2018

Graham County Community Health Assessment

GRAHAM COUNTY
DEPARTMENT OF PUBLIC HEALTH

GRAHAM COUNTY
COMMUNITY HEALTH ASSESSMENT

ACKNOWLEDGEMENTS

This document was developed by Graham County Health Department in partnership with Erlanger Medical System as part of a local community health (needs) assessment process. We would like to thank and acknowledge several agencies and individuals for their contributions and support in conducting this health assessment:

Name	Agency	Role/ Contribution	Duration of Participant	Agency Website
Beth Booth	Graham County Dept of Public Health	Head of CHA Committee	2017-2018	www.health.grahamcounty.org
Amber Williams	Graham County Dept of Public Health	CHA Committee	2018-2019	www.health.grahamcounty.org
Christine Crisp	Graham County Dept of Public Health	CHA Committee	2018-2019	www.health.grahamcounty.org
Shawn Turpin	Graham County Dept of Public Health	CHA Committee	2018-2019	www.health.grahamcounty.org
Melissa Blevins	Graham County Dept of Social Services	CHA Committee	2019	www.grahamcounty.org/social-services
Abby Holmes	MountainWise	CHA Consultant	Winter 2018	www.mountainwise.org
Martin McKay	Erlanger Health System (Murphy Medical)	Local hospital representative	Winter 2018	www.erlanger.org
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	Medical)			
Angie Knight	Graham County Schools	CHA Prioritization	Winter 2018	http://www.graham.k12.nc.us/
Rick Davis	Graham Revitalization Economic Action Team (GREAT)	CHA Prioritization	Winter 2018	http://www.grahamcounty.net/great/great.htm
Dale Wiggins	Graham County Administration/ Board of Health	CHA Prioritization	Winter 2018	http://grahamcounty.org/commissioners/
Becky Garland	Graham County Administration	CHA Prioritization	Winter 2018	http://grahamcounty.org/county-manager/
Kristen Shuler	Appalachian Mountain Community Health Center – Tallulah	CHA Prioritization & CHA Committee	Winter 2018	http://www.amchc.org/
Lindsey Jenkins	Robbinsville Pharmacy	CHA Prioritization	Winter 2018	https://www.robbinsvillepharmacy.com/

GRAHAM COUNTY 2018 COMMUNITY HEALTH ASSESSMENT EXECUTIVE SUMMARY

Community Results Statement
Improving the health of Graham County in mind, body, and spirit.

Leadership for the Community Health Assessment Process

The leadership for the Graham County Community Health Assessment involved a wide range of community leaders and partners, with strong support from the faith based community and the school. These two factions make up a large portion of the community voice.

Name	Agency	Title	Agency Website
Angie Knight	Graham County Schools	Superintendent	http://www.graham.k12.nc.us/
Rick Davis	Graham Revitalization Economic Action Team (GREAT)	Executive Director	http://www.grahamcounty.net/great/great.htm
Dale Wiggins	Graham County Administration/ Board of Health	Commissioner	http://grahamcounty.org/commissioners/
Becky Garland	Graham County Administration	County Manager	http://grahamcounty.org/county-manager/
Tina Lee	Appalachian Mountain Community Health Center – Tallulah	Practice Manager	http://www.amchc.org/
Lindsey Jenkins	Robbinsville Pharmacy	Pharmacist	https://www.robbinsvillepharmacy.com/

Regional/Contracted Services
Our county received support from **WNC Healthy Impact**, a partnership and coordinated process between hospitals, public health agencies, and key regional partners in western North

Carolina working towards a vision of improved community health. We work together locally and regionally to assess health needs, develop collaborative plans, take action, and evaluate progress and impact. This innovative regional effort is coordinated and supported by **WNC Health Network**. WNC Health Network is the alliance of hospitals working together to improve health and healthcare in western North Carolina. Learn more at www.WNCHN.org.

Theoretical Framework/Model

WNC Health Network provides local hospitals and public health agencies with tools and support to collect, visualize, and respond to complex community health data through Results-Based Accountability™ (RBA). RBA is a disciplined, common-sense approach to thinking and acting with a focus on how people, agencies, and communities are better off for our efforts.

Through WNC Healthy Impact, all hospitals and their public health partners can access tailored Results-Based Accountability training and coaching; scorecard licenses and development (including the electronic Hospital Implementation Strategy); and scorecard training and technical assistance.

Collaborative Process Summary

Graham County's collaborative process is supported by WNC Healthy Impact, which works at the regional level.

Locally, our process is to collect information from focus groups and community leadership. We conduct listening sessions with target groups to collect specific information that will further the health priority selection, and add insight into next steps and program planning. It is imperative that the community supports the health priority choices, and the programs chosen to address those priorities. Both the leaderships and partnerships mentioned above serve roles in the collection of community data and action planning.

Phase 1 of the collaborative process began in January, 2018 with the collection of community health data. For more details on this process see Chapter 1 – Community Health Assessment Process.

Key Findings

The total population for Graham County, as reported in the 2016 census ACS Estimates, is 8,651. Key findings include leading causes of death for those under the age of 40 are suicide and unintentional injuries. The overall leading cause of death (regardless of age) is heart disease. The WHC Health Impact phone survey revealed 17.2% of residents reported Graham County as a fair/poor place to live. 19.4% of residents reported that mental health/depression limited their daily activity. The key informants felt mental health and substance use were major priorities, but had concerns with feasibility in addressing them. The focus groups revealed a number of insights. The Celebrate Recovery group sighted poor access to resources, and many of the social determinants of health as roots to their substance use. Beta Sigma Phi stressed the need for a gym, or some way to access physical activity indoors. Graham County remains poor in

community and health resources, but is beginning to build the partnerships necessary to rectify this concern.

Health Priorities

Community Leaders convened January 31, 2019 to choose the top three priorities for the coming CHA cycle. These were narrowed down from seven options, and were chosen based on community need, available and potential resources, and feasibility.

Health Priority 1: Substance Use Disorder
Health Priority 2: Mental Health
Health Priority 3: Heart Disease

Next Steps

- The health department has previously begun building the infrastructure necessary to address both mental health and substance use.
- Collaborate with Smoky Mountain Urgent Care to expand the health department primary care clinic to serve the community and address all three health priorities.
- Include VAYA and Appalachian Community Services in the planning of community programs targeting mental health and substance use.
- Graham County has a new Substance Use Coalition that is in the beginning stages, and will develop into a strong support network to address mental health and substance use
- Driven by the repeated request and strong support for a gym, a workgroup will be formed to begin efforts toward the end goal of establishing a gym. This workgroup will focus on both wellness and heart disease. This may not be feasible; however, the option has never been fully explored.
- Further collaboration with Celebrate Recovery leadership and members to drill down to key issues that need to be addressed to assist that population.
- Further develop the partnership with Harris Regional Hospital to explore telemedicine and the expansion of healthcare services.
- Explore evidence-based programs to address heart health, and wellness to prevent heart disease.
- Collaborate with the school to implement programs targeted toward youth for substance use prevention.
- Collaborate with Melissa Barker, with Congregations4Children, to implement the evidence-based Strengthening Families program and the Incredible Years program. These serve to assist all families with skills building and relationship building techniques.
- Develop and publish the Community Health Improvement Plan (CHIP) on an electronic Scorecard.
- Requests for access to the full set of data used in the development of the 2018 Community Health Assessment should be directed to:
  - Amber Williams at amber.williams@grahamcounty.org

CHAPTER 1 – COMMUNITY HEALTH ASSESSMENT PROCESS

Purpose

Community health assessment (CHA) is an important part of improving and promoting the health of county residents. A community health assessment (CHA) – which is a process that results in a public report – describes the current health indicators and status of the community, what has changed, and what still needs to change to reach a community's desired health-related results.

What are the key phases of the Community Health Improvement Process?

In the **first phase** of the cycle, process leaders for the CHA collect and analyze community data – deciding what data they need and making sense of it. They then decide what is most important to act on by clarifying the desired conditions of wellbeing for their population and by then determining local health priorities.

The **second phase** of the cycle is community health strategic planning. In this phase, process leaders work with partners to understand the root causes of the identified health priorities, both what's helping and what's hurting the issues. Together, they make a plan about what works to do better, form workgroups around each strategic area, clarify customers, and determine how they will know people are better-off because of their efforts.

In the **third phase** of the cycle, process leaders for the CHA take action and evaluate health improvement efforts. They do this by planning how to achieve customer results and putting the plan into action. Workgroups continue to meet, and monitor customer results and make changes to the plan as needed. This phase is vital to helping work groups understand the contribution their efforts are making toward their desired community results.

Definition of Community

Community is defined as "county" for the purposes of the North Carolina Community Health Assessment Process. Graham County is included in Erlanger Health System's service area for the purposes of community health improvement, and as such they were key partner in this local level assessment.

WNC Healthy Impact

WNC Healthy Impact is a partnership and coordinated process between hospitals, public health agencies, and key regional partners in western North Carolina working towards a vision of improved community health. We work together locally and regionally to assess health needs, develop collaborative plans, take action, and evaluate progress and impact.

This regional initiative is designed to support and enhance local efforts by:
- Standardizing and conducting data collection,
- Creating communication and report templates and tools,
- Encouraging collaboration,
- Providing training and technical assistance,
- Addressing regional priorities, and
- Sharing evidence-based and promising practices.

This innovative regional effort is supported by financial and in-kind contributions from hospitals, public health agencies, and partners, and is coordinated by **WNC Health Network**. WNC Health Network, Inc. is an alliance of hospitals working together, and with partners, to improve health and healthcare. Learn more at www.WNCHN.org.

WNC**HEALTHY**IMPACT

1. Erlanger Murphy Medical Center
2. Cherokee County Health Dept.
3. Graham County Dept. of Public Health
4. Clay County Health Dept.
5. Swain County Health Dept.
6. Swain Community Hospital
7. Macon County Public Health Center
8. Angel Medical Center
9. Highlands-Cashiers Hospital
10. Cherokee Indian Hospital
11. EBCI Public Health and Human Services
12. Jackson County Dept. of Public Health
13. Harris Regional Hospital
14. Haywood County Health & Human Services Agency
15. Haywood Regional Medical Center
16. Transylvania Public Health
17. Transylvania Regional Hospital
18. Madison County Health Dept.
19. Buncombe County Health and Human Services
20. Mission Hospital
21. CarePartners Health Services
22. Park Ridge Health
23. Margaret R. Pardee Memorial Hospital
24. Henderson County Department of Public Health
25. Toe River Health District– Yancey
26. RPM Health District– Polk
27. Saint Luke's Hospital
28. Toe River Health District– Mitchell
29. Blue Ridge Regional Hospital
30. RPM Health District– McDowell
31. Mission Hospital McDowell
32. Rutherford Regional Health System
33. RPM Health District– Rutherford

Data Collection

The set of data reviewed for our community health assessment process is comprehensive, though not all of it is presented in this document. Within this community health assessment we share a general overview of health and influencing factors, then focus more on priority health issues identified through a collaborative process. Our assessment also highlights some of our community strengths and resources available to help address our most pressing issues.
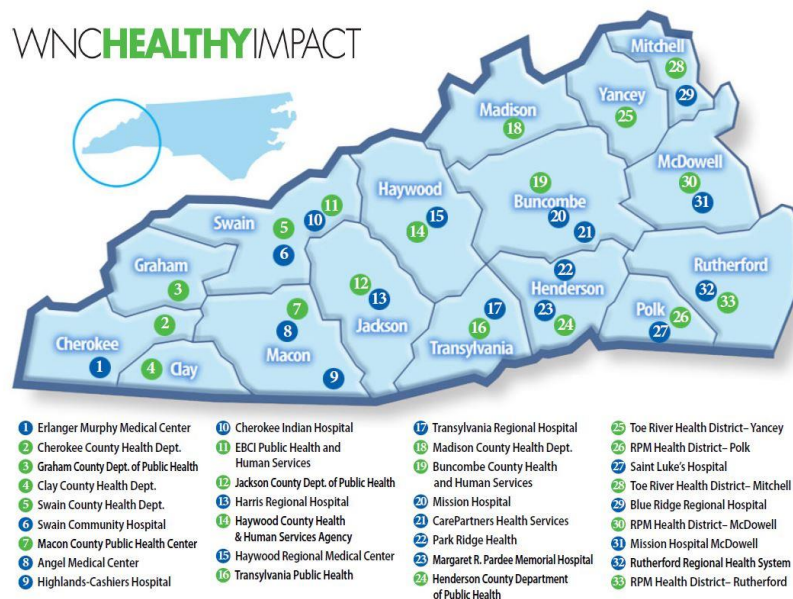
Core Dataset Collection

The data reviewed as part of our community's health assessment came from the WNC Healthy Impact regional core set of data and additional local data compiled and reviewed by our local CHA team. WNC Healthy Impact's core regional dataset includes secondary (existing) and primary (newly collected) data compiled to reflect a comprehensive look at health. The following data set elements and collection are supported by WNC Healthy Impact data consulting team, a survey vendor, and partner data needs and input:

- A comprehensive set of publicly available secondary data metrics with our county compared to the sixteen county WNC region
- Set of maps accessed from Community Commons and NC Center for Health Statistics
- WNC Healthy Impact Community Health Survey (cell phone, landline and internet-based survey) of a random sample of adults in the county
- Online key informant survey

See **Appendix A** for details on the regional data collection methodology.

Additional Community-Level Data

Additional qualitative data was collected through three community listening sessions. That data is discussed in the priorities section of this document. See Appendix A for details on the listening session data collection process.

Health Resources Inventory

We conducted an inventory of available resources of our community by reviewing a subset of existing resources currently listed in the 2-1-1 database for our county as well as working with partners to include additional information. Where gaps were identified, we partnered with 2-1-1 to fill in or update this information when applicable. See **Chapter 7** for more details related to this process.

Community Input & Engagement

Including input from the community is a critical element of the community health assessment process. Our county included community input and engagement in a number of ways:
- Partnership on conducting the health assessment process
- Through primary data collection efforts (survey, key informant interviews, listening sessions, etc.)
- By reviewing and making sense of the data to better understand the story behind the numbers
- In the identification and prioritization of health issues

In addition, community engagement is an ongoing focus for our community and partners as we move forward to the collaborative planning phase of the community health improvement process. Partners and stakeholders with current efforts or interest related to priority health issues will continue to be engaged. We also plan to work together with our partners to help

ensure that programs and strategies in our community are developed and implemented with community members and partners.

At-Risk & Vulnerable Populations

Throughout our community health assessment process, our team was focused on understanding general health status and related factors for the entire population of our county as well as the groups particularly at risk for health disparities or adverse health outcomes. For the purposes of the overall community health assessment, we aimed to understand differences in health outcomes, correlated variables, and access, particularly among medically underserved, low-income, and/or minority populations, and others experiencing health disparities.

The at-risk and vulnerable populations of focus for our process and product include:

- Older Adults (65 years and older)
- Native Americans
- Those living below poverty level
- Those with disabilities
- Those with lower education
- Those with substance use disorder

Though there are not universally accepted definitions of the three groups, here are some basic definitions from the Health Department Accreditation Self-Assessment Instrument (in some cases definitions have been slightly altered to better represent our region):

Underserved populations relate to those who do not access health care either because there is a lack of services or providers available or because of limitations such as income, literacy/language barriers or understanding on how to access services, cultural competency of clinicians, trust, transportation, etc.

At-risk populations are the members of a particular group who are likely to, or have the potential to, get a specified health condition. This could be from engaging in behavior (such as pregnant women who smoke) that could cause a specified health condition, having an indicator or precursor (high blood pressure) that could lead to a specified health condition or having a high ACE score (traumatic experiences), which is correlated with increased risk of specified health conditions.

A vulnerable population is one that may be more susceptible than the general population to risk factors that lead to poor health outcomes. Vulnerable populations, a type of at-risk population, can be classified by such factors as race/ethnicity, socio-economic status, cultural factors and age groups.

Health Department Self-Assessment Instrument Interpretation Documents 1.1.18
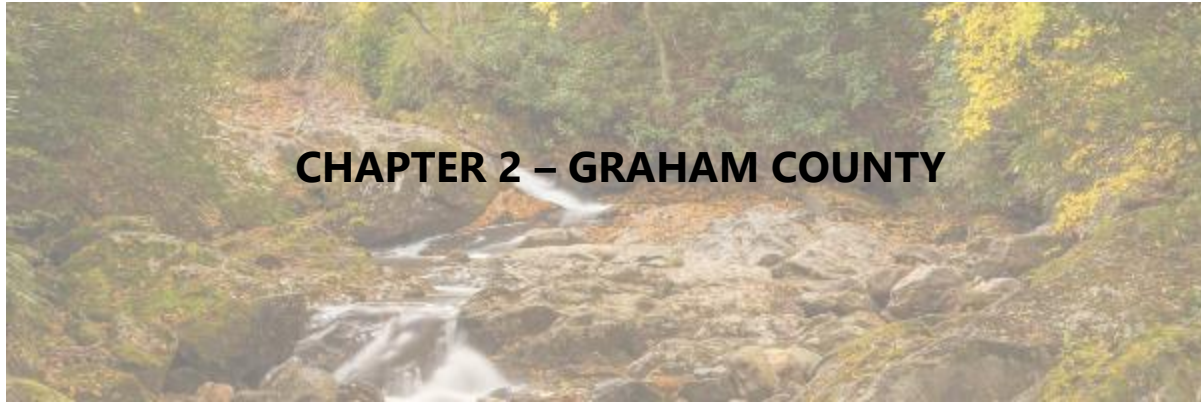
CHAPTER 2 – GRAHAM COUNTY

Location, Geography, and History of Graham County

Graham County is known for its tranquility, isolation and rugged mountain lands.   It offers the beauty and comfort that draw tourists and new residents to this rural area. Many tourists flock to the mountains for the thrill of driving on the curvy roads, in particular, one section of Highway 28 known as the Dragon. We also have many who come to hike our portion of the Appalachian Trail or visit Joyce Kilmer Forest (Graham County Public Health, 2015).
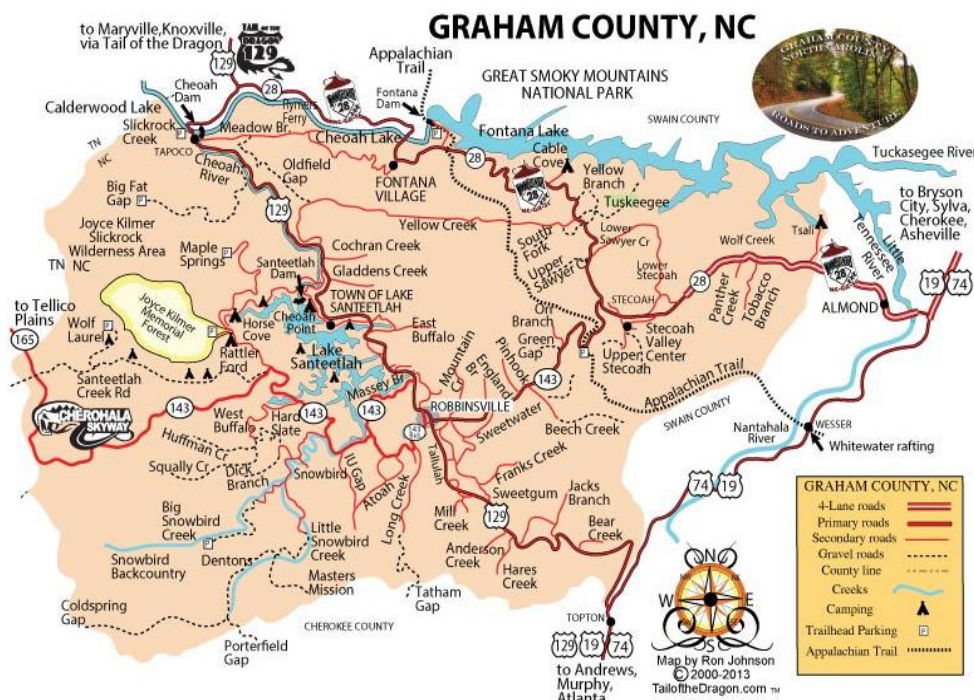
The county is in the far western part of North Carolina, bordering Tennessee, and is surrounded by mountains with the Unicoi Mountains to the West; the Snowbird Mountains to the South; and the North and East crossed by the Cheoah Range and the Yellow Creek Mountains. The Cheoah River flows into the Little Tennessee River in the western section of the county (Graham County Public Health, 2015).

The County has a total of 186,965 acres of land. The United States Forest Service owns 111,618; Tennessee Valley Authority owns 3,522; Eastern Band of The Cherokee Indians owns 2,249;

Brookfield Smoky Mountain Hydropower, LLC owns 5,995; and Private landholders own 63,581. (Graham County Public Health, 2015).

The rugged and remote aspects of Graham County yield unique challenges to its residents. Access to healthy food, places of employment, safe places for physical activity, and schools, require a commute. Without reliable transportation, accessing these basic needs become even more of a challenge. Situated among some of the highest mountains on the East Coast, Graham County is vulnerable to adverse weather, which necessitates a high level of preparedness.

History

Graham County was formed from the eastern part of Cherokee County in 1872 to make enforcement of the law and access to the courts more uniform and accessible for the families who settled in the mountains of WNC. It was named for William A. Graham, a senator who helped with the passage of the act to form the county (Graham County Public Health, 2015).

Early history finds only three white families living in Graham County - the Crisps, the Hydes, and the Rowans. Long before European settlers, the area that would become Graham County was home to a large group of Cherokee Indians. Part of the original Trail of Tears still exists in Graham County on a six-mile section of road called Tatham Gap, which connects Graham and Cherokee counties. The Eastern Band of Cherokee Indians remains in western NC; according to the tribe's epidemiologist, there are about 8,226 members living on tribal land, which spans five counties including Graham County (M. Tuttle, personal communication, February 1, 2019).

Rural Appalachia, while abundant in natural resources and beauty, has long been associated with poverty. Over the course of the last century, Appalachia has overcome the loss of coal and logging industries and evolved alongside the economic mainstream, yet it still falls behind the rest of the nation in most economic indicators. According to the Appalachian Regional Commission (ARC), Graham County ranks in the worst ten percent of the nation's counties for economic status; Graham is classified as a "distressed" economy (ARC, 2018).

Population

According to data from the US Census 2016 estimates, the total population of Graham County is 8,651. The population has decreased slightly by about 2.4% (down from 8,861 in 2010). There is an equal representation of males and females in Graham County with a median age of 44.8 years old (U.S. Census Bureau, 2018).

Residents ages 65 and older represent a significantly larger proportion of the overall population in Graham County (21.9%) than in the state as a whole (14.7%). (U.S. Census Bureau, 2018). In terms of future health resource planning, it will be important to understand how this segment of the population, a group that utilizes health care services at a higher rate than other age groups, is going to change in the coming years. The graph below presents the projected growth trend for the age 65 and older population for the decades of 2020 and 2030. This data illustrates how

the population age 65 and older in the county is going to increase over the coming two decades.

Change in Percent of Population 65 and Older

18.0 19.7 24.5 26.1 25.2

2000 2010 2020 2030 2037
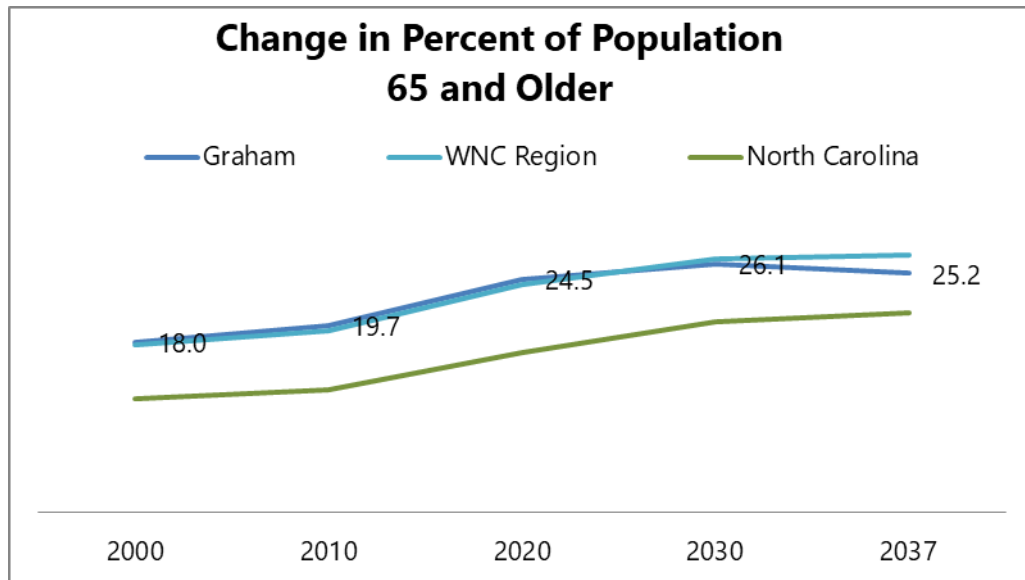
Figure 1. North Carolina Office of State Budget and Management. (2018). *County/State Population Projections: Sex and Single Years of Age (2000-2037)*. [Data tables]. Available from https://www.osbm.nc.gov/demog/county-projections.

The racial makeup consists of 88.8% white with the next largest racial identification being American Indian/Alaska Native at 8.1% and Hispanic or Latino at 3%. (U.S. Census Bureau, 2018). About 704 Native Americans reside in Graham County predominantly in an area that is referred to as "Snowbird."

CHAPTER 3 – A HEALTHY GRAHAM COUNTY

Elements of a Healthy Community

In the WNC Healthy Impact Key Informant survey, key informants in Graham County were asked to list characteristics of a healthy community. They were also asked to select the health issues or behaviors that they feel are the most critical to address collaboratively in their own community over the next three years or more. Follow-up questions asked them to describe which contributors to progress and impediments of progress exist for these issues, as well as the likelihood that collaborative effort could make a positive change for these issues.

When key informants were asked to describe what elements they felt contributed to a healthy community in our county, the top characteristics reported were access to care, access to healthy foods/eating, and education. All characteristics are represented in the word cloud image.

The 2018 WNC Healthy Impact Community Health Survey asked respondents their perception of Graham County as a place to live; 17.2% claimed Graham County to be a "fair" or "poor" place to live, which has gone up from 12.4% in 2015 compared to the opposite trend happening in the region (WNCHN - Community Health Survey, 2018).

During our collaborative planning efforts and next steps, we will further explore these concepts and the results our community has envisioned.

CHAPTER 4 – SOCIAL & ECONOMIC FACTORS

Throughout this report, we have included quotes from the County Health Rankings website that helps to emphasize the importance of how social determinants impact health. The socioeconomic factors discussed below are examples of social determinants of health.

As described by Healthy People 2020, economic stability, education, health and healthcare, neighborhood and built environment, and social community and context are five important domains of social determinants of health. These factors are strongly correlated with individual health. People with higher incomes, more years of education, and a healthy and safe environment to live in have better health outcomes and generally have longer life expectancies. Although these factors affect health independently, they also have interactive effects on each other and thus on health. For example, people in poverty are more likely to engage in risky health behaviors, and they are also less likely to have affordable housing. In turn, families with difficulties in paying rent and utilities are more likely to report barriers to accessing health care, higher use of the emergency department, and more hospitalizations.

Social determinants of health are "conditions in which people are born, grow, live, work, and age, as well as known factors that contribute to a person's health" (WNCHN - Community Health Survey, 2018). In the Key Informant Survey, respondents were asked to rank social determinants of health by order of importance. The highest ranked issues were employment opportunities and access to health care (WNC –Key Informant Survey, 2018). These are social/environmental support systems necessary for Graham County residents to thrive. Employment is discussed in this chapter and access to healthcare is discussed in Chapter 5.

Income & Poverty

"Income provides economic resources that shape choices about housing, education, child care, food, medical care, and more. Wealth, the accumulation of savings and assets, helps cushion and protect us in times of economic distress. As income and wealth increase or decrease, so does health" (County Health Rankings, 2018).

Graham County falls significantly lower than the region and the state in household income, median family income, and per capita income, as represented in the graph below. However, the median household income has risen by $6,331 since 2010 (US Census, 2016).

Income Levels (2016)

Graham WNC Region North Carolina

	Graham	WNC Region	North Carolina
Median Household Income	$34,778	$40,004	$48,256
Median Family Income	$47,188	$50,507	$59,667
Per Capita Income	$18,783	$23,001	$26,779
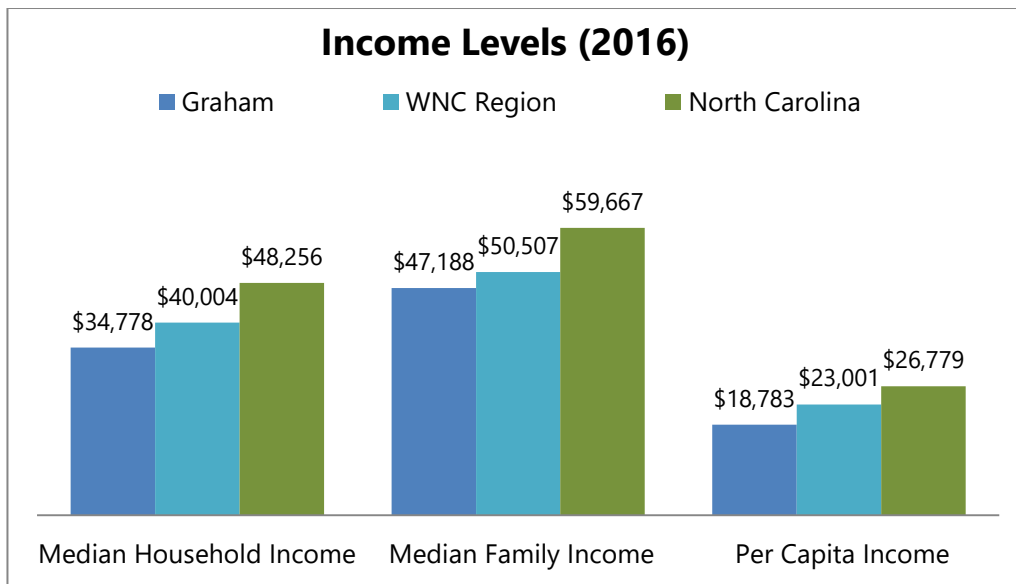
Figure 2. U.S. Census Bureau. (2018). *Selected Economic Characteristics: ACS 5-Year Estimates*. [Data tables]. Available from http://factfinder2.census.gov.

The number of Graham County residents affected by poverty has stayed nearly the same over the last decade. Almost 20% of the population remains below poverty level and about half of the population fall under 200% of the federal poverty level (US Census, 2016). The graph below depicts the percent of individuals living below the poverty level by age and in comparison to the region and the state.

Percent Below Poverty by Age (2016)

Graham WNC Region North Carolina

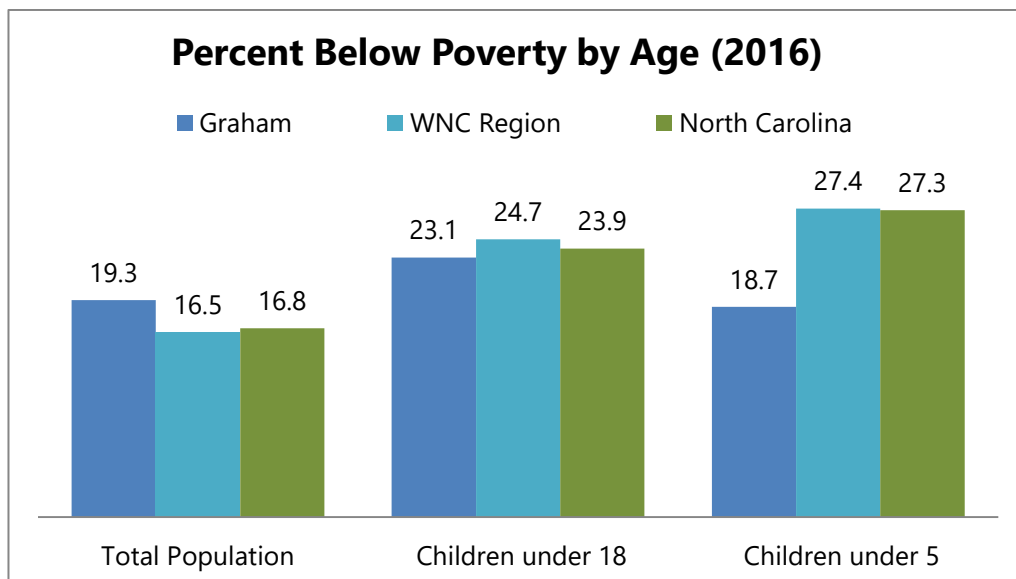|	Graham	WNC Region	North Carolina
Total Population	19.3	16.5	16.8
Children under 18	23.1	24.7	23.9
Children under 5	18.7	27.4	27.3

Figure 3. U.S. Census Bureau. (2018). *Poverty Status in the Past 12 Months: 2012-2016 ACS 5-Year Estimates*. [Data tables]. Available from http://factfinder2.census.gov

Poverty perpetuates other quality of life issues, most notably access to resources for healthy living including transportation, adequate housing, and access to healthy foods. For example, about seven percent of those who occupy a housing unit in Graham County do not own or have access to a vehicle (US Census, 2016). Considering the remote geography of the county and the sparse healthcare and food retail locations, lack of transportation is a significant barrier to a healthy lifestyle.

Employment

"Employment provides income and, often, benefits that can support healthy lifestyle choices. Unemployment and under employment limit these choices, and negatively affect both quality of life and health overall. The economic condition of a community and an individual's level of educational attainment both play important roles in shaping employment opportunities" (County Health Rankings, 2018).

The graph below depicts the decline in unemployment over the last eight years, from 16.8% in 2009 to 6.9% in 2017. This trend is parallel with that of the region and the state; however, the rate of unemployment in Graham County has remained significantly higher compared to both the region and the state (North Carolina Department of Commerce, Labor, and Economic Division, 2018).
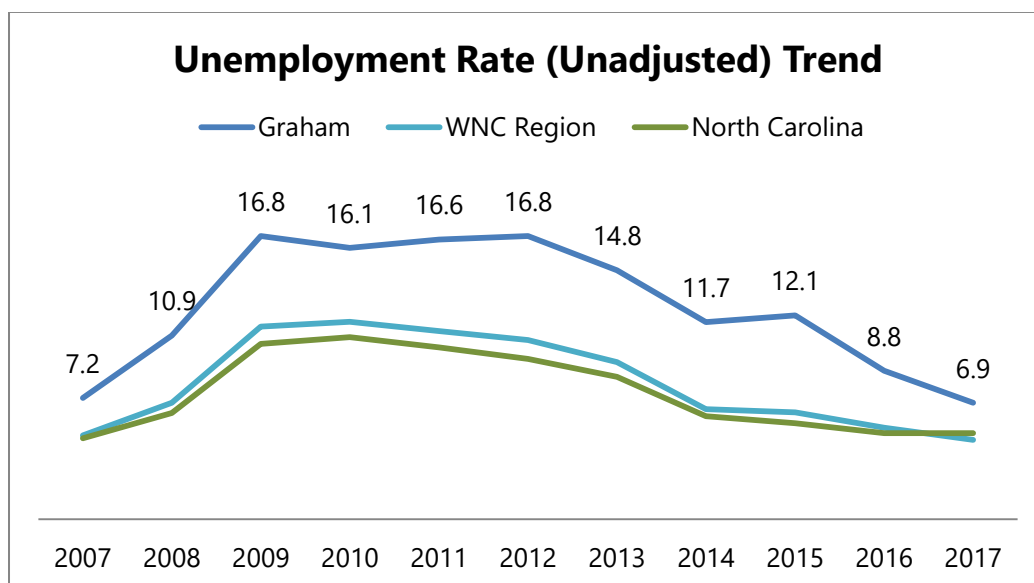
Figure 4. North Carolina Department of Commerce, Labor, and Economic Analysis Division. (2018). AccessNC: Labor Force (Laus). [Data tables]. Available from https://accessnc.opendatasoft.com/pages/dashboard_laborforce_laus/

The largest employment sectors in Graham County include construction (18.6%), accommodation and food service (17.8%), educational services (12.9%), and public administration (12.3%) (NC Employment Security Commission, 2017). Across all employment sectors in 2017, the average weekly wage in Graham is $716.79, which is slightly lower than the regional average of $725.51, and significantly lower than the state average of $1,076.29 (NC Employment Security Commission, 2017).

Education

"Better educated individuals live longer, healthier lives than those with less education, and their children are more likely to thrive. This is true even when factors like income are taken into account" (County Health Rankings, 2018).

In the 2016-17 school year, 93.2% of Graham County students graduated high school, which is higher than regional (88.4%) and state (86.5%) rates (Public Schools of North Carolina, 2018).

As depicted in the graph below, the percent of Graham County residents with a high school degree (35.5%) ranked higher than that of the region (30.6%) and the state (26.4%) in 2016. Graham also ranks slightly higher in attaining some college education (no degree); however, those attaining a college degree remain low compared to the region and state (U.S. Census Bureau, 2018). This data indicates that there are barriers to attending and completing college.

Highest Educational Attainment of Population Over 25 (2016)

- Graham
- WNC Region
- North Carolina

	Graham	WNC Region	North Carolina
% High School Graduates	35.5	30.6	26.4
% Some College	24.5	21.8	21.8
% Bachelor's Degree or Higher	14.0	23.2	29.0
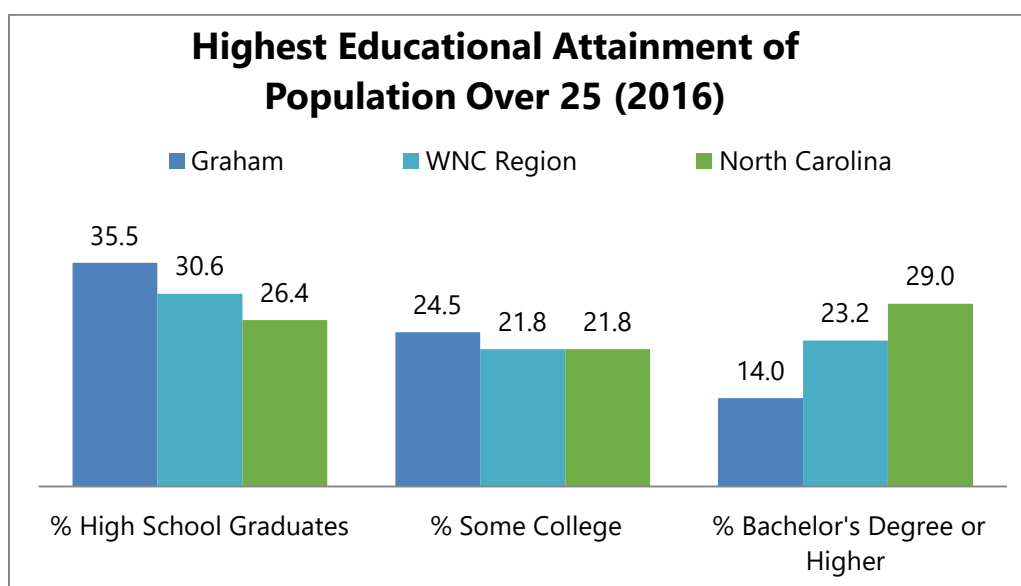
Figure 5. U.S. Census Bureau. (2018). Educational Attainment: ACS 5-Year Estimates. [Data tables]. Available from http://factfinder2.census.gov.

Community Safety

"Injuries through accidents or violence are the third leading cause of death in the United States, and the leading cause for those between the ages of 1 and 44. Accidents and violence affect health and quality of life in the short and long-term, for those both directly and indirectly affected, and living in unsafe neighborhoods can impact health in a multitude of ways" (County Health Rankings, 2018).

Community safety reflects not only violent acts in neighborhoods and homes, but also injuries caused unintentionally through accidents. Detailed crime information for Graham County from the preferred source is limited and is not fully presented in this report. (Refer to the WNC

Health Network's *Data Workbook* for a review of the few data points that are available.) However, there was data in some areas.

The combined total of violent and/or property criminal offenses that occurred in 2015 and 2016 is 441 (North Carolina Department of Justice, 2018). The vast majority of those crimes were larceny (theft of personal property without force). The second most prevalent type of crime was burglary followed by aggravated assault (North Carolina Department of Justice, 2018).

For 2016-2017, according to the NC Department of Administration, there were 26 sexual assaults reported by phone call, up from 21 reports in 2013-14 (North Carolina Department of Administration, 2018). Also in 2016-2017, there were 66 domestic violence reports by phone call with 120 domestic violence clients served by the county (North Carolina Department of Adminstration, 2018)

In the table below, the numbers of child abuse and neglect cases are represented for years 2013-2017. There were 20 children that entered child welfare custody in Graham County in 2017-18.

Graham County	Type of Findings			
Year	FY13-14	FY14-15	FY15-16	FY16-17
Total Substantiated Findings (#)	4	0	5	4
Total Substantiated Findings (%)	6%	0%	5%	6%
Abuse and Neglect	2	0	0	2
Abuse	0	0	3	1
Neglect	2	0	0	1
Dependency	0	0	2	0
Unsubstantiated (#)	2	13	25	10
Unsubstantiated (%)	3%	18%	25%	14%
Number of Children with Investigated Reports of Abuse and Neglect	63	73	100	69

Table 1. UNC-CH Jordan Institite for Families Management Assistance for Child Welfare, Work First and Food & Nutrition Services in North Carolina. (2018). Abuse and Neglect: Longitudinal Data: Number of Children with Investigated Reports of Abuse and Neglect Over Time. [Data tables]. Available from http://ssw.unc.edu/ma/

The age-adjusted rate of unintentional injury (accidents) mortality in 5-year aggregate 2011-2015 is 66.1 per 100,000 (32 people) and in years 2012-2016 it went up slightly to 70 per 100,000 (35 people). The current rate is 60% higher than the region, with a regional average rate of 45.8 (North Carolina State Center for Health Statistics, 2018). The most recent data available on unintentional poising deaths, including drug-overdoses, is for years 2009-2013, as reported in the 2015 CHA.

"In the period 2009-2013, 13 Graham County residents died as a result of unintentional poisoning, with a corresponding age-adjusted mortality rate of 30.2 deaths per 100,000 population, twice the WNC average and 2.7 times the NC average" (Graham County Health Department, 2015).

Housing

"The housing options and transit systems that shape our communities' built environments affect where we live and how we get from place to place. The choices we make about housing and transportation, and the opportunities underlying these choices, also affect our health" (County Health Rankings, 2018).

Over the course of the last decade, the amount of household income spent on housing costs has decreased, according to the U.S. Census mortgage status. Estimates made in 5-year aggregates show that in 2006-2010, about 33% of Graham County housing units housed occupants that spent more than 30% of their income on housing costs, with a median owner cost of $930/month. In 2012-2016, only 10% of housing units housed occupants spending more than 30% of their income on housing costs, with a median owner cost of $811 per month.

Percent of Owned Housing Units Spending More than 30% of Household on Housing
—Graham —WNC Region —North Carolina

33.3   30.1   33.2   30.6   29.9   34.1   10.0

2010   2011   2012   2013   2014   2015   2016
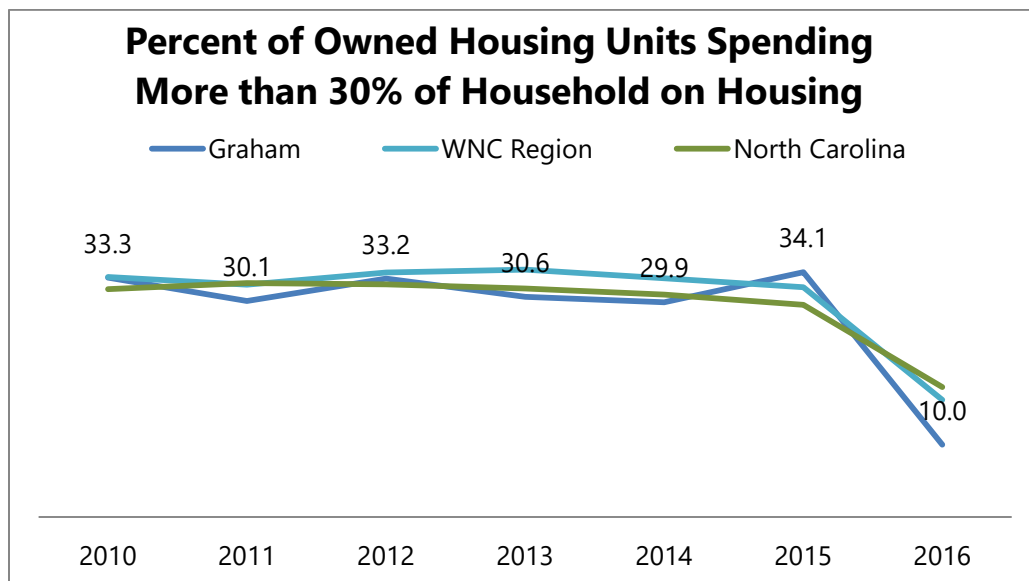
Figure 6. U.S. Census Bureau. (2018). Mortgage Status by Selected Monthly Owner Costs as a Percentage of Household Income in the Past 12 Months: ACS 5-Year Estimates. [Data tables]. Available from http://factfinder2.census.gov

Renters are spending a lower percentage of the income on housing costs despite the fact that the average cost of rent has gone up. The median gross rent from 2006-2010 was $421 per month; whereas in 2012-2016, the median gross rent was $551 (U.S. Census Bureau, 2017).

Percent of Rented Units Spending >30% of Household Income on Housing

— Graham — WNC Region — North Carolina

43.1
35.1
30.8   33.3
27.8
17.0   17.6

2010   2011   2012   2013   2014   2015   2016

Figure 7. U.S. Census Bureau. (2017). Median Gross Rent (Dollars): ACS 5-Year Estimates. [Data tables]. Available from http://factfinder2.census.gov.

Family & Social Support

"People with greater social support, less isolation, and greater interpersonal trust live longer and healthier lives than those who are socially isolated. Neighborhoods richer in social capital provide residents with greater access to support and resources than those with less social capital" (County Health Rankings, 2018).
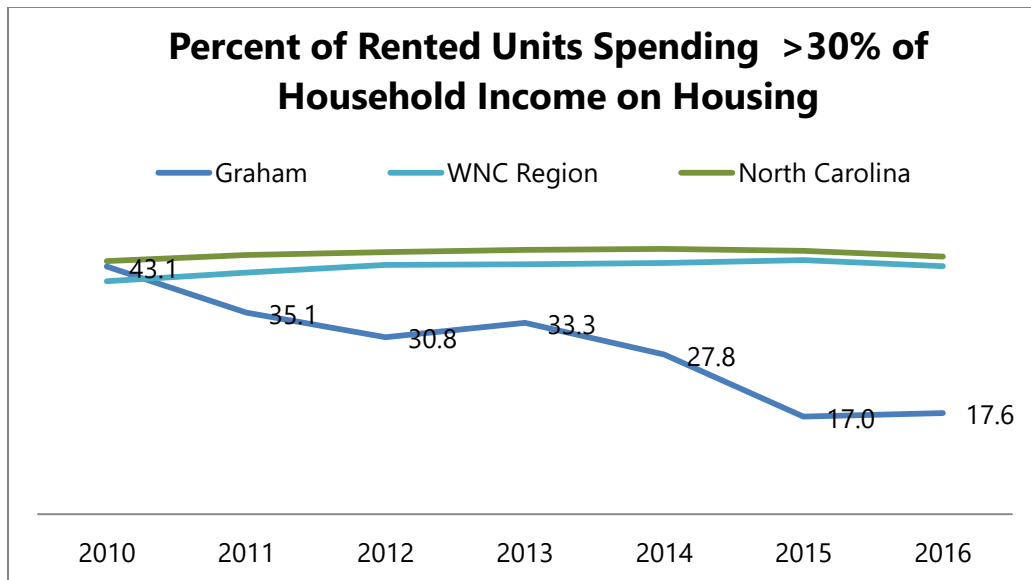
According to the community survey results, the amount of individuals claiming to receive the necessary social and emotional support that they need has increased over the last six years from 74% in 2012 to 85% in 2018. At the same time, those that reported not receiving mental health care or counseling services that they need has doubled since 2015, from 6.2% to 12.2% (WNCHN - Community Health Survey, 2018). This may indicate that individuals are leaning more on community for social/emotional support since they are not able to get clinical help.

There is a growing body of evidence around Adverse Childhood Experiences (ACEs) and their relationship to health outcomes. "Childhood experiences, both positive and negative, have a tremendous impact on future violence victimization and perpetration, and lifelong health and opportunity. As such, early experiences are an important public health issue. Much of the foundational research in this area has been referred to as Adverse Childhood Experiences (ACEs). Adverse Childhood Experiences 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." (CDC, 2018).

The community survey asked questions that indicated ACEs. The graph below depicts the number of respondents that claimed to have experienced an adverse childhood experience prior to age 18.

Experienced Adverse Childhood Experiences (ACEs) Prior to Age 18 (2018)

Category	Graham Co	WNC
Emotional Abuse	26.8%	36.6%
Household Substance Abuse	25.5%	31.6%
Parental Separation or Divorce	22.5%	27.6%
Household Mental Illness	20.1%	23.0%
Intimate Partner Violence	15.9%	19.1%
Physical Abuse	18.1%	18.7%
Incarcerated Household Member	2.1%	9.9%
Sexual Abuse	6.2%	7.6%

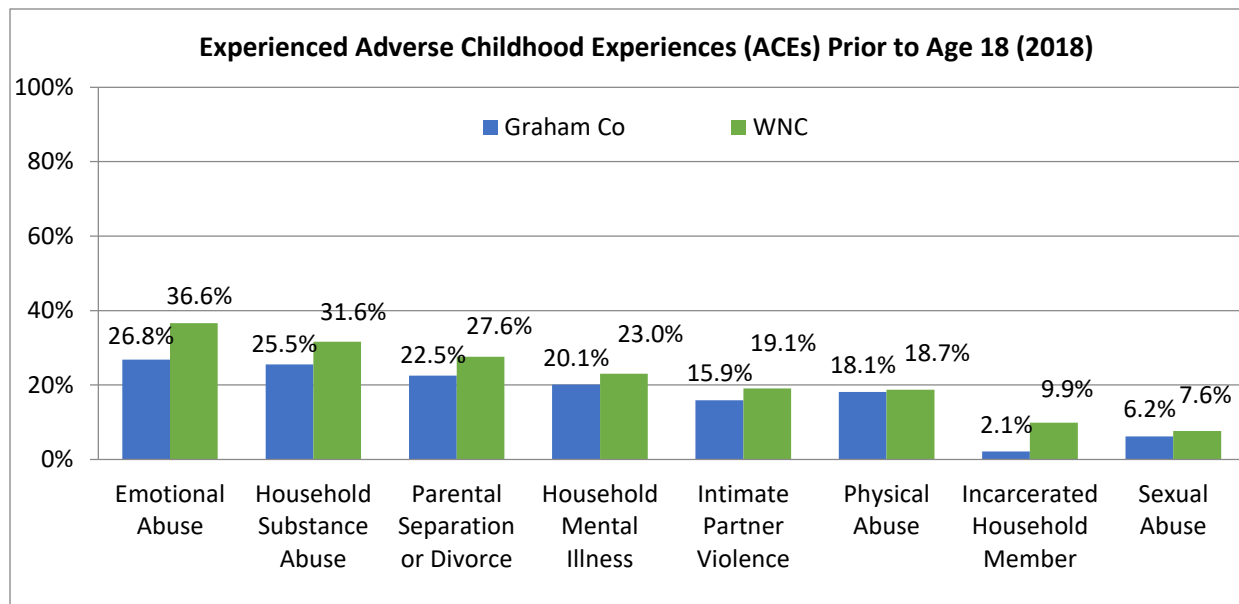**Figure 8** WNC Health Network. (2018). *2018 WNC Healthy Impact Community Health Survey: Data Workbook*. [Data set]. Available from https://www.wnchn.org/partner-resources/.

According to these results, about ten percent of Graham County respondents had a "high AC score" of four or more compared to about 16% of regional respondents overall (WNCHN - Community Health Survey, 2018).

CHAPTER 5 – HEALTH DATA FINDINGS SUMMARY

Mortality

The following table lists the 15 leading causes of death in the county as a five-year aggregate from 2012-2016. The top five causes are unchanged from the 2015 Community Health Assessment. Suicide has moved up from the 9th to the 6th leading cause of death. Alzheimer's disease has gone from 6th to 9th.

Leading Causes of Death, Age-Adjusted Death Rates per 100,000 Population (5-Year Aggregate, 2012-2016)

Rank	Cause of Death	Graham	
		# Deaths	Death Rate
1	Diseases of Heart	132	197.3
2	Cancer	122	180.9
3	All Other Unintentional Injuries	35	70.0
4	Chronic Lower Respiratory Diseases	39	57.9
5	Cerebrovascular Disease	22	34.3
6	Suicide	**12**	**29.6**
7	Diabetes Mellitus	**17**	**29.0**
8	Nephritis, Nephrotic Syndrome, and Nephrosis	**18**	**25.1**
9	Alzheimer's disease	**14**	**21.3**
10	Chronic Liver Disease and Cirrhosis	**9**	**15.1**
11	Pneumonia and Influenza	**10**	**14.9**
12	Unintentional Motor Vehicle Injuries	**5**	**11.6**
13	Homicide	**3**	**6.6**
14	Septicemia	**1**	**3.5**
15	Acquired Immune Deficiency Syndrome	**0**	**0.0**
All Causes (some not listed)		534	844.9

Table 2. North Carolina State Center for Health Statistics (NC SCHS). (2018). Causes of Death. [Data tables]. Available from https://schs.dph.ncdhhs.gov/data/

Heart disease is the number one cause of death in the county and has a higher occurrence in the county than in the state. The age-adjusted rate of death by heart disease for years 2012-

2016 is 197.3 per 100,000, which is 20% higher than the regional rate and 22.3% higher than the state rate (NCSCHS, 2018). Heart disease is discussed in more detail in the priorities section of this paper (Chapter 8).

There is a disproportionate heart disease death rate for males and females. This is also the case with cancer rates, which is discussed below. This is not unique to Graham County; disproportionate mortality among men is a long-standing and wide-spread problem that remains unsolved. It may indicate that males are not seeking preventative medical care as much as females, or that males participate in higher risk lifestyles (smoking, drinking, poor diet, etc.) more than women do, and there may be other factors at play as well (CDC, 2019).

The rate of total cancer incidences for 2012-2016 is 392.1 per 100,000 and the mortality rate is 180.9 per 100,000. The cancer mortality rate in Graham County is higher than the regional and state rates. The most prevalent types of cancer are breast cancer and lung cancer in Graham County (North Carolina State Center for Health Statistics , 2018). In the key informant survey, 75% of respondents felt that cancer was a critical health issue that needs to be addressed. The graph below depicts the trend of cancer incidence in Graham County.
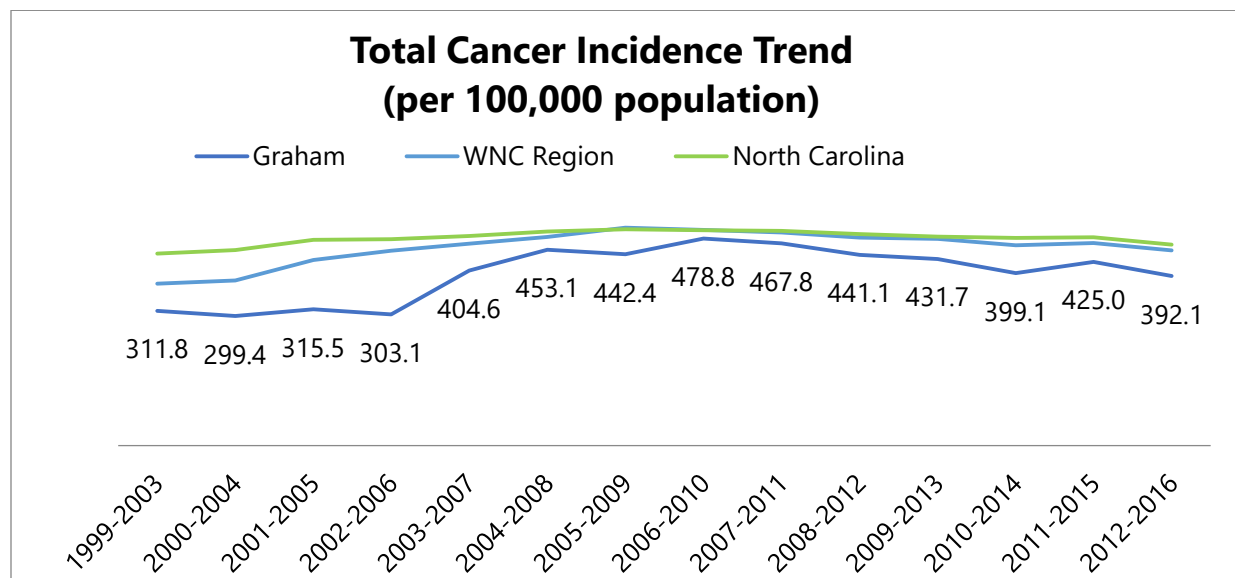
Total Cancer Incidence Trend
(per 100,000 population)

Graham   WNC Region   North Carolina

311.8   299.4   315.5   303.1   404.6   453.1   442.4   478.8   467.8   441.1   431.7   399.1   425.0   392.1

1999-2003   2000-2004   2001-2005   2002-2006   2003-2007   2004-2008   2005-2009   2006-2010   2007-2011   2008-2012   2009-2013   2010-2014   2011-2015   2012-2016

Figure 9. North Carolina State Center for Health Statistics (NC SCHS). (2018). Central Cancer Registry: NC Cancer Incidence Rates per 100,000 Population Age-Adjusted to the 2000 US Census. [Data tables]. Available from http://www.schs.state.nc.us/data/cancer/incidence_rates.htm

Life expectancy is the average number of additional years that someone at a given age would be expected to live if current mortality conditions remained constant throughout their lifetime. The table below presents a fairly recent summary of life expectancy for Graham County and for WNC and NC as a whole. From this data it appears that females born in Graham County between 2014 and 2016 could expect to live about five years longer than males born at the same time.

The overall life expectancy in Graham County is 77.9 years, which is slightly higher than the region and state **(North Carolina State Center for Health Statistics, 2018)**.
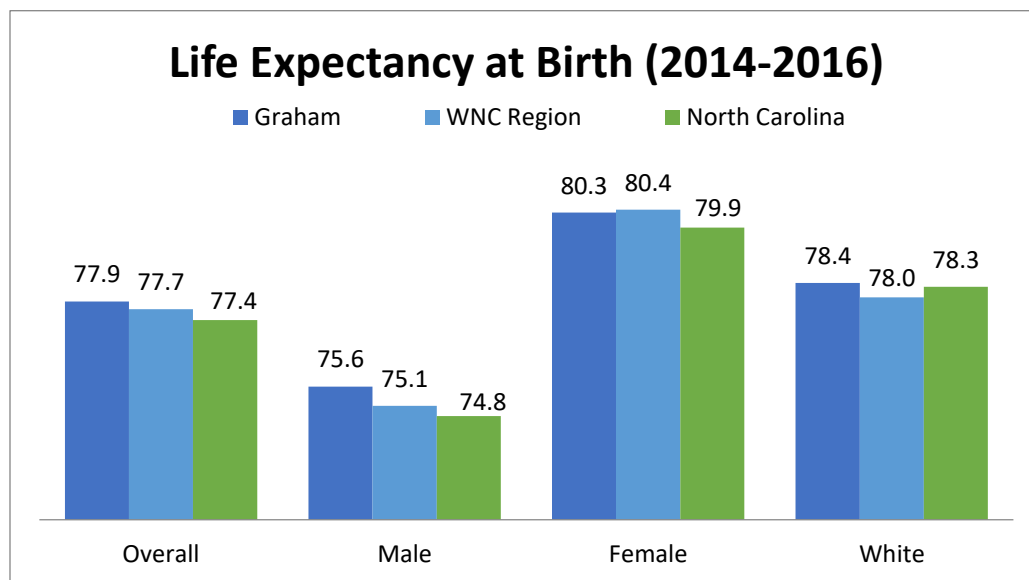

Figure 10 North Carolina State Center for Health Statistics (NC SCHS). (2018). County Life Expectancy at Birth: County Health Data Book. [Data tables]. Available from https://schs.dph.ncdhhs.gov/data/.

Health Status & Behaviors

Health Ranking

The Robert Wood Johnson Foundation, collaborating with the University of Wisconsin Population Health Institute, supports a project to develop health rankings for the counties in all 50 states. Each state's counties are ranked according to health outcomes and the multiple health factors that determine a county's health. Each county receives a summary rank for its health outcomes and health factors, and also for four different specific types of health factors: health behaviors, clinical care, social and economic factors, and the physical environment (Graham County Public Health, 2015).

The following table represents Graham's ranking out of 100 counties for health outcomes and health factors in 2016 (1 being the "best" and 100 being "worst").

Graham County Health Ranking (2016)

Location	County Rank (Out of 100)							
	Health Outcomes			Health Factors				
	Length of Life	Quality of Life	Overall Rank	Health Behaviors	Clinical Care	Social & Economic Factors	Physical Environment	Overall Rank
Graham	96	53	88	32	96	89	24	81

Table 3. County Health Rankings & Roadmaps. (2016). 2016 County Health Rankings. [Data tables]. Available from http://www.countyhealthrankings.org/.

Graham County's overall rank for health outcomes is 88th out of 100, with social and economic factors ranking 89th out of 100. This reiterates the significant relationship between social determinants of health (i.e., social and economic factors) and health outcomes. The overall health ranking for both outcomes and factors has improved since the overall ranking in 2015 was 92nd. Moreover, clinical care, ranked 96th and length of life, also ranked 96th, are indicators that Graham faces significant health disparities compared to the rest of the state. However, physical environment has significantly improved since 2015 when Graham ranked 88th (now ranking 24th in 2016). More on how physical environment has changed in Chapter 6.

Maternal Health

One health indicator looked at when determining a county's overall health is maternal and infant health. According to NC State Center for Health Statistics in 2016, seven percent of Graham County mothers had gestational diabetes while pregnant, 19% were overweight and 34.5% were obese during pregnancy. The health of the mother during pregnancy impacts the health of the baby. There are several factors contributing to the overall health of the mother, including the use of tobacco, as depicted in the graph below.
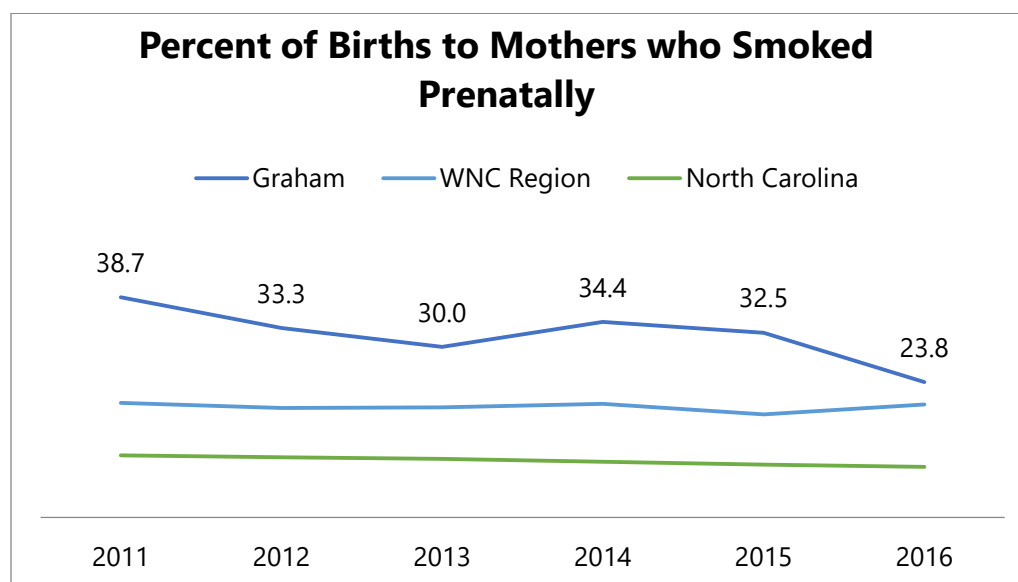

Percent of Births to Mothers who Smoked Prenatally

Graham — WNC Region — North Carolina

38.7   33.3   30.0   34.4   32.5   23.8

2011   2012   2013   2014   2015   2016

Figure 11. North Carolina State Center for Health Statistics (NC SCHS). (2018). North Carolina Vital Statistics Volume 1: Selected Vital Statistics. [Data tables]. Available from https://schs.dph.ncdhhs.gov/data/vital/pregnancies/2016/.

Since 2011, the percent of births to mothers who smoked prenatally has steadily declined to 23.8% of mothers in 2016. This trend is heading towards the WNC regional percentage (19.9%) but still remains significantly higher than the state (8.9%).

The graph below highlights that the same amount of mothers receive prenatal care in their first trimester in Graham County as in the region, and both are slightly higher than the amount receiving care throughout the state.
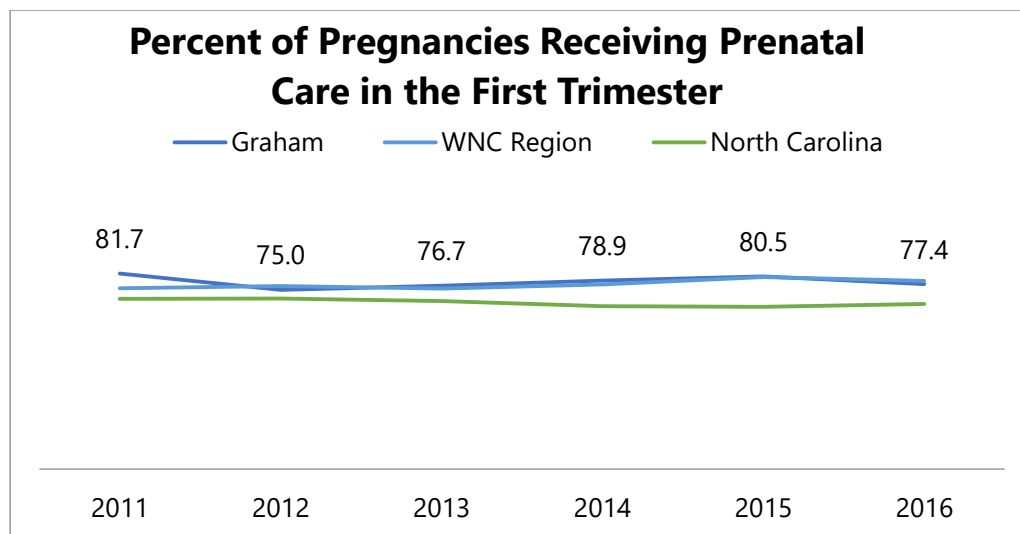
Percent of Pregnancies Receiving Prenatal Care in the First Trimester

Graham —— WNC Region —— North Carolina

81.7	75.0	76.7	78.9	80.5	77.4
2011	2012	2013	2014	2015	2016

Figure 12. North Carolina State Center for Health Statistics (NC SCHS). (2018). County Health Data Book: Birth Indicator Tables by State and County. [Data tables]. Available from https://schs.dph.ncdhhs.gov/data/databook/.

The discrepancy between prenatal care received and health statuses during pregnancy warrants a closer look at both the quality of care received (education provided) and the socio-economic factors influencing the mother's health status from the beginning.

Low birth weight is one indicator of poor maternal health and is a risk factor for other health outcomes. As shown below, low birth weight data shows Graham County to be on par with the state levels in 2012-2016, which is a slight decline from 2011-2015.
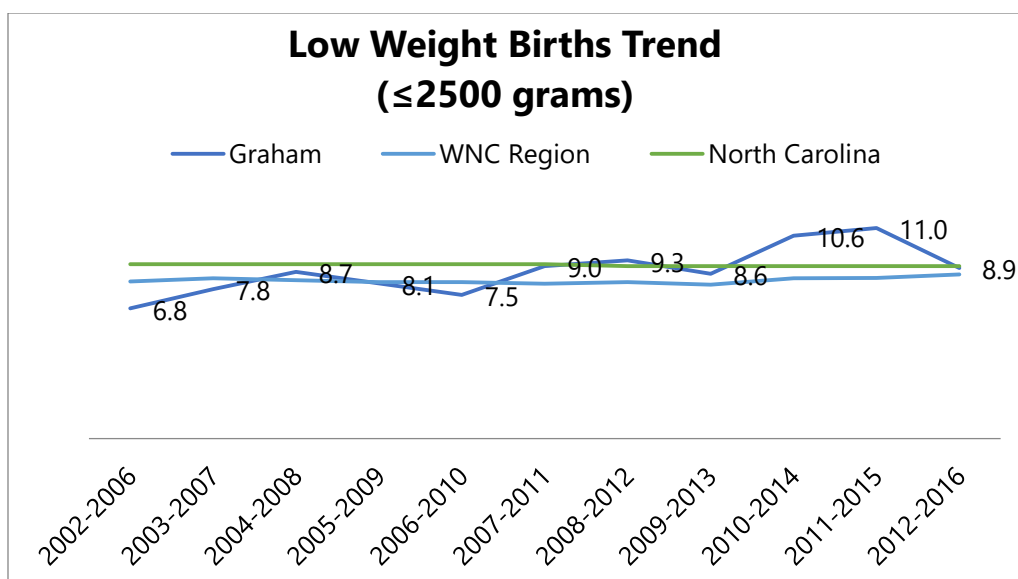
Figure 13. North Carolina State Center for Health Statistics (NC SCHS). (2018). County Health Data Book: North Carolina Live Births by County of Residence. Available from https://schs.dph.ncdhhs.gov/data/databook/

Chronic Disease

A majority of Key Informants (six out of eight respondents) ranked diabetes and cancer as two of the top three chronic disease issues that should be addressed (WNCHN – Key Informant Survey, 2018).

Diabetes is the seventh most leading cause of death in Graham County at a rate of 29 per 100,000 in 2012-2016 (North Carolina State Center for Health Statistics, 2018). Diabetes inflicts males almost twice as much as females in Graham County. Type 2 Diabetes is the most common type among the general population and is often associated with lifestyle behaviors, meaning it can often be prevented and treated with lifestyle changes such as nutrition and exercise. According to the Community Survey, the prevalence of diabetes has increased in Graham County since 2015; 16.9% of respondents answered that they had been diagnosed with diabetes. As depicted below, Graham County has a higher diabetes prevalence compared to the region, state and nation; however, it is trending upwards across all sectors.
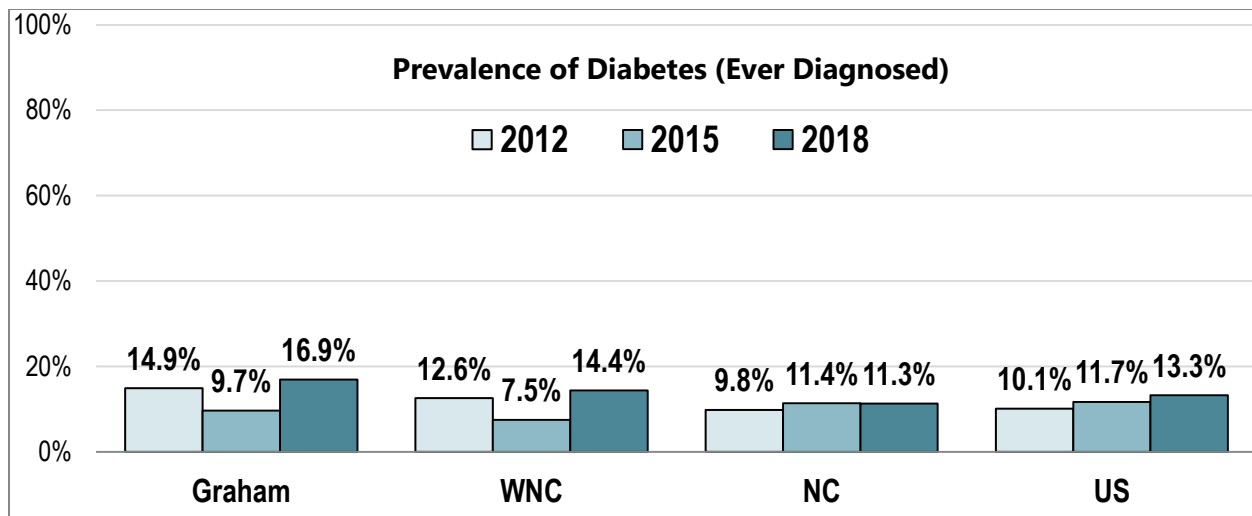
Figure 14 WNC Health Network. (2018). *2018 WNC Healthy Impact Community Health Survey: Data Workbook*. [Dataset]. Available from https://www.wnchn.org/partner-resources/.

Pre-diabetes is a risk factor for becoming diabetic, and if identified early enough, can be reversed with lifestyle behavior changes. In 2018, 11.3% of survey respondents claimed to be pre-diabetic in Graham County, which has declined since 2015 (13.3%) and remains higher than the region at 7.5% in 2018 (WNCHN - Community Health Survey, 2018).

Diabetes data is not broken down by race for Graham County; however, we know that American Indians/Alaska Natives are twice as likely as whites to have diabetes; therefore we've included this group as an "at-risk population" which we will discuss in this context. Diabetes is the cause of kidney failure two-thirds of the time; however kidney failure from diabetes has dropped by 54% in AI/AN between 1996 and 2013 (Centers for Disease Control, 2017). Unfortunately, the rate of kidney disease in Graham County has gone up over the last decade with a rate of 25.1 per 100,000 in 2012-2016 (NC State Center for Health Statistics, 2018).

AI/AN that live in Graham County benefit from the health services provided by the Eastern Band of Cherokee Indians, as well as through the county and state services offered. All enrolled tribal members and members of other tribes are eligible to receive services at the Cherokee Indian Hospital. While there are many efforts on behalf of the tribe to combat diabetes, Graham County will consider the unique needs of the AI/AN population residing in the county. Access to healthier foods, physical activity, and healthcare services is even more critical for this higher risk population. The Tribe began participating in the CDC's Diabetes Prevention Program (DPP) in 2016 where they have served 127 tribal members as of January 2019 and the program continues to grow (W. Pertet, DPP Coordinator, personal communication, February 28, 2019).

When key informants were asked what they believed was getting in the way of progress towards improving the issue of diabetes, respondents identified several contributing factors, including: "lack of access to healthy foods," "a lack of education and support around healthy behaviors," and "lack of access to care." When asked what is contributing to progress, responses included:

"Education and awareness for youth," "access to information online," and "the Diabetes Coalition" (WNCHN - Key Informant Survey, 2018).

Heart Disease is among the top four chronic diseases identified as critical to address by key informants. The rate of heart disease mortality in 2012-2016 was 197.3 per 100,000 (NCSCHS, 2018). According to the community survey, 10.9% of respondents have heart disease. High blood pressure, strokes and high cholesterol are risk factors for heart disease; 46.3% of respondents claimed to have high blood pressure and 5.4% have had a stroke. The vast majority, 97.5% of those that have high blood pressure are taking action to control it. Additionally, m35.3% have high cholesterol, up from 31% in 2015, and on par with the region and state (WNCHN - Community Health Survey, 2018). (Refer to the priorities section (Chapter 8) of this report for more on heart disease).

Injuries such as falls and motor vehicle accidents are incidents that can be looked at to enhance prevention efforts. Thirty-three percent of survey respondents over 65 years old in 2015 claimed to have fallen in the past year (this question was not asked in the 2018 survey). This warrants appropriate resources and outreach efforts to this population to prevent falling, especially as this age-group starts to make up a larger portion of the community. In 2017, there 147 reported crashes, of which 95 caused injuries. Forty-five of these accidents were motorcycle crashes and another eight accidents were alcohol-related (NC Department of Transportation, 2018).

Mental Health

All Key Informants identified substance use as the most critical mental health issue to address, followed by depression/anxiety/stress. Suicide is a leading cause of death for those ages 0-19 years old and 20-29 years old in 2012-2016. Other unintentional injuries, as previously discussed, is often related to medication/drug overdose, which is another leading cause of death in these same age groups. (Mental health and substance use is discussed in more details in the priorities section, Chapter 8).

In the years 2012, 2013 there were no Graham County residents served by a state psychiatric hospital. Since then, there have been 1-4 residents served per year (North Carolina Office of State Budget and Management, 2018). In 2017, there were 527 individuals served in area mental health programs, up from 404 individuals served in 2015 (North Carolina Office of State Budget and Management, 2018). Those served by state alcohol and drug treatment centers has declined since 2014 from 17 patients to 9 patients in 2016 (North Carolina Office of State Budget and Management, 2018).

Clinical Care & Access

According to the community survey, 20.8% of Graham County residents are uninsured, a decrease from 28.9% in 2015 and higher than the regional average of 15.1% (WNCHN - Community Health Survey, 2018). Not all those who are insured can access care. The survey results show 18.1% of Graham County respondents needed care but were not able to get it at least once in the past year, compared to 12.4% for the region (WNCHN - Community Health Survey, 2018). Thirty-one percent of Graham's population is eligible for Medicaid as of 2017 (NC Department of Health and Human Services, 2018).

> *"We have to go outside the county for an emergency room. I have found out the hard way that the doctors are out of network. And they don't inform you of that."- Focus Group Participant*

According to the survey, 60.4% of those over 18 years old had a dental visit and 71.9% of all respondents had a routine checkup in 2018, both percentages are slightly lower than the regional average (WNCHNC, 2018).

The table below represents the number of active health professionals per 10,000 population ratios in Graham County versus the regional and state ratios in 2017.

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County	Physicians	Primary Care Physicians**	Dentists	Registered Nurses	Pharmacists	Physicians Assistants	Nurse Practitioners
Graham	4.5	3.4	3.4	33.9	n/a	1.1	5.7
WNC (Regional) A.M.*	172.0	12.5	5.6	5.9	n/a	1.1	4.9
State Total	23.8	7.0	5.0	100.7	n/a	5.9	6.5

Table 4 Cecil G. Sheps Center for Health Services Research. (2018). North Carolina Health Professions Data System. [Data tables]. Available from http://epi.publichealth.nc.gov/cd/stds/annualrpts.html.
*AM=arithmetic mean
**Primary Care Physicians are those who report their primary specialty as family practice, general practice, internal medicine, pediatrics, or obstetrics/gynecology

Graham County is significantly below the regional and state ratios of providers per service populations.

Five out of eight key informants ranked access to care as the second most critical social-determinant of health issue to address. Respondents identified several factors as impediments of progress towards greater access to care, including: "Lack of funding," "lack of providers," and "socio-economic factors" such as gas prices and Medicaid/Medicare cuts (WNCHN - Key Informant Survey, 2018). Some factors that are contributing to progress include a "new urgent care center," "providers utilizing x-ray/ultrasound/mammogram technology," and "collaborative efforts among providers" (WNCHN - Key Informant Survey, 2018).

The map below represents the "Safety Net Sites" located throughout the state in 2017, which shows Federally Qualified Health Centers (FQHC), free and charitable clinics, health departments, rural health clinics/centers, school based health centers, and critical access hospitals.
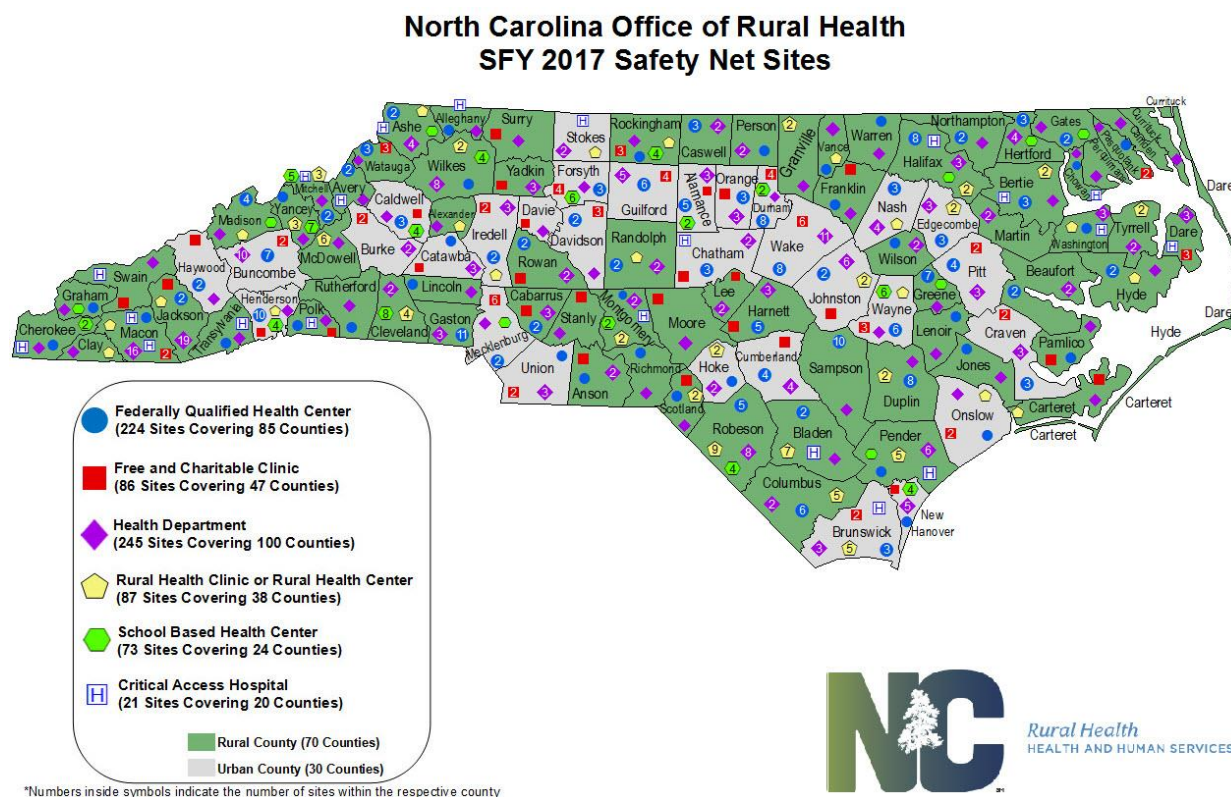

Figure 15 NC Department of Health and Human Services Office of Rural HEalth. (2017). *SFY 2017 Safety Net Sites.* Retrieved from https://www.ncdhhs.gov/divisions/office-rural-health/office-rural-health-programs/provider-recruitment-and-placement

As shown in the map above, Graham residents can access Erlanger Western Community Hospital in Cherokee County and Swain County Hospital in Bryson City. Graham County houses one health department, one school based health center, and one FQHC.

At Risk Populations

Those living poverty are at risk for greater health disparities compared to those not living in poverty. Graham County has a higher rate of poverty than the region and the state; 19.3% of the population was living in poverty in 2016. These low income families are at risk of not being able to receive medical care. Due to low access to health care providers, residents often have to travel out of the county to see any type of specialist. Those living in poverty, those uninsured, and older adults run up against the burden of accessing care either for financial reasons or other socio-economic reasons like lack of transportation or social support.

As of 2018, 1,464 residents were recipients of Food Nutrition Services (SNAP/EBT); 517 of those individuals were under the age of 18 years old (UNC-CH Jordan Institute for Families, 2018). This is often an indicator of food insecurity, which puts this population at greater risk for poor health. According to the community survey, 18.4% respondents were classified as food insecure (those that said they often or sometimes felt they would run out of food before they could afford to buy more). Food insecurity is linked to an increased risk of chronic disease and is of particular concern for pregnant women, infants and children.

CHAPTER 6 – PHYSICAL ENVIRONMENT

Air & Water Quality

"Clean air and safe water are prerequisites for health. Poor air or water quality can be particularly detrimental to vulnerable populations such as the very young, the elderly, and those with chronic health conditions. Clean air and water support healthy brain and body function, growth, and development. Air pollutants such as fine particulate matter, ground-level ozone, sulfur oxides, nitrogen oxides, carbon monoxide, and greenhouse gases can harm our health and the environment. Excess nitrogen and phosphorus run-off, medicines, chemicals, lead, and pesticides in water also pose threats to well-being and quality of life" (County Health Rankings, 2018).

Nationally, outdoor air quality monitoring is the responsibility of the Environmental Protection Agency (EPA); most of the following information and data originate with that agency. In NC, the agency responsible for monitoring air quality is the Division of Air Quality (DAQ) in the NC Department of Environment and Natural Resources (NC DENR).

The EPA categorizes outdoor air pollutants as "criteria air pollutants" (CAPs) and "hazardous air pollutants" (HAPs). Criteria air pollutants (CAPS), which are covered in this report, are six chemicals that can injure human health, harm the environment, or cause property damage: carbon monoxide, lead, nitrogen oxides, particulate matter, ozone, and sulfur dioxide. The EPA has established National Ambient Air Quality Standards (NAAQS) that define the maximum legally allowable concentration for each CAP, above which human health may suffer adverse effects (US Environmental Protection Agency, 2012).

The impact of CAPs in the environment is described on the basis of emissions, exposure, and health risks. A useful measure that combines these three parameters is the *Air Quality Index* (AQI).

The AQI is an information tool to advise the public. The AQI describes the general health effects associated with different pollution levels, and public AQI alerts (often heard as part of local weather reports) include precautionary steps that may be necessary for certain segments of the population when air pollution levels rise into the unhealthy range. The AQI measures concentrations of five of the six criteria air pollutants and converts the measures to a number on

a scale of 0-500, with 100 representing the NAAQS standard. An AQI level in excess of 100 on a given day means that a pollutant is in the unhealthy range that day; an AQI level at or below 100 means a pollutant is in the "satisfactory" range (AIRNow, 2011). The following table defines the AQI levels.

General Health Effects and Cautionary Statements, Air Quality Index

Index Value	Descriptor	Color Code	Meaning
Up to 50	Good	Green	Air quality is satisfactory, and air pollution poses little or no risk.
51 to 100	Moderate	Yellow	Air quality is acceptable; however, for some pollutants there may be a moderate heath concern for a very small number of people who are unusually sensitive to air pollution.
101 to 150	Unhealthy for sensitive groups	Orange	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
151 to 200	Unhealthy	Red	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
201-300	Very unhealthy	Purple	Health alert: everyone may experience more serious health effects.
301-500	Hazardous	Maroon	Health warnings of emergency conditions. The entire population is more likely to be affected.

Data in table below shows that, of days reported with an AQI, in Graham County there were no days rated "very unhealthy" or "unhealthy" and 1 day rated "unhealthy for sensitive groups" in 2017.

Geography	No. Days with AQI	Number of Days When Air Quality Was:				
		Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy
Graham County	227	200	7	1	0	0

Table 5 United States Environmental Protection Agency. (2018). Air Quality Index Reports. [Data tables]. Available from https://www.epa.gov/outdoor-air-quality-data.

Western NC has the highest radon levels in the state, at 4.1 pCi/L, the region is 3.2 times the average national indoor radon level of 1.3pCi/L. In Graham County the current average indoor radon level is 5.6, 37% higher than the regional mean and 4.3 times the average national level. A screening level over 4 pCi/L is the EPA's recommended action level for radon exposure. Radon is the number one cause of lung cancer among non-smokers, according to EPA estimates. Overall, radon is the second leading cause of lung cancer.   People who smoke have an even higher risk of lung cancer from radon exposure than people who don't smoke. (Graham

County Public Health, 2015). The Health Department has Radon Test Kits that are distributed to the public.

The source from which the public gets its drinking water is a health issue of considerable importance. Water from all municipal and most community water systems is treated to remove harmful microbes and many polluting chemicals, and is generally considered to be "safe" from the standpoint of public health because it is subject to required water quality standards. Municipal drinking water systems are those operated and maintained by local governmental units, usually at the city/town or county level. Community water systems are systems that serve at least 15 service connections used by year-round residents or regularly serves 25 year-round residents. This category includes municipalities, but also subdivisions and mobile home parks. As of April 2017, there were 4,484 Graham County residents, or about 51% of the population, being served by municipal and community water systems. This is about six percent lower than the region. (United State Environmental Protection Agency, 2018).

Access to Healthy Food & Places

"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Food and Agriculture Organization, 2006). The environments where we live, learn, work, and play affect our access to healthy food and opportunities for physical activity which, along with genetic factors and personal choices, shape our health and our risk of being overweight and obese. As of 2013, 29 million Americans lived in a food desert, without access to affordable, healthy food. Those with lower education levels, already at-risk for poor health outcomes, frequently live in food deserts" (County Health Rankings, 2018).

Graham County has one farmer's market on Knight Street that operates from July to October. This market accepts SNAP/EBT.

There are two grocery stores located in the county. About four percent of residents have been identified as having low access to a store due to not having a car and living over one mile from a store (US Department of Agriculture Economic Research Services, 2018). According to the community survey, 18.4% respondents were classified as food insecure (those that said they often or sometimes felt they would run out of food before they could afford to buy more).

The number of fast food restaurants far exceeds the number of grocery stores with five fast food restaurants in the county as of 2014 (0.58 per 1,000 compared to 0.2 per 1,000 for grocery store ratios). This is a 26% increase since 2009 (U.S. Department of Agriculture Economic Research Services, 2018).

We know that healthy eating is linked to preventing chronic disease; therefore, access to healthier foods is a critical issue for Graham County residents and will be addressed through the Community Health Improvement Process.

GREAT (Graham Revitalization Economic Action Team) is working has a project for food security in 2018-2019. "The project will focus on the Community Garden concept of providing the community with access to fresh vegetables via community gardens. The GREAT organization will facilitate this unique approach in collaborating with the Graham Health Department, Graham Food Distribution Coalition and Stoney Hollow Farm in addressing this need…The grant funds will be used…to distribute monthly vouchers to the most needy to be used in selecting and picking fruits and vegetables of their choice. Stoney Hollow Farm has agreed to provide a discount of 10% percent to these customers so they can get a significant volume each month. As an incentive for participants to try new fruits and vegetables, the owners have agreed to provide small class cooking instruction for some of the more exotic items." (GREAT, 2019).

Built Environment

Graham County has several projects underway to improve the walkability of downtown Robbinsville. There are way-finding signs being erected, as well as Wi-Fi for visitors to be able to access the internet while visiting downtown. There is one Community Park, tennis courts, basketball courts, and a county pool. Several fitness trails exist throughout the county. The school has a walking trail, which is paved, and accessible to the public outside of school hours.

CHAPTER 7- HEALTH RESOURCES

Health Resources

Process

The review of available health resources as conducted through a review of the Community Resource Assistance Guide published through the NC Division of Workforce Solutions. Gaps in this guide were filled in through meetings with partners and community leaders.

> *"Poverty, low employment, cutbacks in Medicaid/Medicare, smoking, drugs, cuts in mental health services/costs..."*
> *– Social Services Provider*

Findings

The health-related services available in Graham County are scarce. There is no hospital, or specialty care services. The closest hospitals are Swain County Hospital in Bryson City and Erlanger Western Carolina Hospital in Murphy. There is an urgent care, a fulltime primary care Federally Qualified Health Center (FQHC), and the health department provides both state mandated services, and primary care. There are no wellness resources (such as a gym or wellness center), and limited access to mental health resources through Appalachian Community Services. The Eastern Band of Cherokee Indians (ECBI) has a variety of services available to enrolled members only. For a complete list of health services in Graham County, visit the 2-1-1 Resource list.

Resource Gaps

The consensus of the Key Informant Surveys, community surveys, focus groups, and discussions with community leaders is that the availability of resources is very limited. Resources needed, as indicated by the Key Informant Survey, focus groups, and community surveys include more substance use and parenting support groups, more youth activities, more primary care and specialty care options, and a weight management program. The resources necessary to improve the health and wellbeing of the community are recognized by the citizens, and are needed to see health improvements. Lack of access to basic healthcare, and the education and support necessary to fulfill those healthy lifestyle changes, has a monumental negative impact on community health.

CHAPTER 8 – IDENTIFICATION OF HEALTH PRIORITIES

Health Priority Identification

<u>Process</u>
The process of identifying the list of health priorities to be use in the CHA health priority selection was completed by health department staff. Input from MountainWise and WNC Healthy Impact was also taken under advisement. The staff had a working knowledge of the WNC Healthy Impact data workbook, and two had participated in the community focus groups. The selection of the beginning seven health priorities was based on the morbidity and mortality data from the workbook, and the feedback received from community leaders, citizens, and focus groups. Consideration was also given related to feasibility and current funding movements.

Every three years we pause our work to improve community health so that we may step back and take a fresh look at all of the current data from our county that reflects the health of our community. We then use this information to help us assess how well we're doing and what actions we need to take moving forward.

Beginning in August 2018, our team spent time understanding the data and uncovering what issues were affecting the most people in our community. We also interviewed community leaders to find out what they're most concerned about. To identify the significant health issues in our community, our key partners (see a full list in the Executive Summary) reviewed data and discussed the facts and circumstances of our community.

We used the following criteria to identify significant health issues:
- Data reflects a concerning trend related to size or severity
- Significant disparities exist
- Issue surfaced as a high community concern
- County data deviates notably from the region, state or benchmark

Once our team made sense of the data, we presented key health issues to a wide range of partners and community members. The participants used the information we presented to score each issue, and then vote for their top areas of concern. Some of the factors they considered were how much the issue impacts our community, how relevant the issue is to multiple health

concerns, and how feasible it is for our community to make progress on this issue.

This process, often called health issue prioritization, is an opportunity for various community stakeholders, such as the school system, DSS, FQHC, GREAT, the local pharmacy, and county administration to agree on which health issues and results we can all contribute to, which increases the likelihood that we'll make a difference in the lives of people in our community.

Identified Issues

During the above process, the CHA team identified the following health issues or indicators:

- **Cancer**: As the second leading cause of death, this was selected; type not considered.

- **Heart Disease**: As the leading cause of death, regardless of age, this was selected.

- **COPD**: Fourth leading cause of death; high in older adults with consideration to smoking rates.

- **Diabetes**: Seventh leading cause of death with a seven percent increase since 2015 Community Survey among participants.

- **Mental Health**: Suicide is the sixth leading cause of death with depression/anxiety/stress identified as a critical issue to address.

- **Cerebrovascular Disease (stroke)**: Fifth leading cause of death with a two percent increase among participants of the Community Survey.

- **Substance Use Disorder**: Unintentional injury is the leading cause of death ages 20-39 & third leading cause, regardless of age; identified as a critical issue to address among surveyed participants.

Priority Health Issue Identification

Process

During our group process, the following criteria were applied to the issues listed above to select priority health issues of focus for our community over the next three years:

- Criteria 1 – Relevant – How important is this issue? *(Urgency to solve problem; community concern; Focus on equity; Linked to other important issues)*
- Criteria 2 – Impactful – What will we get out of addressing this issue? *(Availability of solutions/proven strategies; Builds on or enhances current work; Significant consequences of not addressing issue now)*
- Criteria 3 – Feasible – Can we adequately address this issue? *(Availability of resources (staff, community partners, time, money, equipment) to address the issue; Political*

capacity/will; Community/social acceptability; Appropriate socio-culturally; Can identify easy, short-term wins)

Participants used a modified Hanlon method to rate the priorities using the criteria listed above. Then dot-voting techniques were used to narrow to the top 3 priority health issues.

Identified Priorities
The following priority health issues are the final community-wide priorities for our county that were selected through the process described above:

- **Substance Use Disorder** – Selected due to the alarmingly high rate of intravenous drug use, opioids, and methamphetamines. Graham County is in the top 5% in the nation for a Hepatitis C/HIV outbreak, so addressing SUD is a major health concern for the county. The impact of a successful intervention would be immense. Like mental health, feasibility is a concern, as no framework is in place. This will be developed from the ground up.
- **Mental Health** – Selected due to being a major, overarching concern of the county. The team felt addressing mental health will begin to improve the issues with substance use and overall county wellbeing; this would have a vast positive impact on the county. While the feasibility of this priority is a concern, it is something that will have to be addressed.
- **Heart Disease** – Selected as it is the leading cause of death, and is preventable in most cases. The availability of resources surrounding heart disease education and prevention is extensive, and programs can be implemented with existing systems. This is the most feasible of the selected priorities in terms of implementation. However, decreasing the prevalence of heart disease takes years.

PRIORITY ISSUES 1: SUBSTANCE USE DISORDER

In 2015, there were 1,110 opiate related deaths in North Carolina, which was a 73% increase from 2005 (NC Governor Roy Cooper, 2018). In Governor Cooper's report that came out in May of 2017, he said, "Opioid addiction is devastating families across the nation…This is a uniquely challenging crisis for our communities and will require a new level of collaboration between law enforcement, treatment-providers, and those in recovery. I am committed to combatting opioid abuse in North Carolina, and I urge the General Assembly to make a similar investment to help those who are suffering from this disease." (NC Governor Roy Cooper, 2018). Refer to *NC's Opioid Action Plan* to learn more.

According to NC Department of Health and Human Services (NCDHHS), Injury and Violence Prevention Branch, "Opioid-involved poisoning deaths are common in both urban and rural areas throughout the state, affecting a wide range of demographics…Though, most commonly affected persons tend to be white, male, and between 25 and 54 years old…Health and societal risks of drug use include HIV, Hepatitis C, dependence, addiction, crime, violence, employment instability, and family disruption" (NCDHHS, 2018).

Graham County has selected substance use disorder (SUD) as a health priority to address through the Community Health Improvement Process (CHIP) 2019-2022.   This issue was selected due to the alarmingly high rate of intravenous drug use, opioids, and methamphetamines. The CDC has declared an epidemic Hepatitis C outbreak in Graham County, which is in the top five percent in the nation for a Hepatitis C/HIV outbreak. Graham ranks 124th out of 220 counties in the top five percent (Centers for Disease Control, 2019). The spread of Hep C has been linked to the use of intravenous drugs. The incidence rate of Hep C in Graham County has rapidly increased from 117 per 100,000 in 2016 to 468 per 100,000 in 2017 (NC Department of Public Health, 2018). The map below shows incidence rate comparisons by county throughout the state and the incidence rate increase in NC overall (darker blue counties represent higher rates).
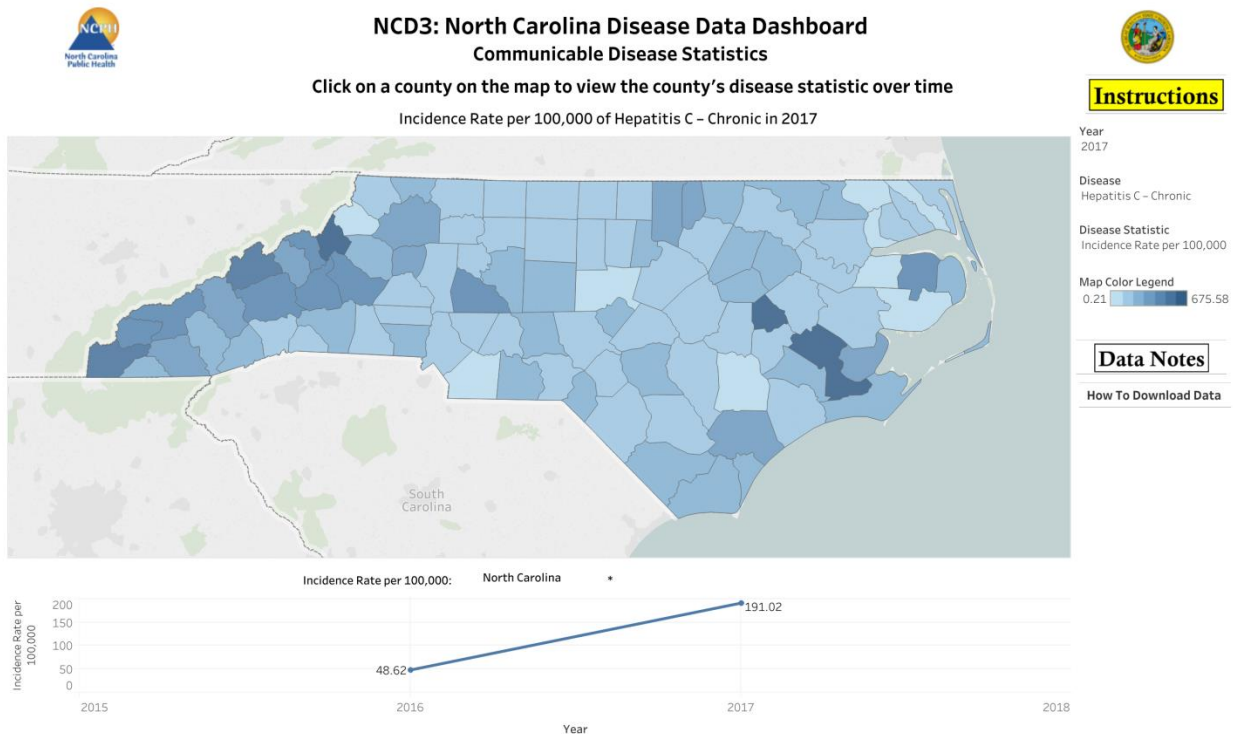
Figure 16 NC Department of Public Health. (2018). *NCD3: North Carolina Disease Data Dashboard Communicable Disease Statistics*. Retrieved from Tableau Public:
https://public.tableau.com/profile/nc.cdb#!/vizhome/NCD3NorthCarolinaDiseaseDataDashboard/DiseaseMapsandTrends

Substance use disorder will become a community-based health improvement priority, addressed through the Community Health Improvement Process. This will be a new group that has not existed before and will include as many stakeholders as possible. This issue has worsened rapidly and requires a systematic approach to combating the problem.

What Do the Numbers Say?

Health Indicators

According to the PRC Survey, 18.1% of Graham County respondents have used opiates/opioids in the past year, with or without a prescription. This is slightly lower than the regional response at 19.6%.

The table below depicts the number of unintentional poisoning deaths and medication/drug overdose deaths from 2009-2013. As shown, the rate of unintentional poisoning deaths in Graham County is more than twice a high as the regional and state rates, of which 85% are due to medication/drug overdoses. Also, the rate of unintentional medication/drug overdose deaths is also twice as high than the region and significantly higher than the state.

County	Unintentional Poisoning Deaths for Select Locations and Percent that are Medication/Drug Overdoses (2009-2013)*			Rate of Unintentional Medication/Drug Overdose Deaths (2009-2013)**	
	#	Rate per 100,000 NC Residents	% that are med/drug overdoses	#	Rate per 100,000 NC Residents
Graham	**13**	**30.2**	**85**	**11.0**	**26**
WNC (Regional) Total	560	14.8	90	506	13
Non-WNC (Regional) Total	4,749	10.7	91	4,320	10
State Total	5,309	11.0	91	4826.0	10

Table 6. NC Division of Public Health, Chronic Disease and Injury Section, Injury and Violence Prevention Branch, Injury Epidemiology and Surveillance Unit. (2015). Medication and Drug Poisoning. [Data tables]. Unpublished Data.

The table below depicts the types of medication/drugs used that caused unintentional deaths due to overdosing; the top category is "other opioids," followed by methadone and benzodiazepines.

County	Leading Causes of Unintentional Medication/Drug Overdose Deaths (2009-2013)						
	Other Opioids	Methadone	Other Synthetic Narcotics	Benzodiazepines	Alcohol	Cocaine	Heroine
Graham	5	2	0	2	1	0	0
WNC (Regional) Total	212	122	77	56	46	31	11
State Total	1,717	915	599	504	429	786	511

Table 7. NC Division of Public Health, Chronic Disease and Injury Section, Injury and Violence Prevention Branch, Injury Epidemiology and Surveillance Unit. (2015). Medication and Drug Poisoning. [Data tables]. Unpublished Data.

The Community Survey found that 30.4% of respondents are drinkers (defined as having at least one alcoholic beverage in the past month) and 4.9% are binge drinkers (5+ drinks for men and 4+ drinks for women on any one occasion). Binge drinking is down significantly from 14.4% in 2015.

Also according to the survey, 14.4% of Graham County respondents are smokers, which has declined since 2012 (27.5%) and 2015 (20.1%). This is also slightly lower than the state and regional smoking prevalance. 5.3% are using smokeless tobacco products, which is similar to the state and region; 4.5% are using vaping products (such as e-cigarettes). Of those respondents who are employed, 21% claimed that they have breathed someone else's smoke at work in the past week. This is higher than the regional percentage and has increased since 2015 by six percent. This indicates that there is a need for tobacco-free policies to take effect in more public places and places of work.

What Did the Community Say?

According to the community survey results, 46.2% of Graham County respondents believe that life has been negatively affected by substance abuse either by themselves or someone else (WNCHN - Community Health Survey, 2018). This is about the same for the region and both are about 10% lower than the national average. Respondents also identified substance use as a health issue that is critical to address.

"There's a rope right there but you can't reach it." – Focus Group Participant

The Key Informant interview asked "Considering your community's values, current resources, and existing work, how likely is it that collaborative effort could make a positive change on this issue?" Fifty percent of respondents answered "Not Likely" to this question, while 16.7% answered "Not Likely At All" and 33.3% answered "Very Likely" (PRC Survey, 2018). This is representative of the low morale around this issue because it has affected so many people with little relief.

What Else Do We Know?

"Needle exchange would cut back on the transfer of diseases that people have." – Focus Group Participant

A listening session was held with a group to discuss the substance use issue. These discussions highlighted the relationship between early childhood experiences and drug use. Participants shared reasons why they began using, which included: drug use by their parents (generational), abuse as a child, and feeling inadequate, alone, or hopeless. There was a consensus around the lack of resources for youth to be engaged in healthy and productive activities; therefore they find relief from stress in drug use.

There is also a stigma around drug use and therefore some efforts to help the problem are not always effective. They feel that healthcare providers and counselors make you feel bad for using and act as if the problem is your fault. Focus group participants discussed the syringe drop boxes. One statement from the discussion was, "We want syringe drop boxes at the library, health department, and urgent care. People won't use the park drop box because of the cameras. They think the Sheriff's office will pull the tapes and arrest them when they see them on camera. People are afraid of arrest when dropping needles in the courthouse boxes as well."

What is Already Happening?

According to listening sessions, participants identified gaps in resources and needs to help improve the situation. Some of the resources they feel the community is *lacking* includes: suboxone or methodone clinics, outpatient treatment, support groups, transportation, housing, domestic violence shelters or transitional housing, parenting program, jobs, needle exchange programs, recovery support, and mentorship/peer counseling.

However, some feel that the Celebrate Recovery group is helping the problem. There are also some efforts towards generating more awareness among youth and counseling options that are helping the community move towards a solution.

The Appalachian Mountain Community Health Centers (AMCHC) received an opioid-prevention grant in 2018 from the Health Resources and Services Administration (HRSA). This grant is highly focused on opioid prevention and treatment for three counties at the highest risk for substance use disorder, Graham, Cherokee and Clay Counties. This workgroup consists of regional resource organizations as well as local direct service providers that provide vital opioid prevention/treatment services in these three counties. Local direct service providers include AMCHC, the respective county health departments (Cherokee, Clay and Graham) and Meridian Behavioral Health Services. Regional resource organizations include MountainWise Public Health Partnership, Mountain Area Health Education Center (MAHEC), Vaya Health and UNC Gillings MPH Program in Asheville. (S. Tennyson, AMCHC, personal communication, February 26, 2019).

Refer to **Appendix B** to read the Executive Summary for this grant work.

What Change Do We Want to See?

We want to see Graham County residents free from substance abuse and its health impacts, fewer families negatively impacted by it, and more resources for those that need support.

PRIORITY ISSUE 2: MENTAL HEALTH

Mental health often stems from other social determinants of health, such as poverty, lack of access to care, and lack of a support network. It can also correspond with other health issues like substance use and chronic disease. Mental health affects all walks of life and can be exacerbated or inherent due to generational trauma.

Mental health was selected as a priority to address in the Community Health Improvement Process due to it being a major overarching concern of the county. The team felt addressing mental health will begin to improve the issues with substance use and overall county wellbeing; this would have a vast positive impact on the county. While the feasibility of this priority is a concern, it is something that will have to be addressed.

What Do the Numbers Say?

Health Indicators

Suicide is the leading cause of death among youth ages 0-19 and the second leading cause of death in those age 20-39 in Graham County and occurs at a higher rate than the region and the state (refer to table 10 below). It is the sixth leading cause of death overall. According to the data presented below, males are inflicted by suicide at more than twice the rate of females.

Suicide Mortality Age-Adjusted Rates per 100,000

County	2012-2016					
	Male		Female		Overall	
	#	Rate	#	Rate	#	Rate
Graham	9	n/a	3	n/a	12	**29.6**
WNC (Regional) Arithmetic Mean	37	31.2	11	8.9	48	*19.0*
State Total	5,000	20.3	1,679	6.3	6,679	12.9

Table 8 North Carolina State Center for Health Statistics (NC SCHS). (2018). Race-Specific and Sex-Specific Age-Adjusted Death Rates by County: County Health Data Book. [Data tables]. Available from https://schs.dph.ncdhhs.gov/data/.

Graham County				
Age Group	Rank	Leading Cause of Death	# Deaths	Death Rate
00-19	1	Suicide	1	9.9
		Other Unintentional injuries	1	9.9
20-39	1	Other Unintentional injuries	8	88.3
	2	Suicide	3	33.1
	3	Cancer - All sites	2	22.1
		Motor Vehicle Injuries	2	22.1
40-64	1	Cancer - All Sites	31	212.7
	2	Diseases of the heart	24	164.7
	3	Other Unintentional injuries	8	54.9
65-84	1	Cancer - All Sites	75	878.1
	2	Diseases of the heart	64	749.3
	3	Chronic lower respiratory diseases	20	234.2
85+	1	Diseases of the heart	44	4360.8
	2	Cancer - All Sites	14	1387.5
	3	Chronic lower respiratory diseases	13	1288.4

Table 9 North Carolina State Center for Health Statistics (NC SCHS). (2018). Death Counts and Crude Death Rates per 100,000 Population for Leading Causes of Death. [Data tables]. Available from https://schs.dph.ncdhhs.gov/data/.

The majority of "other unintentional injuries" includes medication/drug overdoses. This is the other leading cause of death among ages 0-39 in Graham County, as shown in the table above.

Mental health and substance use appear to have a direct correlation in Graham County, which is why both issues have been identified as priorities; one cannot be addressed without the other.

What Did the Community Say?

The table below represents all of the mental health conditions key informants ranked as most critical to address.

Rank	Health Issue	Identified as Critical to Address
1	Substance Use	8
2	Depression/Anxiety/Stress	7
3	Dementia/Alzheimer's Disease	3
4	Suicide	3
5	General Mental Health	2

Table 10

50

When Key Informants were asked what is contributing to the problem of depression/anxiety/stress, responses included: "Lack of access to mental health services and care," "lack of education," and "other social determinants of health" such as poverty and availability of illegal drugs. When asked what they felt was contributing to progress, responses included, "There is no progress" and "education for school staff." (WNCHN - Key Informant Survey, 2018).

What Else Do We Know?

According to the 2018 community survey, 84.9% of respondents claimed that they "always or usually" get needed social-emotional support (WNCHN - Community Health Survey, 2018). However, 16.4% claimed they had more than seven days of poor mental health in the past month and 12.2% are unable to access mental health services when needed in the past year (WNCHN - Community Health Survey, 2018). 9.1% of respondents claimed they felt "dissatisfied" or "very dissatisfied" with life (WNCHN - Community Health Survey, 2018).

The community survey asked respondents to identify types of problems that limit them from being active. 19.4% of respondents claimed "mental/depression" to be the problem that limits their activity, compared to 15% regionally (WNCHN - Community Health Survey, 2018). Physical activity and the ability to be socially engaged is an important factor in preventing and treating mental health disorders. It will be important to assess community resources to address this issue.

To read more on family/social support and Adverse Childhood Experiences, see Chapter 4.

What is Already Happening?

The table below shows all of the licensed mental health facilities in Graham County. There is a very small capacity for these services that cannot meet the demand.

Graham County Licensed Mental Health Facilities			
Total Capacity of 14 across 6 facilities			

Name of Facility	Location	Capacity (if listed)	Category
Atoah Heights LIFESPAN Inc	Robbinsville	2	Supervised Living/Alternative Family Living
Foundation: Graham High School	Robbinsville		Day Treatment
Graham Foundations	Robbinsville		Day Treatment
Skill Foundation	Robbinsville		Psychosocial Rehabilitation
The Passage	Robbinsville	6	Supervised Living MI Adult
The Twin Oaks	Robbinsville	6	Supervised Living MI Adult

Table 11 NC Department of Health and Human Services. (2018). Licensed Facilities, Mental Health Facilities (by County). [Data tables]. Available from https://www2.ncdhhs.gov/dhsr/reports.htm.

There were 527 individuals served in area mental health programs in 2017. Other mental health services that Graham County residents can access are provided by Meridian Behavioral Health Services, which has a location in Cherokee County. Meridian offers adults, child and family services, and recovery support.

Graham County schools are making efforts to address mental health issues among students. School staff in the district have been or will soon be trained in Mental Health First Aid, as recommended by the NC Department of Public Instruction. Additionally, staff is trained annually in non-violent crisis prevention intervention. School Resource Officers are trained annually in current trends/risky behaviors in children. There are numerous conferences, meetings and committee agendas dedicated to these topics. One of the most active routine meetings is the school level intervention team meetings. Lastly, the Exceptional Children staff attends numerous conferences throughout the year that reflect some of the mental health issues prevalent with youth. (A. Knight, personal communication, February 27, 2019).

What Change Do We Want to See?

Graham County wants to see all residents free from the infliction of mental health issues and empowered to find hope. It is a complex issue that Graham County plans to approach with a systematic focus, which will include stakeholders from across all sectors including school systems, healthcare, early childhood programs, social services, etc. Specific short and long-term goals and objectives will be determined through the Community Health Improvement Process to establish a framework for this effort.

PRIORITY ISSUE 3: HEART DISEASE

Heart disease was selected as a priority for the Community Health Improvement Process as it is the leading cause of death, and is preventable in most cases. The availability of resources surrounding heart disease education and prevention is extensive, and programs can be implemented with existing systems. This is the most feasible of the selected priorities in terms of implementation. However, decreasing the prevalence of heart disease is a long term goal.

There are several lifestyle factors that can be looked at to address heart disease, such as nutrition, physical activity, food access, and access to preventative healthcare services. We not only want to decrease the prevalence of heart disease, but focus on improving systems and environments to make healthy living the easier choice for all ages.

What Do the Numbers Say?

Health Indicators

The table below depicts the age-adjusted mortality trend for heart disease from 2010-2016. The overall rate of heart disease is 197.3 per 100,000 in Graham County in 2012-2016.

2010-2014						2011-2015						2012-2016					
Male		Female		Overall		Male		Female		Overall		Male		Female		Overall	
#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
77	268.1	52	136.9	129	196.1	79	272.5	60	156.6	139	208.9	74	256.9	58	144.7	132	197.3

Table 12 North Carolina State Center for Health Statistics (NC SCHS). (2018). Race-Specific and Sex-Specific Age-Adjusted Death Rates by County: County Health Data Book. [Data tables]. Available from https://schs.dph.ncdhhs.gov/data/

According to the community survey data, 10.9% of respondents claimed having heart disease, which is up from 9.8% in 2015 (WNCHN - Community Health Survey, 2018).

Blood pressure is one risk factor for heart disease. The graph below shows the prevalence of high blood pressure among community survey respondents and the trend from 2012-2018. As shown, Graham County has a significantly higher prevalence than its comparators. The Healthy

People 2020 target is to lower the prevalence of high blood pressure by 26.9%. The majority of respondents claimed that their blood pressure is being controlled.
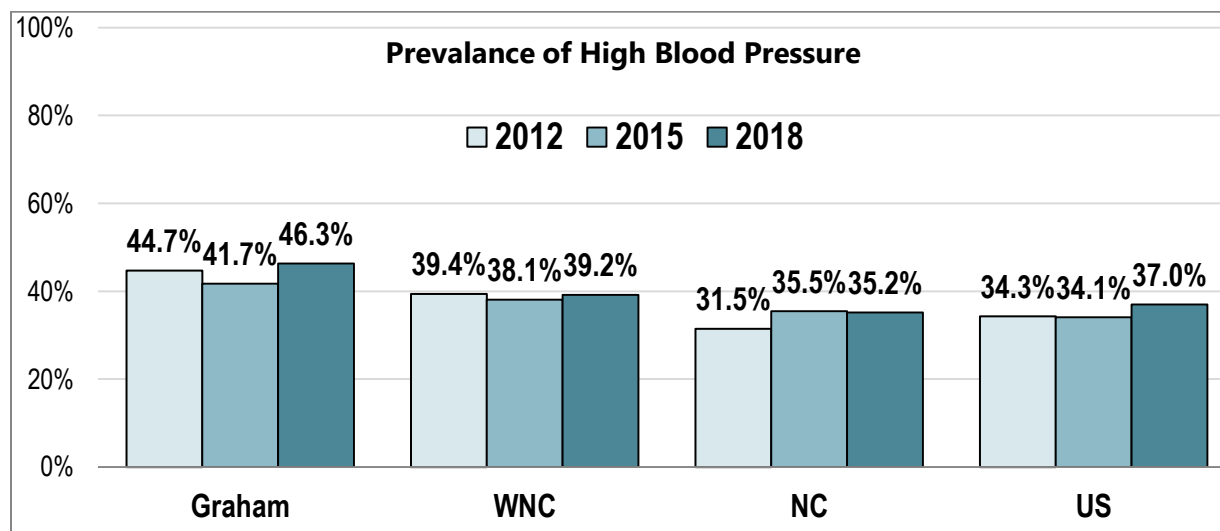

Prevalance of High Blood Pressure

□ 2012 ■ 2015 ■ 2018

	Graham	WNC	NC	US
2012	44.7%	39.4%	31.5%	34.3%
2015	41.7%	38.1%	35.5%	34.1%
2018	46.3%	39.2%	35.2%	37.0%

Figure 17 Sources: 2018 PRC Community Health Survey, Professional Research Consultants, Inc. [Item 39]; Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia. United States Department of Health and Human Services, Centers for Disease Control and Prevention (CDC): 2015 North Carolina data.; 2017 PRC National Health Survey, Professional Research Consultants, Inc.

High cholesterol is another risk factor for heart disease. According to survey results, 34.3% of respondents had high cholesterol in 2018, which is on par with the region and the state. The vast majority of respondents claimed their cholesterol was being controlled.
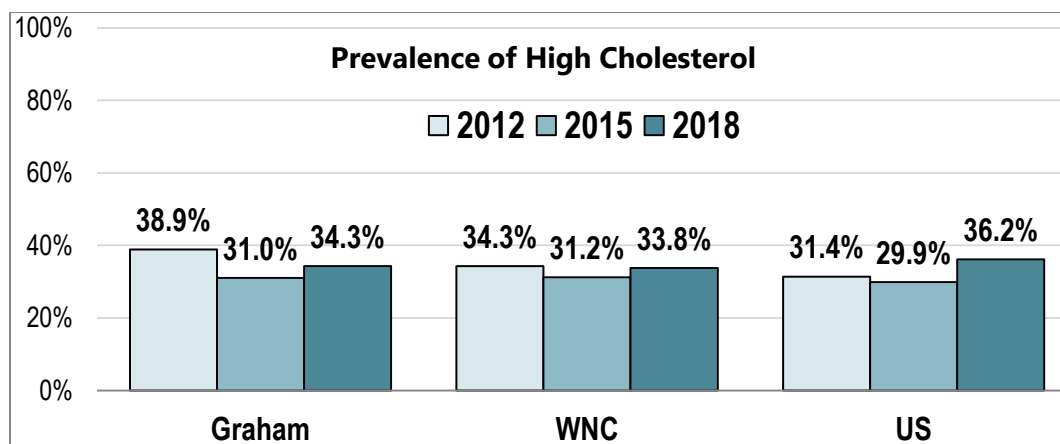

Prevalence of High Cholesterol

□ 2012 ■ 2015 ■ 2018

	Graham	WNC	US
2012	38.9%	34.3%	31.4%
2015	31.0%	31.2%	29.9%
2018	34.3%	33.8%	36.2%

Figure 18   Sources: 2018 PRC Community Health Survey, Professional Research Consultants, Inc. [Item 43]; 2017 PRC National Health Survey, Professional Research Consultants, Inc.

The graph below represents the total population that is overweight or obese. Note that this data is based on reported heights and weights of respondents.
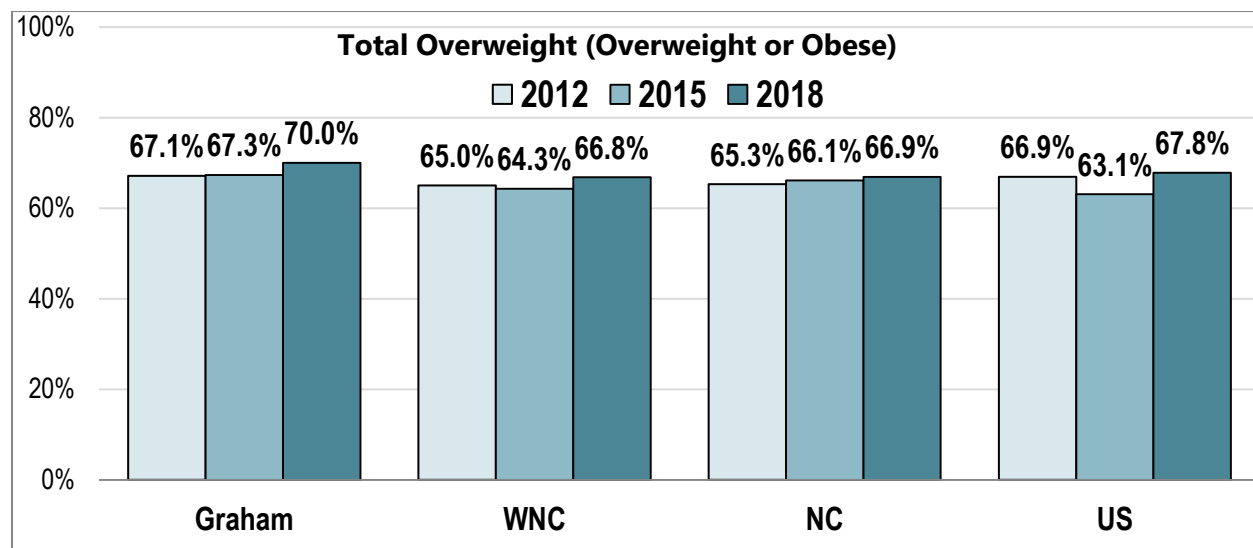

Figure 19 2018 PRC Community Health Survey, Professional Research Consultants, Inc. [Item 154]; Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia. United States Department of Health and Human Services, Centers for Disease Control and Prevention (CDC): 2016 North Carolina data; 2017 PRC National Health Survey, Professional Research Consultants, Inc.

What Did the Community Say?

Key informants were asked to identify what they believed to be contributing to the problem of heart disease and responses included, "eating and cooking habits," "oppression and depression," "poverty," and "lack of access to care and services" (WNCHN - Key Informant Survey, 2018). When asked what is contributing to progress, responses included, "a sports-minded community," "willingness to learn and practice," "urgent care clinic," and "more medical equipment" (WNCHN - Key Informant Survey, 2018).

What Else Do We Know?

Only 4.4% of survey respondents claimed to eat the recommended amount (5) of fruits and vegetables per day. 18.4% claimed they were worried about running out of food before being able to afford more at least once in the past year; this is an indication of food insecurity. (WNCHN - Community Health Survey, 2018).

Only 16.2% of respondents claimed to meet recommended levels of physical activity compared to 21.3% regionally. 22% claimed to not have leisure time physical activity in the past month. (WNCHN - Community Health Survey, 2018).

Addressing food security, accessing healthier foods, and improving environments that support more physical activity, will be critical to address in combating this priority issue.

What is Already Happening?

GREAT (Graham Revitalization Economic Action Team) "is a partnership of citizens that meets the health, social, economic, educational, and recreational needs of Graham County residents, while preserving its cultural heritage and natural resources and instilling pride in community and place" (GREAT, 2019). Below is the "health and social" section of GREAT's strategic plan, which includes addressing many social determinants that impact health
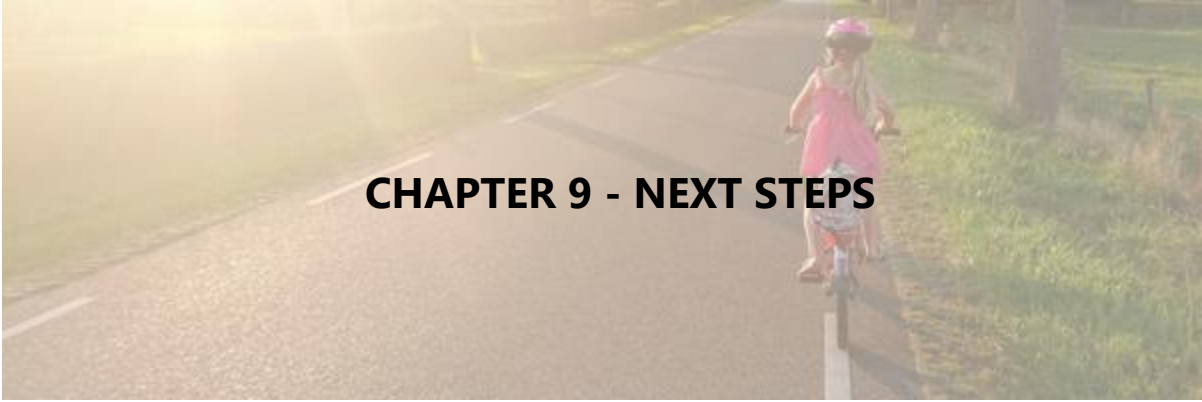
Goal: Improve the social and health climate to position it as a model for quality of life in a mountain community.			
Strategies, Objectives, and Actions	**Timeline**	**Lead**	**Status**
A. Improve the Health and Well Being of Citizens of Graham County			
1. Encourage the reduction of the county's diabetes rate.			
2. Help reduce and prevent obesity.			
3. Support substance abuse prevention and treatment programs.			
B. Improve Physical Activity among Citizens of Graham County			
1. Increase active living options.			
C. Increase Access to Health Care			
1. Recruit more health professionals.			
2. Increase after hours health care.			
D. Improve the Social Well Being and Quality of Life for the County's Citizens			
1. Increase food security.			
2. Collaborate with religious institutions to address social issues.			
· Study the changing fabric and values of the community and understand the future impact.			
3. Support efforts that address reduction in the county's poverty rate.			
4. Develop strategies to increase social and entertainment opportunities for all segments of the community.			

Table 13 GREAT. (2019). *Strategic Plan*. Retrieved from www.grahamcounty.net/great

To learn more about the work that GREAT is doing in Graham County, visit www.grahamcounty.net/great.

What Change Do We Want to See?

We want to see Graham County residents free from the burden of heart disease, an increase in the availability of healthier foods and places to be physically active and increased access to preventative services.

CHAPTER 9 - NEXT STEPS

Collaborative Planning

Collaborative planning with hospitals, healthcare providers, and community organizations will result in the creation of a community-wide plan that outlines what will be aligned, supported and/or implemented to address the priority health issues identified through this assessment process.

It is understood that community health assessment is an ongoing process. The Graham County Department of Public Health and the community will use this information to continue to work to improve and promote the health of Graham County. The Community Health Assessment will be used as the foundation for concerned citizens and community leaders to strengthen the capacity for moving forward to change both individual and community health outcomes.

Sharing Findings

The CHA will be disseminated in at least the following ways:

- Dissemination to the public – Graham County Department of Public Health website, GREAT (Graham Revitalization Economic Action Team) annual meeting, Graham County Library
- Dissemination to stakeholders – presentations to Graham County Board of Health, Graham County Board of Commissioners, GREAT annual meeting

Where to Access this Report

- WNC Health Network website
- Graham County Public Health website
- Graham County Library (in print)

For More Information and to Get Involved

Visit www.health.grahamcounty.org or email Amber Williams at amber.williams@grahamcounty.org

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PHOTOGRAPHY CREDITS

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APPENDICES

Appendix A – Data Collection Methods & Limitations

Appendix B – Executive Summary: Rural Communities Opioid Response Program

ATTACHMENTS

2018 WNC Community Survey Questions

2018 PRC Phone Survey Script

WNC Healthy Impact Community Health Survey Data (Power Point Slides)

Online Key Informant Survey Questions

2-1-1 Resource List

APPENDIX A - DATA COLLECTION METHODS & LIMITATIONS

Secondary Data from Regional Core

Secondary Data Methodology
In order to learn about the specific factors affecting the health and quality of life of residents of WNC, the WNC Healthy Impact data workgroup and data consulting team identified and tapped numerous secondary data sources accessible in the public domain. For data on the demographic, economic and social characteristics of the region sources included: the US Census Bureau; Log Into North Carolina (LINC); NC Department of Health and Human Services; NC Office of State Budget and Management; NC Department of Commerce; Employment Security Commission of NC; UNC-CH Jordan Institute for Families; NC Department of Public Instruction; NC Department of Justice; NC Division of Medical Assistance; NC Department of Transportation; and the Cecil B. Sheps Center for Health Services Research. The WNC Healthy Impact data consultant team made every effort to obtain the most current data available at the time the report was prepared. It was not possible to continually update the data past a certain date; in most cases that end-point was August 2018.

The principal source of secondary health data for this report was the NC State Center for Health Statistics (NC SCHS), including its County Health Data Books, Behavioral Risk Factor Surveillance System, Vital Statistics unit, and Cancer Registry. Other health data sources included: NC Division of Public Health (DPH) Epidemiology Section; NC Division of Mental Health, Developmental Disabilities and Substance Abuse Services; the Centers for Disease Control and Prevention; National Center for Health Statistics; NC DPH Nutrition Services Branch; and NC DETECT.

Environmental data was gathered from sources including: US Environmental Protection Agency; US Department of Agriculture; and NC Department of Environment and Natural Resources.

Because in any CHA it is instructive to relate local data to similar data in other jurisdictions, throughout this report representative county data is compared to like data describing the 16-county region and the state of NC as a whole. The WNC regional comparison is used as "peer" for the purposes of this assessment. Where appropriate and available, trend data has been used to show changes in indicators over time.

It is important to note that this report contains 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.

WNC Healthy Impact Survey (Primary Data)

Survey Methodology

The 2018 WNC Healthy Impact Community Health Survey was conducted from March to June. The purpose of the survey was to collect primary data to supplement the secondary core dataset, allow individual counties in the region to collect data on specific issues of concern, and hear from community members about their concerns and priorities. The survey was conducted throughout the entire WNC Healthy Impact region, which includes the following 16 counties: Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania and Yancey.

Professional Research Consultants, Inc. (PRC) designed and implemented the survey methodology, which included a combination of telephone (both landline and cell phone) interviews, as well as an online survey. The survey methodology was designed to achieve a representative sample of the regional population that would allow for stratification by certain demographic characteristics, while also maximizing data collection timeliness and efficiency. Survey sampling and implementation methodology is described in greater detail below.

Survey Instrument

The survey instrument was developed by WNC Healthy Impact's data workgroup, consulting team, and local partners, with assistance from PRC. Many of the questions were derived from the CDC Behavioral Risk Factor Surveillance System (BRFSS) and other validated public health surveys. Other questions were developed specifically by WNC Healthy Impact, with input from regional and local partners, to address particular issues of interest to communities in western North Carolina. Each county was given the opportunity to include three additional questions of particular interest to their county, which were asked only of their county's residents.

The three additional county questions included in the 2018 survey were:
1. I believe it is important for ALL PUBLIC PLACES to be 100% tobacco free (Strongly Agree/Agree/Neither Agree nor Disagree/Disagree/Strongly Disagree)
2. Are ALL dogs, cats, and ferrets that you own as pets up-to-date on their rabies vaccinations? (Yes/No/Don't have pets/Too young/Don't know)
3. Do you keep your medicine in a locked place so that no one else can access it? (Yes/No)

The Community Survey questions are included as an attachment.

Sampling Approach & Design

PRC designed the survey methodology to minimize sample bias and maximize representativeness by using best practice random-selection sampling techniques. They also used specific data analysis techniques, including poststratification, to further decrease sample bias and account for underrepresented groups or nonresponses in the population. Poststratification involves selecting demographic variables of interest within the population (here, gender, age, race, ethnicity, and poverty status) and then applying "weights" to the data to produce a sample which more closely matches the actual regional population for these characteristics. This

technique preserves the integrity of each individual's responses while improving overall representativeness. In order to determine WNC regional estimates, county responses were weighted in proportion to the actual population distribution to appropriately represent Western North Carolina as a whole. Since the sample design and quality control procedures used in the data collection ensure that the sample is representative, the findings may be generalized to the region with a high degree of confidence.

Survey Administration
PRC piloted the survey through 30 interviews across the region and consulted with WNC Health Network staff to resolve substantive issues before full implementation. PRC used trained, live interviewers and an automated computer-aided telephone interviewing system to administer the survey region-wide. Survey interviews were conducted primarily during evening and weekend hours, with some daytime weekday attempts. Interviewers made up to five call attempts per telephone number. Interviews were conducted in either English or Spanish, as preferred by respondents. The final sample included 29 percent cell phone-based survey respondents and 71 percent landline-based survey respondents. Including cell phone numbers in the sampling algorithm allowed better representation of demographic segments that might otherwise be under sampled in a landline-only model.

PRC also worked with a third-party provider to identify and invite potential respondents for an online survey for a small proportion (20%) of the sample population. The online survey was identical to the telephone survey instrument and allowed better sampling of younger and more urban demographic segments.

About the Graham County Sample

Size: The total regional sample size was 3,265 individuals age 18 and older, with 152 from our county. PRC conducted all analysis of the final, raw dataset.

Sampling Error: For our county-level findings, the maximum error rate at the 95% confidence level is +7.8%.

Expected Error Ranges for a Sample of 152 Respondents at the 95 Percent Level of Confidence
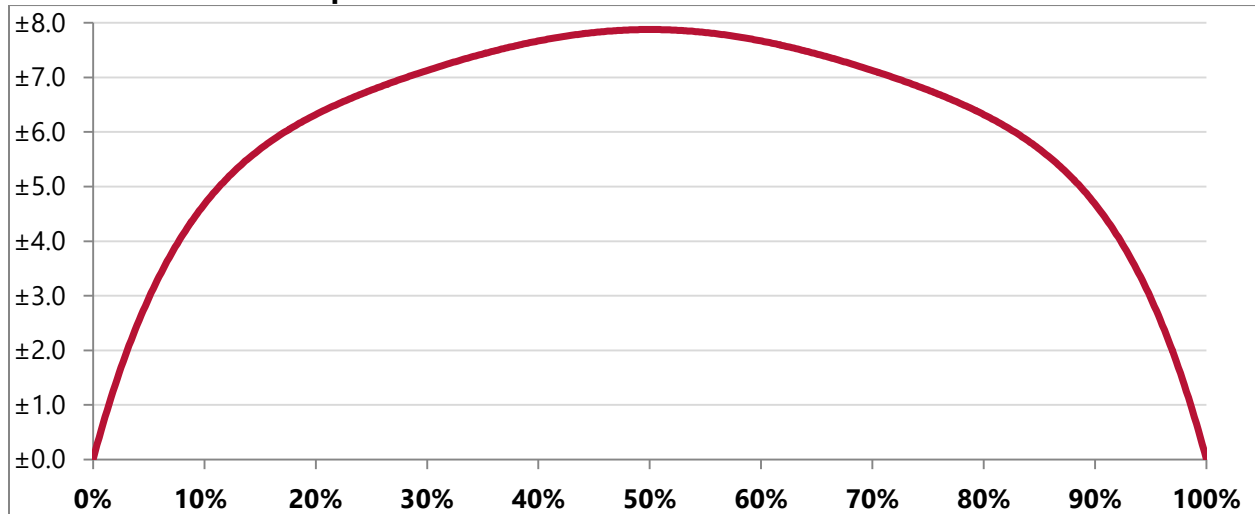
Note: The "response rate" (the percentage of a population giving a particular response) determines the error rate associated with that response. A "95 percent level of confidence" indicates that responses would fall within the expected error range on 95 out of 100 trials.
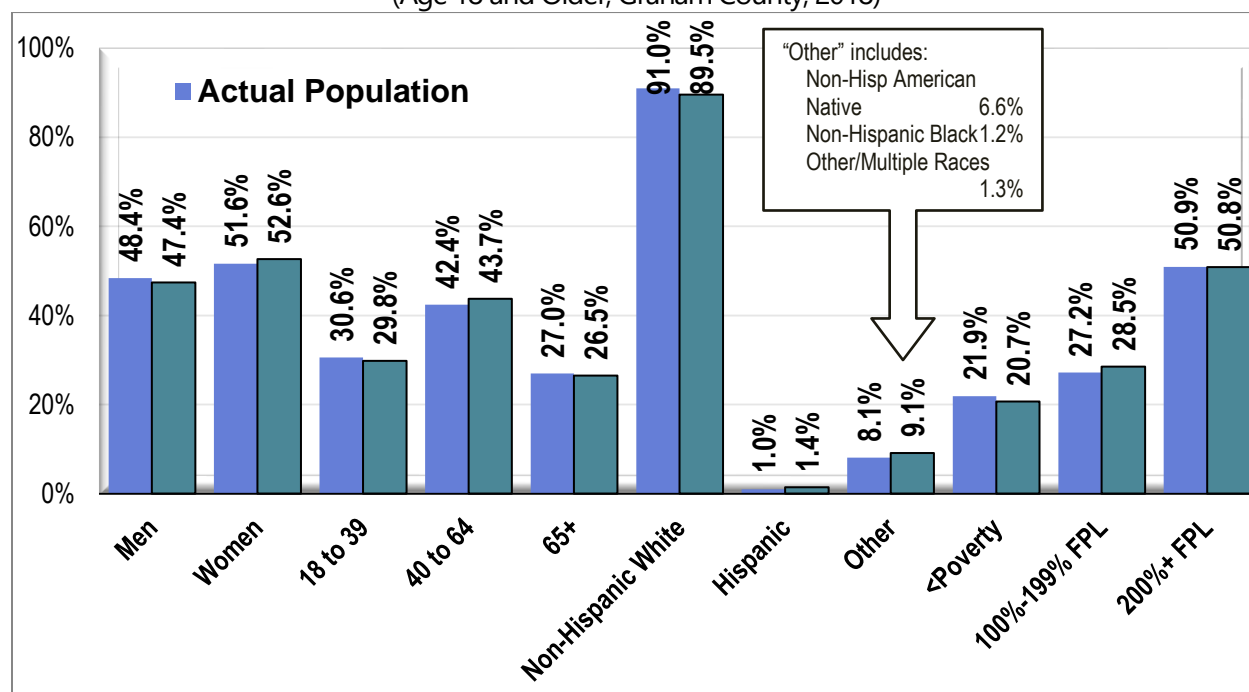
Examples:
- If 10% of a sample of 200 respondents answered a certain question with a "yes," it can be asserted that between 5.8% and 14.2% (10% ± 4.2%) of the total population would offer this response.
- If 50% of respondents said "yes," one could be certain with a 95 percent level of confidence that between 43.1% and 56.9% (50% ± 6.9%) of the total population would respond "yes" if asked this question.

Characteristics: The following chart outlines the characteristics of the survey sample for our county by key demographic variables, compared to actual population characteristics from census data. Note that the sample consists solely of area residents age 18 and older.

Population & Survey Sample Characteristics
(Age 18 and Older; Graham County, 2018)

Chart: Population & Survey Sample Characteristics (Age 18 and Older; Graham County, 2018), comparing Actual Population values.

Category	Actual Population	Survey Sample
Men	48.4%	47.4%
Women	51.6%	52.6%
18 to 39	30.6%	29.8%
40 to 64	42.4%	43.7%
65+	27.0%	26.5%
Non-Hispanic White	91.0%	89.5%
Hispanic	1.0%	1.4%
Other	8.1%	9.1%
<Poverty	21.9%	20.7%
100%-199% FPL	27.2%	28.5%
200%+ FPL	50.9%	50.8%

"Other" includes:
Non-Hisp American Native 6.6%
Non-Hispanic Black 1.2%
Other/Multiple Races 1.3%

Sources:
● 2011-2015 American Community Survey. U.S. Census Bureau.
● PRC Community Health Survey, Professional Research Consultants, Inc.

Benchmark Data

North Carolina Risk Factor Data
Statewide risk factor data are provided where available as an additional benchmark against which to compare local survey findings; 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
Nationwide risk factor data, which are also provided in comparison charts where available, are taken from the 2017 PRC National Health Survey; the methodological approach for the national study is identical to that employed in this assessment, and these data may be generalized to the US population with a high degree of confidence.

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.
- Measure the impact of prevention activities.

Healthy People 2020 is the product of an extensive stakeholder feedback process that is unparalleled in government and health. It integrates input from public health and prevention experts, a wide range of federal, state and local government officials, a consortium of more than 2,000 organizations, and perhaps most importantly, the public. More than 8,000 comments were considered in drafting a comprehensive set of Healthy People 2020 objectives.

Information Gaps

While this assessment is quite comprehensive, it cannot measure all possible aspects of health in the community, nor can it adequately represent all possible populations of interest. It must be recognized that these information gaps might in some ways limit the ability to assess all of the community's health needs.

For example, certain population groups (such as the homeless, institutionalized persons, or those who only speak a language other than English or Spanish) are not represented in the survey data. Other population groups (for example, pregnant women, lesbian/gay/bisexual/transgender residents, undocumented residents, and members of certain racial/ethnic or immigrant groups) might not be identifiable or might not be represented in numbers sufficient for independent analyses.

In terms of content, this assessment was designed to provide a comprehensive and broad picture of the health of the overall community. However, there are certainly a great number of medical conditions that are not specifically addressed.

Online Key Informant Survey (Primary Data)

Online Survey Methodology

Purpose and Survey Administration

WNC Healthy Impact, with support from PRC, implemented an Online Key Informant Survey to solicit input from local leaders and stakeholders who have a broad interest in the health of the community. WNC Healthy Impact shared with PRC a list of recommended participants, including those from our county. This list included names and contact information for physicians, public health representatives, other health professionals, social service providers, and a variety of other community leaders. Potential participants were chosen because of their ability to identify primary concerns of the populations with whom they work, as well as of the community overall.

Key informants were contacted through an email that introduced the purpose of the survey and provided a link to take the survey online. Reminder emails were sent as needed to increase participation.

Online Survey instrument
The survey provided respondents the opportunity to identify critical health issues in their community, the feasibility of collaborative efforts around health issues, and what is helping/hurting their community's ability to make progress on health issues.

The Online Survey questions are included in the attachments.

Participation
In all, eight community stakeholders took part in the Online Key Informant Survey for our county, as outlined below:

Local Online Key Informant Survey Participation		
Key Informant Type	**Number Invited**	**Number Participating**
Community Leader	6	5
Other Health Provider	3	1
Physician	2	0
Public Health Representative	1	1
Social Services Provider	2	2

Through this process, input was gathered from several individuals whose organizations work with low-income, minority populations, or other medically underserved populations.

Online Survey Limitations
The Online Key Informant Survey was designed to gather input from participants regarding their opinions and perceptions of the health of the residents in the area. Thus, these findings are based on perceptions, not facts.

To collect this data, purposive sampling (a type of non-probability sampling which targets a specific group of people) was used. Unlike the random sampling technique employed in the telephone survey, the purpose is not to make generalizations or statistical inferences from the sample to the entire population, but to gather in-depth insights into health issues from a group of individuals with a specific perspective.

Listening Sessions
Three listening sessions were held to gather information around the health priorities; two of these groups are referenced in this document: Celebrate Recovery and the Beta Sigma Phi group.

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. While these technical health data terms are defined in the report at the appropriate time, there are some data caveats that should be applied from the onset.

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, 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 is 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 sixteen separate county measures the consultants calculated a 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.).

<u>Data limitations</u>
Some data that is used in this report may have inherent limitations, due to the sample size, its geographic focus, or its being out-of-date, for example, but it is used nevertheless because there is no better alternative. Whenever this kind of data is used, it will be accompanied by a warning about its limitations.

APPENDIX B - Executive Summary: Rural Communities Opioid Response Program (RCORP)

Overview:
In October 2018, Appalachian Mountain Community Health Centers (AMCHC) received a $200,000 RCORP Planning Grant from the Health Resources and Services Administration (HRSA) to convene a multi-sector consortium of regional resource organizations as well as local direct service providers that provide vital Opioid prevention/treatment services in Clay, Cherokee and Graham Counties. Local direct service providers include AMCHC, the three local county health departments (Cherokee, Clay and Graham) and Meridian Behavioral Health Services. Regional resource organizations include MountainWise Public Health Partnership, Mountain Area Health Education Center (MAHEC), Vaya Health and UNC Gillings MPH Program in Asheville.
These three Western NC Counties have been identified by the Centers for Disease Control and Prevention (CDC) in the top 5% of vulnerable counties nationally at risk of outbreaks of HIV and/or Hepatitis C because of the Opioid epidemic. The expected synergy of this consortium is that a highly focused effort on three of the highest risk communities will have an immediate measurable impact on reducing overdose death rates and concomitant HCV and HIV infection related to opioid use, while simultaneously allowing lessons learned to be quickly spread to the region as a whole.

Purpose/Goals:
- To support treatment for and prevention of substance use disorder (SUD), including opioid use disorder, in rural counties at the highest risk for substance use disorder in Cherokee, Clay and Graham Counties in Western NC
- To reduce the morbidity and mortality associated with opioid overdoses in high-risk rural communities by strengthening the organizational and infrastructural capacity of the multi-sector consortium to address prevention, treatment and recovery.

Core Activities:
1. Develop the consortium: long term sustainability and impact rests in the strength of the consortium
2. Tri-county analysis of opportunities and gaps: community health needs assessment specific to SUDs prevention, treatment and recovery
3. Develop Comprehensive Strategic Plan
4. Develop Comprehensive Workforce Plan
5. Sustainability and Implementation Plan
6. Pilot Implementation Projects in each Clay, Cherokee, and Graham Counties