Good Samaritan Regional Medical Center

2016 Community Health Needs Assessment

Samaritan Health Services

Good Samaritan Regional Medical Center

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Chapter 1
Introduction and Overview

Good Samaritan Regional Medical Center

Good Samaritan Regional Medical Center (GSRMC), the largest of the five hospitals within Samaritan Health Services, Inc., is a 188-bed Level II trauma center. Established in 1913, construction began in 1918 with the doors opening in 1922. GSRMC serves all of Benton County as the primary medical facility. However, GSRMC also serves residents of Linn and Lincoln counties with regional programs including cancer, cardiac surgery, cardiology, vascular surgery and orthopedics, with several programs receiving a "five-star" quality rating. GSRMC has also been recognized by Blue Cross Blue Shield of Oregon as a Center of Distinction for spine surgery, cardiac care and maternity care. More than 1,700 employees and 200 volunteers keep the medical center and its' clinics running and supporting our motto, "building healthier communities together."

The 2016 Good Samaritan Regional Medical Center Community Health Needs Assessment (CHNA) is the result of many dedicated hours of research, working in collaboration with community partners and agencies, leaders, and local residents across Benton County.

The World Health Organization defines health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[1] Health is not just about individuals, but includes families, communities, and systems, and is a result of the interaction of complex networks of conditions and factors. Health starts long before illness occurs and is impacted by where and how we live, learn, work, play, worship and age.

This CHNA incorporates this definition of health by describing a wide array of information about the conditions and factors affecting people's health across the county as well as indicators of health status.

Assessment Goals and Objectives

The Good Samaritan Regional Medical Center Community Health Needs Assessment (CHNA):

- Identifies and gathers health status indicators in order to determine the current health status of the community;
- Describes areas for potential future health improvement while building upon ongoing community knowledge and efforts;

- Recognize and highlight the need for more detailed local data; and
- Is a collaborative process that incorporates a broad range of community voices.

CHNA data informs Good Samaritan Regional Medical Center's organizational decision-making, the Good Samaritan Regional Medical Center's Community Benefit Implementation Plan, and other community and hospital efforts.

Report Organization

The Community Health Assessment is presented in eight chapters. An appendix of key informant interviews, focus groups, and survey results is available as a separate document.

Chapter 1: *Introduction and Overview*, including methodology and limitations.

Chapter 2: *People,* describing the people of Benton County including population demographics as well as a look at how the community has changed over time.

Chapter 3: *Environment*, which includes information about the physical spaces in which we live, work, and play.

Chapter 4: *Social Determinants of Health,* which includes the social, economic, and community factors that influence health.

Chapter 5: *Access to Medical Care*, exploring how we define and measure the ability of those in our community to get the medical care they need.

Chapter 6: *Morbidity and Mortality,* which covers a number of related health outcomes, from chronic conditions to violence and injury.

Chapter 7: *Health Across the Life Course*, exploring the ways in which individuals and communities act to protect and improve health at different stages in life.

Chapter 8: *Conclusion: Meeting Challenges with Resources/Evaluation Impact,* discussing how this data can be used to understand the health of Benton County and recognize opportunities for positive changes to improve the health of the entire community.

Appendix (separate): *Community Perceptions on the Health of Benton County,* reporting on the results of key informant interviews, focus groups, and a community survey on perceptions of the health of the community.

Methodology

The CHNA is comprised of secondary and primary data. Data from secondary sources were identified by meeting with community partners and through preexisting publications (e.g. community health assessments and hospital community health needs assessments). In addition, data sources were identified through literature research to include data ranging from

local, state and national level data. A variety of community partners were involved throughout the process. Staff conducted both in-person and phone presentations and consultations with members of regional and county-level governmental, nonprofit, and health system organizations. In addition, members of state and local research communities were contacted.

This process has included:

- Engaging county stakeholders and partners in the process of issue identification, data collection, interpretation of data, editing, and dissemination of results;
- Obtaining updated secondary data for Benton County;
- Synthesizing existing data reports; identifying areas in which more information is needed; and including data from other sources which address these gaps;
- Identifying health needs and assets that will inform additional local planning processes, including County-level Community Health Improvement Plans, Public Health Division strategic planning, public health accreditation, and health care transformation initiatives, among others; and
- Consulting state and national resources for guidance in the development of this community health assessment, including the following: Oregon Health Authority technical reports (e.g. health equity,[2] asthma,[3] chronic disease prevention[4]); the Centers for Disease Control and Prevention's data set directory of social determinants of health at the local level;[5] King County's Equity and Social Justice Annual Report;[6] and the Statewide Health Assessment of Minnesota.[7]

Limitations

While the CHNA identifies many critical issues pertaining to community health, it is not inclusive of all health-related issues. As a result, it should not be considered a formal study or research document investigating the causes of each issue raised or providing a detailed analysis of the data.

When considering the many factors that contribute to health, data are lacking in part because respective theoretical models are still being developed. In addition, conclusions, hypotheses, and interpretations of the interactions between the many factors that contribute to health may not be included, in part because the underlying structures of these interactions are still not fully understood.

Gaps in Data

Recognizing and highlighting the need for more detailed local data was a key objective of this assessment. As mentioned above (and throughout the document) data for Benton County was often not available for particular demographics, such as age, income, education-level, race/ethnicity, or zip code. This greatly limited the ability to explore differences or disparities within particular sub-populations.

When race/ethnicity data are gathered, analysis may be further limited due to a lack of data stratification by more specific racial categories, such as U.S-born versus Foreign-born for the Latino population, or the many ethnicities and cultures represented in the category of Asian-Pacific Islander. There are limited data on disparate populations in the county but, as explained throughout the CHNA, their needs and barriers to health and health care are likely to be greater than those of the population at large.

Frequently within the document, national or Oregon state-wide data are provided to illustrate trends, especially among vulnerable populations, when county level data are not available. It is important to note, however, that national or state-wide rates, trends, and patterns may not necessarily reflect the reality of particular communities' or the county's rates and trends. As partners continue to gather information to inform their practices and services, it is important to collect demographic data (i.e. zip codes, level of education, etc.) so that more accurate information can be used to inform future health improvement planning and other public health initiatives.

How to Use This Document

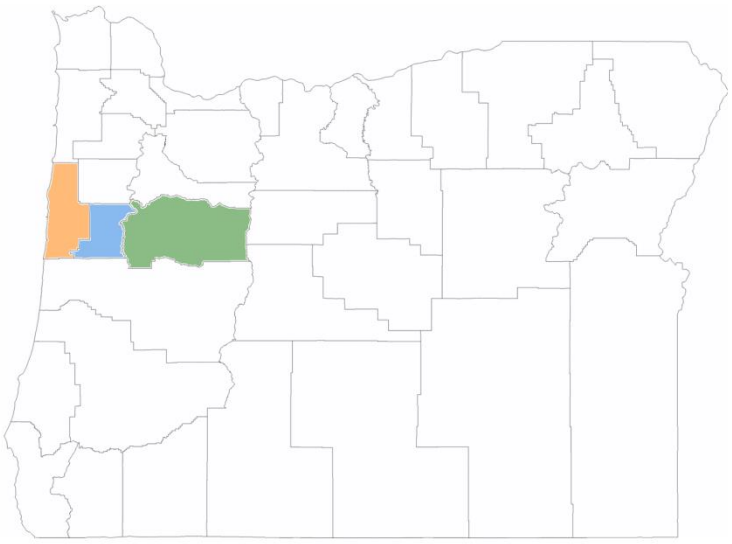
Timeframes for Data

This report attempts to balance the importance of comparing data from common years with the goal of presenting the most recent data. Different data sources update and release data on different timeframes. The U.S. Census Bureau is the main source of data for demographic and socioeconomic information used in this report. The most precise data available for county-level demographic and socioeconomic data is the Census Bureau's American Community Survey (ACS) 2011-2013 three-year aggregates. This aggregation combines data from the three years in order to produce more accurate estimates.

In an effort to compare data from common years, many statistics reported are from 2013, even if more recent data is available. These statistics reflect measures of health that have historically changed gradually, so differences between 2013 and the present are likely to be minor. However, other measures of health have changed greatly in the past two years, such as the implementation of the Affordable Care Act in 2014, which had huge impacts on insurance coverage rates and Medicaid membership. In this case and for other rapidly changing measures, more contemporary data is reported in order to best reflect current health status and the current health system.

As with the ACS 2011-2013 3-year aggregates, many other data sources aggregate statistics over a number of years to improve the reliability of the estimates. A common example of this is reporting the incidence (number of new cases) of cancer. For example, in the state of Oregon there were approximately 98,860 new cases of cancer in Oregon between 2008 and 2012. This statistic is reported as an incidence of 448 cases for every 100,000 people. This means that *each year*, for every 100,000 people in Oregon there were 448 cancer diagnoses. It does not mean that 448 cases per 100,000 people were diagnosed over the course of 5 years.

Chapter 2
People



The history of Benton County begins with the Native American tribes that have lived in the area for thousands of years. Native American tribes that first lived in the valleys, hills, and along the rivers of Benton County include the Long Kom, Lakimut, Chepofna, Chelamela, Klickitat, Siletz, Kalapuya, and Alsea. Today the Confederated Tribes of Siletz and the Confederated Tribes of Grande Ronde continue to have a close connection to Benton County.

Contact with non-native groups began with trappers and explorers in the late 18th century, then with pioneers and settlers who moved to the Oregon Territory during the mid-1800s. Over the next 150 years, Benton County grew in population and developed strong local industries. Oregon State Agricultural College, now Oregon State University, was designated as a land grant university in Benton County in 1868. The university is a major driver of economic and cultural activity in the region. In addition, Benton County is considered a regional health care hub, and is home to agriculture and technology industries.

Health Disparities

In the discussion of residents of Benton County, it is important to recognize that specific subpopulations may experience worse health outcomes than the general population. These include: individuals with mental health issues; homeless; rural residents; racial or ethnic groups; those with low educational attainment; persons living in poverty; and lesbian, gay, bisexual, transgender, or queer (LGBTQ) persons, among other subpopulations.

For example, across the United States, rates of illness for adults in their 30s and 40s with lower incomes and education levels are comparable to affluent adults in their 60s and 70s. College graduates can expect to live at least five years longer than those who have not finished high school, and almost two years longer than those who did not finish college.[8] People with mental health conditions and/or substance abuse issues in Oregon lose an average of 34.5 potential life years.[9] Understanding health disparities in the context of Benton County is critical to improving health across the county.

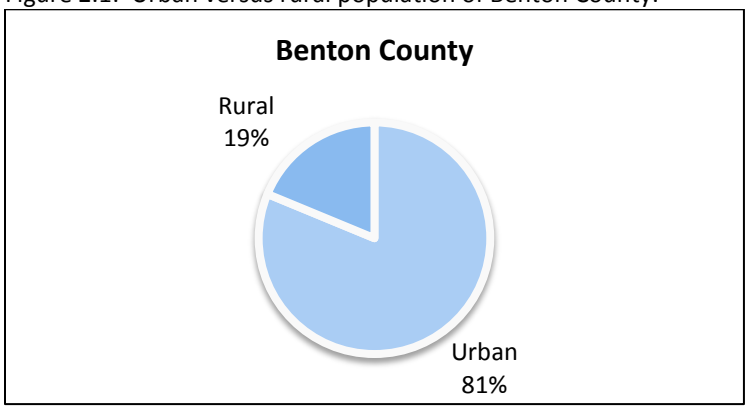
This chapter on the people of Benton County serves as the foundation for understanding the different characteristics of the people of the county. Permanence of residency has important effects on health, but at this time there is not data detailing the mobility of residents within the county and to or from other areas. This makes it more difficult to provide an accurate picture

of changing population dynamics. However, thanks in part to comprehensive data collected by the U.S. Census Bureau, we have a strong understanding of the residents of Benton County. This chapter will detail Benton County's population, its population distribution, population centers, and population characteristics of age, gender, race, ethnicity, disability and diversity.

Population Overview

Benton County is home approximately 86,000 residents. Close to 62,000 residents (73 percent) live in the two most populated cities of Benton County, Corvallis and North Albany.[10] Corvallis is the county seat, and it is also the largest city within Benton County (pop. 59,000). 19 percent of residents living in Benton County live in rural areas (Figure 2.1). This rural geography often isolates families through their limited daily interactions with other residents. Isolation is increased by limited public transportation options as well as the variable cost of gasoline.

Figure 2.1: Urban versus rural population of Benton County:



Source: U.S. Census Bureau, 2010 Decennial Census, Table P2

In 2013, there were 33,298 households in Benton County.[11] Benton County has an average household size of 2.4 people. Families made up 56 percent of the households. In Benton County, 46 percent of households consist of married couple family households. Among persons 15 years of age and older, 44 percent of males and 43 percent of females are currently married.[12]

Non-family households made up 44 percent of all homes in Benton County. Most non-family households are composed of people living alone, but some are people living in households in which no one is related to the head of household.[13]

In Benton County, 24 percent of all households have one or more people under the age of 18. Benton County has a lower percentage of households with seniors. .[14]

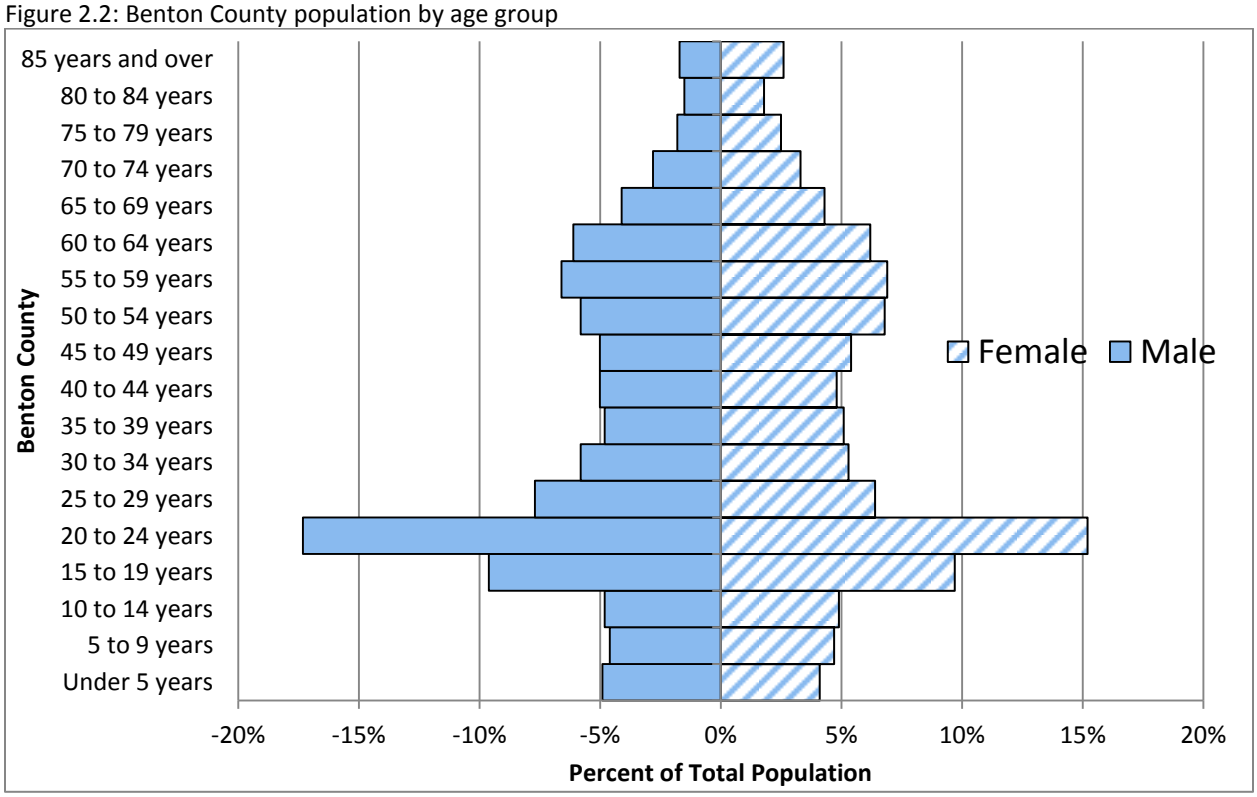
Veterans

The 2009-2013 American Community Survey (ACS) report that there are 5,561 individuals with veteran status in Benton County. [15] Veterans are defined as men and women who have previously served on active duty in the U.S. Army, Navy, Air Force, Marine Corps, Coast Guard, or who served in the U.S. Merchant Marine during World War II.[16] This amounts to approximately 8 percent of Benton County's civilian population ages 18 and older. As this population ages, the number of individuals with veteran status is expected to decrease over time.

Demographics: Population by Age and Sex

Based on U.S. 2013 Census data, the percentage of males and females in Benton County is approximately equal in most age groups.[17] Within Benton County , the age group of children under 18 years of age constitutes 17.2 percent of the population and the age group of adults 65 years and older constitutes 13.2 percent of the population. The median age in Benton County is 33 years.[18] From 2000 to 2014, the population of Benton County grew 10.4 percent, from 78,153 to 86,346.[19,20]

Figure 2.2: Benton County population by age group



Source: U.S. Census Bureau, American Community Survey 3-year estimates, 2011-2013, Table S0101

The age distribution for Benton County can be seen above in the form of a population pyramid (Figure 2.2). Benton County's population is heavily skewed towards younger individuals. Young

adults between 20 and 24 years of age make up a very large proportion of Benton County's population (about 15 percent), due to the large university presence in Corvallis.

Growing Diversity

Native and Foreign Born

In 2013, 91 percent of the people living in Benton County were native residents of the United States.

Race/Ethnicity

In an increasingly global view of health and understanding of research outlining the social constructs of race and ethnicity, a culturally sensitive definition of race should be considered. The inclusion of individuals to self-identify as two or more races has been adopted almost universally across other agencies collecting and reporting demographic data. It is important to understand the data for individuals along the lines of racial divide as later issues of health disparities will be presented. Without understanding the populations impacted by these health disparities, health authorities would be limited in their ability to address the specific issues creating the disparities.

U.S. Office of Management and Budget defines race and ethnicity categories accordingly:

White – people having origins in Europe, the Middle East, or North Africa.
Black or African-American – people having origins in the black racial groups in Africa.
Asian – people having origins in any of the original peoples of the Far East, Southeast Asia or the Indian subcontinent.
Native Hawaiian or Other Pacific Islander – people having origins in any of the original people of Hawaii, Guam, Samoa, or other Pacific Islands.
American Indian or Alaska Native – people having origins in any of the original peoples of North or South America (including Central America), and who maintain a tribal affiliation or community attachment.
Multiracial – people having origins in two or more of the federally designated racial categories.
Hispanic or Latino – A person of Cuban, Mexican, Puerto Rican, South or Central America, or other Spanish culture or origin, regardless of race.[21]

In this report, the non-Hispanic categories are used for races. For example, the category denoted White includes white, non-Hispanic individuals.

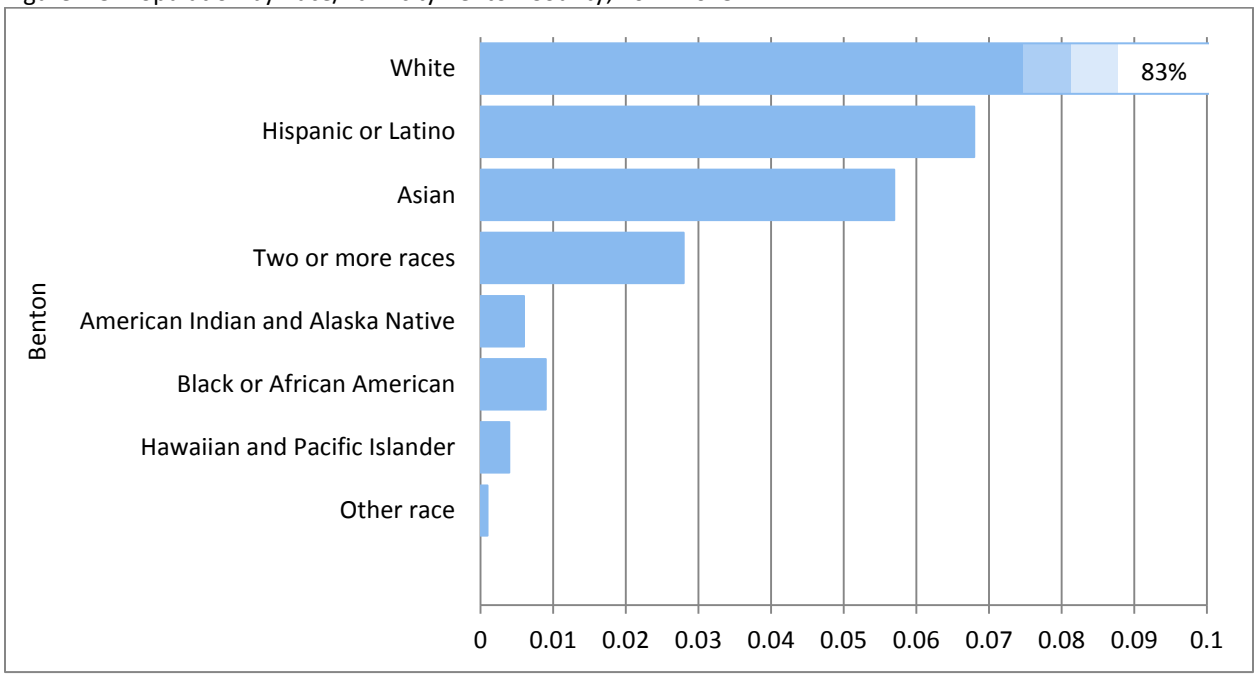
As shown in Table 2.1, the largest ethnic population in Benton County is Latino (6.8 percent).[22] The Latino population increased by three percent from 2000 to 2011.[23,24,25] The largest non-White racial group in Benton County is Asian (5.7 percent).

Table 2.1: Population by Race/Ethnicity Benton County 2011-2013*

	Total Population	Percent
White	71,463	82.8%
Hispanic or Latino	5,850	6.8%
Asian	4,960	5.7%
Two or more races	2,386	2.8%
American Indian and Alaska Native	495	0.6%
Black or African American	807	0.9%
Hawaiian and Pacific Islander	312	0.4%
Other race	73	0.1%

Source: U.S. Census Bureau, American Community Survey 3-year estimates, 2011-2013, Table DP05
*Columns may not sum to 100% due to rounding error

Figure 2.3: Population by Race/Ethnicity Benton County, 2011-2013



Source: U.S. Census Bureau, American Community Survey 3-year estimates, 2011-2013, Table DP05

K-12 Population

During the 2013-2014 school year, the four school districts of Benton County served 8,840 students, a slight decrease (less than 1 percent) from the number of students in 2010. These students include kindergarten through 12th grade in 23 public schools. [26] These statistics do not include private schools or homeschooled students. In Table 2.2 below, the racial and ethnic diversity for the county school districts are presented.

Table 2.2: Benton County School Districts by race/ethnicity, 2013-2014

School district	White	Hispanic/ Latino	Asian Pacific Islander	Multi-Ethnic	American Indian/ Alaskan Native	African American	Total Minority
Alsea	90.1%	7.6%	0.0%	1.2%	0.6%	0.6%	9.9%
Corvallis	68.9%	15.5%	6.5%	7.1%	0.7%	1.2%	31.1%
Monroe	76.3%	19.4%	0.7%	1.8%	1.8%	0.0%	23.7%
North Albany							
Philomath	85.7%	8.0%	1.0%	3.7%	1.4%	0.2%	14.3%
Benton County Total	72.8%	14.2%	5.1%	6.1%	<1.0%	< 1.0%	27.3%

Source: Oregon Department of Education, Student Ethnicity statistics, academic year 2013-2014

Language Spoken at Home

2011-2013 U.S. Census data for Benton County reports that 11.9 percent of residents who are at least 5 years old spoke a language other than English at home.

Disabilities

Understanding and measuring disability is a very complex task. The complexity comes from the fact that the definition of "disability" includes a number of populations, and because the definition is still being discussed and further developed. Definitions of disabilities from a source such as the World Health Organization (WHO) can help shed light on the particular health issues facing these populations, but it must be noted that this definition is not the same as that used to gather many types of data.

Disability itself is not an indicator of poor health—rather, disability can (and often does) become a barrier to employment, adequate housing, social inclusion, transportation, access to health care, and other essential components of a healthy life.

Mental illness, that substantially limits one or more major life activities, is also included in definitions of disability.[27] This is particularly worth noting, as institutionalized populations generally experience a greater prevalence and severity of mental illness than the broader population. However, these populations are not captured in much of the data collected around disability.[28]

From 2011 to 2013, among the civilian non-institutionalized population, approximately 10 percent reported a disability in Benton County,[29] where *disability* is defined as a person's risk of participation limitation when he or she has a functional limitation or impairment.[30] Disability encompasses many different conditions; for instance, the most common disability in Benton County among those aged 5-64 is cognitive difficulty, with ambulatory difficulty ranking the highest for the 65 and older population. The prevalence of disability increases with age, from 1.4 percent of people under 5 years of age, up to 7.6 percent for 18 to 64 years of age, and 31.6 percent of those 65 and over.

Aging Population

Among those living in Benton County, 13 percent are 65 years of age and over, compared with 15 percent in Oregon overall.[31] A number of health issues, needs, and concerns are associated with an aging population.

Conclusion

In order to understand the health of Benton County, it is vital to understand the people who live here. Differences in age, race or ethnicity, and geography all influence health. Vulnerable populations, such as individuals with disabilities or older adults, merit further description, both because they may require different services, and also because they may present different health concerns. The people of Benton County are growing more diverse and represent many different groups, such as students, Native Americans, and retirees. The history of the region has shaped the residents of this county into its makeup today. In exploring the many determinants of health, it is evident that the people of Benton County are deeply connected with the environments in which they live. The next chapter explores these environments and the effects they have on the health of the county.

Chapter 3
Environment

Human beings interact with their environment in everything they do. Some of these interactions have the potential to improve health, while others can negatively impact it. The natural environment is made up of the interactions of air, water, open spaces, and weather or geologic activity. The human-made environment consists of homes, communities, and infrastructure. These two environments are closely linked in their effects on human health. Humans benefit from clean water and air, places to exercise and enjoy the outdoors, safe living and working spaces, and opportunities to engage in healthy behaviors such as active commuting and consuming healthy food. However, when an environment lacks these characteristics, the complex interactions of health and environment can worsen health issues. Poor air quality can raise the risk of asthma, heart attack, or stroke;[32] poorly designed communities can limit opportunities for recreation or access to quality food;[33] and infrequent but intense natural disasters can disproportionately affect vulnerable populations.

Benton County has many strengths and challenges in regards to environmental factors. The county has active populations that value open spaces for recreation, clean air, and clean water, while at the same time Benton County faces food access and transportation issues. An understanding of the natural and human-made environments forms a foundation for an analysis of the health of Benton County.

Natural Environment

The natural environment changes slowly and usually influences health through long-term, cumulative effects. As a result, many of the data described in this section use longer time frames than elsewhere in this report. Furthermore, unlike many other determinants of health, it can be very difficult or impossible for individuals or health professionals to influence the natural environment on a local scale. Examples include global climate change or natural disasters. What can be controlled are the systems and practices put in place to react and adapt to the natural environment in order to improve health.

Terrain and Natural Resources

The area comprising Benton County is 676 square miles.[34] Benton County is bordered to the south by Lane County, to the north by Polk County, to the west by Lincoln County, and to the east by Linn County. Primary land cover types include mixed Douglas-fir coniferous forests, oak savannahs, and agricultural land.
Located in the mid-Willamette Valley, its rich agricultural and forest land, mountains, valleys, rivers and wetlands are highly prized economically, culturally, recreationally, environmentally

and aesthetically. The western side of Benton County climbs into the Coast mountain range, where the highest point in Benton County, Mary's Peak (4,097 feet), is located. The Willamette River forms the eastern boundary of Benton County.

Annual weather patterns

Benton County experiences seasonal variation throughout the year, with hot, dry summers, and cold, wet winters. On average, 44 inches of rain fall per year in the valley. Most of Benton County's annual precipitation occurs from October to March. Temperatures rarely dip below freezing from November through April, while highs above 90 degrees Fahrenheit are common in July and August. [35,36,37]

Recreation and outdoor spaces

Benton County is favored with a great variety of recreational assets and outdoor spaces. A diverse set of environments exist within the county's boundaries. Benton County's open spaces stretch from the highest peak in the Coast Range (Mary's Peak) to the Willamette River. Mary's Peak (4,097 feet) is situated in the Siuslaw National Forest. It hosts many hiking trails, which are also open to mountain bikes and horses. Mary's Peak is also the source of the Rock Creek Watershed, which provides much of the drinking water to Corvallis, and Mary's River, which is the source of Philomath's drinking water. Near Alsea, the Alsea Falls Recreation Site (managed by the Bureau of Land Management), is a popular hiking and day-use area. Recently a network of mountain biking trails was constructed for novice and experienced mountain bikers within the Alsea Falls Recreation Site. The most popular large recreation site in Benton County is the McDonald-Dunn Research Forest, which is owned and managed by Oregon State University. It runs along a ridge of the Coast Range that extends along the northern edge of Corvallis. The 11,250 acre forest has 175,000 visits per year and hosts cross-country races in the spring and fall.[38] South of Corvallis, the Finley National Wildlife Refuge was established in 1964 to provide overwintering habitat for dusky Canada geese. The 5,325 acre refuge hosts some of the last wet prairies in the Willamette Valley, 12 miles of hiking trails, camas meadows, and a herd of Roosevelt Elk.[39]

Forming the border of Benton County, the Willamette River is a major recreation site, used by boaters, paddlers, and fishers. The Willamette River Trail maintains a network of 11 campsites and 7 boat ramps between Harrisburg and Albany. However, the Willamette River also has a history of contamination from agricultural runoff, storm water drainage, and industrial byproducts. This contamination has limited the healthy use of the river, but efforts are continuing to clean up the river and restore it to health.[40]

Recreational Access

Access to recreational facilities and opportunities demonstrates the intersection of natural and human-made environments. Research demonstrates a strong relationship between access to recreational facilities and physical activity among adults and children. Studies have shown that proximity to places with recreational opportunities is associated with higher physical activity and lower obesity levels.[41] Public recreation areas include parks, schools, public forests and trails, beaches, and waterfronts. As mentioned previously, Benton County's rural areas are largely accessible to residents.

Recreational opportunities that include walking and bicycling are efficient, low-cost, and available to most anyone. By walking and bicycling, residents can help develop and maintain livable communities, make neighborhoods safer and friendlier, save on motorized transportation costs, and reduce transportation-related environmental impacts, auto emissions, and noise. They can also create transportation system flexibility by providing alternative mobility options, particularly in combination with transit systems. Furthermore, creating walkable and bikeable communities can lead to healthier lifestyles.[42]

Fluoridated Water

Water fluoridation is the controlled addition of a fluoride compound to a public water supply, intended to prevent tooth decay. Community water fluoridation is an evidence-based practice recommended by the Community Preventive Services Task Force based on strong evidence of effectiveness in reducing dental cavities across populations.[43] It is an effective, affordable, and safe way to protect children from tooth decay and is recognized as one of the 10 greatest public health achievements of the 20th century.[44] Water fluoridation complements, but does not replace other efforts to improve oral health. Water fluoridation is a valuable tool in addressing oral health disparities, since everyone who can access public water benefits from it regardless of age, income level, or race or ethnicity. As of 2012, Oregon was ranked very low in the United States (48th out of the 50 states) for the percentage of people receiving fluoridated water. About 75 percent of the U.S. population served by community water systems received fluoridated water, while about 23 percent of Oregon's public water supplies are fluoridated.[45] This low state fluoridation rate is a direct consequence of some of Oregon's most densely populated regions lacking fluoridation, including Portland and Eugene.

In Benton County, two-thirds of residents are served by public water systems that fluoridate water, most of whom live in Corvallis, Philomath, North Albany, or Adair Village.

Human-made Environment

Human-made (or built) environments contribute to health in a variety of ways. People need schools, workplaces, and homes that do not expose them to physical or chemical hazards and

places to walk and recreate outdoors that are clean, safe, and free of debris. They also need access to quality and affordable food and transportation options, as well as the confidence that their local communities have not been contaminated with human-made pollutants.[46]

Healthy Homes

Indoor environmental quality, as defined by the Centers for Disease Control and Prevention, is the quality of a building's environment in relation to the health and well-being of those who occupy the space within it. Key factors that influence a structure's indoor environmental quality include dampness and mold in buildings, building ventilation, construction and renovation, chemicals and odors, indoor temperatures, and relative humidity.[47] Buildings in the county are often exposed to winter storms with winds in excess of 30 mph and heavy rainfall, with 24 hour accumulations of greater than three inches. This combination often results in moisture entering buildings, creating conditions for the growth of mold. Examining the health effects of specific contaminants in buildings is very complex, but research has shown that some respiratory symptoms and illnesses can be associated with damp buildings.[48] According to County Health Rankings, 22 percent of households in Benton County have severe housing problems.

Tobacco-free spaces

Tobacco use is still the leading preventable cause of death and disability in the county. Statistics on tobacco related diseases and deaths are discussed in Chapter 6: Morbidity and Mortality.

As stated in Benton County's Tobacco Prevention and Education program, "the list of diseases linked to tobacco use is expanding well beyond the general health risks of coronary heart disease, stroke, cancer and chronic lung disease." Tobacco use is also directly linked to additional health and environmental concerns such as exposure to second hand smoke; fire related death and injury; increased risks of wildfires; and littering of toxic cigarette filters. In order to reduce these health and environmental impacts, Benton County and the state have taken steps to reduce exposure to tobacco and cigarette smoke in public places.

Currently, Oregon law prohibits smoking and other tobacco products in most workplaces, schools, bars, and other indoor public spaces. Corvallis has banned smoking at city parks. Many governmental bodies are expanding smoke- or tobacco-free policies to explicitly include e-cigarettes.[49]

In Benton County, a number of non-governmental entities also restrict or ban tobacco on their properties. Linn Benton Community College and Oregon State University are both 100 percent tobacco free, and smoking is not allowed in OSU research forests. Good Samaritan Regional Medical Center, Samaritan Health Services, the Corvallis Clinic, and other health providers ban tobacco products, as does Willamette Neighborhood Housing Services and other low-income

housing services. Linn-Benton Housing Authority is smoke free at most of its units, with restrictions in place on the few that permit smoking.[50]

Transportation

Transportation links people and places, making it possible to get to work, to school, to recreational opportunities, and to the grocery store. Transportation includes more than roads, walkways, or bridges. It also encompasses public transit systems, policies that dictate the location and construction of roads, and guidelines for accommodating different kinds of users. Guidelines are important for providing avenues for physical activity, and for reducing the potential of driver, cyclist, and pedestrian injury.

Access to Public Transportation

Access to public transportation is an important public good. Not only does taking public transportation provide additional opportunities for exercise, but the presence of public transportation also makes it easier for individuals and families without private transportation to access goods and services vital to maintaining health. These include grocery stores, health and dental care, and recreation facilities. In Oregon, counties with large metropolitan areas relative to county population size tend to have more public transportation options. Approximately 50 percent of Benton County residents live within one quarter of a mile from a bus stop.[51] Most of those residents live in Corvallis and Philomath. Although distance to a public transportation route is one measure of the strength of a public transportation system, additional factors impact the strength of public transport, including frequency and hours of operation, direct routes, and connections to other routes.

People of color, people experiencing poverty, people with disabilities, and people who experience language barriers are more likely to depend on public transit. However, they often live in areas with poor transit service, fewer destinations, and poor connectivity. These unfair burdens increase transportation costs and stress, and limit access to economic and educational opportunities, housing, healthy foods, and physical activity. Vulnerable populations often have unsafe transportation conditions, including limited safe crossings, areas with high-speed traffic, and poor sidewalk and bicycle infrastructure.

Access to Healthy Foods

Transportation options and limited public transportation for county residents contributes to challenges with regard to nutritious food access. For households without private vehicles, the ability to shop for food at grocery stores is highly dependent on proximity. In Benton County, 19 percent of households are within one half mile of a grocery store. Statewide, the rate is also 19 percent. The average distance between a household and the nearest grocery store is 2.1 miles.[52] However, since grocery stores tend to be located in larger towns, the county average may overestimate the urban average and underestimate the rural average.

Access to nutritious foods can be particularly difficult for residents with unreliable transportation or tight budgets. A rural community is considered to have low access to food when it is ten or more miles from a supermarket or large grocery store. Rural residents must often travel long distances for food. For rural residents in the Benton County this could mean traveling as many as 20 miles to the nearest full service grocery store. Rural grocery stores throughout the county report barriers that may limit rural low-income families' access to healthy food. These include: administrative barriers to becoming an authorized vender for SNAP and WIC programs, economic barriers to offering fresh fruits and vegetables, meat, dairy and other refrigerated foods.[53]

As a comparison, almost twice as many residents live within one half mile of a tobacco vendor than live within one half mile of a grocery store; nearly twice as many residents live within one half mile of a tobacco vender compared to those who live within one half mile of a WIC authorized store (Table 3.1). Approximately five percent of Benton County residents are low income and do not live close to a grocery store.[*,54]

Table 3.1: Proximity to grocery stores compared to tobacco vendors in Benton County, 2012

Vendor	Average (mean) walking distance in miles	Percent of population living within ½ mile
Grocery stores	2.1	19%
WIC-authorized stores	2.1	18%
Tobacco vendors	1.3	34%

Source: Oregon Environmental Public Health Tracking, 2012

In addition to access to nutritious food, proximity to fast food can affect the health of the community. Although complex in nature, the food environment can impact what people eat, and providing healthy options is vital for the health of the community. Although not causal, studies have shown an increase in the prevalence of obesity and diabetes with increased access to fast food outlets in a community. Forty-six percent of restaurants in Benton County are fast food vendors.[55]

Conclusion

The previous Community Health Needs Assessment did not include a section on the environment, and changes to the environment generally take place over long time frames. Therefore there are no comparisons that can be made with the previous CHNA.

[*] "Close" is defined as within 1 mile for urban areas and within 10 miles for rural areas

Chapter 4
Social Determinants of Health

Opportunities for health among residents of Benton County begin within their communities including their homes, neighborhoods, places of worship, workplaces, and schools. A growing body of scientific research shows that all people benefit when communities invest in health.

The World Health Organization defines social determinants of health as "the conditions in which people are born, grow, work, live and age, and the wider set of forces and systems shaping the conditions of daily life".[56] These non-medical factors contribute to a large percent of preventable poor health outcomes. Social determinants include influences such as: "early years' experiences, education, economic status, employment and decent work, housing and environment, and effective systems of preventing and treating ill health."[57] These aspects of health are often referred to as "upstream factors" since their effect occurs well before illness is manifest and curative intervention becomes necessary. In this chapter data will be presented for education, employment, income, poverty, economic challenges, food security, home ownership, and homelessness.

Income, Poverty, and Economic Challenges

Income and Poverty

Income is the strongest predictor of health among all social determinants of health. Not only are there many studies showing a strong association between income and health,[58] but income also affects all other social determinants of health, including education, food security, and housing. The National Longitudinal Mortality Survey found that people in the top 5 percent of incomes had life expectancies 25 percent longer than people in the bottom 5 percent of incomes.[59] While income is not a "one size fits all" measure of health, understanding the income characteristics of the county provides a solid foundation for measuring social determinants of health in Benton County.

Median Incomes

The median income of a population is one measure of the overall income in that population; 50% of the population earns more than the median income, and 50% of the population earns less.

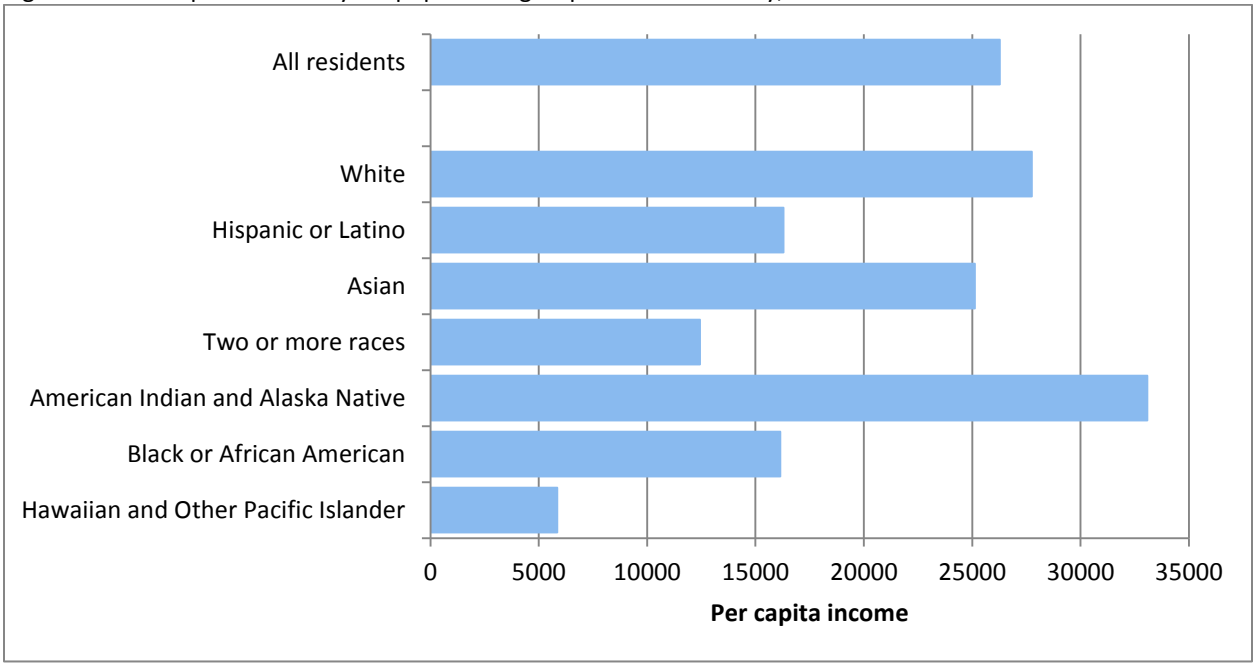
Table 4.1: Median household income of Benton County and Oregon, 2011-2013

	Benton	Oregon
Median household income	$47,587	$49,519

Source: U.S. Census Bureau American Community Survey, 2011-2013, Table B19013

Per capita income is another measure of income. Per capita income is lower than median household income because it is per person, not per household. Figure 4.1 below displays the per capita income of Benton County to the subpopulation group.

Figure 4.1: Per capita income by subpopulation group in Benton County, 2011-2013



Source: U.S. Census Bureau American Community Survey, 2011-2013, Table B19301

Income Inequality

Income inequality (the distribution of wealth between richer and poor segments of the population) is associated with many health outcomes. Regions with higher inequality are more likely to experience increased infant mortality, lower life expectancy, higher rates of depression, and lower health status overall. Income inequality is commonly measured by calculating the ratio of the 80th income percentile to the 20th income percentile of the population.[*,60] In Oregon, the 80th income percentile is 4.6 times the 20th income percentile (Figure 4.2). Benton County, which has a ratio of 6.3, has the highest income inequality in the in the state.

Poverty

Poverty is inextricably linked to poor health outcomes. Poverty is related to both limited income and lack of economic stability, limited choices in education, employment, and living

[*] The 80th income percentile is the income of the individual who earns more than 80 percent of the population. The 20th income percentile is the income of the individual who earns more than 20 percent of the population. Those who earn more than the 80th income percentile are the richest 20% of the population; those who earn less than the 20th percentile are the poorest 20% of the population.

conditions, and reduced access to safe places to live, work, and play. It can also frequently hinder choices and access to healthy food.

The United States Census Bureau determines the Federal Poverty Level (FPL) each year. The FPL was originally an estimate of the amount of money required to meet the cost of living for individuals or families. Currently, the FPL is a statistical threshold of poverty.[61] It is not generally recognized as an accurate measure of true poverty, but it is used for determining eligibility for assistance programs. Below, in Table 4.2, the FPL for individuals and families is presented, as well as specific FPL ratios that are used for eligibility and comparison purposes.

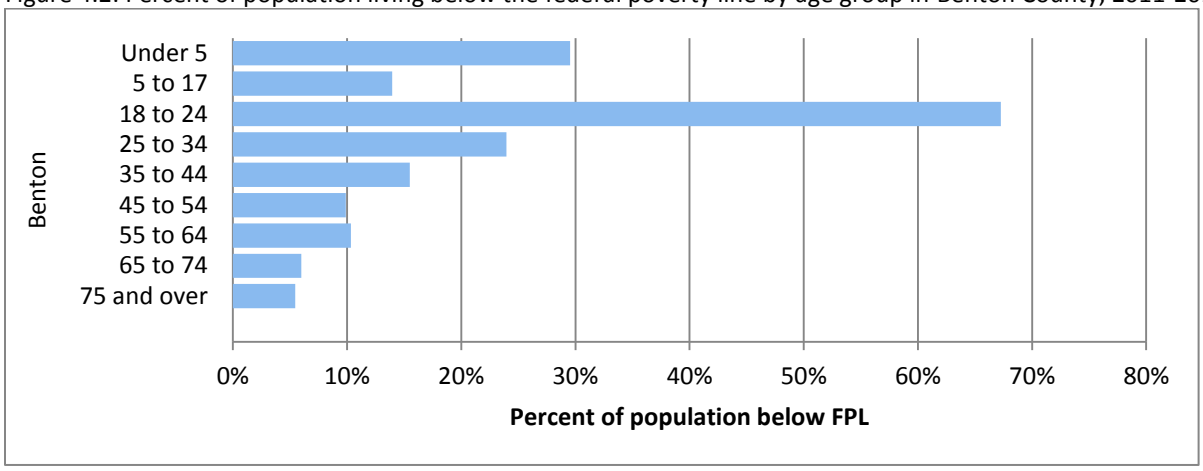
Table 4.2: Annual Income and Federal Poverty Levels and related ratios for 2013

Family size	Percent of Federal Poverty Level					
	50%	**100%**	138%	185%	200%	400%
Individual	$5,940	**$11,880**	$16,394	$21,978	$23,760	$47,520
Three person family	$9,277	**$18,554**	$25,605	$34,325	$37,108	$74,216
Four person family	$11,922	**$23,844**	$32,905	$44,111	$47,688	$95,376

Source: U.S. Census Bureau, Historical Poverty Threshold Table

Approximately 24 percent of the Benton County's population lives below the federal poverty line, compared to 17 percent of Oregon's total population. Benton County's greater percent of the population living below the federal poverty line is largely due to poverty among 18 to 24 year olds. A worrisome statistic is the poverty rate among this age group, combined with the very large proportion of Benton County residents that are between age 18 and 24. Another worrisome statistic is that children less than 5 years of age are among the age groups with the highest percentage living below the federal poverty level in Benton County. This indicates opportunities for improvement in the county.[62] Figure 4.2 on the following page illustrates each age group's contribution to the overall poverty rate.

Figure 4.2: Percent of population living below the federal poverty line by age group in Benton County, 2011-2013

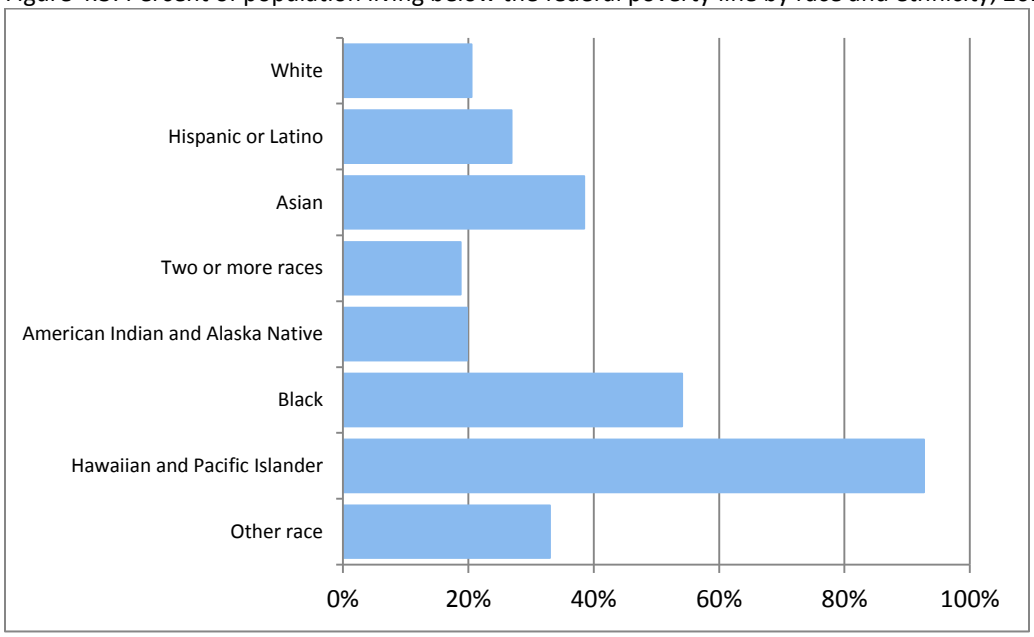


Source: U.S. Census Bureau, American Community Survey, 2011-2013, Table S1703

Earning less than a high school education increases the risk of experiencing poverty.[63] In Benton County, 38 percent of adults over the age of 25 who did not complete high school are below the federal poverty line, compared with 16 percent of those who completed high school.[9]

Variation also exists between racial/ethnic groups, although racial/ethnic groups within the county consistently have a higher percentage of population living below the federal poverty line. As shown in Figure 4.3, the White, non-Hispanic/Latino population, the American Indian/Alaska Native population, and those who are two or more races have the lowest poverty rates in Benton County. Individuals in Benton County who identify as Hawaiian or Pacific Islander and Black or African American are among the racial/ethnic groups with the highest poverty rates with 93 percent and 54 percent, respectively.[64] It is important to note, however, that the population for these racial/ethnic groups, in addition to the American Indian population, is small relative to other groups within Benton County.

Figure 4.3: Percent of population living below the federal poverty line by race and ethnicity, 2011-2013



Source: U.S. Census Bureau, American Community Population, 2011-2013, Table S1701

Low Income and Cost of Living

Many Benton County residents earn incomes higher than the federal poverty level but still struggle economically to meet their everyday needs. Nearly 35 percent of Benton County's population earn less than 185 percent of the federal poverty level ($21,775 annually for an individual or $44,863 annually for a family of four in 2015).[65,66] This is the threshold that many assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), use for income eligibility.

Research suggests that the cost of living in Benton County is well above the federal poverty level. Table 4.3 below shows the cost of living for three family types in each county, and the corresponding poverty level. These figures take into account costs such as housing, child care, food, transportation health care, and taxes.[67]

Table 4.3: Cost of living as a percent of the federal poverty level, 2014

Location	One adult, one preschooler		One adult, one preschooler, one school-age		Two adults, one preschooler, one school-age	
	Annual cost of living	Annual cost of living as percentage of FPL	Annual cost of living	Annual cost of living as percentage of FPL	Annual cost of living	Annual cost of living as percentage of FPL
Benton	$44,684	284%	$55,389	280%	$62,671	263%

Source: The Self-Sufficiency Standard for Oregon, 2014

Employment

Stable and secure employment influences health, not only by being a source of income, but also by providing access to health insurance. Compared to unemployed workers, individuals who are employed fulltime have higher incomes and standards of living, less stress, and may be less likely to turn to unhealthy coping behaviors such as alcohol consumption or smoking.[68] In Benton County, the unemployment rate in 2013 was 9.5 percent, compared with 10.7 percent statewide.[69] The unemployment rate has been decreasing steadily in recent years.[70] As of April 2015, the seasonally adjusted unemployment rate in Benton County was 4.1 percent.[71] Generally an unemployment rate of 5 percent is considered "full employment" as there is always a certain amount of turnover in the labor force.

Economic Opportunities

In Benton County, the education, healthcare, and social assistance sector employs approximately one-third of the population (37 percent), compared with just under one-quarter of the population statewide (23 percent). Other important business sectors in Benton County are arts, entertainment, recreation, accommodation and food services; retail trade; manufacturing; and professional, scientific, management, administrative, and waste services.[72]

Education

Health and education are closely connected. Educational access and attainment are very important predictors of health status. Individuals with higher levels of education are less likely to die prematurely or report acute diseases. They also report positive health behaviors, like maintaining healthy weight, and fewer risky behaviors, like smoking.[73] Furthermore, education

levels are the strongest predictor of income and wealth, which strongly influence lifelong health.[74]

Early Learning

Early childhood development supports nurturing relationships and learning opportunities that foster children's readiness for school. The early years are crucial for influencing health and social well-being across a child's lifetime. Research evidence accumulated over the past 40 years supports the conclusion that children who participate in high-quality early childhood development (ECD) programs benefit from a broad range of immediate and long-term health benefits.[75]

The Head Start Program is one such federal program that promotes the school readiness of children from low-income families by enhancing their cognitive, social, and emotional development. Head Start programs provide a learning environment that supports children's growth from birth to age five in several areas, such as language, literacy, and social and emotional development. Head Start programs also emphasize the role of parents as their child's first and most influential teacher, and support the development of healthy familial relationships and well-being.[76] In Oregon, Head Start programs include the Oregon Head Start Prekindergarten (OHS PreK) program, which serves children age three to five from low-income families. Some Head Start programs also include Early Head Start (EHS), which is a comprehensive program for children below the age of three and pregnant women from low-income families. Oregon children whose families are below the federal poverty level ($24,250 for a family of 4) are eligible for these benefit programs.[77]

The OHS PreK and EHS programs that serve children and families in Benton County are shown in Table 4.4 below.

Table 4.4: Oregon Head Start PreK and Early Head Start programs and enrollment in Benton County, 2013-2014

OHS PreK and EHS program	County	OHS PreK enrollment	EHS enrollment	Total enrollment
Kids and Company of Linn County (KidCo) Head Start	Linn and Benton	449	52	501
Oregon State University Child Development Center	Benton	75	--	75
Total		524	52	576

Source: Oregon Department of Education, Early Learning Division, Oregon Head Start Prekindergarten Programs 2013-2014 Directory

Despite strong research showing the positive impact of high-quality early education, many families in the county who are in need of child care may not be served. While data are not available for informal child care options, in 2012, for every 100 children there were 24 available

child care slots in Benton County. In Oregon, there were 17 available child care slots per 100 children. The goal for the state is 25 slots per 100 children. Benton County almost met this goal. In addition to availability, price may be a barrier for many families. Child care expenses may overwhelm the budgets of families in Benton County, where the average cost of child care exceeds that of Oregon. In Benton County the cost of child care may amount to 34 to 65 percent of the annual income of a parent earning the minimum wage (Figure 4.5b).[78]

High School Education

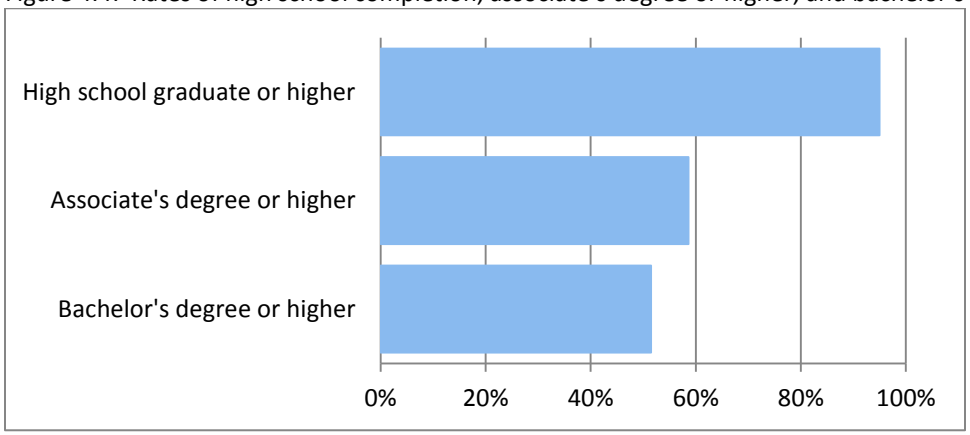
High school graduation is a strong predictor of future employment and earnings. Conversely, dropping out of school is associated with lower income, multiple social and health problems,[79,80] and health risks.[81] For example, 32 percent of Oregonians who do not have a high school degree smoke, compared with 24 percent of high school graduates, 18 percent with some post-secondary education, and seven percent of college graduates (age-adjusted).[82]

In the 2013-2014 school year, Benton County experienced a dropout rate of 14 students per 1,000 9th–12th graders.

In Benton County, the high school dropout rate for minority youth populations is generally higher compared to the total county dropout rate of 1.4 percent. This is particularly true for Hispanic students (3.3 percent) and Native American students (3.0 percent).[83]

In 2011, Oregon set a goal of 40-40-20, meaning that by 2025, 40 percent of Oregonians would have a bachelor's degree or higher, an additional 40 percent would have an associate's degree, and the remaining 20 percent would have graduated high school. This translates to 100% of Oregonians having a high school degree or higher, and 80% having an associate's degree or higher. In 2013, 95% of Benton County residents had completed high school or GED equivalent, of whom 59% had an associate's degree or some college, and 52% had a bachelor's degree or higher. These rates were higher than the rate for the state[36] (Figure 4.4).[84]

Figure 4.4: Rates of high school completion, associate's degree or higher, and bachelor's degree or higher, 2015



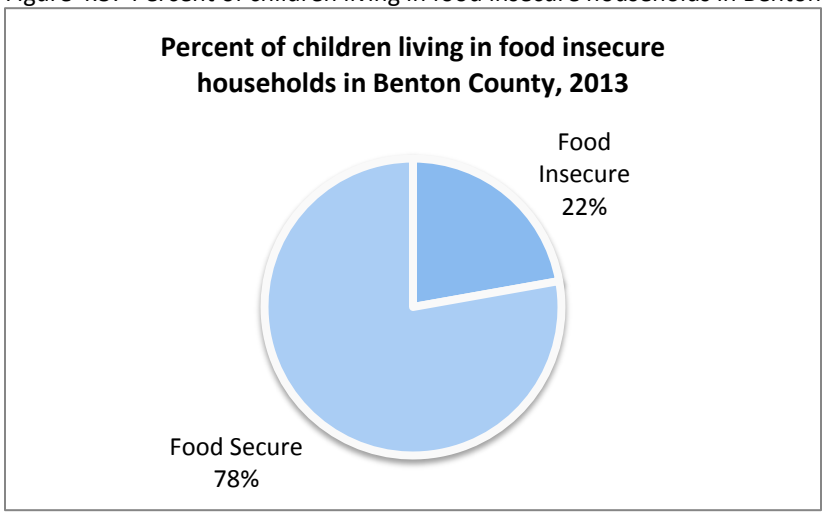
Source: County Health Rankings 2015

Food Security

Food security is defined as having enough to eat, and being able to purchase or obtain healthy food in socially acceptable ways.[85] Adequate nutrition is particularly important for children, as it affects their cognitive and behavioral development. Children from food insecure, low-income households are more likely to experience irritability, fatigue, and difficulty concentrating on tasks, especially in school, compared to other children.[86]

Feeding America, a national nonprofit that monitors food security, estimates that 22 percent of children in Benton County are living in food insecure households as shown in Figure 4.5 below.

Figure 4.5: Percent of children living in food insecure households in Benton County, 2013



Source: Feeding America, 2013

Based on Oregon Department of Education data, 38 percent of Benton County K-12 students were eligible for free/reduced lunch during the 2013-2014 school year. The percentage of students eligible for free/reduced lunch by school varies significantly from school-to-school within the county, from 15 percent to 88 percent of students attending schools with at least 100 students (Table 4.6).[87] Students whose family incomes are below 130 percent of the federal poverty level ($31,525 annually for a family of four) are eligible for free lunches, and students whose family incomes lie between 130 and 185 percent of the federal poverty level (between $31,525 and $44,863 annually for a family of four) are eligible for reduced-price lunches.[88,89]

An analysis of factors* determining food insecurity suggests that in 2013, 16 percent of Benton County's population, or nearly 14,000 individuals, were residing in households that were food insecure. Among those who were food insecure, 28 percent earned incomes above 185 percent of the federal poverty level, making them ineligible to receive government assistance programs (Table 4.7). The childhood food insecurity rate was lower, at 22 percent of the

* Factors include indicators of food insecurity such as poverty, unemployment, median income; food budget shortfalls; a cost of food index; and national average meal costs.

children in Benton County. Of the children living in food insecure households in Benton County, it is estimated that 40 percent of these children are likely ineligible for federal nutrition programs as they live in households with incomes above 185 percent of the federal poverty level.[90,91,92]

Table 4.5: Food insecurity in Benton County, 2013

	Number of food insecure individuals	Percent of population that is food insecure	Percent of food insecure people who are ineligible for benefits *
Benton County	13,840	16%	28%

* Percent ineligible figure is produced by modeling and is an estimate
Source: Feeding America

Supplemental Nutrition Assistance Program Participation

The Federal Supplemental Nutrition Assistance Program (SNAP) is the largest domestic food and nutrition assistance program for low-income Americans. U.S. households must meet certain eligibility criteria, such as income, to receive benefits. In 2013, it is estimated that 14 percent of all households (4,542 households) in Benton County received SNAP benefits.

Women, Infants and Children (WIC)

WIC is a public health nutrition program that is vital to the health of women, infants, and children across Oregon. The WIC program provides health and nutrition services to pregnant and breastfeeding women and children ages 0 to 5 that have a household income less than 185 percent of poverty guidelines.[93] Overall in 2014, a total of 2,396 families were served by WIC in Benton County; 71 percent of these were infants and children under five, and 29 percent were pregnant, breastfeeding, and post-partum women. Approximately 35% of pregnant women in Benton County were served by WIC. Furthermore, 67 percent, of families served by WIC in Benton County were working families.[94,95,96]

Emergency Food Support

Linn Benton Food Share, the regional food bank system, distributes emergency food boxes to 23 food pantries (emergency food box agencies) located in both Linn and Benton Counties. In addition to the pantries, Linn Benton Food Share also provides assistance through programs, such as emergency meal sites (soup kitchens), supplemental programs, and gleaners and wood share.[97]

Below are the most salient demographic characteristics of the population that is served by the Linn Benton Food Share:

- 36% of those receiving emergency food are children;
- 7% of those receiving emergency food are 65 years and older;

- 55% of households have children;
- 46% of households had at least one member working;
- 30% of households have one or more member working a full-time job;
- 58% of households report delaying medical care;
- 68% of households report delaying dental care;
- 47% of households delay filling medical prescriptions due to cost;
- 56% report medical/hospital debts.[98]

Linn Benton Food Share distributed over 52,000 food boxes from July 2013 through July 2014. One food box typically contains enough groceries for a 4 day supply.[99] In addition, the Food Share served over 272,000 meals in soup kitchens and shelters. Between food boxes and emergency meals, Linn Benton Food Share provided enough meals to feed nearly 2,500 people three meals a day for the whole year. [100-101]

Housing and Home Ownership

Housing is an important part of the built environment and another key factor contributing to good health. Older housing in particular can present multiple threats to health, including the presence of mold, asbestos, lead-based paint, and lead solder in plumbing and in the soil.

Poor quality and inadequate housing contribute to health problems such as infectious and chronic diseases, injuries, and poor childhood development. Indoor allergens and damp housing conditions play an important role in respiratory conditions including asthma, which currently affects over 20 million Americans, and is the most common chronic disease among children. Approximately 40 percent of diagnosed asthma among children is believed to be attributable to residential exposures.

Housing Affordability

Affordable, quality housing provides shelter that is safe and healthy for all people. Housing that costs more than 30 percent of household income is considered to be "unaffordable."[102] Thirty-seven percent of Benton County Households have a housing cost burden.

Homelessness

The Oregon's Ending Homelessness Advisory Council defines homelessness as being without a decent, safe, stable, and permanent place to live that is fit for human habitation.[103] Understanding homeless populations is a daunting challenge for public health. Homeless people are just as much a part of society as housed individuals, but they face additional obstacles in accessing social services or health care. Even counting the number of homeless individuals is a difficult task, because a homeless individual may move around a lot during the year or be unwilling to interact with social services. Each January, Oregon Housing and Community Services require communities to conduct a point-in-time count of homeless

populations. This snapshot of the homeless population is limited in scope and depth. Canvassers visit shelters, transitional housing, and known homeless encampments. Individuals staying with other people out of economic necessity are not counted, nor are homeless people who are in areas not covered by the canvassing. Furthermore, the one-night count misses any individual who is homeless at other points during the year. Notwithstanding these limitations, the point-in-time estimates have the benefit of being a consistent approach across years and geographies, and therefore may give some insight into the homeless community in Benton County.

In 2011, the county point-in-time surveys counted 107 homeless individuals in Benton County (Table 4.8). All of these individuals were in shelters or transitional housing. There were no street counts conducted in the county in 2011. Sixty-six percent of the homeless population in Benton County was male. In Benton County, the average length of time spent homeless was 43 months for men and 18 months for women.

The most recent data on homeless populations is from 2015 (Table 4.8). In 2015, there were 131 homeless individuals identified in the January point-in-time survey, an increase of 22percent in four years. However, in 2015 the unsheltered counts comprised the majority of the records, which may indicate a larger canvassing effort rather than solely an increase in the homeless population.

In 2011, approximately one quarter of the recorded individuals were members of families, both adults and children. In 2015, less than a sixth of records in Benton County were of family members (Table 4.6).

Table 4.6: One-night count homeless population figures in Benton County

	2011	2015
Total homeless count	107	131
Sheltered count	107	94
Unsheltered count	0	37
Male	71	88
Female	36	43
Individuals	81	110
Family members	26	21
Average months spent homeless (male / female)	43 / 18	No data

Source: OHCS and Community Services Consortium

* Counts do not sum to total

Another source for recording the number of homeless individuals is the set of statistics gathered by federally qualified health centers (FQHCs). Among the data that FQHCs are required to collect is housing status, which they report each year to the federal government. According to the Bureau of Primary Health Care, a patient's status should be recorded as homeless if the patient was residing in a shelter, transitional housing, on the street, if the

patient was doubled up or temporarily living with others, had been homeless within the last 12 months, or resided in a housing program targeted to homeless populations. Compared with the one-night counts, FQHCs may identify homeless individuals who were not staying in shelters or in canvassed encampments or who were homeless at other times throughout the year. However, only those individuals who were able to seek out medical care at an FQHC and chose to do so were identified. Nevertheless, the records provided by the FQHCs indicate a much broader level of homelessness than the one-night counts. In 2014, the Benton Linn FQHC served approximately 835 homeless patients. This is over three times as large as the 2015 one-night count, and represents a 50 percent increase from the number of homeless FQHC patients in 2012.[104]

While these two data sources can broaden the understanding of the homeless population in the county, a major challenge is reconciling their different purposes and methodologies. If a crosswalk of data could be created, it could have the potential to greatly clarify the picture of homelessness in Benton County.

Student homelessness is a recurring problem in Oregon as well. Across the state, an increasing number of Oregon's K-12 public school students are homeless at some point during the school year. Homelessness among students has more than doubled since the 2003-2004 academic school year. Three percent of Benton County K-12 students experienced homelessness in the 2014-2015 academic year (Table 4.7).

Table 4.7: Homeless students grades K-12 in Benton County, 2013-2014

School District	Number of Homeless Students Grades K-12	Percent of Homeless to Total Enrollment
Corvallis SD	220	3 %
Philomath SD	20	1.3 %
Monroe SD	**	**
Alsea SD	14	8.1 %
Benton County	228	3 %

Source: Oregon Department of Education, 2013-2014
** data suppressed due to small numbers

Conclusion

A few socioeconomic factors have changed since the last triennium. Median childcare costs have increased by 14 percent, or $1,500. The unemployment rate has decreased by nearly two percentage points. Despite an improving economy, poverty rates, housing costs, and food insecurity rates have remained steady over the past six years.

Chapter 5
Access to Medical Care

It is important to examine medical care access and capacity in the larger context of overall factors that contribute to health. "Health care is necessary but not sufficient for improved health; in fact, health care accounts for only about 10–20 percent of health outcomes, according to some experts."[105] Social determinants of health, the upstream factors listed in the previous chapter, are responsible for a much larger percentage of health outcomes than medical care alone. People need a healthy and accessible environment to achieve good health. This includes the broader community context, as well as the characteristics of the local health care system itself.

Many of the forces that shape the opportunity for better health in Benton County – education, employment, and transportation, for instance – can also affect access to medical care. Hospital data is reported for Good Samaritan Regional Medical Center; other data is reported at the county level.

Demographic Differences in Access to Medical Care

Some populations face increased barriers to accessing care and receive poorer quality care when they get it. In its 2011 reports on health care quality and disparities, the Agency for Healthcare Research and Quality (AHRQ) finds that, at a national level, low income individuals and people of color experience more barriers to care and receive poorer quality care. Moreover, other research shows that individuals with limited English proficiency are less likely than those who are English proficient to seek care even when insured. Research also finds differing patient experiences and levels of satisfaction by race, gender, education levels, and language.[106]

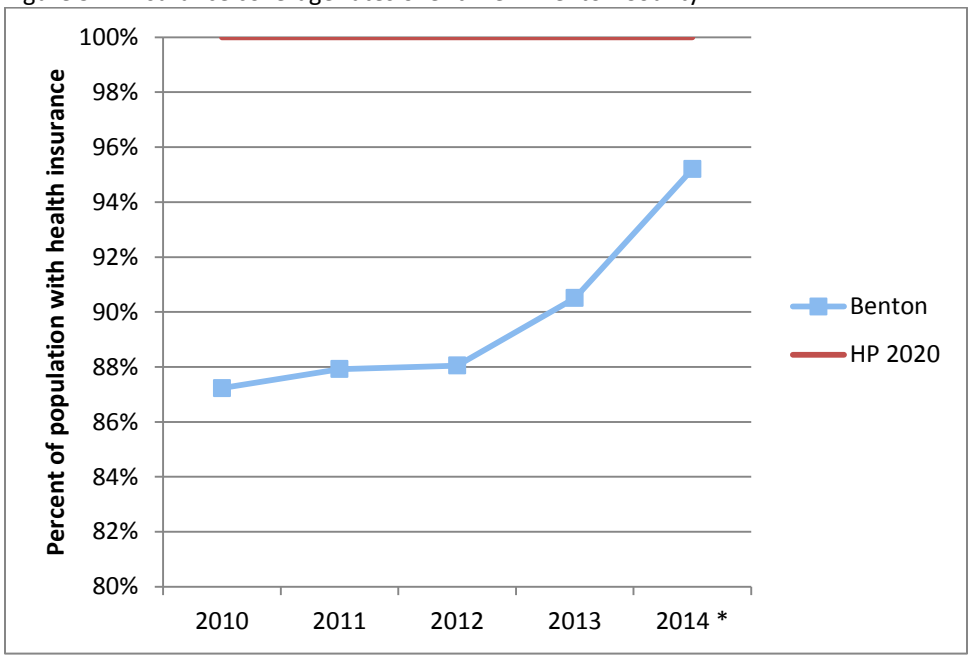
Health Insurance Coverage

Lack of adequate health insurance coverage is often a major barrier to medical care. People who are uninsured or underinsured receive less medical care than their insured counterparts.[107] Inadequate coverage creates a financial barrier between a patient and needed medical care services. People without health insurance are less likely to know about or seek out preventive services, and are more likely to have new and worsening health problems, and shorter lifespans.[108] In general, even when uninsured/underinsured persons receive medical care, care is often postponed (due, in part, to concerns about cost). As part of the ACA, Oregon accepted federal funding to expand Oregon Health Plan (OHP) membership, setting targets for enrollment and expanding the variety of services (e.g. dental services). Statewide, membership in OHP increased 75 percent over four years, from 469,000 members in January 2010 to

821,000 members in January 2014. Enrollment in Benton County increased from 5,844 members to 10,543 members over the same time period.[109,110] In addition to OHP expansion, eighty percent of the consumers registered to the new health care exchange received tax credits and/or cost-sharing subsidies as of April 2014.[111]

Insurance coverage rates in Benton County, and across the nation, have risen recently, largely due to the ACA and other healthcare transformation policies. The Benton County insurance coverage rate in 2012 was 87 percent, rising to 95 percent in 2014.[112] (Figure 5.1).[113]

Figure 5.1. Insurance coverage rates over time in Benton County



Source: U.S. Census Bureau, American Community Survey, 2009-2013
** 2014 coverage rates are from Oregon Health Authority, 2015*

Because of the rapidly shifting health care and health insurance landscape, local data points that accurately capture these changes are still forthcoming. With that in mind, data from before the ACA expansion showed major disparities among the population based on age, race, and income. Examining these disparities across the county can help provide a baseline for future comparisons with disparities which exist after ACA expansion once the data is available.

Uninsured rates

Uninsured rates differed greatly between age groups before ACA. The uninsured rate among children in Benton County was lower than the rate for working-age adults (Table 5.1).[114] Benton County uninsured rates were lower than in the rest of Oregon. In the county, less than one percent of individuals 65 and older lack health insurance. The age group with the highest uninsured rates in Benton County was 25 to 34 year olds, at 25.8 percent.

Table 5.1: Uninsured rates in Benton County, 2011-2013

	Benton
Under 18 years old	4.2 %
18 to 64 years old	14.7 %
65 years old and older	0.7 %

Source: U.S. Census Bureau, ACS 2011-2013, Table S2702

Insurance coverage rates were also pronounced across racial/ethnicity categories, employment status, and citizenship status. From 2009 to 2013 in Benton County, over 20 percent of Latino individuals and over 15 percent of American Indian and Alaska Native were uninsured, compared to 9 percent of Asians and 13 percent of the White population. Black or African American, two or more races, and other races had uninsured rates between 16 and 18 percent. Additionally, 42 percent of the unemployed are uninsured, compared to 17 percent of those currently employed. The foreign born and non-citizens have very high uninsured rates, at 31 percent and 42 percent, respectively.[115] Insurance coverage data is not available for undocumented immigrants. However, undocumented immigrants, including undocumented children, are excluded from both Medicaid and the health insurance exchange.[116]

Among the employed, those working less than full time year-round were uninsured at a higher rate (25 percent) compared to those working full time year-round (13 percent). Residents earning less than 200 percent of the federal poverty level are more likely to be without insurance coverage than those with higher incomes, 24 percent versus 9 percent.[117]
The implementation of the Affordable Care Act has had a major impact on insurance coverage rates in the county as Figure 5.1, above, demonstrates. However, even given the growth in insurance coverage rates over the past 5 years, insurance gaps and inequalities remain, especially for people of color, individuals living in rural areas, and low income workers.[118] As data for recent years become available, it will be important to measure these disparities.

Health insurance among children

Insurance coverage rates among children up to age 18 shows a gradual increase in Benton County from 2006 to 2012. As of 2012, Benton County had an insurance coverage rate of 94 percent for children under the age of 18. While data are not yet available to demonstrate the effects of the ACA on insurance coverage rates among children, the upward trend preceding the ACA expansion provides an important baseline.

Cost of Medical Care

Insurance coverage is only part of the cost of medical care. Additional costs are referred to as cost-sharing and include costs such as copayments, coinsurance and deductibles. Health reform legislation has reduced financial burdens for many people with lower income or significant health care needs. Nevertheless, one in three Americans say they have put off getting medical treatment that they or their family members need because of cost.[119]

According to the County Health Rankings, during the 2006-2012 period, 10 percent of adults in Benton County reported they did not see a doctor in the past 12 months because of cost.[120]

Access Capacity

Primary care, mental health, and oral health are foundational to a comprehensive offering of medical care for a population.

Other primary care providers are especially vital in rural areas that may not have the population density to support a full time physician.

Benton County had 786 residents per primary care physician; 483 residents per primary care provider; 172 residents per behavioral health provider, and 1,604 residents per oral health provider.[121]

Having a usual primary care provider (PCP) is associated with improved health outcomes, increased health equity, and lower healthcare costs. Effective PCPs work to maintain sustainable relationships with patients, connect them with additional health resources in the community, and coordinate their care. Patients with ongoing access to PCPs and other healthcare services have better relationships with their providers and are more likely to receive appropriate care than patients without a regular healthcare provider.[122]

Safety Net Services & Community Benefits

The health care "safety net" refers to the component of the health care system serving low-income and uninsured people. Safety net services are complemented by community funding, programs and activities.[123]

Federally Qualified Health Centers* (FQHCs) and Free Clinics or "charity" clinics are the most common types of safety net clinics. FQHCs in Benton County provide primary care, mental/behavioral health, and oral health services. [124] Benton County has four federally qualified health centers: one in Corvallis, a school-based health center in south Corvallis, a school-based health center in Monroe, and a rural health clinic in Alsea. Across the Benton and Linn Counties, FQHCs served just over 14,000 patients in 2014.[125] Auxiliary safety net providers such as Community Outreach Inc. also serve Benton County's vulnerable populations. Persons served by these programs include homeless, women and children through maternal-child and WIC services, and HIV-positive people.

* FQHCs have a legal mandate or expressly adopted mission to serve all patients, regardless of ability to pay or legal status.

Health Care Professional Shortage Areas

Knowing the number of providers and types of services are very important for gauging the capacity and presence of a health care system. However, an understanding of the geographical distribution of these services helps paint a more accurate picture.
While the county enjoys a good ratio of health care providers to overall population, geographic distribution of providers can make it difficult for those with limited transportation to access services. Because rural areas of Benton County have either no or very few medical care providers, portions of the county are designated as geographic Health Care Professional Shortage areas (HPSA). Designation as an HPSA means that there is an increased risk of poor access to health professionals.[126] Benton County qualifies in part as an HPSA for primary care, dental health, and mental health.

In addition to the geographic designation, the county also has population-based HPSAs for migrant seasonal farmworkers and low income individuals. Migrant seasonal farmworkers and their families are a particularly vulnerable subgroup of the Latino/Hispanic population. Farmworkers have different and more complex health problems than those of the general population. Many of the Latino/Hispanic migrant seasonal farmworkers are documented but have undocumented family members with them. Many are employed in agriculture sectors that provide few or no employment benefits. While most are low income, many immigrants and migrant seasonal farm workers do not qualify for Medicaid due to their residency status or they are unable to access Medicaid due to language, transportation and cultural barriers.[127]

Emergency Responders

Emergency Management Services (EMS) serve an important role in the community. According to the Oregon Office of Rural Health, the mean travel time to the nearest hospital for rural service areas is 24 minutes. Estimated travel time is calculated from the largest town/city in each of the rural service areas to the nearest town/city with a hospital. This is the protocol unless the city already has a hospital, in which case driving time is defaulted to 10 minutes.[128] Two areas in Benton County have a mean travel time to the nearest hospital which is greater than 24 minutes, with the longest mean travel time from Alsea at approximately 34 minutes.[129]

Medical Services

The following seven indicators provide a snap-shot of the breadth and type of services provided by Good Samaritan Regional Medical Center (GSRMC) over the past three years:

The number of inpatient visits

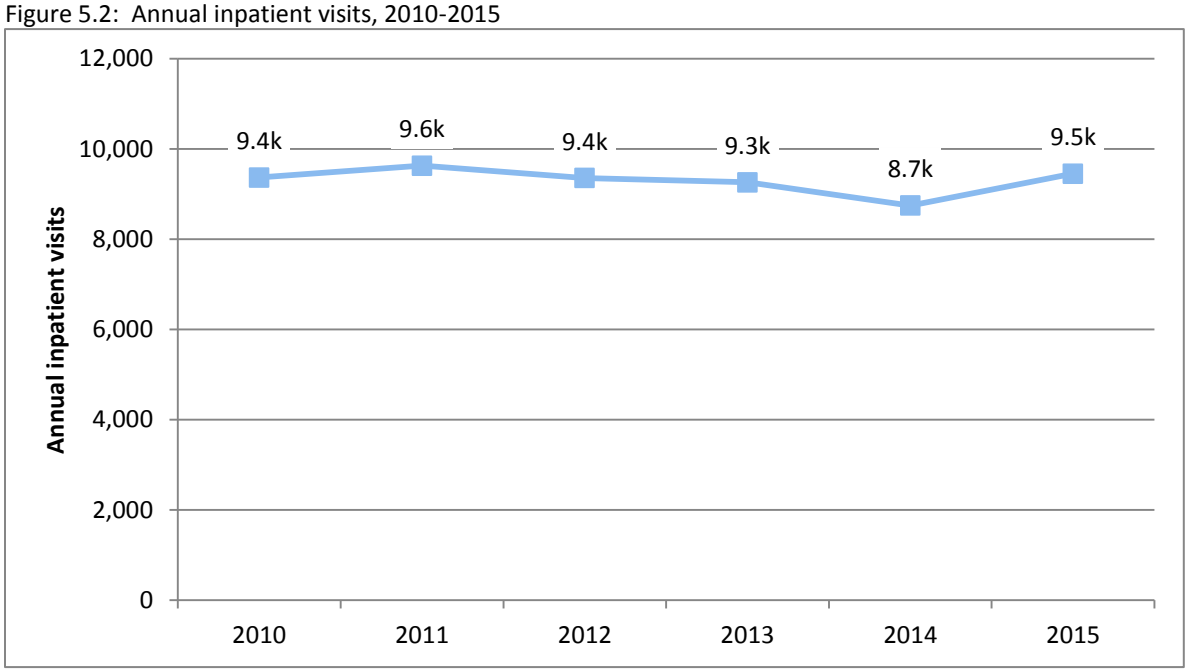
- The number of ER visits
- The number of surgeries performed
- The number of infants delivered
- The number of imaging procedures performed

- The number of clinic visits
- The number of home health visits

Inpatient Visits

Inpatient care begins when a doctor makes a formal order to admit a person as an inpatient. The length of inpatient care depends on the severity of the health issue and when the doctor deems it safe for the patient to leave.
From 2013-2015, there were on average 9,150 inpatient visits each year at GSRMC. The annual rate was essentially unchanged from the previous triennium, when on average 9,448 visits were made annually. The following figure (Figure 5.2) illustrates the six year trend.

Figure 5.2: Annual inpatient visits, 2010-2015

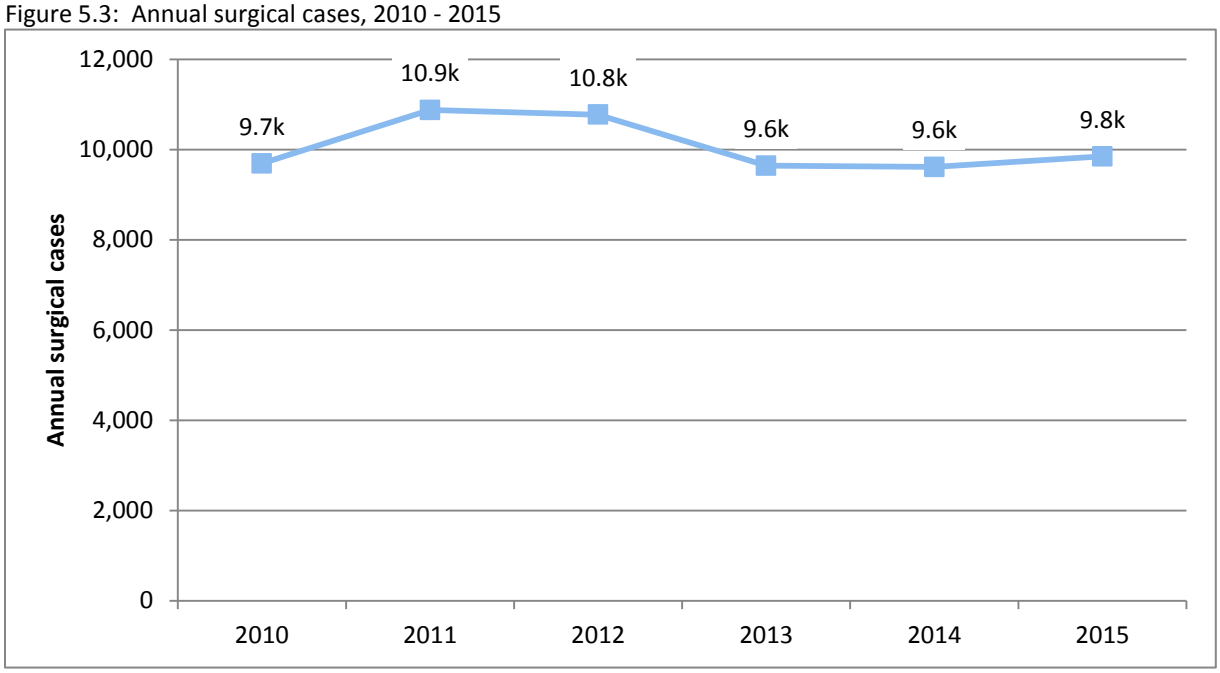


Source: Samaritan Health Services, 2016

Surgical Procedures

Good Samaritan Regional Medical Center offers surgical services in a number of specialties, including, but not limited to Cardiac, Cancer, Gynecology, Obstetrics, Orthopedics & Sports Medicine, Neurosurgery, Urology and Weight Loss Surgery.
From 2013-2015, there were on average 9,700 surgical cases each year at GSRMC. The annual rate was essentially unchanged from the previous triennium, when on average 9,700 surgeries were performed annually. The following figure (Figure 5.3) illustrates the six year trend.

Figure 5.3: Annual surgical cases, 2010 - 2015



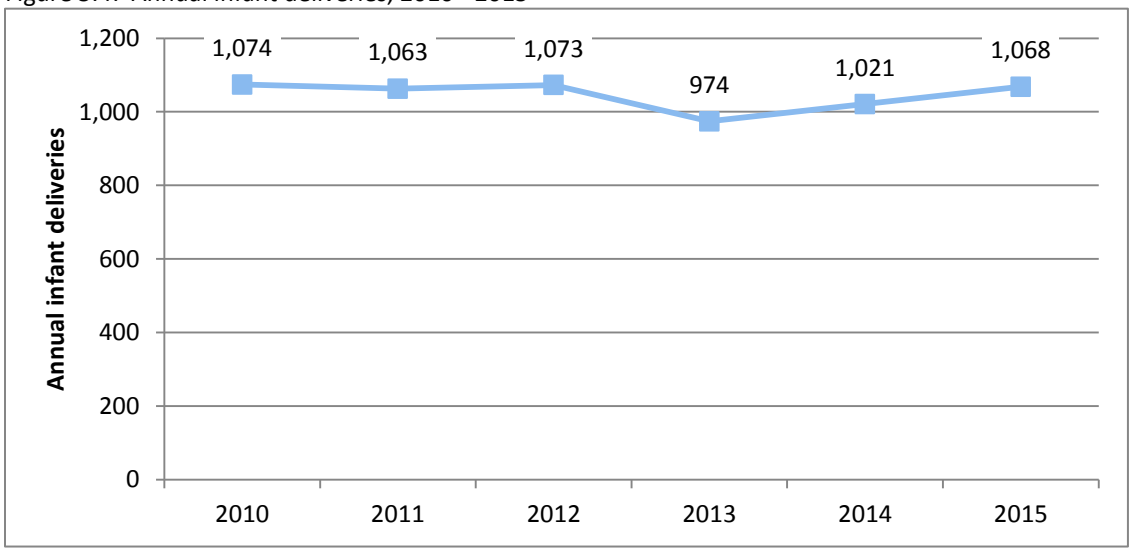
Source: Samaritan Health Services, 2016

Infant Deliveries

The Center for Women and Families at Good Samaritan Regional Medical Center is a birthing center that offers a range of services and options including midwives, tub births, and cesarean births.

From 2013-2015, there were on average 1,020 infant deliveries each year at GSRMC. The annual rate was essentially unchanged from the previous triennium, when on average 1,070 infants were delivered annually. The following figure (Figure 5.4) illustrates the six year trend.

Figure 5.4: Annual infant deliveries, 2010 - 2015



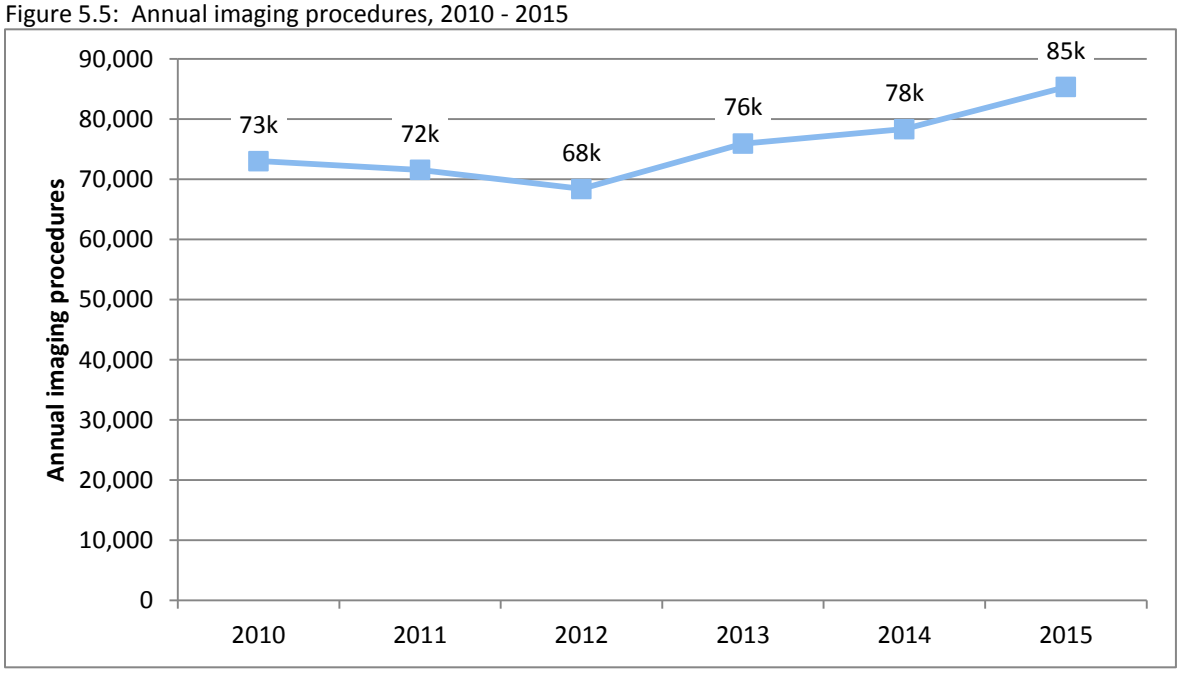
Source: Samaritan Health Services, 2016

Imaging Procedures

Good Samaritan Regional Medical Center offers a variety of imaging procedures:[130]Angiography
Bone Density Text (DEXA)
Cardiac Cath
Cardiac CTA
Cardiac Scoring
CAT Scan
Digital Mammography
Echocardiography
MRI
Nuclear Medicine
Ultrasound
X-ray
X-ray (digital)

From 2013-2015, there were on average 79,800 imaging procedures each year at GSRMC. The last three years have seen a gradual increase in the number of imaging procedures annually, from 68,300 procedures in 2012 to 85,300 in 2015. The following figure (Figure 5.5) illustrates the six year trend.

Figure 5.5: Annual imaging procedures, 2010 - 2015



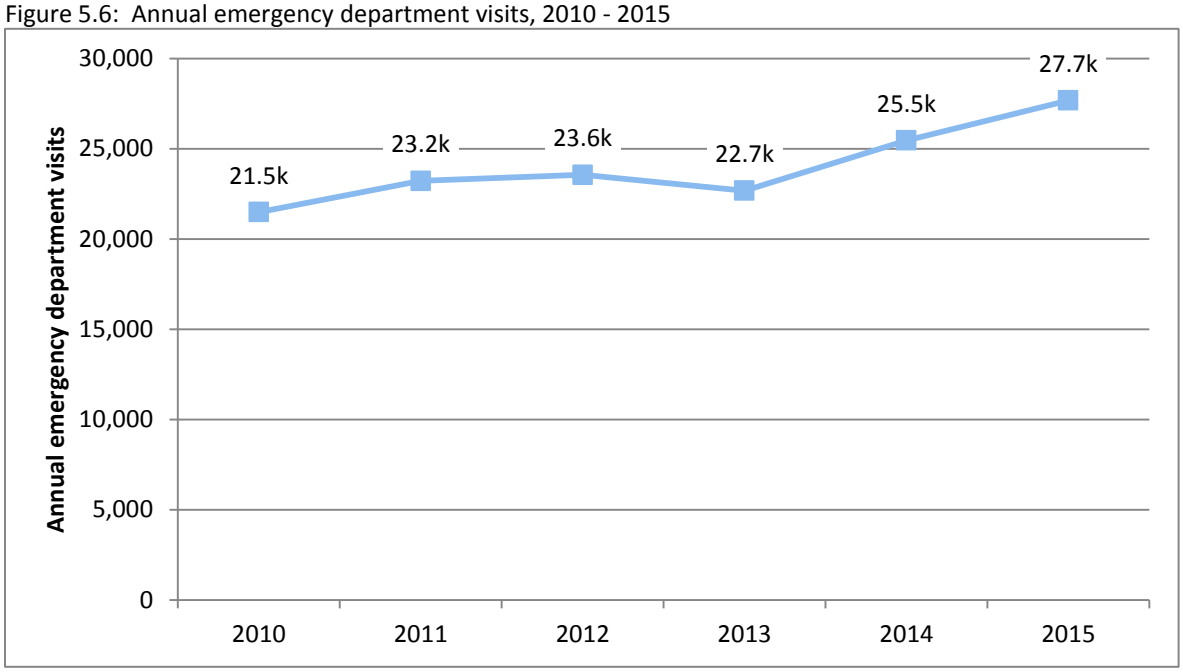
Source: Samaritan Health Services, 2016

Emergency Department Visits

People without health insurance and access to other providers often end up seeking emergency room care. Uninsured adults are more likely than those with private or public health insurance to utilize emergency room care because they lack preventative care and places to receive affordable, accessible care. Lack of access to other providers and adequate health insurance is reflected in rising visits to the emergency room.[131]

From 2013-2015, there were on average 25,300 emergency department visits each year at GSRMC. The last three years have seen a gradual increase in the number of emergency department visits annually, from 22,700 visits in 2013 to 27,700 in 2015. The following figure (Figure 5.6) illustrates the six year trend.

Figure 5.6: Annual emergency department visits, 2010 - 2015



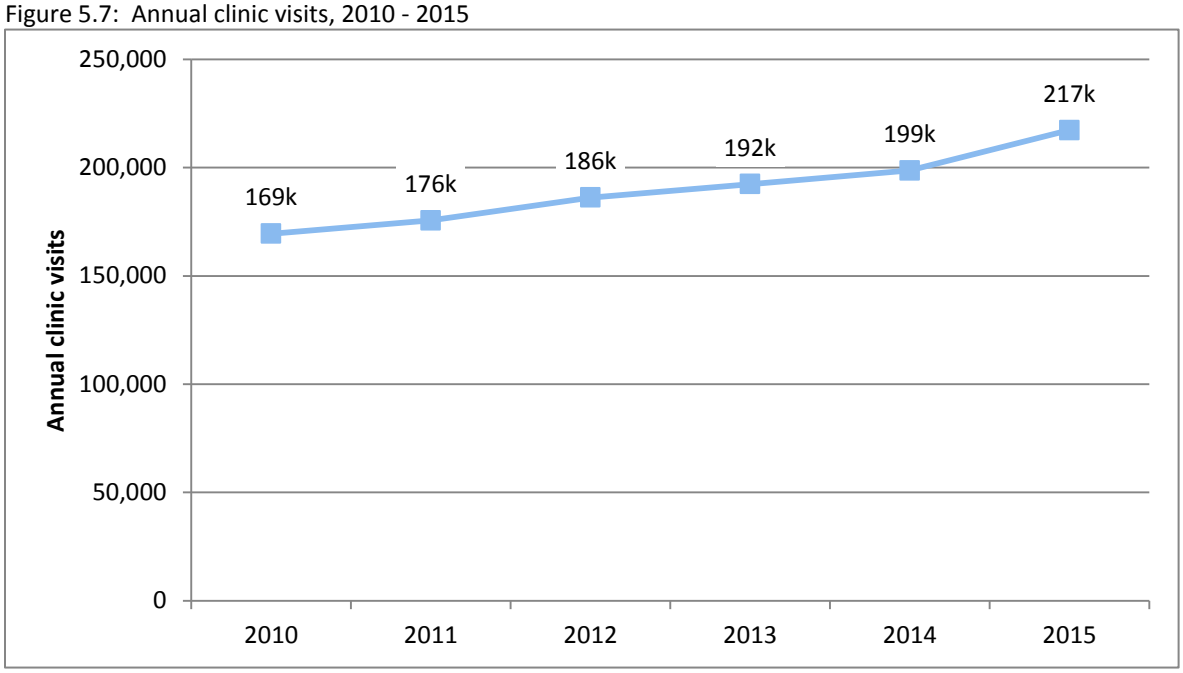
Source: Samaritan Health Services, 2016

Medical Clinics

Samaritan Health Services offers 31 clinics in the GSRMC service area. Services provided include specialty care, family medicine, obstetrics/gynecology, pediatrics, and urgent/walk-in care. With the implementation of the Affordable Care Act, an increased emphasis has been placed on holistic and preventive care, which can be provided efficiently at medical clinics.

Samaritan clinics have seen a strong and steady increase in the number of patient visits over the past six years. The annual number increased from 169,000 visits in 2010 up to 217,000 visits in 2015. The following figure (Figure 5.7) illustrates the six year trend.

Figure 5.7: Annual clinic visits, 2010 - 2015



Source: Samaritan Health Services, 2016

Conclusion

The health insurance market has changed drastically over the past four years with the introduction of the Affordable Care Act and the expansion of the Oregon Health Plan. Un-insurance rates have dropped from 18 percent in 2013 to five percent in 2015 and Oregon Health Plan enrollment has doubled. Insurance coverage rates have increased steadily for children as well, even before implementation of the ACA.

The data presented in this chapter can support an initial understanding and baseline of access to medical care in Benton County, while calling attention to challenges faced by many in our community when accessing medical care.

Chapter 6
Morbidity and Mortality

Understanding the leading causes of illness and death is the first step on the path to preventing both the loss of life and improving the quality of life within any community. Traditional measures used to evaluate the health of populations are morbidity (incidence of disease) and mortality (deaths). Examining various cancers, heart disease, and other major causes can highlight notable improvement as well as areas in which Benton County is in need of improvement. The more detailed data available about disparities within particular populations and illnesses, the better communities can address these issues effectively in the county. Many of the conditions that cause illness and death within Benton County have well-established causes, a number of them rooted in behaviors or risk factors that can be prevented.

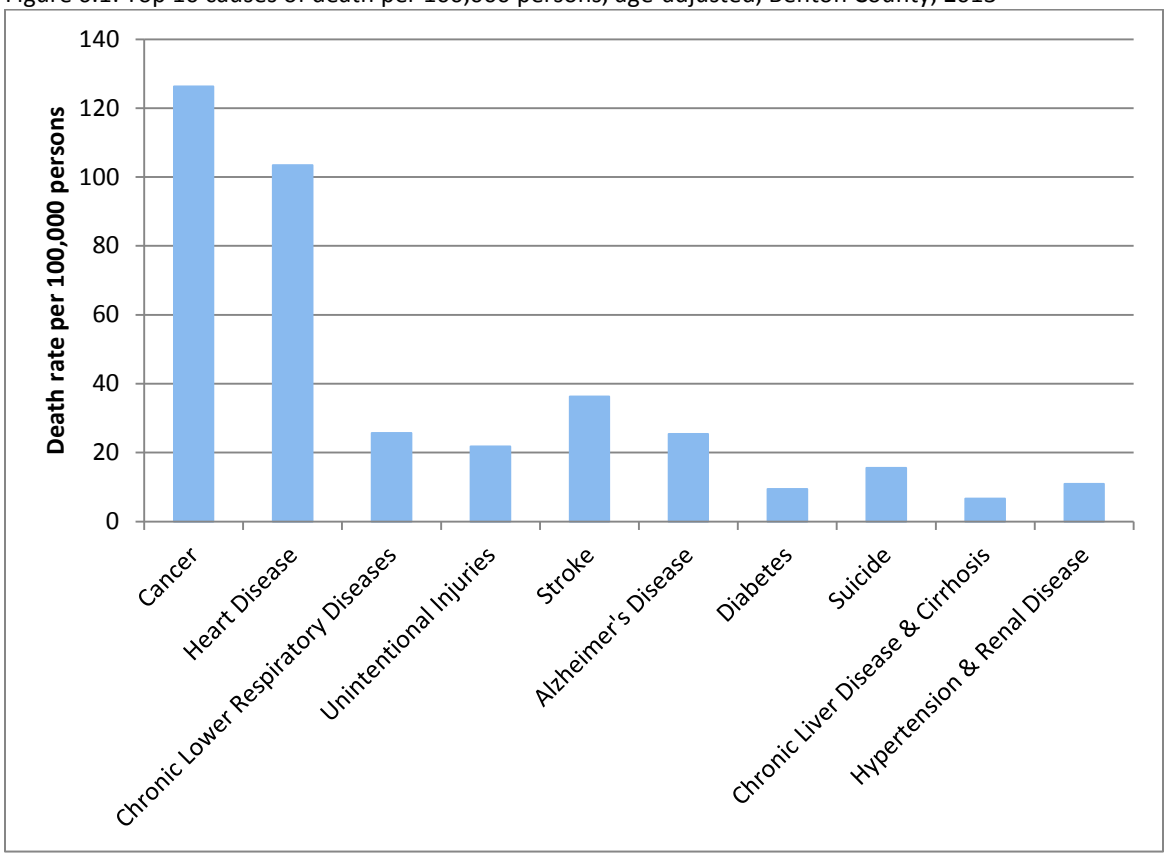
Throughout this chapter, some data is unavailable at the county level. When incidence or prevalence rates are reported across many years, the statistic is per person per year. For example, the all-cancer incidence rate in Oregon across 2008-2012 was 448 cases per 100,000 people; this means that in each of the five years between 2008 and 2012, 448 cases were diagnosed for every 100,000 people in the population.

Leading Causes of Death in Benton County

In 2013, the age-adjusted death rate in Benton County was 531 deaths per 100,000 people, compared to 717 deaths per 100,000 people in Oregon. The leading causes of death (for all ages combined) in Benton County are cancer, heart disease, cerebrovascular disease (stroke), Alzheimer's, chronic lower respiratory disease, and unintentional injuries (Figure 6.1).

Preventable risk factors such as tobacco use, diet, activity and alcohol use contribute substantially to these deaths. For example, in 2013, it is estimated that 18 percent of Benton County deaths were tobacco-related deaths. This proportion is comparable to 22 percent of tobacco-related deaths in Oregon during the same time period.[132]

Figure 6.1: Top 10 causes of death per 100,000 persons, age-adjusted, Benton County, 2013



Source: Oregon Health Authority, Oregon Public Health Assessment Tool, 2013

Chronic Disease and Conditions

Chronic diseases, such as heart disease, stroke, cancer and diabetes are among the most prevalent, costly, and preventable of all health problems. Healthy lifestyles, such as avoiding tobacco, being physically active, and eating well, greatly reduce a person's risk for developing chronic illnesses. Research shows that access to resources that support healthy lifestyles, such as nutritious food, recreational opportunities, and high quality and affordable prevention measures (including screening and appropriate follow-up) saves lives, reduces disability, and lowers medical costs.[133]

Oncology - Cancer

Cancer is the leading cause of death in Benton County and in Oregon.[134] Five types of cancer are discussed in the section: lung, colorectal, breast, prostate, and pancreatic. Lung cancer is the most common cause of cancer death for Oregonians, followed by colorectal cancer and breast cancer.[135] Pancreatic cancer has a very high mortality rate, in part due to the likelihood of a late diagnosis after the cancer has already progressed. Prostate cancer is a common cancer among men.

Benton County's annual rate of newly diagnosed cancer cases is similar to the rate in Oregon, with 415 diagnoses per 100,000 individuals each year.

Cancer rates also vary between different racial and ethnic groups. In Oregon, prevalence of cancer (the proportion of the population living with cancer) varies from a low of 3.6 percent among Asians and Pacific Islanders, to a high of 11.4 percent among American Indians and Alaska Natives.

Between 2011 and 2013, the mortality rate from all cancers was 126 deaths per 100,000 people per year in Benton County.

Lung and Bronchial Cancer

Lung and bronchial cancers are closely related, and this section will combine them both as lung cancer. Lung cancer incidence in men is steadily declining as a result of decreasing smoking rates, but the incidence in women remains relatively flat.[136] Lung cancer is the deadliest cancer in Oregon, accounting for 27 percent of cancer deaths in the state in 2013; a number which includes tobacco and non-tobacco caused lung cancers.[137] The rate of lung cancer has remained fairly constant in Oregon and the United States over time.

In Benton County, smoking declined gradually from 2004 to 2011, which has major implication for cancer rates, since smoking is the leading cause of lung cancers.[138] The lung and bronchial cancer incidence rate in Benton County was 49 per 100,000.[9] Mortality rates are also disparate when compared to the state. The Benton County rate is also lower than the state mortality rate of 47 per 100,000. Only Benton County achieves the Healthy People 2020 goal of 45.5 deaths per 100,000 people.[139]

Breast Cancer

Oregon has the 7th highest incidence rate for breast cancer in the United States.[140] Although significant improvements have occurred in early detection and treatment, breast cancer is still the leading cause of death for women in Oregon. Only a small fraction of breast cancer cases can be linked to genetics.[141]

In Benton County, the 2008-2012 age-adjusted incidence rate of breast cancer among women was 122 diagnoses per 100,000 women. The Benton County rate is also similar to the Oregon breast cancer incidence rate of 128 diagnoses per 100,000 women. In 2008-2012, the female breast cancer mortality rate 22.5 deaths per 100,000 women.

Prostate Cancer

The 2008-2012 incidence of prostate cancer in Benton County was 117 per 100,000. The mortality rate for Benton County matched the state mortality rate of 23 per 100,000 men.[17]

None of these rates meet the Healthy People 2020 objective to reduce the mortality rate due to prostate cancer 22 deaths per 100,000 men.[142]

Colorectal Cancer

The age-adjusted incidence of colorectal cancer in Benton County is similar to the state incidence. The Benton County mortality rate is also similar to the state rate. Benton County has achieved the Healthy People 2020 target to reduce the mortality rate due to colorectal cancer to 14.5 deaths per 100,000 people.[143]

Pancreatic Cancer

In 2008-2012, the annual incidence rate for pancreatic cancer in Benton County was 11.6 per 100,000 persons, [144] similar to the state incidence rate of 11.8 per 100,000 persons during that time period. In contrast with the other cancers discussed in this section, pancreatic cancer mortality rates are close to incidence rates, with rates of 12.3 per 100,000 in Benton County and 10.9 per 100,000 in Oregon. Pancreatic cancer is difficult to diagnose before it has advanced, so survival rates tend to be lower than for other common cancers. One consequence of similarities in incidence and mortality rates is the potential for mortality rates in a given year or set of years to exceed incidence rates, as is the case for Benton County. This is because the cancer may be diagnosed in a year prior to the year of death.

Cancer Screening

Research shows that screening for cancer is effective in reducing serious consequences of the disease, which is generally more treatable when detected early. Breast and cervical cancer screening rates in Benton County are fairly consistent with state-level screening rates (Table 6.1). Additional data are needed to identify rates of screening among race/ethnic populations, age group and income level, as risk factors differ among different populations.

Table 6.1: Age-adjusted percent of cancer screening in Benton County, 2010-2013

Cancer Screening Practice	Benton County	Oregon
Mammogram within past 2 years (women 50-74 years old)	78.4%	75.3%
Pap test within past 3 years (women 21-65 years old)	86.4%	81.7%
Current on colorectal cancer screening (50-75 years old)*	66.2%	61.1%

Source: Oregon Health Authority, Health screenings among Oregon adults, 2010-2013
**Current on colorectal cancer screening includes the following: having a fecal occult blood test (FOBT) in the past year; a colonoscopy within the past 10 years; or, a sigmoidoscopy within the past 5 years as well as an FOBT within the past 3 years.*

Heart Disease and Stroke

After cancer, heart disease is the largest contributor to the mortality rate in Benton County and in Oregon. When combined with stroke and adjusted for age, diseases of the circulatory system are the leading causes of death in Benton County and Oregon.

Cardiovascular Disease and Stroke

Numerous health conditions and behaviors contribute to the potential for heart disease and stroke. These include:

- High blood pressure,
- High blood cholesterol,
- Diabetes,
- Obesity,
- Lack of exercise, and
- Smoking.[145]

Many of the effects of heart disease can be reversed with healthy eating, exercise, avoidance of tobacco, and stress reduction. In addition to high blood pressure, high cholesterol, and diabetes being critical health factors of heart disease and stroke, social and economic factors are also important. For example, in the U.S., low-income adults are 50 percent more likely to suffer heart disease than top wage earners, even when other risk factors such as cholesterol or smoking, are taken into account.[146]

Heart Disease Mortality

Across Oregon, the death rate for heart disease is higher in rural areas than urban areas.[147] In 2013, Benton County (103 deaths per 100,000 persons) had a lower cardiovascular disease mortality rate than Oregon (135 deaths per 100,000 persons).[148]

Stroke Mortality

In general, stroke mortality rates in Benton County and in Oregon have not achieved the Healthy People 2020 target of a reduction to 34.8 deaths per 100,000 persons.[149] Benton County's mortality rate is 36 deaths per 100,000 people, compared to Oregon's rate of 37 deaths per 100,000 people.

Diabetes

Diabetes in Adults

There are two types of diabetes identified by the medical community. Type 1 diabetes is a hormonal condition in which the body does not produce enough insulin to regulate the conversion of sugar and starches into energy. Type 1 diabetes is caused by genetic and unknown factors and is usually diagnosed in children.

In Type 2 diabetes, the body develops resistance to insulin, so that dietary sugar absorbed into the bloodstream is not converted into glycogen at a healthy rate. There are both genetic risk factors and behavioral risk factors for developing type 2 diabetes. Because diabetes can cause serious health complications, it is important to prevent type 2 diabetes through healthy life choices and to catch early through health screenings.[150]

Hereafter, type 2 diabetes will be referred to as diabetes.

Prevalence of diabetes among adults in Benton County was 7.7 percent in 2008-2011.[151] This estimate may be conservative, however, as many people are unaware of their status. Diabetes often develops gradually, and symptoms and complications can take years to manifest.

Diabetes Mortality

Overall, 2013 age-adjusted annual diabetes mortality rates have been consistently lower in Benton County (9 per 100,000) than they have been in Oregon (23 per 100,000). Both of these rates are much lower than the national diabetes mortality rate and meet the Healthy People 2020 objective of no more than 66.6 deaths per 100,000 persons.[152]

Alzheimer's Disease

Alzheimer's disease is the most common form of dementia, which is a general term for loss of memory and other intellectual abilities serious enough to interfere with daily life. Alzheimer's disease accounts for 60 to 80 percent of all cases of dementia. Alzheimer's disease is also terminal, and is the 5th most common cause of death in Benton County. In 2013, the Benton County cause-specific mortality rate per 100,000 for Alzheimer's (25 per 100,000 individuals) was similar to the mortality rate in Oregon (27 per 100,000 individuals).

Arthritis

Arthritis continues to be the most common cause of disability in the United States, affecting one in five Americans. Arthritis consists of over 100 different diseases and conditions that

affect the joints, surrounding tissues and other connective tissues. The two most common types are osteoarthritis and rheumatoid arthritis.

The age-adjusted percentage of adults in Benton County who report an arthritis diagnosis is 24 percent.

Asthma

Over the past 20 years, asthma has become one of the most common chronic diseases in the United States. Oregon has one of the highest asthma rates in the nation.[153] Asthma results in direct health care costs (e.g., hospitalizations and emergency department visits) and indirect costs (e.g., missed school and work days and days of restricted activity), and affects the quality of life for people with asthma and their families.

Prevalence of Asthma in Adults

For the past 10 years, the percent of Oregonians with a current asthma diagnosis has been rising slowly. Oregon ranked among the top six states for the highest percentage of adults with current asthma diagnoses in 2011.[154]

Two important risk factors, tobacco use and obesity, contribute to the likelihood of an asthma diagnosis. Oregon counties with asthma levels higher than the state average tend to also be counties with high smoking rates.[155] Likewise, counties with high levels of obesity also tend to have increased prevalence and incidence of asthma. Benton County has an age-adjusted adult asthma prevalence of 9.8 percent, which is slightly below the Oregon prevalence of 10.4 percent.[156]

Infectious Diseases

Prevention and control of infectious illnesses rank among the greatest health advances of the 20th century. The World Health Organization defines infectious diseases are those that are caused by bacteria, viruses, parasites, or fungi; these diseases can be passed from person to person.[157] Some are transmitted via ingesting contaminated food or water. Many are spread by microorganisms in coughs or sneezes, while others result from exposures in the environment or insect bites. Diseases that spread from animals are called zoonotic infections.

All physicians, health care providers, and laboratories in Oregon are required by law to actively report confirmed or suspect diagnoses of over 50 infectious diseases and conditions to their local health departments.[158] These reports are directed through county health departments to the Oregon Public Health Division which collects and distributes data to inform health departments, physicians and the public. Reporting enables appropriate public health follow-up for patients, helps identify outbreaks, and provides a better understanding of disease transmission patterns. Some diseases are subject to restrictions on school attendance, day

care attendance, patient care, and food handling. Communicable disease nurses in Benton County investigated 494 reports of reportable communicable diseases during 2013.[159]

Respiratory Illnesses

Respiratory illnesses such as the influenza virus, commonly referred to as the flu, spread from person to person when droplets from a cough or sneeze of an infected person move through the air and enter the mouth or nose of people nearby.

The common cold* and influenza are the most common respiratory illnesses. However, local, state, and national statistics for these diseases are difficult to ascertain because doctors and laboratories are not required to report them to public health authorities. This is because most people experience only mild, short-term illness, and do not seek medical attention. The illnesses are difficult to differentiate, and most are treated symptomatically rather than curatively. The Oregon Health Authority reports influenza and pneumonia mortality jointly; these rates have been steadily declining in Benton County.

Less common, but more serious respiratory illnesses include pneumonia, pertussis (whooping cough), and tuberculosis. In general, infectious tuberculosis is extremely rare in Benton County. Between 2007 and 2013, an average of 1-3 cases were reported annually.[160] Tuberculosis cases are actively managed and curative therapy is overseen by public health nurses.

Pertussis is a very contagious bacterial infection that causes a coughing illness which may last 6 to 10 weeks or longer. It is an endemic disease with epidemic peaks occurring every 2 to 7 years and has proven persistence despite widespread childhood immunization. There was a sharp rise of pertussis in the United States during 2012. Oregon reported more than twice as many pertussis cases in 2012 as in 2011. The number of cases of pertussis in the Benton County fluctuates annually; an outbreak in the region in 2012 pushed the county incidence above the historical average of approximately 14 diagnoses per 100,000 people per year.

Foodborne Illnesses

The Centers for Disease Control and Prevention (CDC) estimate that each year, 1 in 6 Americans (48 million people) get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases.[161] The leading causes of foodborne illness in the United States are due to exposure to norovirus, Salmonella, Campylobacter, and *Clostridium perfringens*. Norovirus, Salmonella, and Campylobacter are also among the leading causes of death due to foodborne illness.[162] Figure 6.20 below shows that the incidence of campylobacter in Benton County has historically ranged between 20 and 45 cases per 100,000 each year. In contrast, the incidence in Oregon has stayed below 35 cases per 100,000 people between 2007 and 2013.

* More than 200 viruses cause what is typically considered the common cold, including rhinovirus, coronavirus, respiratory syncytial virus, and the parainfluenza virus.

Escherichia coli, most commonly 0157:H7 (a specific strain of *E. coli*), is another significant causative organism. Around 5 to 10 percent of those who are diagnosed with the infection develop potentially life-threatening complications.[163] Since 2007, Benton County's rate of *E. coli* per 100,000 persons has fluctuated between 1 and 9 cases.

Sexually Transmitted Infections (STIs)

Sexually transmitted infections (STIs, also sometimes called sexually transmitted diseases, STDs) are infections that can be passed from one person to another through sexual contact. Untreated STIs can have consequences for individuals' health such as infertility and even death. Testing for STIs is a very effective mechanism for preventing the spread of STIs. Even incurable STIs, like HIV, are much less likely to be spread if those affected by the infection receive proper treatment. However, untested individuals are unable to receive the treatment they need and are also much more likely to pass on the infection to others.

Chlamydia and gonorrhea are the most common STIs in Benton County. Approximately 80 to 90 percent of chlamydia infections and about 50 percent of gonorrhea infections are asymptomatic in women and may go undiagnosed. If left untreated, these infections may lead to pelvic inflammatory disease, which can cause tubal infertility, ectopic pregnancy and chronic pelvic pain.[164]

Chlamydia

Chlamydia is the most common reportable illness in Oregon, with infection rates steadily increasing over the past decade. In Oregon, reported rates of chlamydia are almost twice as high in women as in men; for every 10 men diagnosed with chlamydia, 19 women are diagnosed. Current guidelines recommend chlamydia screening in women who are not symptomatic, but do not recommend the same screening for men without symptoms. This likely causes the higher rate of reported chlamydia cases among women, rather than a difference in infection rates by gender.[165] Overall, Benton County has had a lower rate of chlamydia than the state, although rates are increasing across these geographic levels. Benton County had 260 cases of chlamydia per 100,000 individuals in 2013.

Gonorrhea

Another reportable sexually transmitted infection that is present in Benton County is gonorrhea. In general, women are more likely than men to become infected with gonorrhea after exposure. However, as with chlamydia, women are less likely than men to develop symptoms following infection.[166] Gonorrhea infection rates in Benton County have consistently stayed below the state rate. Benton County had 22 cases of gonorrhea per 100,000 individuals in 2013.

The key risk factor for sexually transmitted infections is age. Benton County residents between 15 and 24 years of age contract chlamydia at a rate 4.7 times higher than the infection rate among all ages. This trend holds for state infection rates as well. Gonorrhea infection rates are somewhat less influenced by age; 15-24 year olds in the county have infection rates 2.2 times as high as the infection rate among all ages (Table 6.2).

Table 6.2: Age-specific incidence rates of chlamydia and gonorrhea, diagnoses per 100,000 persons in Benton County, 2013

	Chlamydia	Gonorrhea
Age		
<15	260	22
15-24	1,217	48
25-44	433	52
45-64	31	0.0
65+	1.6	0.0

Source: Oregon Health Authority, Oregon Public Health Assessment Tool, 2013

HIV/AIDS

HIV/AIDS (human immunodeficiency virus/ acquired immunodeficiency syndrome) remains an important public health problem in Oregon. From 1981 through 2010, 8,753 Oregonians were diagnosed with HIV infection. Of those, 40 percent (3,540) died. Fortunately, death rates have decreased dramatically since the development of effective antiretroviral therapies. HIV/AIDS is now managed as a serious but chronic disease. As a result, the number of Oregonians living with HIV infections has increased from 2,720 in 1997 to 5,213 in 2010. New HIV diagnoses in Oregon are most common among 35–39 year old males. Between 2009 and 2013, 24 individuals were diagnosed in Benton County. The 5-year incidence of HIV in the Benton County was 5 cases per 100,000 persons per year, about two-thirds of the state's incidence (6.5 cases per 100,000 persons per year) during that time period.[167]

Injury and Violence

Violent Crime

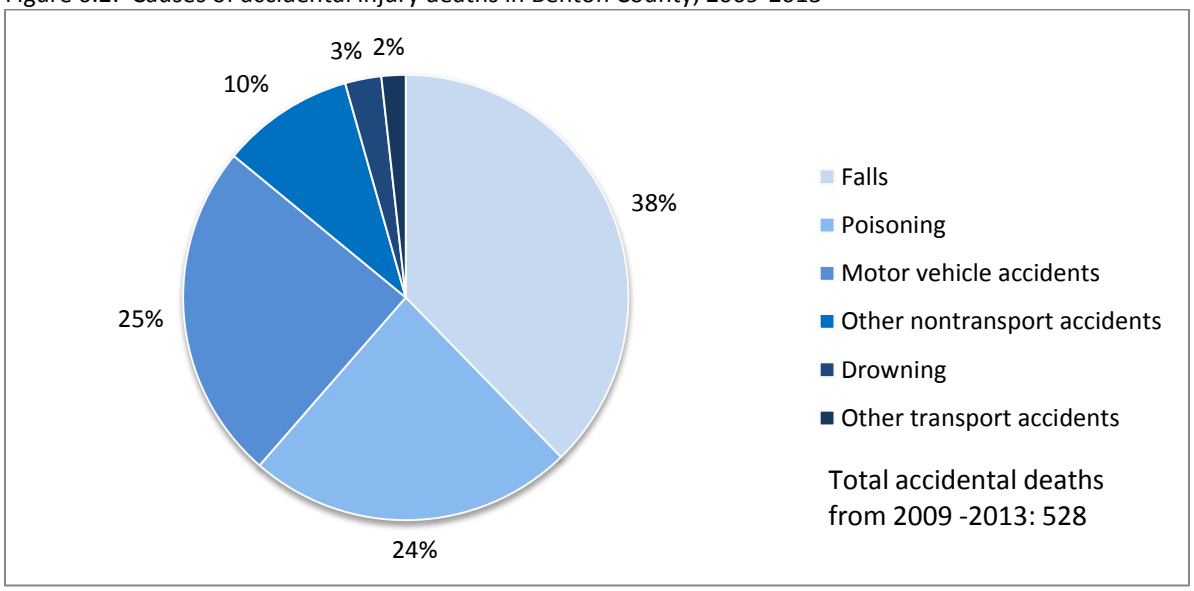
Violent crimes are defined as offenses that involve face-to-face confrontation between the victim and the perpetrator, including homicide, rape, robbery and aggravated assault. High levels of violent crime compromise physical safety and psychological well-being. Crime rates can also deter residents from pursuing healthy behaviors such as exercising out-of-doors.[168] Benton County had a violent crime rate of 116 crimes per 100,000 people from 2010-2012. This was well below the Oregon rate of 249 crimes per 100,000 people. In 2012, Benton County had 58 assaults.[169]

Unintentional Injury Mortality

Injuries are the number one cause of death among people under the age of 44 in Oregon and the fifth leading cause of death overall. Injury is also the number one cause of disability at all ages.[170] Most of the events resulting in injury, disability, or death are preventable. According to Healthy People 2020, injuries and violence have an impact on the well-being of people by contributing to premature death, disability, poor mental health, high medical costs, and high unproductivity.[171]

Benton County injury deaths follow the same pattern as the state (see Figure 6.2 below). Falls contributed to 38 percent of accidental deaths between 2009 and 2013, followed by poisoning and motor vehicle accidents. Together, these three causes comprise 87 percent of accidental deaths in Benton County.

Figure 6.2: Causes of accidental injury deaths in Benton County, 2009-2013



Source: Oregon Public Health Assessment Tool, 2009-2013

Injury mortality is higher among males than females in all age groups in Oregon. Injury mortality rates increase with age for both sexes, starting at age 5.[172] The risks of different major types of injury fluctuate through a person's life. These include, among other types, falls, unintentional poisonings, motor vehicle accidents, and self-harm.

Mental Health Conditions

Mental health disorders are experienced by people of all ages, from early childhood through old age. Research suggests that only about 17 percent of U.S. adults are considered to be in a state of optimal mental health. An estimated 26 percent of Americans age 18 years and older are living with a mental health disorder in any given year, and 46 percent will have a mental health

disorder during their lifetime.[173] These disorders include, among others, anxiety, depression, behavior disorders, persistent suicidal thoughts, schizophrenia, and Alzheimer's disease.[174] County Health Rankings reports the number of poor mental health days each month, both as a proxy for mental health diagnoses and as an indicator of overall mental wellness. Residents of Benton County reported an average of 2.9 poor mental health days over the previous month. This measure is based on survey responses to the question: "Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"[175]

The Oregon rate is 3.3 poor mental health days. The Healthy People 2020 benchmark is 2.3, indicating clear room for improvement in Benton County and the state. From 2008 to 2011, 64 percent of Benton County residents reported no poor mental health in the past 30 days. This rate is statistically equivalent to the statewide rate of 65 percent.[176] From 2010 to 2013, the self-reported depression rate in Benton County was 23 percent in Benton County. This was slightly lower than the state rate of 25 percent.[177]

Suicide

Suicide is a death resulting from the intentional use of force against oneself. As a public health concern, it relates to both injury and violence, and mental health. However, while many unintentional injuries can be prevented by making one's environment safer, suicide can also be effectively prevented by providing treatment to those with mental health disorders. Therefore, suicide is discussed in the context of mental health. Suicide is an important public health problem in Oregon. It is also the leading cause of injury-related death in the state and is the 9th leading cause of death for Oregonians. There are more deaths in Oregon due to suicide than due to car crashes. As with violent death, suicide rates were lower in Benton County in 2013, with 14 deaths per 100,000 residents of Benton County. The Benton County rate was also lower than the statewide rate of 18 per 100,000 persons.[178] Additional detail is given in Chapter 7.

Conclusion

Understanding the leading causes of illness and death is a first step on the path to preventing both the loss of life and improving the quality of life within Benton County. While leading causes of death in Benton County closely mirror those of the and state, examining various cancers, heart disease, and other major causes reveal areas of vast improvement, as well as areas in which Benton County is doing more poorly than the state average. Data on many sub-populations are noticeably absent throughout this chapter. As discussed throughout the chapter, many of the conditions that cause illness and death within the county have well-established causes, with a number of them rooted in behaviors or risk factors that can be prevented. The following chapter takes a closer look at behaviors and risk factors that affect a person's health and well-being across the life course.

Chapter 7
Health Across the Life Course

A life course framework helps to illuminate the ways in which experiences during key stages of life contribute to health outcomes throughout an individual's lifetime.[179] This framework builds upon the previously discussed social determinants of health to illustrate that a person's environment and the systems in which they live can affect health outcomes differently during different stages of life. For example, there are ways in which maternal and infant disparities contribute to childhood and adolescent experiences which, in turn, contribute to adult and older adult health outcomes. This can have effects not only on an individual's life, but can also span generations, creating and contributing to persistent disparities within the community. By taking a look at the ways in which certain life stages and health factors interact, new opportunities to improve community health can be uncovered. This chapter addresses health behaviors such as engaging in physical activity; maintaining healthy eating habits; being tobacco-free; and using alcohol and prescription drugs appropriately. This larger view illuminates ways that people protect and promote health for others, including assuring a healthy start for children, preventing and managing chronic conditions, preventing disease and injury, and promoting good mental health.

This chapter is organized to follow the course of a person's life. Factors that influence the health of a mother have a lasting effect on the health of her children as infants, adolescents, and adults. The behavioral and lifestyle choices of children and adolescents affect their wellbeing throughout life, as do other health factors that arise during childhood, such as oral care and mental health. Adults continue to influence their health by adopting healthy behaviors or discontinuing unhealthy ones. They may now feel the effects of health conditions that began earlier in life but took time to develop, or reap the benefit of the healthy choices that they have made. Living a healthy life as one ages is very possible, and it is never too late to improve one's health. However, the elderly are also at risk for health issues that may not affect younger people, including falls, mental decline, or elder abuse.

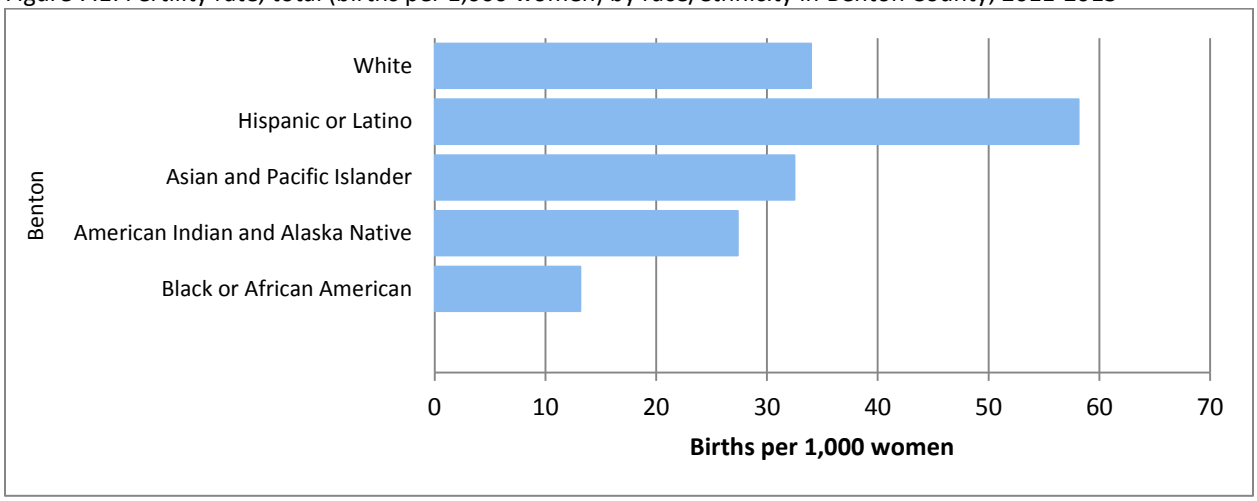
Maternal and Infant Health

Since healthy aging starts at the beginning of one's life, public health professionals can assess the health of a community by starting with the health of mothers and infants during and immediately after pregnancy. This section takes a closer look at maternal and infant health outcomes and various factors that impact them. All fertility data is based on the county of residence, not the county where the infant was born.

Fertility Rate (Total Fertility Rate, TFR)

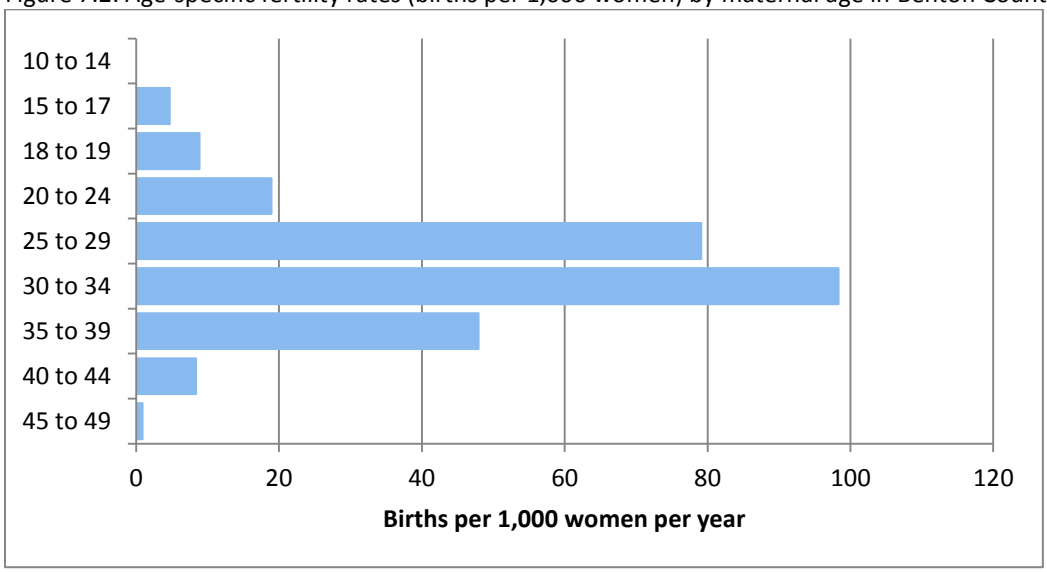
The total fertility rate (TFR) is the total number of births per 1,000 women in a given year. The TFR is based on the age-specific fertility rates of women in their "child-bearing years", which is ages 15 to 44. Figure 7.1 below illustrates the variation of TFR among different racial/ethnic groups within Benton County. While the overall TFR for the region is lower than that of Oregon, Benton County has a TFR that is nearly twice as low as the TFR for both Linn and Lincoln Counties. Benton County's TFR is also much lower than that of the state. Among racial/ethnic groups, women who identify as Hispanic or Latina have the highest TFR in the county, equating to about 1.5 times the TFR of women who identify as White.

Figure 7.1: Fertility rate, total (births per 1,000 women) by race/ethnicity in Benton County, 2011-2013



Source: Oregon Healthy Authority, Center for Health Statistics, Birth Certificate Data, 2011-2013
Note: Fertility rate data is based on county of residence, not county of birth

Figure 7.2: Age-specific fertility rates (births per 1,000 women) by maternal age in Benton County, 2011-2013

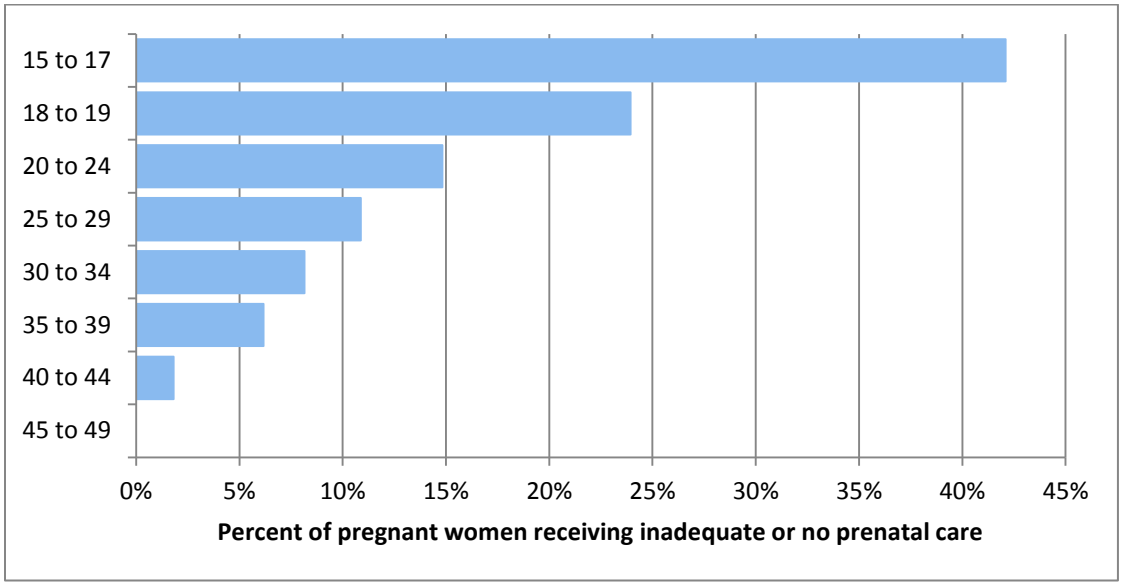


Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2011-2013

Prenatal Care and Healthy Pregnancy

In Benton County from 2011 to 2013, a total of 89.5 percent of all mothers were able to access adequate prenatal care. However, disparities exist among different age groups within Benton County. As shown in Figure 7.3, younger mothers are less likely to access adequate prenatal care than older mothers.[180]

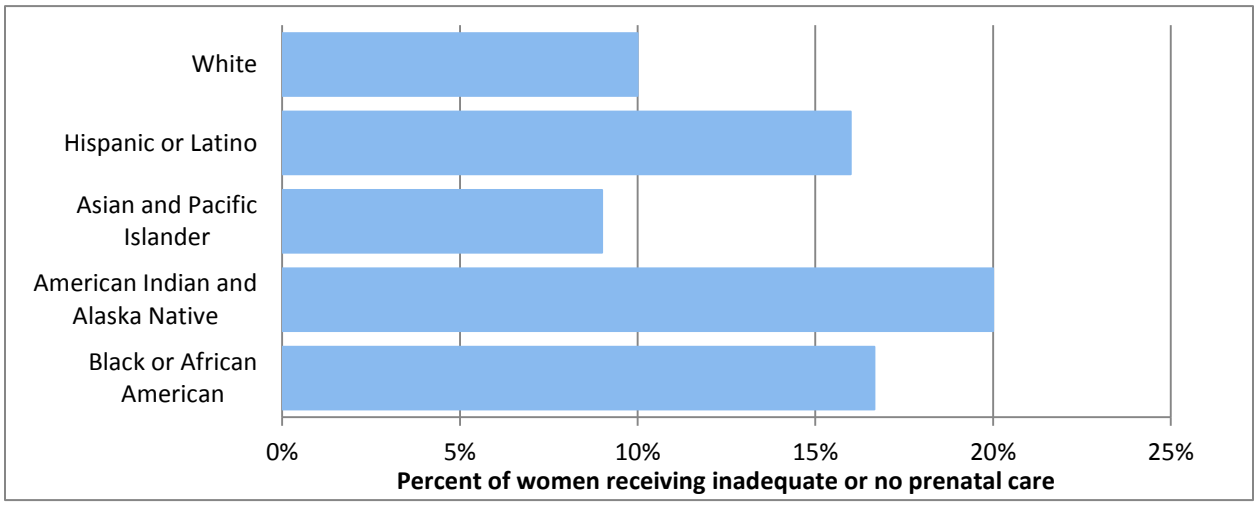
Figure 7.3: Percent of mothers accessing inadequate or no prenatal care in Benton County by age group, 2011-2013



Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2011-2013

There also exist disparities in prenatal care access among mothers of different race/ethnic groups in Benton County. Overall, mothers who identify as White, non-Hispanic or Asian and Pacific Islander tend to access adequate prenatal care more frequently when compared to all other racial/ethnic groups (Figure 7.4).[181]

Figure 7.4: Percent of mothers accessing inadequate or no prenatal care by race/ethnicity in Benton County and, 2011-2013



Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2011-2013

Unhealthy behavior during pregnancy

Smoking during Pregnancy

Smoking during pregnancy is the single most preventable cause of illness and death among infants. Smoking during pregnancy increases the risk of stillbirth, low birth weight, sudden infant death syndrome (SIDS), and preterm birth. It also contributes to cognitive and behavioral problems, and respiratory problems in both the mother and the child.[182]

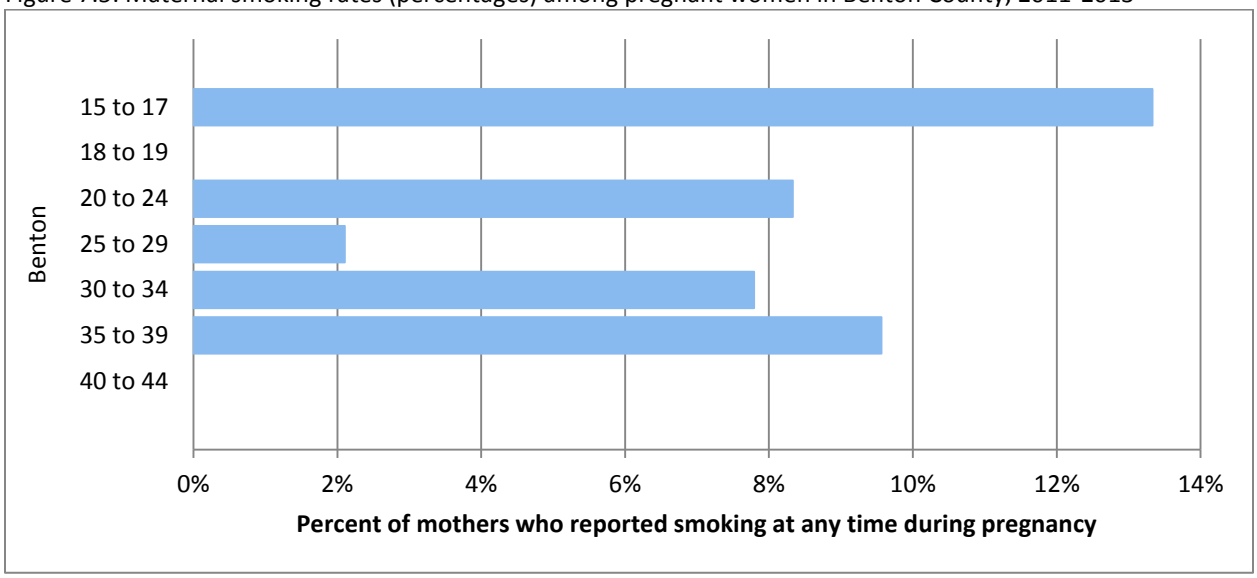
On average in 2011-2013, 8 percent of mothers smoked during pregnancy in Benton County (Table 7.1). However, there is a notable difference in smoking rates when comparing age groups, in which the rate of smoking among pregnant women under the age of 25 in Benton County is two times the rate of smoking among pregnant women over the age of 25.

Table 7.1: Maternal smoking rates (percentages) among pregnant women by age in Benton County, 2011-2013

Population (by age)	Benton County
15 to 17	11 %
18 to 19	25 %
20 to 24	15 %
25 to 29	7 %
30 to 34	5 %
35 to 39	3 %
40 to 44	4 %
Total	8 %

Source: Oregon Health Authority, Center for Vital Statistics, 2011-2013

Figure 7.5: Maternal smoking rates (percentages) among pregnant women in Benton County, 2011-2013



Source: Oregon Health Authority, Center for Vital Statistics, 2011-2013

Smoking cessation counseling and programs offered during prenatal care can provide effective assistance to encourage pregnant women to quit smoking. There currently are no established smoking cessation programs specifically for mothers in Benton County, but efforts are being made to make them available at the county level.

Alcohol Use during Pregnancy

Drinking alcohol during pregnancy can cause miscarriage, stillbirth, and a range of lifelong disorders, known as fetal alcohol spectrum disorders (FASDs). Children with FASDs can have a host of problems, including poor coordination, hyperactivity behavior, difficulty paying attention, poor memory, difficulty in school, learning disabilities, speech and language delays, poor reasoning and judgment skills, vision or hearing problems, and complications with the heart, kidney, or bones. There is no known safe amount of alcohol to drink during pregnancy, and no known safe time to drink alcohol during pregnancy.[183]

The Pregnancy Risk Assessment Monitoring System (PRAMS), a national surveillance system, provides information about women who have had a recent live birth. Oregon state-level data indicates that 92 percent of pregnant mothers abstained from alcohol during the last 3 months of their pregnancies. Less than one percent had more than one drink per week during the third trimester.[184] There are no county data available at present.

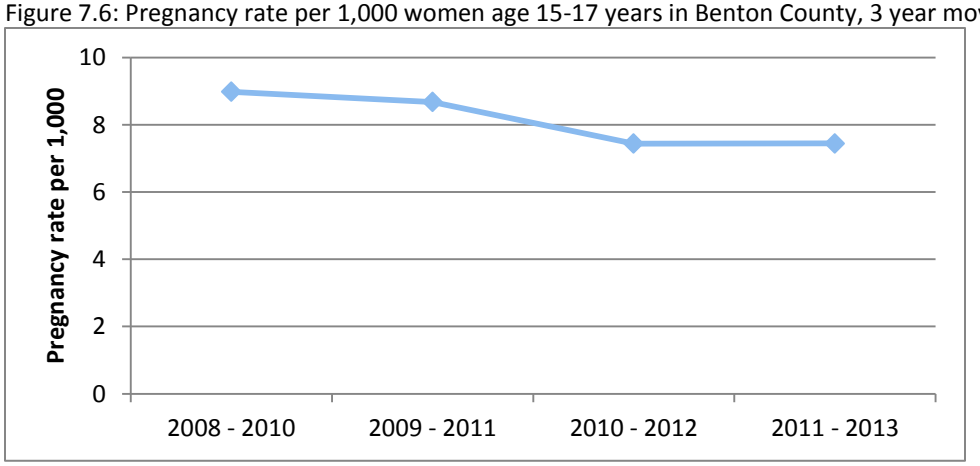
Teen Parenting

Teen mothers are less likely to receive early prenatal care, and are more likely to experience blood-pressure complications and premature birth.[185] Children of teenage mothers are also more likely to become teen parents themselves, be incarcerated during adolescence, drop out

of school, experience more health problems, and are two times as likely to experience abuse and neglect. Negative effects of early childbearing on teenage fathers include an increased likelihood of partaking in delinquent behaviors, such as alcohol and drug abuse or dealing, and fewer years of completed school in comparison to their childless peers.[186]

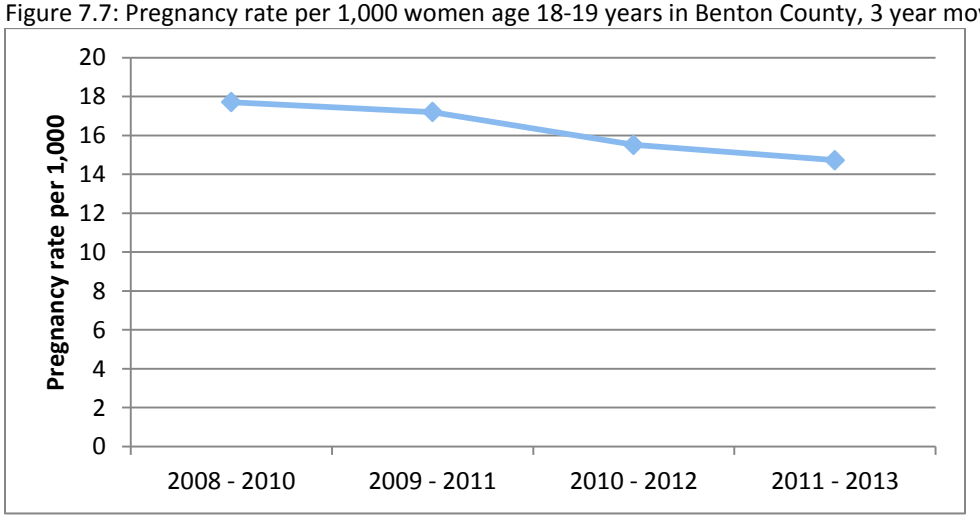
The most recent information available suggests that, overall, Benton County teen pregnancy rates (ages 15 to 17 and 18 to 19) have decreased slightly between 2009 and 2013 (Figures 7.6 and 7.7). Given the small number of teen pregnancies each year, three year averages are shown. The three year average in 2008-2010 among 15-17 year-olds was 9.0 pregnancies per 1,000 women age 15-17. This number declined to 7.4 pregnancies per 1000 women age 15-17 in 2011-2013. This decline is similar among 18-19 year old women; the rate declined from 17.7 pregnancies per 1,000 women age 18-19 in 2008-2010 to 14.7 pregnancies per 1,000 women age 18-19 in 2011-2013. Benton County teen pregnancy rates were below state teen pregnancy rates in all years.

Figure 7.6: Pregnancy rate per 1,000 women age 15-17 years in Benton County, 3 year moving average, 2008-2013



Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2008-2013

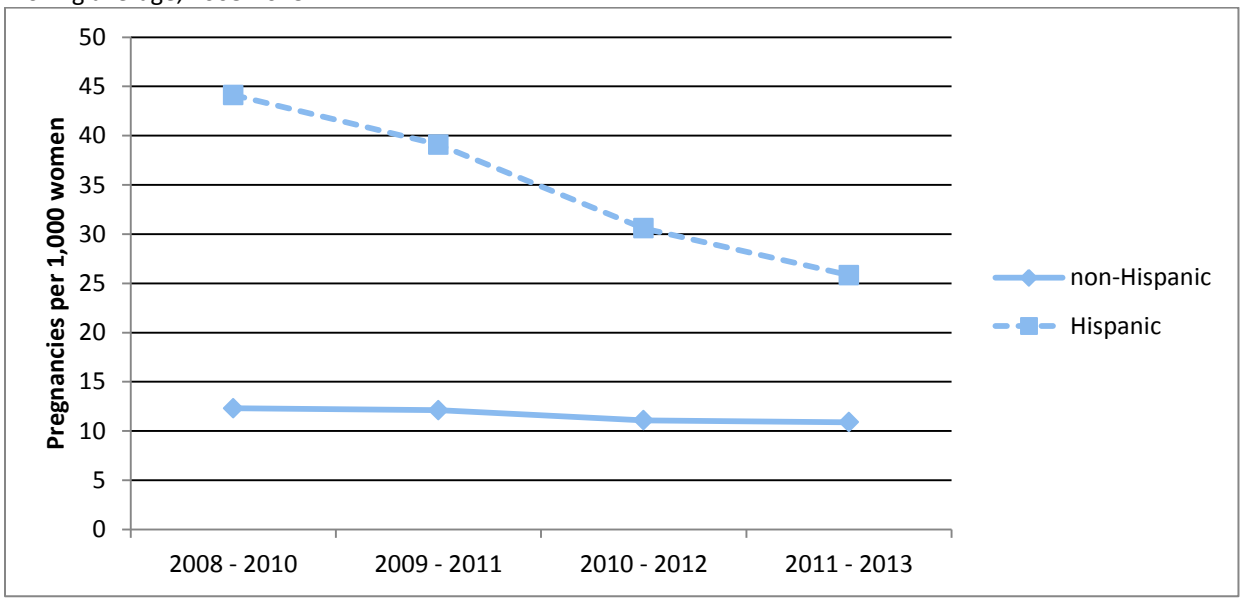
Figure 7.7: Pregnancy rate per 1,000 women age 18-19 years in Benton County, 3 year moving average, 2008-2013



Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2008-2013

Disparities in teen pregnancy rates emerge when the overall Benton County figure is broken down. For example, despite the overall decline in rates, there are striking differences in teen birth rates for Hispanic and non-Hispanic populations at the county and state levels. Between 2011 and 2013, Hispanic teens aged 15 to 19 had a pregnancy rate in Benton County that was 237 percent higher that of non-Hispanic teens (Figure 7.8). . Notwithstanding the greater Hispanic teen pregnancy rates, in the county and statewide, the pregnancy rate among Hispanic teens is declining faster than the pregnancy rate among non-Hispanic teens.

Figure 7.8: Pregnancy rate, Hispanic versus non-Hispanic, women age 15-19 years in the Benton County, 3 year moving average, 2008-2013



Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2008-2013

Infant Mortality

The annual infant mortality* occurrence in Benton County has been less than 5 per 1,000 births from 2011 to 2013. However, the infant mortality rate in Benton County is lower than the infant mortality rate for the state (4.98 per 1,000 births). Benton County has surpassed the Healthy People target of 6.0 per 1,000 births.[187]

Premature Birth and Low Birth Weight

Premature birth, and low birth weight among infants are commonly used measures of maternal and infant health. Infants that are born too early and/or with a low birth weight are at higher risk of dying in the first year of life and of having developmental problems and worse health outcomes throughout life. [188,189] Both conditions are preventable to varying degrees and have been found to be influenced by a variety of factors.

* Infant mortality is defined as the death of a live-born infant before the age of 1.

Premature Birth

Premature birth (also known as preterm birth) is a measure of births that occur before the projected full term of the pregnancy. Infants are considered premature when they are born before completing 37 weeks (about 8.5 months) of pregnancy.[190]

In Benton County 6.2 percent of births are preterm, which is well below the Healthy People 2020 target of 11.4 percent.[191] However, disparities exist among women when stratified by race/ethnicity, as shown below in Table 7.2.

Table 7.2: Percent of births that are premature in Benton County, 2011-2013

	Benton County
White, non-Hispanic	5.6 %
Black/African American, non-Hispanic	16.7 %*
American Indian/Alaska Native	20 %*
Asian & Pacific Islander	6.2 %*
Hispanic/Latino	7.7 %
All births	6.2 %

Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2011-2013

** This number may be statistically unreliable due to small numbers and should be interpreted with caution*

Low Birth Weight

Low birth weight results when an infant fails to grow sufficiently during pregnancy and can both signal and cause health problems with the infant. Infants are considered to have low birth weight if they weigh less than 2,500 grams (about 5.5 pounds at birth).

From 2011 to 2013, approximately 5.9 percent of all infants born in Benton County had a low birth weight, which meets the Healthy People 2020 target of 7.8 percent.[192] While Benton County and Oregon meet the Healthy People 2020 objective for low birth weight infants, differences exist among racial/ethnic groups within Benton County. Table 7.3 and Figure 7.9 illustrate the variation across different racial/ethnic groups within Benton County.

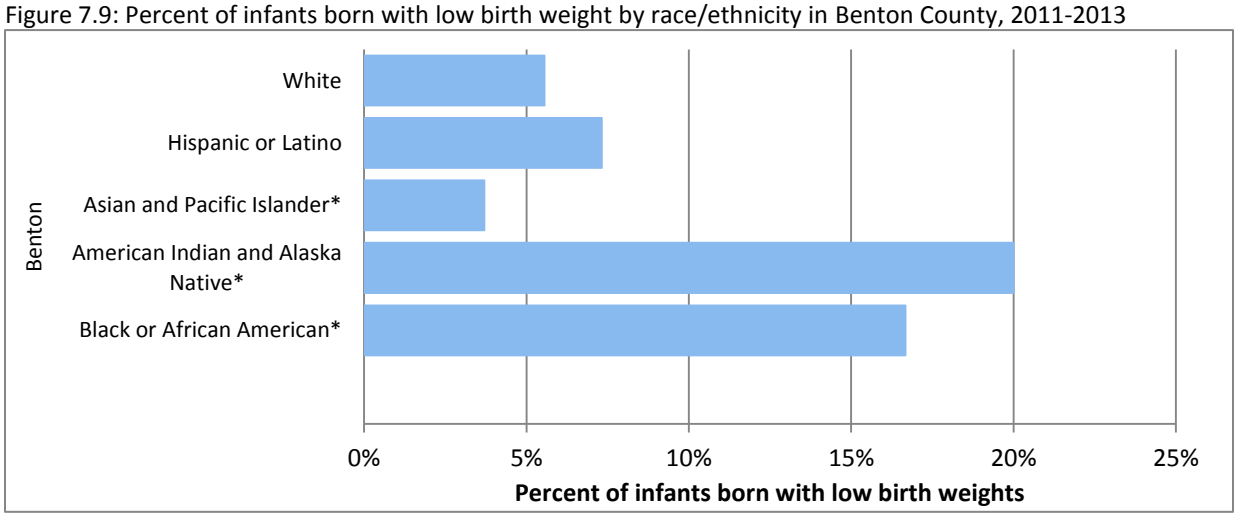
Table 7.3: Percent of infants born with low birth weight by race/ethnicity in Benton County, 2011-2013

	Benton County
White, NH	5.6 %
Black/African American, NH	16.7 %*
American Indian/Native American, NH	20.0 %*
Asian & Pacific Islander, NH	3.7 %*
Hispanic/Latino	7.3 %
All infants	5.9 %

Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2011-2013

** This statistic may be statistically unreliable due to small numbers and should be interpreted with caution*

Figure 7.9: Percent of infants born with low birth weight by race/ethnicity in Benton County, 2011-2013



Source: Oregon Health Authority, Center for Health Statistics, Birth Certificate Data, 2011-2013
** This statistic may be statistically unreliable due to small numbers and should be interpreted with caution*
Note: Low birth weight data is based on county of residence of the mother, not county of birth

Breastfeeding

Breastfeeding is associated with numerous health benefits for infants, such as boosting immune system response, reducing the risk of Type 2 diabetes, and preventing obesity. Breastfeeding also promotes maternal-child bonding. The American Academy of Pediatrics recommends exclusively breastfeeding for the first 6 months after birth and further recommends continued breastfeeding for a year or more after birth.[193]

Breastfeeding in Benton County

Data on breastfeeding are limited at both the state and county level. However, state programs, such as the Nutrition and Health Screening Program for Women, Infants, and Children (WIC), give some insight into the percentage of participating women who breastfeed. Table 7.4 displays the available county data on mothers who participate in the WIC program and the rate of breastfeeding. [194]

Table 7.4: Breastfeeding rates among WIC mothers in Benton County, 2014

	Benton County
Percent of pregnant women served by WIC	35%
Percent of WIC mothers who started out breastfeeding (initiation)	97%
Percent of WIC mothers who breastfed exclusively for 6 months	53%

Source: Oregon Health Authority, 2014 WIC Facts

In addition to WIC, most health care providers encourage women to breastfeed their children, and there are many breastfeeding classes and support groups available in Benton County.

Childhood and Adolescence

Childhood and adolescence are formative times in a person's life. The number and severity of adverse experiences during childhood affects an individuals' risk for alcoholism, depression, heart disease, liver disease, intimate partner violence, sexually transmitted infections, smoking, and suicide. Adverse events include emotional, physical, and sexual abuse and neglect, and various types of household dysfunctions such as violence against mothers, substance abuse, mental illness, parental separation or divorce, or an incarcerated household member.[195,196]

Gender Identity and Sexual Orientation

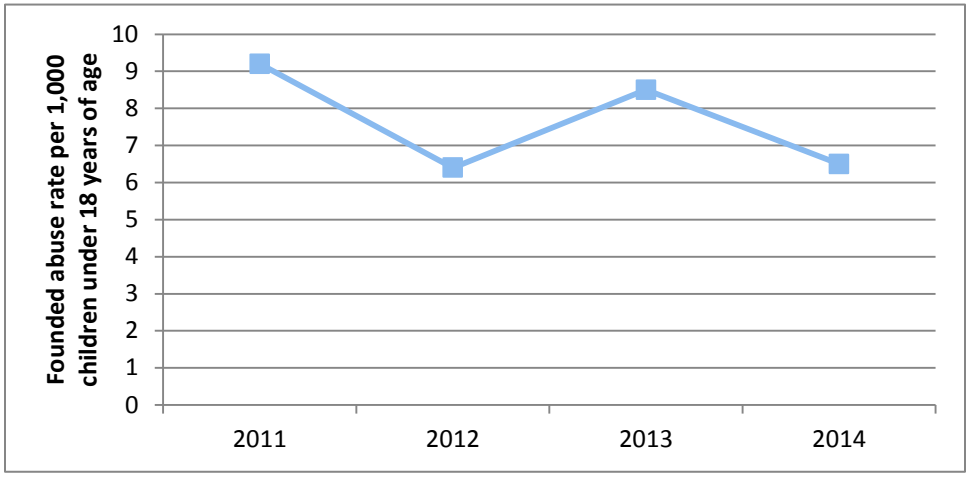
Adolescence is a time of developing sexual awareness and gender expression, although many children are aware of their developing gender identity from a very early age. Because most state and national surveys do not ask questions related to sexual orientation or gender identity, it is difficult to estimate the health needs of lesbian, gay, bisexual, transgender, or queer children, youth and adults in Oregon.

Available data include survey responses on harassment among adolescents in our public schools. In Benton County during the 2013-2014 school year, 8th graders reported having been harassed by a peer who thought they were gay, lesbian, bisexual, or transgender more frequently than 11th graders. Overall, harassment based on perceptions about sexual orientation declines with age.[197,198, 199]

Child Abuse

In 2014, there were a total of 320 reports of child abuse/neglect in Benton County, of which, 63 (20 percent) were founded (determined to be abuse). There were an additional 155 unfounded reports, and 51 indeterminable reports.[200] The types of abuse/neglect include mental injury, physical/medical neglect, physical abuse, sexual abuse, sexual exploitation, or threat of harm. Most often, the perpetrators of child abuse and neglect are family members (93.9 percent of reports); parents account for 78.2 percent of all perpetrators.[201] Child abuse rates in Benton County have remained lower than Oregon and have been fairly stable over the years.[202,203,204,205]

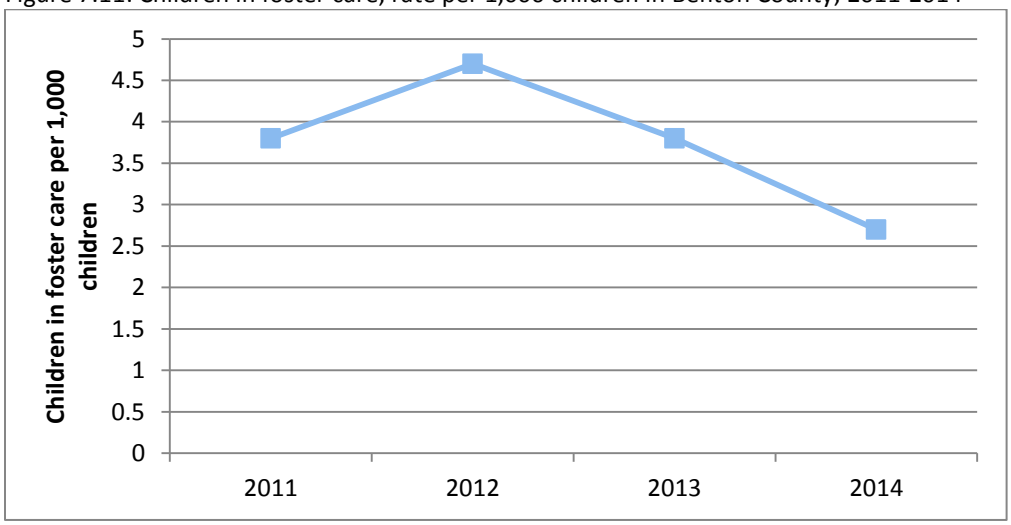
Figure 7.10: Founded abuse rate per 1,000 for children under 18 years of age in Benton County 2010-2014



Source: Oregon Department of Human Services, Child Welfare Data Book 2011, 2012, 2013, 2014
Rates include neglect, physical abuse, and sexual abuse
*2012 data is from the Portland State University Population Research Center. Starting in 2013, the population data is one year behind the year shown and is from Puzzanchera, C., Sladky, A. and Kang, W. (2014). "Easy Access to Juvenile Populations: 1990-2013."

Not all reported cases of child abuse result in a foster care placement. Children are placed in foster care for a variety of reasons. Some are placed in foster care because their families cannot provide them with basic safety and protection, while others have had negative experiences such as parental substance abuse, sexual or physical abuse, and abandonment. In Oregon, many children are in foster care due to a history of abuse or neglect.[206]

Figure 7.11: Children in foster care, rate per 1,000 children in Benton County, 2011-2014



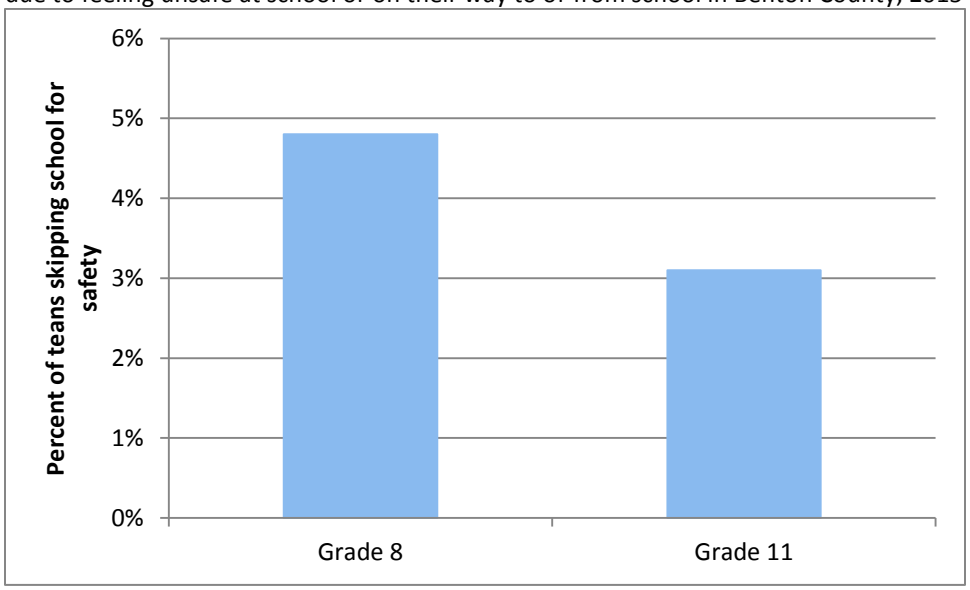
Source: Oregon Department of Human Services: Children, Adults and Families Division (2012). Child Welfare Data Book
**State totals do not include Title IV-E eligible children served by tribes.*

Bullying/Peer Abuse

Violence in schools can affect the learning environment and contribute to absenteeism. Students who are bullied, harassed, and feel unsafe or otherwise victimized, are more likely to miss classes, skip school, feel depressed or exhibit problem behaviors. Research shows that comprehensive discipline, positive behavioral support and anti-bullying programs in schools can reduce the incidence of harassment among primary and secondary school students.[207]

Figure 7.12 shows the percent of students in Benton County, in 2015 who did not go to school at least once in the past 30 days due to feeling unsafe at school or on their way to school. Both 8th and 11th graders in Benton County reported missing fewer days of school than their peers statewide. [208]

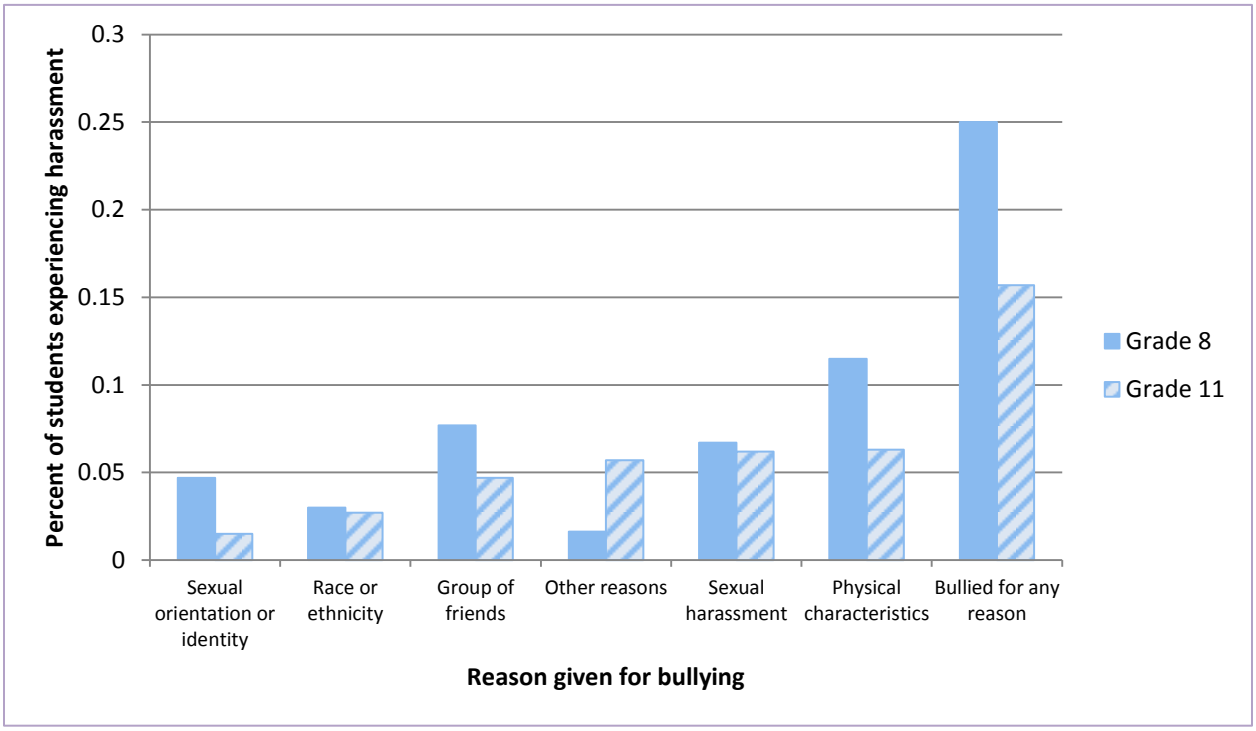
Figure 7.12: Percent of students, 8th and 11th grade, that did not go to school one or more times in the past 30 days due to feeling unsafe at school or on their way to or from school in Benton County, 2015



Source: Oregon Healthy Teens Survey, 2015

Figure 7.13 below shows that reasons for harassment at school differ among age groups at the county level, and that the overall incidence of harassment among Benton County students is common. While the percent of students who report having been harassed at school in the past month tends to decrease with age, reasons for and severity of harassment vary among age groups. Aside from all or other reasons, harassment for physical characteristics is the most reported reason for harassment across all age groups.[209]

Figure 7.13: Percent of students in 8th and 11th grade, who experienced bullying in the past 30 days by reason in Benton County, 2015



Source: Oregon Healthy Teens Survey, 2015

Psychological Distress

Mental health includes our emotional, psychological, and social well-being, and is essential to the overall health and wellbeing of an individual. The World Health Organization defines it as "a state of well-being in which the individual realizes her or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community."[210]

Depression, Suicide, and Suicidal Ideation

In Oregon, suicide rates are higher than the national average and about 70 percent of people who died by suicide from 2003 to 2012 also had depression. Among all age groups, the suicide rate in 2013 per 100,000 people was 12 in Benton County.[211]

The following table highlights the percentage of 8th and 11th grade students in Benton County and Oregon that exhibited signs of depression, thought about suicide, or attempted suicide during 2015 (Table 7.5). The rate of attempted suicide is higher among 8th graders in Benton County than among 11th graders in the county.[212]

Table 7.5: Percent of 8th and 11th grade students that exhibited signs of depression, thoughts about suicide, or actually attempted suicide during the last 12 months, Benton County, and Oregon, 2015

	Grade	Benton	Oregon
Felt so sad or hopeless almost every day for two weeks or more in a row that they stopped doing some usual activities	8th	26 %	27 %
	11th	28 %	29 %
Seriously considered attempting suicide	8th	18 %	16 %
	11th	14 %	16 %
Attempted suicide at least once	8th	7 %	8 %
	11th	5 %	6 %

Source: Oregon Healthy Teens Survey, 2015

Physical Activity

Regular physical activity helps improve overall health and wellness, reduces risk for obesity, and lessens the likelihood of developing many chronic diseases including diabetes, cancer, and heart disease. National physical activity guidelines recommend that children engage in at least 60 minutes of physical activity each day, including aerobic, muscle strengthening, and bone strengthening activity.

The Healthy People 2020 objective for physical activity aims to increase the proportion of adolescents who meet current national physical activity guidelines to 32 percent.[213] 11th graders in Benton County did not meet the Health People 2020 objective. Overall, a slightly larger percentage of youth in Benton County (25 percent) self-report exercising for the recommended amount of time compared to Oregon youth (24 percent).[214]

Table 7.6 shows that the majority of youth in 8th and 11th grade in Benton County do not spend more than two hours per school day watching television. Among 8th graders, Benton County youth surpass the state average and HP 2020 target. Among 11th graders, a larger percentage of youth in Benton County spend less than two hours watching television than youth in Oregon youth overall. Benton County surpasses the HP 2020 target for this measure for youth in 11th grade.[215]

Table 7.6: Percent of youth who view television for no more than two hours per school day in Benton County, 2015

Grade	Benton
8th Grade	83 %
11th Grade	82 %

Source: Oregon Healthy Teens Survey, 2015

Table 7.7 shows that about two-thirds of 8th and 11th graders in Benton County spend less than 2 hours per day on the computer or on their phone. This rate is better than the state average, but fall well short of the Healthy People 2020 target of 82.6 percent.[216]

Table 7.7: Percent of youth who play video/computer games or use a computer for something that is not school work for no more than two hours per school day (including time spent on social networks and on smartphones) in Benton County, 2015

Grade	Benton
8th Grade	65 %
11th Grade	63 %

Source: Oregon Healthy Teens Survey, 2015

Nutrition

There is a well-established link between eating a healthy and balanced diet, and an increasing number of health benefits. A healthy and balanced diet involves eating a variety of foods which provide essential nutrients (like dietary fiber and potassium), in the right amount – with negative health consequences from consuming too little or too much food.[217] In addition to promoting health, and supporting a healthy weight, mounting evidence links a healthy diet to lowered risks of chronic disease, including several types of cancer, osteoporosis, and cardiovascular disease.[218]

Table 7.8: Percent of youth consuming at least 5 servings of fruits and vegetables per day in Benton County, 2015

Grade	Benton
8th Grade	29 %
11th Grade	26 %

Source: Oregon Healthy Teens Survey, 2015

Obesity

Being obese or overweight* is a complicated health condition. The risk of unhealthy weight is influenced by diet, exercise, and other behaviors, but it also depends strongly on genetic and environmental factors. Obesity is also correlated with socio-economic status and other social determinants of health. In addition to being a poor health outcome, obesity and overweight status can increase the risk of many diseases such as diabetes, heart disease, and possible cancer.

* Obesity is defined as having a body mass index (BMI) of 30 or more; Overweight is defined as having a BMI of above 25 and less than 30. Healthy weight is a BMI between 20 and 25.

The Oregon Healthy Teens Survey* found that almost a quarter of all eighth graders in Benton County are overweight or obese (Table 7.9). Benton County youths are generally less likely to be overweight than other Oregon youths. In Benton County, the rate of obesity and being overweight decreases slightly between 8th and 11th grade.[219]

Table 7.9: Overweight and obesity prevalence in Benton County, 2015

Grade	Benton
8th grade overweight	14 %
8th grade obese	7 %
11th grade overweight	9 %
11th grade obese	7 %

Source: Oregon Healthy Teens Survey, 2015

Oral Health

Another childhood health issue that has ramifications for the rest of a person's life is adequate dental care. Good oral health is essential to overall physical and mental health, and encompasses more than just dental check-ups. Oral disease can lead to cavities and gum ailments, which can in turn contribute to other diseases or conditions. Conversely, certain chronic mental and physical health conditions can also contribute to declines in oral health. Poor oral health can also affect self-esteem, reduce employment opportunities, and increase absenteeism.[220]

Cavities are almost completely preventable through optimal water fluoridation, application of dental sealants to children's teeth, effective oral hygiene (brushing teeth and flossing), and regular preventive visits to the dentist.[221] The proportion of 8th grade and 11th grade youth who have ever had a cavity is higher than the Healthy People 2020 target of no more than 48.3 percent (Table 7.10). The proportions do not change much in the three years between 8th grade and 11th grade – this indicates that most tooth decay occurs in children before the 8th grade.[222]

Table 7.10: Percent of youth who have ever had a cavity in Benton County, 2015

Grade	Benton County
8th Grade	65 %
11th Grade	70 %

Source: Oregon Healthy Teens Survey, 2015

Achieving and maintaining good oral health is a significant challenge for many people in Benton County, particularly those with lower incomes. This challenge may be exacerbated by the fact

* The Oregon Healthy Teens Survey distributes a questionnaire to 8th and 11th graders; therefore, adolescent data is richest for these age groups.

that not all cities, districts, or water supplies in the county are fluoridated (see Chapter 3: Environment).

One of the objectives of Healthy People 2020 is to increase the proportion of U.S. communities with fluoridated public water to 75 percent.[223] Benton County surpasses this objective (96 %).

Alcohol, Tobacco, and Prescription and Illicit Drug Abuse

Alcohol and prescription medications are consumed appropriately and responsibly by most of the population. However, problems frequently occur when these substances are over-consumed, used inappropriately, combined with other substances, or consumed while engaging in risky activities such as driving or unsafe sexual activity. The costs to society of the misuse of alcohol, prescription medications and other drugs are massive, and include injury and death due to overdose; effects on unborn children of drug users; impacts on family, crime and homelessness; spread of infectious disease including through sexual transmission and needle sharing; and financial costs associated with lost productivity, healthcare, and legal expenses for individuals and the wider community.[224]

Research has shown that people are most likely to misuse drugs—including tobacco, alcohol, and illegal and prescription drugs—during adolescence and young adulthood. Misuse of substances at an early age (particularly before age 18) is shown to be a predictor of substance use disorders later in life, making this period an important focus for prevention efforts.[225]

Table 7.11: Percent of youth who reported taking part in illicit activities in the past 30 days in Benton County and Oregon, 2015

	Grade	Benton County	Oregon
Consumed at least one alcoholic beverage	8th	7 %	12 %
	11th	30 %	30 %
Consumed at least 5 alcoholic beverages within a couple of hours	8th	3 %	5 %
	11th	15 %	17 %
Smoked cigarettes	8th	1 %	4 %
	11th	7 %	9 %
Used e-cigarettes	8th	5 %	9 %
	11th	12 %	17 %
Used marijuana	8th	4 %	9 %
	11th	21 %	19 %
Used prescription drugs without a doctor's orders	8th	3 %	4 %
	11th	10 %	10 %

Source: Oregon Healthy Teens Survey, 2015

Alcohol Use

The younger a person begins drinking regularly, the greater the chance that person will develop a clinically defined alcohol disorder. Youth who start drinking before the age 15, compared to those who start at 21, are far more likely to be injured while under the influence of alcohol, to be in a motor vehicle crash after drinking, or to become involved in a physical fight after drinking.[226] Overall, alcohol use among Benton County youth tends to increase with age, reflecting the state trend displayed in Table 7.11.

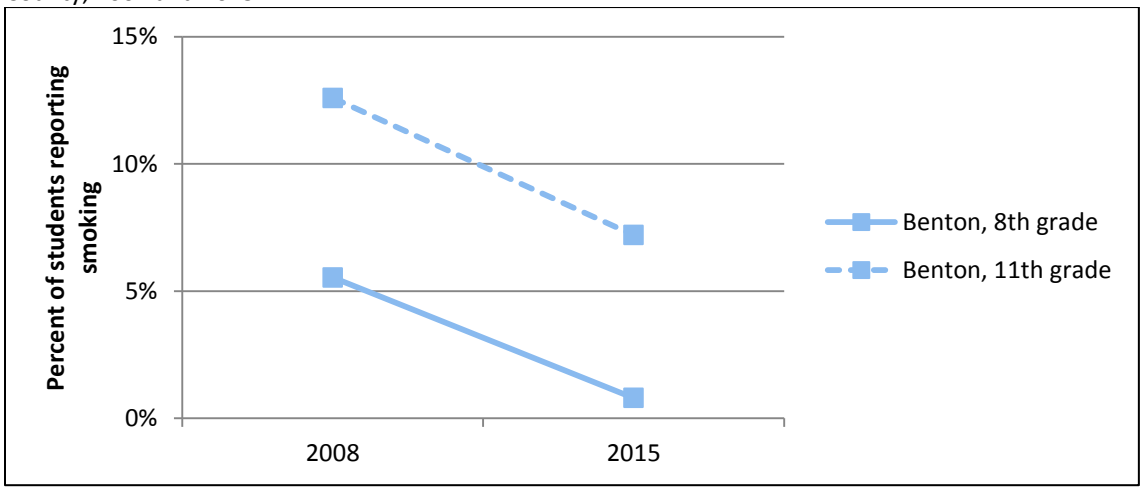
Binge Drinking

Middle and high school youth Benton report similar rates of binge drinking as other Oregon youths. Approximately 3 percent of Benton County 8th graders reported binge drinking in 2015 (Table 7.11). This rate increases to 15 percent among 11th graders.[227] Benton County likely meets the Healthy People 2020 objective of reducing the percent of high school seniors (12th graders) who binge drink to below 23 percent, but it is not possible to directly compare the rates between 11th graders and 12th graders.[228]

Tobacco Use among Adolescents

Tobacco products are designed to deliver nicotine, an addictive drug that changes the way the brain works, causing tobacco users to crave repeated doses. Youth are especially sensitive to nicotine and can become dependent more quickly than adults. Because of their dependency, nearly three out of four teen smokers continue using tobacco products into adulthood.[229] Tobacco use is present among youth in Benton County but has been decreasing over time. Figure 7.14 below illustrates this trend, in addition to showing that smoking among youth increases with age. [230,231]

Figure 7.14: Percent of students that reported having smoked cigarettes at least once in the past 30 Days, Benton County, 2007 and 2015



Source: Oregon Healthy Teens Survey, 2007 and 2015

2015 was the first year the Oregon Healthy Teens Survey asked students about electronic cigarette use. Among both 8th and 11th graders electronic cigarette use was significantly higher than smoking cigarettes. Five percent of 8th graders and 12 percent of 11th graders reported smoking electronic cigarettes.

Marijuana, prescription drug, and illicit drug use

Recreational marijuana is still illegal for all individuals under 21 years of age. The effects of marijuana on children and adults have not been studied to the degree that other legal substances have been, including alcohol and cigarettes. Another major public health concern is the abuse of prescription drugs. When these drugs are misused or taken without a doctor's prescription they can be just as harmful as illegal street drugs.

Among youths in Benton County, marijuana use was three times as prevalent as cigarette smoking as shown in Table 7.11. In Benton County, one out of every five 11th graders surveyed reported using marijuana in the past 30 days. Adolescents in Benton County abuse prescription drugs at rates higher than the state. Prescription drug abuse is particularly among 11th graders.[232] There are no reliable data on other illicit drug use among adolescents in the county.

Many healthy behaviors that children learn continue to support their health as adults, including good oral hygiene, exercise and nutritious diets, and abstaining from drugs or tobacco. The next section discusses the prevalence of these behaviors among adults in Benton County.

Adults

As individuals enter adulthood, they become independent in their decision making. With adulthood comes a new set of stressors and risks, such as the potential for partner violence or easier access to alcohol, tobacco, and drugs. At the same time, working adults have more independence and resources to engage in healthy behaviors such as consuming nutritious food and getting adequate exercise.

Many of the topics that were covered in the childhood health section are revisited here, and some additional areas are introduced. Much of the data reported in this section covers adults from age 18 onward.

Domestic violence

Domestic violence, which includes many forms of abuse, affects children and adults. Physical abuse, sexual abuse or assault, intimidation, verbal abuse and emotional abuse, or threats of such harm are all forms of domestic violence. Domestic violence can include abuse from a household member (including roommates or caregivers), intimate partners (including dating partners) or a family member (whether or not they live with the victim).[233]

The Center Against Rape and Domestic Violence (CARDV) is a non-profit organization serving Benton County that provides supportive services to victims of domestic violence, sexual assault, and dating abuse.[234] Services include crisis intervention, emergency shelter, 24-hour crisis line, safety planning, advocacy, court information and support, agency and resource referrals, education, peer counseling, and outreach activities.

CARDV responded to a total 7,178 calls on its 24-hour crisis line and provided emergency shelter to 125 adults and 91 children for a total of 3,240 bed nights. CARDV also provided legal system support to 594 adults and 11 teens from Benton and Linn Counties.[235,236]

Domestic violence not only has an effect on the victim, but can also have an effect on children; domestic violence poses a threat to children's emotional, psychological, and physical well-being. Children who live with domestic violence are also at an increased risk to become direct victims of child abuse.[237]

Abuse of Vulnerable Adults

Vulnerable adults include the elderly and adults of all ages with physical or mental disabilities, whether living at home or being cared for in a health facility. Abuse and maltreatment of vulnerable adults can include physical, emotional, or sexual abuse, caregiver neglect, and financial exploitation. The information in this section includes adults and seniors.

Within Benton County, there were fewer than 5 allegations of abuse against adults with an intellectual and/or developmental disability

Mental and Emotional Health

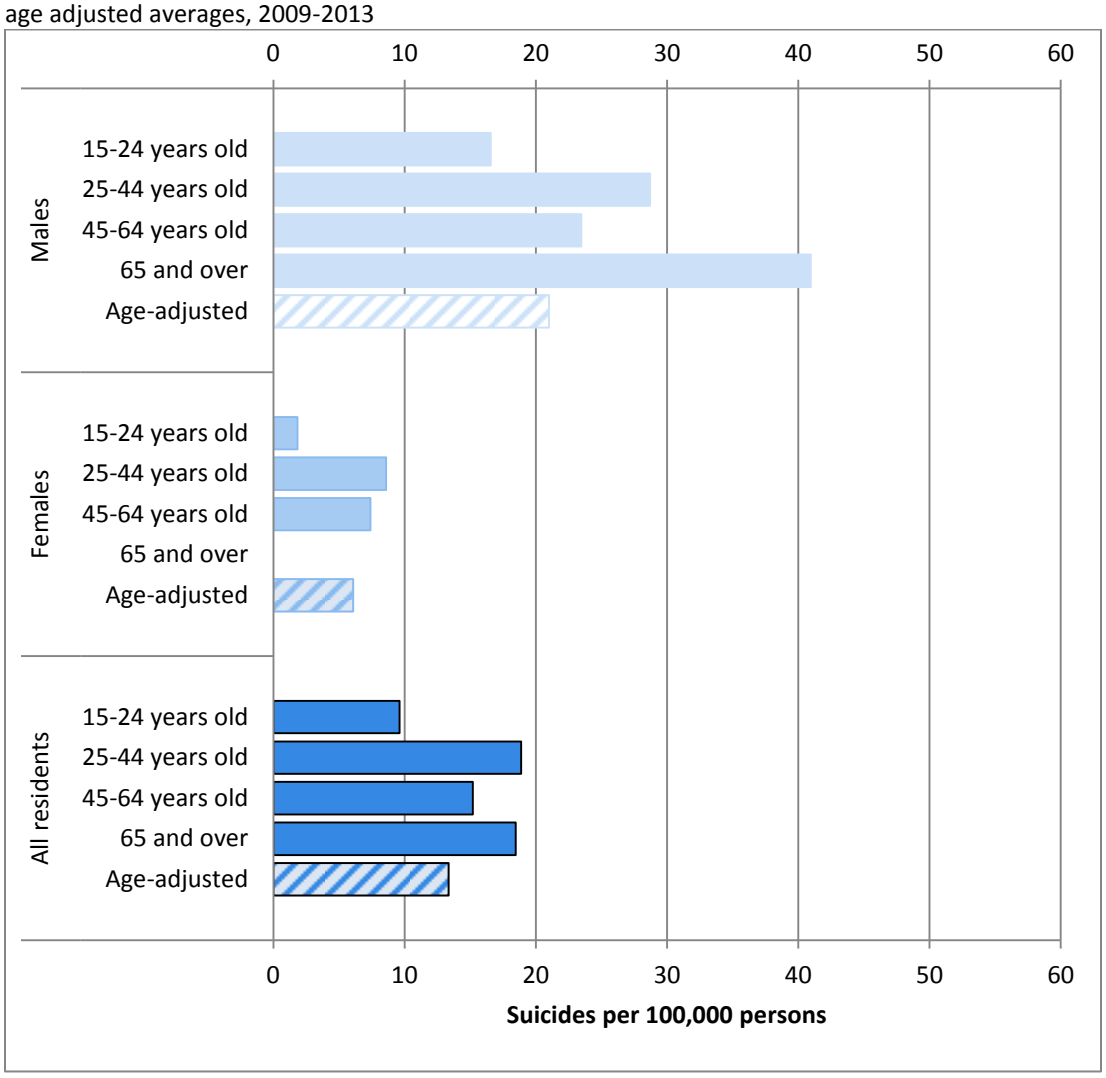
Mental and emotional health begins in childhood and extends throughout a person's life. Many mental disorders manifest during the transition from adolescence to adulthood, including depression, schizophrenia, and bipolar disorder.

A major depressive episode (MDE) is defined as a period of at least two weeks when a person experienced a depressed mood or a loss of interest or pleasure in daily activities. In addition to this, four of the seven symptoms reflecting the criteria for major depressive disorder (as described in the 4th edition of the DSM-IV) must have been experienced by the individual.[238] From 2008 to 2010, eight percent of Benton County adults age 18 years and older reported having had a MDE in the past year.[239,240] This is comparable to seven percent of Oregon adults aged 18 years and older having reported an MDE in the past year.[241]

The most serious consequence of poor mental health is suicide. Overall, the suicide rate among adult males in Benton County is 3.5 times the rate among adult females. The total suicide rate increases with age, but this is due primarily to the outsize effect of male suicide rates, which increase with age. Among males of all age groups in Benton County from 2009 to 2012, males

over the age of 65 had the highest suicide rate at 41 per 100,000 men (Figure 7.15). After the age of 70, the rate of suicide among older adult men rises dramatically (up to 72 per 100,000 men for males 85 and older in the state of Oregon).[242] In Benton County, females had a much lower rate of suicide, averaging 6 per 100,000 women, and this rate does not increase with increasing age. The suicide rate among women peaks at 9 per 100,000 women between the ages of 25 and 44.[243]

Figure 7.15: Suicide rates per 100,000 men, per 100,000 women, and per 100,000 individuals, with Benton County age adjusted averages, 2009-2013



Source: Oregon Health Authority, Oregon Public Health Assessment Tool, 2009-2013

Physical activity

Physical activity is important for maintaining health as a person ages. Recommendations for adults include at least an hour and fifteen minutes of vigorous-intensity activity or two-and-a-half hours of moderate-intensity activity every week, in addition to muscle-strengthening activities on two or more days a week.[244]

Overall 32 percent of adults in Benton County met the CDC guidelines for physical activity* from 2010-2013, compared to 25 percent of adults in Oregon.[245]

Of greater concern is the proportion of the population that gets little to no exercise. In Benton County, the percent of adults who report no physical activity outside of work ranges is 13 percent, compared to the Oregon average of 18 percent.[246]

At the state level, participation in physical activity varies by race/ethnicity, household income, and by level of education. Adults with less than a high school education, those earning less than $24,999, and Latinos are less likely to meet CDC physical activity recommendations than their peers.[247] As with children and youth, county-level data that describe physical activity levels among adults by race/ethnicity or level of household income are not available.

Nutrition and eating habits are frequently set early in life. Good nutrition can delay the physical signs of aging and prevent or slow the development of many chronic diseases, including diabetes and cancer. Approximately one in five adults in Benton County consumes at least 5 servings of fruits and vegetables per day.[248]

Obesity

Obesity is a complicated health issue, with many factors that affect the likelihood of obesity, and many downstream health issues that are influenced by body weight.

While about 25 percent of children in Benton County are overweight or obese, the prevalence of overweight or obesity nearly doubles among adults. An estimated 21 percent of adults in Benton County are obese; an additional 25 percent are overweight (Table 7.12).[249] Therefore, about percent of Benton County adults are either overweight or obese.

Table 7.12: Prevalence of overweight and obesity among adults in Benton County and the region, 2013

	Benton
Overweight	25 %
Obese	21 %

Source: Oregon State Health Profile, 2013

Alcohol, Tobacco, and Drug use

Data shows that younger adults (particularly in their 20's) are at a higher risk for misuse of alcohol and other drugs. One particular area for concern is the misuse of prescription drugs. Misuse of these drugs is highest among young adults (aged 18 to 25).[250] As the most commonly abused type of prescription drugs, painkillers provide a useful marker for prescription drug

* The CDC recommends 30 minutes of moderate physical activity on five or more days per week.

misuse trends. While data shows little change in the self-reported pain experienced by Americans, the amount of painkillers dispensed in the U.S. has quadrupled since 1999, as have the deaths resulting from prescription painkillers.

Of particular concern is the rate of misuse of prescription painkillers among Medicaid patients. Research shows higher rates of inappropriate provider prescribing practices and patient use as compared to privately insured patients. Potential inappropriate prescribing practices include overlapping prescriptions for painkillers, high daily doses, or long-acting painkillers, and have been shown in at least one study to be present in particularly high rates amongst Medicaid enrollees.[251]

Alcohol Use

Excessive drinking is a risk factor for many adverse health outcomes, such as hypertension, alcohol poisoning, unintended pregnancy, fetal alcohol syndrome, inter-personal violence, and motor vehicle crashes.[252] It can also contribute to a number of health issues including heart disease and stroke, high blood pressure, cirrhosis, coma, and even death.[253] The following data includes adults ages 18 and older.

Excessive drinking is defined differently for men and women, due to different metabolic rates and average body weights. Among men, excessive drinking is defined as 2 or more alcoholic drinks per day for a period of 30 days. Benton County data regarding the percent of men who reported excessive drinking is suppressed due to unreliability.

For women, excessive drinking is defined as one or more alcoholic drinks per day for a period of 30 days. In general, excessive drinking among women is lower in Benton County than among men.

Table 7.13: Alcohol abuse among adults, 18 years and older in Benton County, 2010-2013

	Gender	Benton
Consumed at least two alcoholic beverages per day for the past 30 days	Male	**
Consumed at least one alcoholic beverage per day for the past 30 days	Female	6 %
Consumed at least 5 (male) or 4 (female) alcoholic beverages within a couple of hours in the past 30 days		17 %

Source: Oregon BRFSS 2010-2013
*** Benton County data is suppressed due to statistical unreliability*

Binge Drinking among Adults

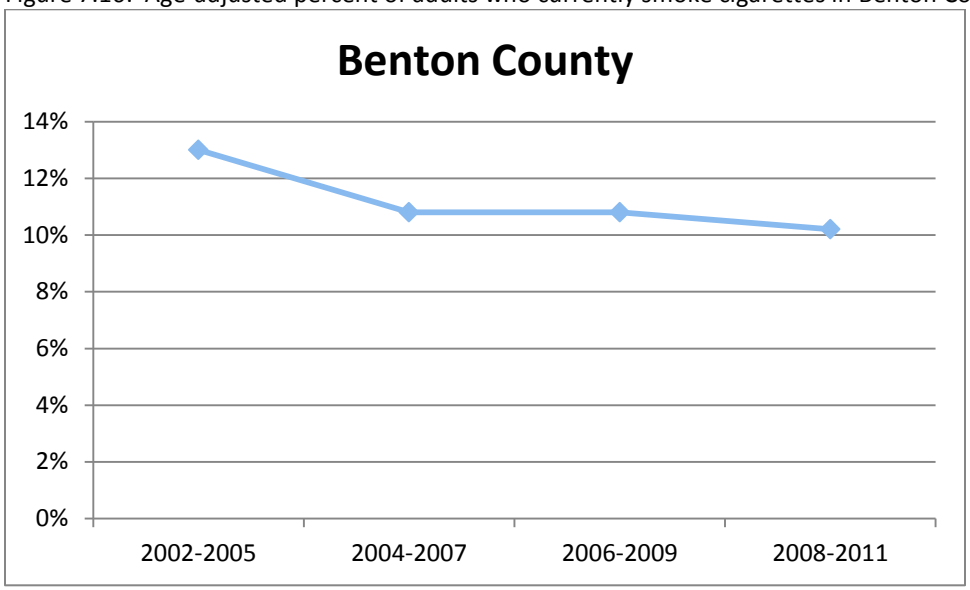
For adults over the age of 18, binge drinking is defined as consuming five or more drinks at one time for men and four or more drinks at one time for women.[254] Binge drinking is more

common in Benton County and in the state than drinking every day. Binge drinking among adults in Benton County varies by county of residence. Seventeen percent of Benton County adults reported binge drinking within the past month in 2013 (Table 7.13).[255] This meets and surpasses the Healthy People 2020 objective of reducing the percent of adults that reported having engaged in binge drinking within the past month to 24.4 percent.[256]

Tobacco Use and Exposure to Secondhand Smoke

Tobacco use is the single most preventable cause of disease, disability, and death in the United States. Tobacco use in any form can cause serious diseases and health problems, including cancers of the lung, bladder, kidney, pancreas, mouth, and throat, heart disease and stroke, lung diseases (i.e., emphysema, bronchitis, and chronic obstructive pulmonary disease), pregnancy complications, gum disease and vision problems.[257]

Figure 7.16: Age-adjusted percent of adults who currently smoke cigarettes in Benton County, 2002-2011



Source: Oregon BRFSS, Table II: Prevalence of Modifiable Risk Factors among Adults, 2002-2011

More recent data has been collected that includes up to 2013, but should not be compared to the data in Figure 7.16 above due to changes in survey methodology. The 2010-2013 data is presented in Table 7.14 below, and is likely more accurate due to a more representative survey sample. These data Benton County does not currently meet the Healthy People 2020 smoking target of 12 percent or below.

Table 7.14: Age-adjusted percent of adults who currently smoke cigarettes in Benton County and Oregon, 2010-2013

	Benton County	Oregon
Smoking rates	14 %	19 %

Source: Oregon BRFSS, Table II: Prevalence of Modifiable Risk Factors among Adults, 2010-2013

Secondhand Smoke Exposure

Secondhand smoke is a mixture of the smoke exhaled by a person smoking, and the smoke from burning tobacco in a cigarette, pipe, or cigar. Secondhand smoke contains the same toxic chemicals and carcinogens as inhaled tobacco smoke, and even brief exposure has been found to put a nonsmoker's health at risk. In adults, secondhand smoke exposure has been found to cause lung cancer and heart disease. Children exposed to secondhand smoke are more at risk for ear infections, asthma attacks, respiratory symptoms and infections, and a greater risk for sudden infant death syndrome (SIDS).[258] Measures to reduce the amount of secondhand smoke exposure to others include, but are not limited to, quitting smoking, forbidding smoking in the home, and forbidding smoking in a shared car. Table 7.15 illustrates that the majority of households in Benton County have rules against smoking in the home, while a smaller majority hold the same rules against smoking in family cars.

Table 7.15: Family tobacco/secondhand smoke practices (age-adjusted) in Benton County and Oregon, 2008-2011

	Benton County	Oregon
Have rules against smoking in the home	94 %	91 %
Have rules against smoking in family cars	86 %	82 %

Source: Oregon Health Authority, Table IV: Age-adjusted and unadjusted prevalence of tobacco use among adults, 2008-2011

Older Adult Health

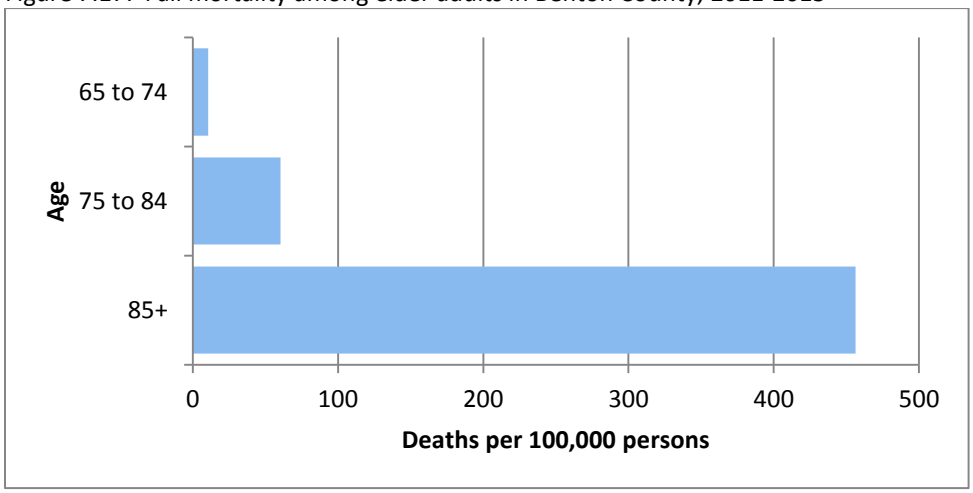
As people age, many of the behaviors they have adopted over their lives begin to pay dividends, whether it is exercising regularly, eating healthy food, or avoiding drugs and tobacco. Older adults also encounter a different set of challenges for staying healthy. This section revisits some of the ongoing behaviors and also highlights new factors that affect health.

Preventing Falls

Falls are a major cause of injury and hospitalization, and the 10th leading cause of death among older Oregonians.[259] Nearly one in three older adults experiences a fall each year, and 20-30 percent of those who fall suffer injuries. As commonly as they occur, injuries and deaths due to falls are not an inevitable consequence of aging; they can be prevented. Muscle weakness is a significant contributing factor in falls, so physical activity is widely viewed as among the most important interventions for preventing injuries related to falls among older adults.

Hospitalization rates for falls increase drastically as adults age; the rate of hospitalizations due to a fall for adults 75 years and older is more than six times the rate for adults 60-74 years. Older adults hospitalized for falls are nearly six times more likely to be discharged into long term care compared to older adults hospitalized for other conditions. In 2013, the cost for fall injury hospitalization among adults 65 years and older in Oregon totaled to more than $219 million.[260] Between 2011 and 2013, the mortality rate from falls in Benton County was 92 deaths per 100,000 residents age 65 and older. Figure 7.17 below highlights the difference in mortality rates for different age groups among the elderly in Benton County.

Figure 7.17: Fall mortality among elder adults in Benton County, 2011-2013



Source: Oregon Health Authority, Oregon Public Health Assessment Tool, 2011-2013

Depression and suicide

Benton County suicide rates are also higher among older adults, with 18 suicides per 100,000 adults age 65 and older between 2009 and 2013. This rate is 40 percent higher than the age adjusted rate for all Benton County residents. This increased rate conceals the difference between older men and women, however. The suicide rate among older men was 95 percent higher than among all men. The suicide rate among older women lower than among all women, and was lower than the suicide rate among women age 45-64. See Figure 7.15 in the Adults Mental and Emotional Health section for a visual representation of these data.

Conclusion

There were a number of promising changes in behavioral indicators over the past triennium and youth. 8th grade drinking rates declined from 16 percent to 7 percent. Both 8th graders and 11th graders smoked cigarettes at lower rates than the previous triennium. However, 5 percent of 8th graders and 11 percent of 11th graders reported smoking e-cigarettes. These rates are higher than smoking rates from the previous triennium. Adults reported fewer healthy behaviors than in the previous triennium.

The life course framework helps us recognize two key components of community health: the health issues which are most important at particular stages of life, and when they are best addressed. At the same time, we are able to identify particular disparities that are present throughout the life course, such as the far-reaching risks of poor health tied to low birth weight. In this context, differences in low birth weight that exist by race in Benton County, as well as differences in related behaviors, like smoking among pregnant women, become particularly important for health improvement efforts.

Shifting focus to adolescence and adulthood allows us to consider such factors as mental health, healthy eating, and physical activity. These are areas in which we have have room for improvement to reach the statewide average or Healthy People 2020 benchmarks. In taking advantage of early opportunities to adopt healthy behaviors or prevent unhealthy ones, health benefits can be experienced throughout the life course.

Conclusion
Meeting Challenges with Resources

As highlighted throughout the Community Health Needs Assessment, there are many factors that influence and affect health outcomes, both positively and negatively, in Benton County. The CHNA provides an opportunity to identify the many health concerns, disparities and impacts that residents face in their daily lives.

A health assessment is truly important to help identify needs and opportunities for improvement. At the same time, it is important to highlight the various resources and assets that are alive and well within our communities. These resources and assets refer to the many types of human, social and economic resources that Benton County can offer to address problems. Organizations, agencies and partners within Benton County can collaborate to improve the health and quality of life for residents.

General Health Status

Benton County is considered to be one of the healthiest counties in the state. Benton County is ranked number 3 in the state of Oregon as the healthiest county, individuals are living longer and have a better quality of life.[261] The Rankings consider factors that affect people's health within four categories: health behavior, clinical care, social and economic factors, and physical environment.

Knowledge and skills in caring for and promoting health

Benton County is part of a three-county region that shares a long history of collaboration and partnership among various organizations and agencies to improve and promote health.

- Good Samaritan Regional Medical Center and Samaritan Health Services work tirelessly to improve the health of the people of Benton County by providing excellent health care and supporting social programs.
- Benton County has strong tobacco ordinances and other population-based prevention care programs that reduce the onset and incidence of many illnesses.
- The county has a commitment to and many years of experience with effective partnerships across a wide variety of public and private sectors, including a unique partnership between county and city departments that has grown strong over ten years of experience of working on public health issues together (HACE).
- The county has a history of caring and extensive community involvement in offering low cost and/or free clinics for families.

- The county is particularly strong in offering excellent choices in medical care, dental care, vision care, elder care, medical clinics, doctors, nurse practitioners, and alternative medicine.

Social support networks

- Benton County has a long tradition of supporting diversity and inclusion, with an extensive list of non-profits, faith-based and University organizations that support building an inclusive community.
- The county has specialized support for people with mental illness, developmental disabilities, and addictions.
- The county provides specialized support for at-risk school children and teens and their caregivers (through Community Services Consortium and the Old Mill School, etc.)
- Community Services Consortium serves as the community action agency supporting the most vulnerable populations in the county.

Without being able to call out every organization and project that supports the health of Benton County, what is shown above only highlights a few examples; each example is the result of efforts by countless community partners. A wealth of collective action and resources exists within Benton County. Overcoming the many health challenges facing residents depends on this collective action and the vitally important part that each of our community partners play.

Resources

- Benton County has an excellent basic framework to assist homeless persons (i.e. emergency shelter, transitional housing, and permanent affordable housing).
- The county is particularly strong in offering a wide choice in public schools, private schools, and alternative schooling opportunities.
- The county has several service providers which provide adult education (i.e. literacy, GED and parenting courses).
- The county is particularly strong in offering job seeking services, vocational training, and general support for unemployed persons.
- The county maintains safe, well-marked roads and bike lanes that help prevent traffic injuries and chronic disease.
- The county has a history of collaboration among various sectors to promote many successful and progressive transportation and built environment programs (i.e. Alternative mode options, Dial-A-Bus, PDX transit, Safety sidewalk and ramp program, Public Transit).

Evaluation Impact

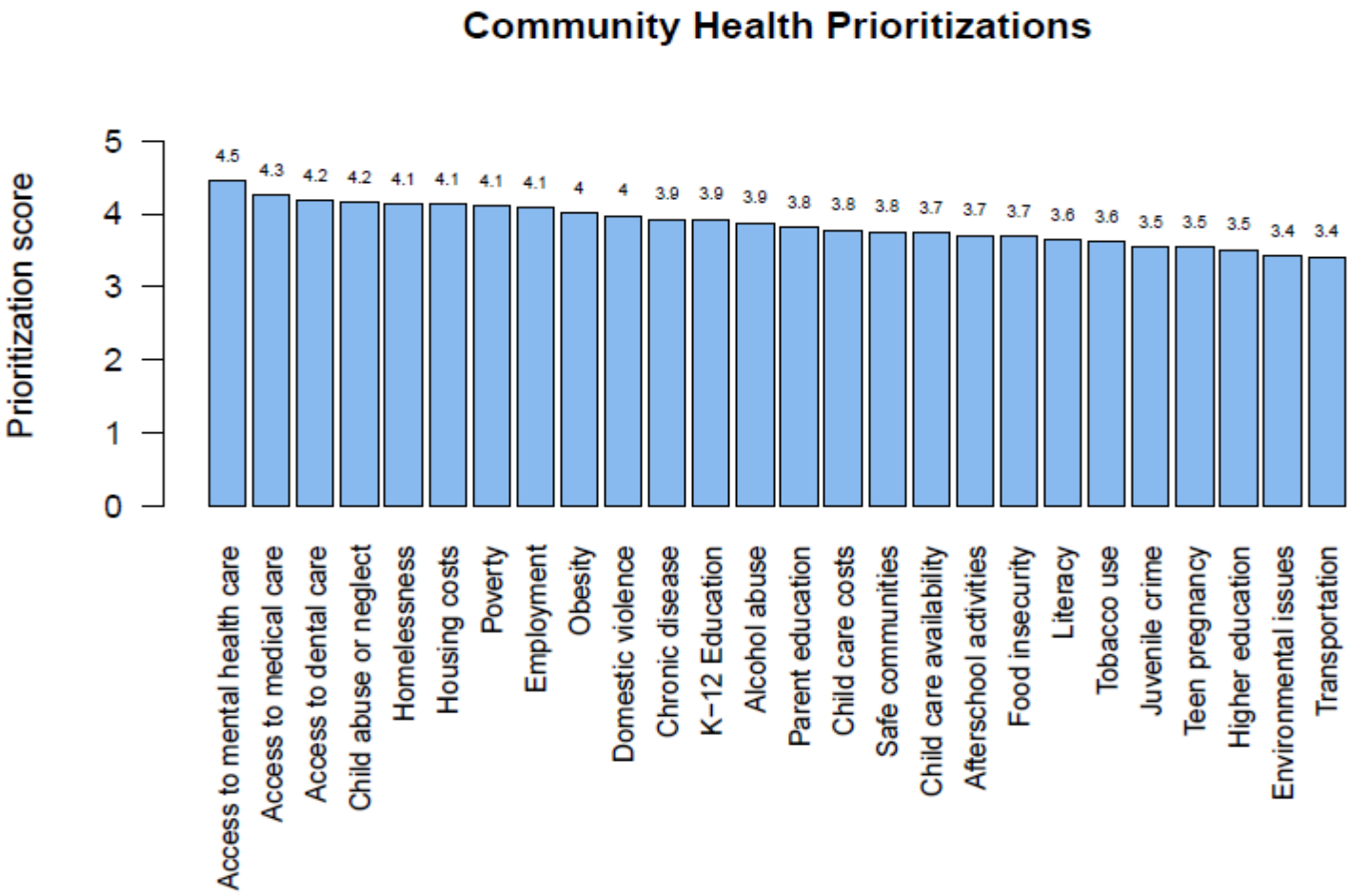
Good Samaritan Regional Medical Center has provided services and supports to address the health needs prioritized in the previous community health needs assessment. Through both internal and external activities focused on the nine community benefit areas GSRMC utilizes a process evaluation method to determine community impact. The most significant health needs identified in the prior community health needs assessments included access to health care, substance abuse, homelessness, poverty, child abuse, oral health, mental health, alcohol abuse and transportation.

A variety of actions were taken to address the identified needs such as the offering health fairs, workshops and classes to the community that addressed child abuse, homelessness, oral health, substance abuse and mental health. Since 2013 over 15,000 residents participated in one or more of the aforementioned events. To address the access to health care, GSRMC has provided transportation, interpretative services, increased medical office hours, expanded urgent care site hours and offered screenings, exams and complete physicals in local schools, Boys & Girls Clubs and in Senior Centers. During this same timeframe over 3,600 residents were transported to a medical appointment and over 20,000 were screened, examined or provided supportive services. More detailed information on activities that support the priorities are contained in the 2013, 2014 and 2015 Community Benefit Plans. GSRMC also provided over 2 million dollars to non-profit organization through direct financial support or in-kind contributions.

Community priorities

Good Samaritan Regional Medical Center reached out to community members through a series of key informant interviews, focus groups, and surveys to learn about the health priorities of the community. Full results are presented in the appendix to this document. A summary of the survey results is shown on the following page. Community members were asked to rate 26 health priorities on a scale of 1 to 5, where 1 is lowest priority and 5 is highest priority. The results were averaged for each of the 26 categories.

Figure 8.1: Community Health Prioritization



A total of **720** respondents from Benton County answered the question: "For the following issues that affect health, please circle how much attention you think they should get in our communities on a scale of 1 to 5" from the Community Health Perceptions Survey**.** Responses are reported as mean values. Of those that responded, the top five issues were identifed as: "Access to mental health care" with a mean value of **4.5**; "Access to medical care" with a mean value of **4.3**; "Access to dental care" with a mean value of **4.2**; "Child abuse or neglect" with a mean value of **4.2**; and lastly "Homelessness" with a mean value of **4.1**".

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