/fastats/depression.htm>

<sup>55</sup> <https://www.nimh.nih.gov/health/statistics/major-depression.shtml>



- In 2014, 21% of AI/AN ages 18 and up reported that they had a mental illness in the past year, compared to 17.9% of the general population.<sup>56,57,58,59</sup>
- North Carolina
  - 11.4% of adolescents aged 12-17 experienced a major depressive episode between 2013-2014.
    - 40.7% of those with major depressive episodes received treatment for depression.
  - 4.5% of adults aged 18 or older have had thought of suicide.<sup>60</sup>
- EBCI
  - Suicide was number 7 on the top 10 leading causes of death in EBCI from 2010-2014.
    - Suicide accounted for 2.5% of all deaths in EBCI compared to 1.8% in the USET Nashville area.
    - 3.3% of all deaths were male suicides whereas 1.6% of all death were female suicides.
    - 13.6% of the EBCI population were diagnosed with depression and received services in 2016.

| <b>CIHA DEPRESSION Dx AND Received Services</b>   | <b>2014</b> | <b>2015</b> | <b>2016</b> |
|---|-------------|-------------|-------------|
| <i>Patients with Depression Dx AND Received Services</i>  | 1,369       | 1,665       | 1,503       |
| <i>Percent of EBCI Population with Depression Dx AND Received Services Per Year<sup>1</sup></i>   | 12.4%       | 15.1%       | 13.6%       |
| <i>Behavioral Health Visits for Patients with Depression Dx</i>                                   | 4,619       | 7,592       | 5,746       |
| <i>Source cited in 2018: personal communication from Cherokee Hospital to PHHS, June 14, 2018</i> |             |             |             |
| <i><sup>1</sup>CIHA user population 2012- 11,016.</i>   |             |             |             |

## Understanding the Issue

- 2017 Tribal Community Health Survey
  - 19.11% of respondents reported that anxiety, depression, and/or mental and behavioral health issues were leading health concerns.
  - 19.2% of respondents reported that they were concerned that anxiety, depression, and/or mental and behavioral health issues would affect them in the next five to ten years.
  - 19.96% of respondents reported that they were concerned their family's health is affected by anxiety, depression, and/or mental and behavioral health issues.

<sup>56</sup> <https://www.cdc.gov/nchs/fastats/depression.htm>

<sup>57</sup> <https://www.nimh.nih.gov/health/statistics/major-depression.shtml>

<sup>58</sup> [https://www.samhsa.gov/data/sites/default/files/2015\\_North-Carolina\\_BHBarometer.pdf](https://www.samhsa.gov/data/sites/default/files/2015_North-Carolina_BHBarometer.pdf)

<sup>59</sup> <https://www.everydayhealth.com/depression/facts-about-depression-whos-at-risk.aspx>

<sup>60</sup> [https://www.samhsa.gov/data/sites/default/files/2015\\_North-Carolina\\_BHBarometer.pdf](https://www.samhsa.gov/data/sites/default/files/2015_North-Carolina_BHBarometer.pdf)

- 2016 Tribal Elder Survey
  - 12.3% of EBCI elders reported having ever been diagnosed with depression.
  - 52% reported that they have felt downhearted or blue at least a little of the time in the past month compared to 34.2% nationally.
  - 32.6% reported that they have felt nothing would cheer them up at least a little of the time in the past month.

### Specific Populations at Risk

Depression can affect everyone, but the following factors put people at more risk for developing depression:

- Gender- depression is twice as common in women as in men.
- Age- major depression is most likely to affect the very young and very old.
- Ethnicity- AI/AN are more likely to be diagnosed with depression than the white population.
- Family history and upbringing- persons are more likely to have depression if a parent or a foster parent suffers from depression.
- Marital status- those who have been previously married are at higher risk.
- Socioeconomic status- the less educated and those with lower income are more likely to experience depression.<sup>61</sup>

### Health Resources available/needed

- Cherokee Indian Hospital Authority's Analenisgi provides a variety of evidence-based outpatient therapy including therapy's that focus on anxiety and depression, a recovery center, psychiatric evaluation, medication management, and intensive outpatient substance abuse treatment. Analenisgi is open Monday-Friday 7:45 am to 4: 30 pm. Walk-ins are welcome Monday-Friday 1:00 pm to 3:00 pm. For more information call 828-497-9163 Ext. 7550 or visit <http://cherokeehospital.org/page?title=Analenisgi>.
- The American Academy of Child and Adolescent Psychiatry's online depression resource center offers resources for children and adolescents. For more information, visit [www.aacap.org/aacap/Families\\_and\\_Youth/Resource\\_Centers/Depression\\_Resource\\_Center/Home.aspx](http://www.aacap.org/aacap/Families_and_Youth/Resource_Centers/Depression_Resource_Center/Home.aspx).
- Anxiety and Depression Association of America (ADAA) offers resources and many helpful articles. For more information, visit [www.adaa.org](http://www.adaa.org).
- Substance Abuse and Mental Health Services Administration (SAMHSA) offers 24-hour helplines. Visit [www.samhsa.gov](http://www.samhsa.gov).
  - National Suicide Hotline: 1-800-273-8255
  - National Helpline: 1-800-662-4357

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<sup>61</sup> <https://www.cdc.gov/nchs/fastats/depression.htm>

## EBCI HEALTH PRIORITY 9: FOOD INSECURITY



Food insecurity is defined as the disruption of food intake or eating patterns due to lack of money or other resources. Those that are food insecure may have disruptive eating patterns, reduced quality of food, reduced quantity of food, reduced variety of food, or a less desirable diet due to lack of resources.<sup>62</sup>

When someone has food security, they always have access to enough food for an active, healthy life. Being food secure is one of several conditions necessary for a population to be healthy and well nourished. Neighborhood conditions can play a significant role in access to food. Communities that lack access or are located long distances from affordable and nutritious food are often referred to as food deserts. Food insecurity can lead to numerous negative health outcomes and disparities such as an increased risk of obesity and other chronic diseases.<sup>63</sup>

### Data Highlights

#### Health Indicators

Food Insecurity by the numbers:

- In 2016, the CDC estimated that food insecurity affects 19.3% of US adults.
  - Among those affected:
    - 58% receive no assistance.
    - 20.3% receive only Supplemental Nutrition Assistance Program (SNAP) benefits.
    - 9.7% received only food bank assistance.
    - 12% received both SNAP and food bank assistance.<sup>64</sup>
- In 2014, the USDA estimated that 14.4 million U.S. households were food insecure at some time during the year.<sup>65</sup>
- In 2017, North Carolina's population affected by food insecurity was estimated at 18%.
  - Swain Co. 18%
  - Jackson Co. 16%
  - Haywood Co. 14%

<sup>62</sup> <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity#1>

<sup>63</sup> <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity#1>

<sup>64</sup> [https://www.cdc.gov/pcd/issues/2016/16\\_0103.htm](https://www.cdc.gov/pcd/issues/2016/16_0103.htm)

<sup>65</sup> [https://www.cdc.gov/pcd/issues/2016/16\\_0103.htm](https://www.cdc.gov/pcd/issues/2016/16_0103.htm)

- Graham Co. 18%
  - Cherokee Co. 14%<sup>66</sup>
- American Indian and Alaska Natives are 25% more likely to be food insecure compared to the white population often due to their rural or economically disadvantaged location.<sup>67</sup>

## Understanding the Issue

The US Department of Agriculture (USDA) defines food deserts in rural locations as a location that forces someone to travel over 10 miles to purchase food.<sup>68</sup> With greater distances to grocery stores, comes a greater risk of food insecurity. Many of those in food deserts end up getting food from closer convenience stores that often lack healthy options, such as fresh fruit and vegetables.

Below are some of the food insecurity survey statistics from the 2017 Tribal Health Survey and the 2016 Tribal Elder Survey.

- 2017 Tribal Community Health Survey:
  - 47% of respondents found it “very difficult” or “somewhat difficult” to buy fresh produce at a price they can afford.
  - 41% of respondents indicated that they must travel 5-10 miles to get groceries.
  - 22% of respondents indicated that they must travel more than 10 miles to get groceries.
  - 23% of respondents indicated that they did not have enough money for food at least once in the previous year.
- 2016 Tribal Elder Survey:
  - 11.2% ate fewer than 2 meals a day.
  - 4.8% didn’t always have enough money to buy the food they needed.
  - 22.5% ate too few fresh fruits, vegetables, or milk products.

## Specific Populations at Risk

Food insecurity risk factors include:

- Those with children in the household
- Households with children headed by a single woman or man
- African-American, AI/AN, and Hispanic households
- Households with persons with disabilities
- Those with poor health
- Those living in neighborhoods with high housing costs or in neighborhoods where housing takes up a significant portion of the household income
- Those that experience prolonged unemployment or those that are underemployed

<sup>66</sup> <http://www.countyhealthrankings.org/app/north-carolina/2017/measure/factors/139/map>

<sup>67</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5422031/>

<sup>68</sup> [https://www.cdc.gov/pcd/issues/2015/15\\_0065.htm](https://www.cdc.gov/pcd/issues/2015/15_0065.htm)

#### Health Resources available/needed

- PHHS' Family Support provides a food pantry service that offers a three-day supply in emergencies. Contact: (828) 359-6092.
- PHHS' WIC program provides assistance to those that are pregnant, breastfeeding and postpartum women, infants, and children up to age five. To learn more call (828) 359-6232.
- PHHS' Tribal Foods Distribution program offers food to eligible households on the Qualla Boundary. For more information call (828) 359-9751.
- The EBCI Senior Citizens program offers a hot, nutritious meal each weekday from 11:30 am to 12:00 pm at Tsali Manor, Snowbird, and the John Welch Center location in Cherokee County. They also offer a homebound meal program, an Ensure program, and transportation to program facilities. For more information call 828-359-6291 or visit <http://www.cherokee-hmd.com/senior-citizens/index.html>.
- The North Carolina Cooperative Extension also provides many helpful services that promote healthy eating and living. Visit <https://ebci.ces.ncsu.edu/> or call 828-359-6939.
- For additional EBCI resources, visit <http://www.cherokee-hmd.com/foodresource.html>.

## EBCI HEALTH PRIORITY 10: SEXUALLY TRANSMITTED INFECTIONS AND TEEN PREGNANCY



In the 2017 EBCI Community Health Survey, 22% of participants indicated that “teen pregnancy” was one of the top 5 threats to the EBCI Tribal community health. In North Carolina, American Indian/ Alaska Natives have the highest teen pregnancy rate of any group. Teenage pregnancy is associated with increased costs of healthcare, increases in the use of the foster care system, increased incarceration rates among the children of teen parents, and lower educational attainment among teen parents. Factors that increase a woman’s risk of becoming pregnant as a teen include growing up in poverty, having parents with low education levels, growing up in a single-parent family, and poor school performance.<sup>69</sup>

Sexually transmitted infection (STI, also known as “sexually transmitted diseases” or “STDs”) rates across the PRCSDA, while significantly lower than that of the state, are increasing. 15-24-year-olds account for half of all new STIs. Other groups that are at increased risk for STIs include men who have sex with men (MSM) and individuals who have multiple sexual partners. STIs can cause a variety of symptoms or show no symptoms at all. Some STIs can cause disability, infertility, and even death, and can be transmitted during pregnancy or at birth to a newborn. All STIs are treatable, and some are curable, though disease-resistant strains of some STIs are becoming alarmingly common. STI transmission can be reduced through safe-sex practices, such as consistent condom use. Pregnancy can be prevented through consistent contraceptive use or abstinence. Education and access to inexpensive, easily available family planning are vital to addressing this issue in the community.

### Data Highlights

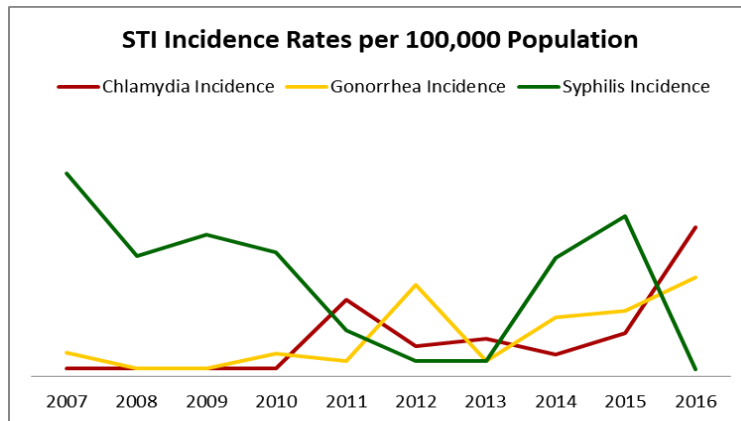
#### Health Indicators

##### *Trends: STI Incidence Rates (2007-2016)*

The graph below displays STI incidence rates in the EBCI population. STI rates vary greatly from year to year and between different STIs. As shown below, chlamydia and gonorrhea incidence rates (rates of diagnosis of new cases) have been trending upwards since 2010. Syphilis rates increased between 2013 and 2015 but sharply decreased in 2016. EBCI is a relatively small population (approximately 16,000) so individual cases of STIs can affect the yearly rates significantly.

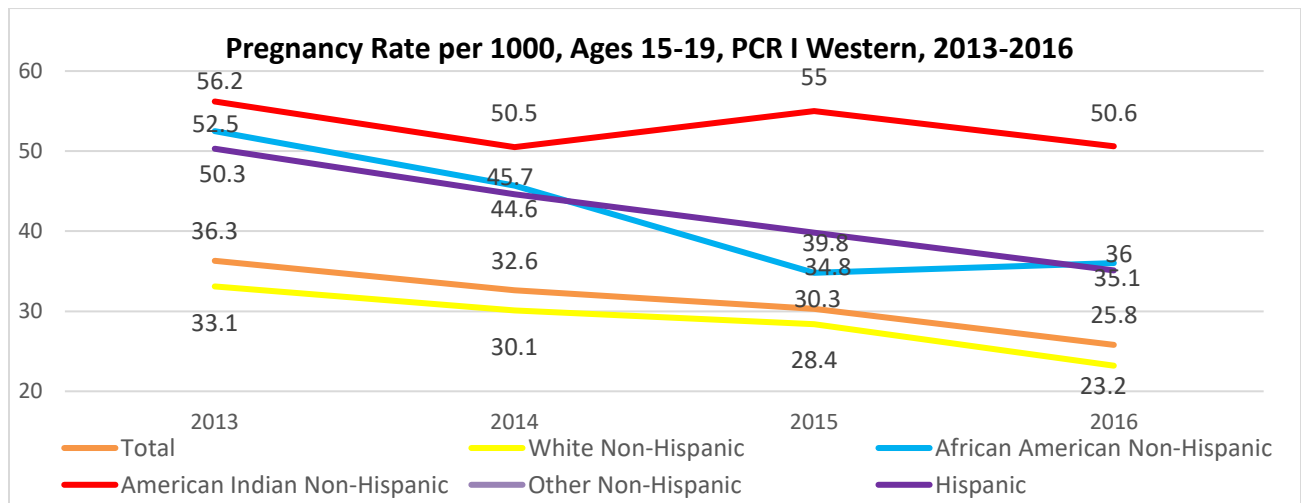
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<sup>69</sup> <https://www.cdc.gov/std/default.htm>



### *Trends: Teen Pregnancy Rates (2013-2016)*

In 2016, AI/AN had the highest teen pregnancy rates for both North Carolina and for the PCR I Western region (which includes the 16 Westernmost counties in North Carolina.). In PCR I, AI/AN teen pregnancy rates, shown in red in the graph below, are at least 15 points higher than the next highest group.



## Understanding the Issue

### *HPV (Human Papilloma Virus)*

Approximately 1 in 4 people in the United States has HPV, according to the CDC; 80% of individuals are diagnosed with HPV in their lifetime.<sup>70</sup> HPV, which causes genital warts, is an STI of concern because of its association with cancer. Nearly all cases of cervical and anal cancer are caused by HPV. Approximately 70% of oropharyngeal cancers (cancers of the middle part of the throat) are caused by HPV. Other rarer cancers are also associated with HPV, which

<sup>70</sup> <https://www.cdc.gov/std/stats/default.htm>



causes approximately 5% of all cancers worldwide.<sup>71</sup> The HPV vaccine prevents the development of some the HPVs that cause cancer: if everyone was vaccinated, 30,000 cases of cancer could be prevented each year. While AI/AN vaccination rates are significantly higher than that of the nation, EBCI lags behind IHS-wide averages and has shown a steady decline in vaccination rates since 2013.

| <b>HPV Vaccination (Females)</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> |
|----------------------------------|-------------|-------------|-------------|-------------|
| <b>EBCI</b>                      | 63.4        | 61.6        | 60.7        | 55.4        |
| <b>Nashville Area</b>            | 53.1        | 52.4        | 52.2        | 50.0        |
| <b>IHS Wide</b>                  | 60.6        | 63.7        | 64.8        | 67.4        |
| <b>NC All Races</b>              | 32.8        | 54.0        | 37.8        | 41.6        |
| <b>US All Races</b>              | 37.6        | 39.7        | 41.9        | 43.0        |

### *2017 YRRS*

In the 2016 YRRS, 60% of high school students reported having been sexually active in their lifetime. Of those students, many reported unsafe sex practices: 12% reported using drugs or alcohol before their last sexual encounter, 50% of them had not used a condom, and 26% of them had not used any form of contraception. Rates from the 2018 YRRS paint a mixed picture: only 47% of students reported having ever been sexually active, but 22% reported using drugs or alcohol before their last sexual encounter; 44% had not used a condom and 27% had not used any form of contraception. In the 2018 YRRS, 1.8% of female students reported ever being pregnant. 1.8% responded yes, which indicated a pregnancy rate of approximately 18 per 1000, significantly lower than the regional average but on par with the national average. Another 2.5% of girls reported that they were unsure if they had been pregnant. [Note: This data should be interpreted with caution because of the relatively small sample size.]

### **Health Resources available/needed**

Cherokee Central Schools: Sexual Education at Cherokee Central Schools follows North Carolina’s Sex Education and Reproductive Health policy; abstinence is strongly promoted, and students are taught “that a mutually faithful monogamous heterosexual relationship in the context of marriage is the best lifelong means of avoiding sexually transmitted diseases, including HIV/AIDS.”<sup>72</sup>

Tsalagi Public Health: Family planning services are available at Tsalagi Public Health (formerly the Beloved Women and Children’s Center) and Cherokee Indian Hospital Authority.

Smoky Mountain Pregnancy Care Center (SMPCC): The SMPCC, a Christian ministry in Cullowhee, provides resources to women and couples who think they may be pregnant. These

<sup>71</sup> <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-fact-sheet>

<sup>72</sup> <https://1.cdn.edl.io/opXjTG7X9rrPiC0KGWZWILxsIuoBnOgNTdVv3RcrAf7v3XK9.pdf>

include free pregnancy tests and free limited ultrasounds, parenting classes, and community referrals. They connect women to the resources they need, from doctors to adoption agencies. They can be contacted at 828-293-3600.

Located in Asheville, Asheville Health Center - Planned Parenthood's mission is "to provide comprehensive reproductive and complementary health care services in settings which preserve and protect the essential privacy and rights of each individual; to advocate public policies which guarantee these rights and ensure access to such services; to provide educational programs which enhance understanding of individual and societal implications of human sexuality; and to promote research and the advancement of technology in reproductive health care and encourage understanding of their inherent bioethical, behavioral, and social implications." The center provides a variety of services including birth control and abortion services, emergency contraception, pregnancy testing and care, LGBT and men's health services, sexual and reproductive health education, and STI testing, treatment, and vaccines. Call (828) 252-7928 or visit <https://www.plannedparenthood.org/health-center/north-carolina/asheville/28801/asheville-health-center-4134-90860>

## CHAPTER 9 - NEXT STEPS

### Sharing Findings

PHHS will devote time and staff to sharing the results of the THA and gaining further community comments and questions on the data during 2019. Community engagement is a cyclic process that will help continually improve data collection and analysis and provide direction for improving health. PHHS will use all available forms of media, community activities and meetings, and public events to make this report available. The THA will also be housed on the PHHS website, [www.cherokee-phhs.com](http://www.cherokee-phhs.com)

### Priority Health Issues and Collaborative Action Planning: The THIP

#### Process

The “top ten” health issues described above can seem overwhelming. However, EBCI has a process that has shown success in working through health issues and making an impact—the Tribal Health Improvement Process (THIP). After sharing the data on the top ten issues with the Tribal community, PHHS will convene the THIP Group, which will include community stakeholders (agencies and special interest groups) and will provide organizational support to decide on two or three of these issues—the most important and the most realistic to address in the next 5 years. The team will engage in the THIP process to tackle the priority issues and develop and implement a long-term (5 years), systematic plan to collectively define and implement strategies that will have measurable impact on the community’s health. PHHS will provide facilitation and oversight to the THIP Group to ensure collaboration among all stakeholders and progress toward meeting desired outcomes.

Together, the THIP Group will use Results-Based Accountability (RBA) to determine results, indicators, strategies, and performance measures to collaborate across the whole community and guide the process so that we can know and show how much we did, how well we did it, and who is better off. Experience with the 2015-17 THIP process has shown that engaging the community and bringing Tribal and regional partners and resources together can produce results that benefit the EBCI community. The collective partnership of community participation in the plan and citizen participation in the THIP Group will ensure the success of the THIP.<sup>73</sup>

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**THE THIP NEEDS YOU! IF YOU WOULD LIKE TO BE A PART OF THIS COMMITTED  
INITIATIVE FOR BETTER TRIBAL HEALTH, PLEASE CONTACT  
[THIP@nc-cherokee.com](mailto:THIP@nc-cherokee.com) -WE WELCOME YOU!**

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<sup>73</sup> For more information about RBA, visit [www.clearimpact.com](http://www.clearimpact.com)

## **APPENDICES**

## APPENDIX A - DATA COLLECTION METHODS & LIMITATIONS

### Data Notes

This report includes data retrieved directly from sources in the public domain. In some cases, the data is very current; in other cases, while it may be the most current available, it may be several years old. Note also that the names of organizations, facilities, geographic places, etc. presented in the tables and graphs in this report are quoted exactly as they appear in the source data. In some cases, these names may not be those in current or local usage; nevertheless, they are used so readers may track a particular piece of information directly back to the source.

### Data sovereignty

The US Indigenous Data Sovereignty Network defines data sovereignty as “the right of a nation to govern the collection, ownership, and application of its own data,”<sup>74</sup> which derives from Tribal sovereignty and enables Tribes to use their data “to advance Indigenous aspirations for collective and individual wellbeing.”<sup>75</sup> In this document, data sovereignty pertains to the concept that EBCI owns and governs all data produced in and on the Tribal population and on Tribal lands, and this data is to be used to benefit the Tribe. PHHS has exercised extreme care to assure the privacy and confidentiality of community members and the data sovereignty, culture, and traditions of the Tribe to determine the contents of this report.

### Data Definitions

Reports of this type customarily employ a range of technical terms, some of which may be unfamiliar to many readers. Health data, which composes a large proportion of the information included in this report, employs a series of very specific terms which are important to interpreting the significance of the data.

### Error

First, readers should note that there is some error associated with every health data source. Surveillance systems for communicable diseases and cancer diagnoses, for instance, rely on reports submitted by health care facilities across the state and are likely to miss a small number of cases, and mortality statistics are dependent on the primary cause of death listed on death certificates without consideration of co-occurring conditions.

### Age-adjusting

Secondly, since much of the information included in this report relies on *mortality* data, it is important to recognize that many factors can affect the risk of death, including race, gender,

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<sup>74</sup> US Indigenous Data Sovereignty Network, Native Nations Institute at the University of Arizona, <https://usindigenousdata.arizona.edu/>

<sup>75</sup> Ibid.

occupation, education, and income. The most significant factor is age because an individual's risk of death inevitably increases with age. As a population ages, its collective risk of death increases; therefore, an older population will automatically have a higher overall death rate just because of its age distribution. At any one time some communities have higher proportions of "young" people, and other communities have a higher proportion of "old" people. In order to compare mortality data from one community with the same kind of data from another, it is necessary first to control for differences in the age composition of the communities being compared. This is accomplished by *age-adjusting* the data. Age-adjustment is a statistical manipulation usually performed by the professionals responsible for collecting and cataloging health data, such as the staff of the NC State Center for Health Statistics (NC SCHS). It is not necessary to understand the nuances of age-adjustment to use this report. Suffice it to know that age-adjusted data are preferred for comparing most health data from one population or community to another and have been used in this report whenever available.

## Rates

Thirdly, it is most useful to use *rates* of occurrence to compare data. A rate converts a raw count of events (deaths, births, disease or accident occurrences, etc.) in a target population to a ratio representing the number of same events in a standard population, which removes the variability associated with the size of the sample. Each rate has its own standard denominator that must be specified (e.g., 1,000 women, 100,000 persons, 10,000 people in a particular age group, etc.) for that rate.

While rates help make data comparable, it should be noted that small numbers of events tend to yield rates that are highly unstable, since a small change in the raw count may translate to a large change in rate. To overcome rate instability, another convention typically used in the presentation of health statistics is *data aggregation*, which involves combining like data gathered over a multi-year period, usually three or five years. The practice of presenting data that are aggregated avoids the instability typically associated with using highly variable year-by-year data, especially for measures consisting of relatively few cases or events. The calculation is performed by dividing the sum number of cases or deaths in a population due to a particular cause over a period of years by the sum of the population size for each of the years in the same period. Health data for multiple years or multiple aggregate periods are included in this report wherever possible. Sometimes, however, even aggregating data is not sufficient, so the NC SCHS recommends that rates based on fewer than 20 events—whether covering an aggregate period or not—be considered *unstable*. In fact, in some of its data sets the NC SCHS no longer calculates rates based on fewer than 20 events. To be sure that unstable data do not become the basis for local decision-making, this report will highlight and discuss primarily rates based on 20 or more events in a five-year aggregate period, or 10 or more events in a single year. Where exceptions occur, the text will highlight the potential instability of the rate being discussed.

## Regional arithmetic mean

Fourthly, sometimes in order to develop a representative regional composite figure from 16 separate county measures the consultants calculated *regional arithmetic mean* by summing the available individual county measures and dividing by the number of counties providing those measures. It must be noted that when regional arithmetic means are calculated from *rates* the mean is not the same as a true average rate but rather an approximation of it. This is because most rates used in this report are age-adjusted, and the regional mean cannot be properly age-adjusted.

## Describing difference and change

Fifthly, in describing differences in data of the same type from two populations or locations, or changes over time in the same kind of data from one population or location—both of which appear frequently in this report—it is useful to apply the concept of *percent* difference or change. While it is always possible to describe difference or change by the simple subtraction of a smaller number from a larger number, the result often is inadequate for describing and understanding the *scope* or *significance* of the difference or change. Converting the amount of difference or change to a percent takes into account the relative size of the numbers that are changing in a way that simple subtraction does not and makes it easier to grasp the meaning of the change. For example, there may be a rate of for a type of event (e.g., death) that is one number one year and another number five years later. Suppose the earlier figure is 12.0 and the latter figure is 18.0. The simple mathematical difference between these rates is 6.0. Suppose also there is another set of rates that are 212.0 in one year and 218.0 five years later. The simple mathematical difference between these rates also is 6.0. But are these same simple numerical differences really of the same significance in both instances? In the first example, converting the 6 point difference to a percent yields a relative change factor of 50%; that is, the smaller number increased by half, a large fraction. In the second example, converting the 6 point difference to a percent yields a relative change factor of 2.8%; that is, the smaller number increased by a relatively small fraction. In these examples, the application of percent makes it very clear that the difference in the first example is of far greater degree than the difference in the second example. This document uses percentage almost exclusively to describe and highlight degrees of difference and change, both positive (e.g., increase, larger than, etc.) and negative (e.g., decrease, smaller than, etc.)

For more definitions of terms relating to data, please see the Glossary at the end of this section.

## Data Sources & Partners

Data contributions for the 2018 THA are from the [USET Tribal Epidemiology Center \(TEC\)](#), [WNC Healthy Impact](#), [Cherokee Indian Hospital Authority \(CIHA\)](#), [EBCI Public Health and Human Services](#), [Cherokee Central Schools \(CCS\)](#), the [US Census Bureau](#), the [North Carolina Center for Health Statistics \(NCSCHS\)](#), and additional sources compiled and reviewed by the



THA Data Team. Data provided by the TEC includes historical mortality data and current patient data extracted from the Resource and Patient Management System (RPMS), the comprehensive IHS healthcare databased used by CIHA.

### Data Comparison Groups

Mortality data provided by the TEC that is labeled “EBCI” is based on decedent records from RPMS, some, but not all, of which could be matched with death records from the State of North Carolina. The most recent mortality data currently available is for 2014. Morbidity data provided by the TEC, as well as data related to Government Performance and Results Act (GPRA) indicators, includes records from RPMS through 2016 or 2017.

The data contained in RPMS includes individuals who receive care through the Indian health care delivery system, and that group of people is called the user population. When an “active clinical population” is identified, it is a more narrowly defined group of people (e.g. of a certain age and gender, or with a particular diagnosis) within the EBCI user population. It includes EBCI members, members of other Tribes, and first descendants who are alive at the end of the report period (year), are AI/AN, live in the 5-county PRCSDA<sup>76</sup>, and have had two or more visits<sup>77</sup> in the last three years.

In order to gain some perspective and context for the health status of EBCI members, it is important to see data from other locations for comparison. It was requested that the entire [26-Tribe USET \(United South and Eastern Tribes\) Region](#) serve as a comparator for data received from the Tribal Epidemiology Center (TEC). Additionally, some TEC data utilized the Nashville Area as a comparator. The [Nashville Area](#) is comprised of 29 federally recognized Tribes in 14 states in the 27-state IHS service area and extends from Texas to Maine. Where possible, data for the 5-county PRCSDA and the state of North Carolina was also provided via data from the NC State Center for Health Statistics and the US Census Bureau.

### Primary and Secondary Data Sources

#### Primary Data

A variety of primary data sources—that is, both qualitative and quantitative data that originate in EBCI—was available for this report. Sources include:

- EBCI Tribal Community Health Survey 2017
- National Resource Center on Native American Aging (NRCNAA) Elder Survey 2017
- Youth Risk and Resilience Survey (YRRS) 2016 and 2018
- Cherokee Indian Hospital Authority deidentified RPMS data

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<sup>76</sup> The 5-county Purchased and Referred Care Service Delivery Area (PRCSDA) includes Cherokee, Graham, Haywood, Jackson and Swain Counties. PRCSDA was formerly known as Contract Health Service Delivery Area (CHSDA).

<sup>77</sup> Includes: visits to CIHA clinics, the Emergency Department and/or inpatient units.

- Community Listening Sessions 2018

A description of these sources follows.

#### EBCI Tribal Community Health Survey 2017

In 2012 and 2017, EBCI PHHS conducted a community-wide health survey with multiple choice and open-ended questions on a wide variety of health issues—primary qualitative community data. The 2012 survey had 900 respondents and the 2017 survey had 1070; the latter was an approximately 15% response rate for the adult EBCI population living on the Qualla Boundary. Some responses were able to be compared across the 5-year period between surveys.

#### Elder Survey 2017

In 2013 and 2016, The National Resource Center on Native American Aging conducted the Elder Survey, a source of qualitative primary data, among EBCI members aged 55 and older at the Cherokee Senior Citizens Program, Tsali Manor. In 2013, 289 EBCI members participated and 187 responded in 2016. Tribal aggregate data from respondents across the country and Nationwide averages were included for comparison.

#### Youth Risk and Resiliency (YRRS) Survey

The Youth Risk and Resiliency Survey is a validated survey for youth based on the CDC's Youth Risk Behavior Survey (YRBS), a large, voluntary biennial national survey that obtains data from high school students themselves on a variety of health issues. This data is primary qualitative data for EBCI. New Mexico partners added and validated questions about resiliency to create the YRRS for middle and high school students. In March and April 2016, Cherokee Central Schools and PHHS collaborated to administer the YRRS questionnaire to CCS middle and high school students.<sup>78</sup> All responses were self-reported by the students and a total of four-hundred and twenty (n=420) surveys were complete enough for analysis. Seventy-five percent of the CCS middle and high school student population completed the survey and approximately 87% of the respondents identified their race as American Indian/Alaska Native (AI/AN). The responses were not weighted and represent only those students who participated in the survey.

#### Cherokee Indian Hospital Authority Deidentified RPMS Data

CIHA supplied deidentified quantitative primary data (that is, aggregate patient data that cannot be traced to any individual) from the CIHA user population that included both clinical and

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<sup>78</sup> More information about the YRRS is available at <http://www.youthrisk.org>. New Mexico partners in YRRS are NM Public Education Department, NM Department of Health, and University of NM School of Medicine Prevention Research Center. The YRRS is given every two years across the state, whose population includes 10-11% AI/AN [NM Indian Affairs Department].

behavioral data. The CIHA Informatics Team assisted in obtaining, sorting, stratifying, and interpreting data specific to EBCI.

### Community Listening Sessions

In 2018, PHHS, CIHA, and Cherokee Central Schools trained a group of listening session/ focus group facilitators who then conducted seven focus groups to obtain primary qualitative data from community members on a set of issues identified by the Community Health Survey. The focus groups were:

- Parental and family experiences of the foster care system
- Men's health and stress
- Elder experiences with health and medication information
- Substance use and harm reduction
- Youth perspectives on accessing health care and the Tribal community
- Tribal Community health priorities: New Kituwah Academy teacher and staff perceptions
- Workplace stress (virtual listening session)

The sessions had 2-15 participants, average 7, and facilitators performed data analysis using qualitative methods. Because of the sensitive nature of many of the discussions, the listening session summary is maintained by PHHS and the data has been made available to Tribal programs with a direct interest in the subject area.

### WNC Healthy Impact Survey

In addition to the above, in 2015, Professional Research Consultants, Inc. (PRC) administered telephone surveys to a total of three thousand and three hundred (n=3,300) adults over the age of 18 in 16 counties of western North Carolina. Forty-seven EBCI enrolled members participated in the WNC Health Impact Survey. Weights were added to enhance representativeness of data. Healthy Impact's data reporting policy is to only report data that meets the criteria of responses greater than 10 and denominators greater than 50. Since the denominator (47 enrolled members of EBCI) is less than 50, the survey responses have not been included in this report.

### Secondary Data

Table 1 summarizes the secondary data sources for this report. PHHS is grateful for the support of WNC Healthy Impact for creating the "data meta-workbook" that has enabled the collection of an unprecedented amount of important data on EBCI health, including comparator data. Note that several of the sources listed correspond to EBCI primary data, which enables comparison (YRRS, Elder Survey, Indian Health Service RPMS data).

**Table 1.** At-a-glance description of secondary data used within this report

| Dataset  | Background  | Population included in Dataset  | Strengths   | Limitations  | Comparison groups   |
|--|---|---|---|--|---|
| <p>Indian Health Service (IHS) Resource and Patient Management System (RPMS)</p> <p>Data was extracted from RPMS by either:<br/>1) Tribal Epidemiology Center (TEC), United South and Eastern Tribes, Inc. or 2) Cherokee Indian Hospital Authority (CIHA)</p> | <p>RPMS is the electronic patient management system used in most Indian Health Service facilities throughout the U.S.</p> | <p>The patient population is AI/AN people who receive care through the Indian health care delivery system.</p> <p>The specific population from which EBCI data is obtained (i.e., the denominator) is either:</p> <ul style="list-style-type: none"> <li>○ <b>Active clinical population:</b> includes those who are alive at the end of the report period, AI/AN, lives in the 5-county CHSDA, and have had two visits in the last three years</li> <li>○ <b>User population:</b> includes those who are alive at the end of the report period, AI/AN, lives in the 5-county CHSDA, and have had one visit in the last three years.</li> </ul> | <p>Data is available for AI/AN residing in the 5-county CHSDA</p> <p>Comparison data is available for the Nashville Area (29 Tribes) and the entire Indian Health Service throughout the U.S.</p> | <p>EBCI-specific data is not available; data includes all AI/AN living in the 5-county CHSDA</p> <p>Data quality may have varied over time</p> | <p>“Nashville Area” is comprised of 29 federally recognized Tribes in 14 states in the 27-state IHS service area. TEC is housed in USET, which serves 26 of the 29 Tribes; IHS-wide data was also extracted</p> <p>State and national data were used as comparisons where appropriate; specific state and national sources are included within the tables in the report</p> |

| <b>Dataset</b>      | <b>Background</b>   | <b>Population included in Dataset</b> | <b>Strengths</b>  | <b>Limitations</b>  | <b>Comparison groups</b> |
|---------------------|---|---------------------------------------|---|---|--------------------------|
| Healthy People 2020 | Healthy People provides science-based, 10-year national objectives for improving the health of all Americans. The Healthy People initiative is grounded in the principle that setting national objectives and monitoring progress can motivate action. For three decades, Healthy People has established benchmarks and monitored progress over time in order to encourage collaborations across sectors, guide individuals toward making informed health decisions, and measure the impact of prevention activities. | US population.                        | <p>Vast array of datasets organized into Leading Health Indicators and sortable by national, state, and local data across a decade.</p> <p>Demonstrates trends in important health indicators that in many cases align with EBCI.</p> | <p>No EBCI-specific data.</p> <p>The state counterpart of Healthy People 2020, Healthy NC 2020, has statewide AI/AN data but no EBCI-specific data.</p> | State and national data. |

| <b>Dataset</b>  | <b>Background</b>  | <b>Population included in Dataset</b>   | <b>Strengths</b>   | <b>Limitations</b>  | <b>Comparison groups</b>   |
|---|--|---|--|---|--|
| WNC Healthy Impact Regional Community Health Survey Data (2015, 2018) | WNC Healthy Impact is a program of WNC Health Network and a partnership between NC hospitals and health departments in 16 counties. As part of a larger community health improvement process, a random regional community health survey was conducted. | <p>The regional community health survey includes a stratified random sample of 3,300 individuals age 18 and older in Western North Carolina, including 300 in Buncombe County and 200 in each of the remaining counties. For the THA, the findings are stratified by race/ethnicity.</p> <p>In the sample, 73 of 3,300 identified as EBCI living ON or OFF boundary.</p> <ul style="list-style-type: none"> <li>• Of note, 53 lived On boundary and 20 lived OFF boundary.</li> </ul> | Random sample from relatively comprehensive sampling frame strengthens representativeness of sample. | Data for EBCI includes: Which of the following best describes you? Are you: An Enrolled Member of the Eastern Band of Cherokee Indians, or EBCI, living ON the boundary; An Enrolled Member of the Eastern Band of Cherokee Indians, or EBCI living OFF the boundary? | Statewide risk factor data are provided where available; these data are reported in the most recent BRFSS (Behavioral Risk Factor Surveillance System) Prevalence and Trend Data published by the Centers for Disease Control and Prevention and the US Department of Health & Human Services; Nationwide risk factor data are from the 2015 PRC National Health Survey. |

| Dataset  | Background  | Population included in Dataset   | Strengths   | Limitations  | Comparison groups  |
|--|---|--|---|--|--|
| U.S. Census 2010; American Community Survey (ACS): 5-year estimates for 2013, 2014, 2015 | <p>The U.S. Census counts every resident in the United States. It is mandated by Article I, Section 2 of the Constitution and takes place every 10 years.</p> <p>The ACS is an ongoing statistical survey that samples a small percentage of the population every year</p>                    | <p>“AI/AN alone or in combination” represents those who self-identified as “American Indian or Alaska Native” when asked their race. Since 2000, Census respondents could self-identify as more than one race; thus, this category reflects those who only checked “American Indian or Alaskan Native” or those who checked “AI or AN” <i>and</i> another race category. Of note, almost half of the AI/AN population reported multiple races. Those who checked AI/AN were asked to identify the name or their enrolled or principal Tribe.</p> | <p>The U.S. Census aims to count every resident.</p> <p>The ACS can estimate character distributions based on smaller sample size; ACS estimates can be combined over multiple years.</p> | <p>In the U.S. Census 2010, American Indians and Alaska Natives living on reservations were undercounted by 4.9 percent, (compared with a 0.9 percent over-count in 2000.) AI/AN data was often missing at the county level; we used NC data instead of the 5-county CHSDA</p> | <p>Where available, we compared EBCI alone in combination, AI/AN alone in combination, within NC and the U.S.</p>  |
| Elder Survey   | <p>The Elder Surveys which are officially called <i>Identifying Our Needs: A Survey of Elders V and VI</i> are provided by the National Resource Center on Native American Aging (NRCNAA). The survey is an instrument that NRCNAA provides to communities to assess areas of concern for</p> | <p>The Surveys were administered to those that were 55 and older and are members of the Eastern Band of Cherokee Indians.</p>  | <p>The elder surveys have been administered multiple times in EBCI, which provides the opportunity for trend data. The survey has also been administered to</p>                           | <p>The tribal aggregate data is taken from survey cycles V and VI. During each survey cycle, NRCNAA provides the same survey to all participating tribes. Participating</p>  | <p>An aggregate file is maintained by the NRCNAA to document the needs of American Indian, Alaska Native, and Native Hawaiian elders. NRCNAA also provides national aggregate data which NRCNAA pulls from federal data sources such as US Census Bureau and the Centers for Disease Control and Prevention.</p> |



| Dataset                                      | Background  | Population included in Dataset   | Strengths   | Limitations  | Comparison groups   |
|--|---|--|---|--|---|
|  | individuals age 55 and older. The data collected from these surveys is only distributed to local officials and where they can decide if they would like to share it publicly.   |  | elders in tribes all across America, which provides excellent tribal aggregate data.  | tribes only administer the survey one time during each cycle. Each cycle covers a 3-year period.   |   |
| State Center for Health Statistics (NC SCHS) | County Health Databook and Vital Statistics   | Residents of North Carolina, with data presented as a statewide total and segmented by county of residence. Some data are additionally stratified by age group, by race, by sex. For some indicators "Other non-Hispanics" is the available racial category that would include AI/AN. For other indicators, the more specific "American Indian non-Hispanic" category is available | Large number of indicators available across a wide range of topics, consistency of data over a large number of years, comparability of data across years and counties.            | Not all indicators are available stratified by race, and so are only presented at the county-level. May not capture all AI/AN residents, due to the source reporting to SCHS. Does not have any data specific to EBCI. | The five Counties of the PRCSDA are presented individually and then a total or average is calculated. The state figure (total, average, or rate) is presented for comparison. |
| Youth Risk Resilience Survey                 | The New Mexico Youth Risk and Resiliency Survey (YRRS) is a tool to assess the health risk behaviors and resiliency (protective) factors of New Mexico high school and middle school students. The YRRS is part of the national <a href="#">CDC Youth Risk Behavior Surveillance System</a> | The YRRS is offered to a selection of high schools and middle schools in each school district in the fall of odd-numbered years. All data are self-reported by students who voluntarily complete the survey during one class period.   | This Survey is evidence based with years of comparison data. The topic areas for the YRRS include risk behaviors related to alcohol and drug use, unintentional injury, violence, | The survey was only administered to students attending Cherokee Central Middle and High Schools. Cherokee Central Schools isn't the only school in the community, some students attend                                 | The State of New Mexico offers this survey and middle schools and high schools all throughout the state participate. We use New Mexico YRRS results for comparison.           |

| Dataset | Background   | Population included in Dataset | Strengths  | Limitations   | Comparison groups |
|---------|--|--------------------------------|--|---|-------------------|
|         | <a href="#">(YRBSS)</a> , but the survey results have widespread benefits for New Mexico at the state, county, and school district levels. |                                | suicidal ideation and attempts, tobacco use, sexual activity, physical activity, and nutrition; resiliency (protective) factors such as relationships in the family, school, community, and with peers; and health status issues such as body weight and asthma. | other neighboring public, private, or home schools. |                   |

## Data limitations

As explained by the TEC:

The misclassification of AI/AN people in state data is a well-documented problem. U.S. Census data, often used for national health statistics, relies on self-identified race data, which may not reflect Tribe-specific populations. For mortality data, race is often documented by the certifying doctor or the funeral director and is sometimes recorded based solely on physical appearance. Therefore, USET evaluates the race recorded on the death certificate and calculates the rate of racial misclassification. The rate of racial misclassification for Eastern Band of Cherokee Indians (EBCI) was 16%, which means that 123 people out of 756 were classified as the wrong race on their death certificate.<sup>79</sup>

Due to the sensitive nature of many of the questions in the YRRS survey data, responses smaller than 10 and denominators smaller than 50 are generally not presented and should be interpreted with caution where present. The data used in the analysis were not weighted and represent only those students who participated in the survey. Inferences should not be made to any non-participating students.

To preserve the reliability and confidentiality of the data reported in this document, numbers (and the corresponding percentages) lower than 10 generally have not been included. This criterion applies to mortality, morbidity, WNC Healthy Impact survey data and YRRS survey data.

Some data that is used in this report may have inherent limitations, due to the sample size, its geographic focus, differences in population definitions or time periods, or being out-of-date, for example, but it is used nevertheless because there is no better alternative; however, PHHS has been as rigorous as possible in using data that is statistically significant.

*“The misclassification of AI/AN people in state data is a well-documented problem.”*

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<sup>79</sup> Tribal Epidemiology Center, United South and Eastern Tribes, Inc. 2014 Mortality Report. Nashville, TN: United South and Eastern Tribes, Inc. (2014).

## Gaps in Available Information

Although the EBCI Tribal Health Improvement cycle has enabled PHHS and partners to access significant data that pertains specifically to the EBCI population and EBCI Tribal lands, there are still gaps where county or state information is not able to be focused down to the sub-census tract level, as in Tribal lands in Cherokee County and Snowbird. In addition, for this THA, there remain gaps in several areas including but not limited to:

- Public safety data, e.g., motor vehicle crashes and homicide rates
- Detention Center data
- Data on vulnerable or at-risk subpopulations within EBCI
- Healthcare data on children and pregnant women who receive care outside the Cherokee health system

PHHS continues to develop and build partnerships to fill these data gaps. Some challenges include difficulty in determining denominators; difficulty in defining populations and obtaining accurate counts, such as homeless persons; discontinuity in communication networks; and the unavailability of outside medical records.

## APPENDIX B - GLOSSARY

|                       |  |
|-----------------------|--|
| Age-Adjusted Rates    | Age-adjustment is a statistical manipulation usually performed by the professionals responsible for collecting and cataloging health data, such as the staff of the NC State Center for Health Statistics (NC SCHS) or TEC. While it is not necessary to understand the nuances of age adjustment for data interpretation, it is important to note that it is preferred for comparing most health data from one population or community to another and that age-adjusting allows for the comparison of rates of age-related health events between communities with different age structures. |
| Comparator            | A tool used for comparing something (usually a number, percent or rate) with a similar thing or with a standard measure  |
| Confidence Interval   | A range of values used to describe the margin of error around an estimate (typically 95%).   |
| Data Limitations      | Some data may have inherent limitations, due to the sample size, its geographic focus, or its being out-of-date. This data will be accompanied by a warning about its limitations.   |
| Five-Year Aggregates  | Data is often aggregated when rates are calculated based on a small number of events or a small population. The average rate over a 5-year period will produce a smaller confidence interval and a more stable rate.   |
| Measurement Error     | Measurement error is the difference between a measured value of quantity and its true value. In statistics, an error is not a “mistake”. Variability is an inherent part of things being measured and the measurement process. Note that there is some error associated with every health data source.   |
| Measures of Morbidity | Characterize the number of persons in a population who become ill (incidence) or are ill at a given time (prevalence).   |
| Morbidity             | Is defined as any departure, subjective or objective, from a state of physiological or psychological well-being.   |
| Mortality Rate        | Number of deaths in the population during stated time period/persons at risk of dying during time period.  |
| Proportions           | A ratio in which the numerator, x, is included in the denominator, y. Proportions are often multiplied by 100 and reported as a percent.   |

|  |   |
|--|---|
| Purchased and Referred Care Service Delivery Area (PRCSDA) | The 5-county Purchased and Referred Care Service Delivery Area (PRCSDA) includes Cherokee, Graham, Haywood, Jackson and Swain Counties. PRCSDA was formerly known as Contract Health Service Delivery Area (CHSDA).   |
| Qualitative Data   | Is descriptive data. This type of data can be observed but not measured.  |
| Quantitative Data  | Is any type of data that can be expressed as a number.  |
| Rate   | Often a proportion, with an added dimension of time. Measures the frequency at which a health event occurs during a period of time & in other words represents the burden of disease or health-related outcome during a specific time period.   |
| RPMS   | Resource and Patient Management System—the hardware, software, network, and database system of the Indian Health Service (IHS) for managing participating patient data and clinical resources.  |
| User Population  | Includes individuals who receive care through the Indian health care delivery system. The user population consists of EBCI members, members of other Tribes, and first descendants who are alive at the end of the report period (year), are American Indian/Alaska Native (AI/AN), live in the 5-county Purchased and Referred Care Service Delivery Area (PRCSDA) (Cherokee, Graham, Haywood, Jackson and Swain Counties) and have had one visit in the last three years. |
| Weighted Data  | Data are considered weighted when data are collected from survey respondents and are adjusted to represent the demographics of the population from which the sample was drawn.  |

## APPENDIX C - LINKS

EBCI 2013 Tribal Health Assessment: <http://www.cherokee-phhs.com/>

EBCI 2015-17 Tribal Health Improvement Plan: <http://cherokee-phhs.com/pdfs/THIPFINAL2015.pdf>

EBCI 2015-17 Tribal Health Improvement Plan Summary Report: <http://www.cherokee-phhs.com/>

EBCI 2017 Tribal Community Health Survey: Email [THIP@ nc-cherokee.com](mailto:THIP@nc-cherokee.com)

Cherokee Central Schools 2018 Youth Risk and Resiliency Survey: [www.ccs-nc.org/apps/pages/index.jsp?uREC\\_ID=368975&type=d&pREC\\_ID=1689945](http://www.ccs-nc.org/apps/pages/index.jsp?uREC_ID=368975&type=d&pREC_ID=1689945)