

2015 Community Health Assessment

“A Letter to the Community”

Dear Klamath County Residents,

Have you heard the term “Place Matters”? It’s a phrase that means where you live makes a difference to your health and quality of life. Klamath County is a unique place that, as with every community, has both assets and challenges. Perhaps the greatest asset of late is a revitalized hope and dedication to improve the health of the community and its residents.

Health encompasses many elements, and as you’ll soon see in this assessment report, each element is interrelated and symbiotic. A holistic and united approach to community health improvement is the only sustainable way to be successful.

An amazing opportunity presented itself to Klamath Falls, the heart of Klamath County, called Blue Zones Project. Blue Zones Project is a community well-being improvement initiative designed to make healthy choices easier through permanent changes to environment, policy, and social networks. Hundreds of community members demonstrated overwhelming support and commitment to make Klamath Falls a better place by rolling up their sleeves and making change happen. Klamath Falls was consequently selected to become Oregon’s first Blue Zones Project demonstration community!

Dr. Glenn Gailis, a well-known and respected physician in town captured the spirit of this opportunity when he said, “In my 40 years as a physician this is the most exciting thing for health and wellness I have seen in my community.” The community is poised for community transformation and now has the capacity and momentum to do it.

Community change is gradual and takes time, but the positive momentum is reaching a tipping point and we expect to see great improvements over the next three to five years.

On behalf of Sky Lakes Medical Center and Klamath County Public Health, we invite you to learn about our current health status in Klamath County and join the community health improvement movement!

Acknowledgements

A special thank you to the organizations that put hard work into the surveys and focus groups used to enrich the data within this community health assessment.

Oregon Health Sciences University School of Nursing Class of 2016

“Place Matters” Youth Focus Groups

Klamath Lake Community Action Services

2014-2015 Community Needs Assessment

Blue Zones Project Klamath Falls

Klamath Falls 2015 Assessment Report and Well Being Index

Healthy Klamath Partners

Klamath County Public Health	Department of Human Services
Sky Lakes Medical Center	Klamath Lake Community Action Services
Klamath Basin Behavioral Health	Klamath County
Oregon Institute of Technology	City of Klamath Falls
Oregon Health Science University	Citizens for Safe Schools
Friends of the Children	Klamath Tribal Health and Family Services
South Central Oregon Economic Development District	Aging and People with Disabilities
Klamath County School District	Klamath Basin Senior Citizen's Center
Klamath Falls City School District	Klamath Agency on Aging
Herald and News	Fire Department
Klamath Talks Radio	Integral Youth Services
KOTI	Lutheran Community Services
Klamath Open Door Family Practice	Klamath Basin Research and Extension Center
Klamath County Chamber of Commerce	Steens Sports Park
Klamath Falls Downtown Association	Klamath Falls YMCA
Cascade Health Alliance	Executive Summary
Blue Zones Project	

Introduction

A swell of momentum has washed over Klamath Falls and the community is poised to move the needle for health outcomes. A grassroots partnership called Healthy Klamath is a collaborative group of organizations and individuals committed to improving all aspects of health (physical, mental, economic and social) in our community. With representation from nearly every sector, Healthy Klamath has the strength and determination to make significant and lasting changes to Klamath's health status.

Sky Lakes Medical Center and Klamath County Public Health are not only leading members of Healthy Klamath, but also major stakeholders when it comes to the health of Klamath Falls, Klamath County, and the surrounding area. It is with strong commitment and collaboration that they have teamed up to complete this community health assessment (CHA) and initiate effective health improvement efforts. According to the National Association of County and City Health Officials, a CHA is part of a community health improvement process that uses data to identify priority issues, develop strategies for action, and establish an accountable system with measurable indicators to track trends (and improvement) over time. A CHA looks beyond of the performance of an individual organization to the collective impact that multiple organizations have on community health.

Methods

In 2013 a community health assessment (CHA) was completed with the help of Healthy Klamath. They collected both primary and secondary data using surveys and focus groups to gather both qualitative and quantitative data.

This 2016 CHA was compiled entirely with secondary data. Primary data was not collected because within the past several months partner organizations collected meaningful primary data through surveys and focus groups. Rather than duplicate efforts, results from those reports were synthesized to create a comprehensive assessment.

Many data sources were utilized throughout this assessment, but certain key reports were heavily relied upon because of their rich qualitative data that provides the stories behind the numbers.

Assessments and resources containing primary data include:

- Blue Zones Project Klamath Falls 2015 Assessment Report: The Blue Zones Project assessment team conducted 16 focus groups with more than 220 people and met with more than 25 key leaders and community groups to learn about Klamath Falls, it's history, economy, and people. Focus groups were organized by sector and included schools, worksites, community policy, restaurants, grocery stores, and faith-based and civic groups. Additionally a three-day built environment audit via walking, biking, and

driving was conducted by national bike and walkability experts Dan Burden and Samantha Thomas.

- Gallup-Healthways Well-Being Index Klamath Falls 2015 Report: The Blue Zones Project assessment team collected over 700 mail surveys from residents in the Klamath Falls Urban Growth Boundary to analyze five elements of wellbeing--purpose, social, financial, community, and physical.

- Oregon Health and Science University (OHSU) School of Nursing Klamath County Youth Health and Behavior Assessment: OHSU's 2016 class of nursing students conducted focus groups with local teenagers. Four high schools throughout Klamath County participated in "Place Matters" focus groups to offer the youth perspective on what they felt were things in their community that were positive and negative influences on their health. Students were also asked about tobacco usage and norms.

- Klamath Lake Community Action Services (KLCAS) 2014-2015 community health needs assessment report: 662 surveys were collected from clients who are struggling with poverty and are at-risk or are currently homeless. 348 surveys were collected from community partners. Participants were asked to share their views on poverty, self-sufficiency, and services needed in the future.

As with any assessment, limitations exist. As previously noted, all secondary data was used and some sources are a little dated. Furthermore, most health statistics gathered reflect the Klamath County or Klamath Falls population and don't include neighboring areas such as Lake County or northern California counties that utilize Klamath for its services.

Community Profile

Brief History

Klamath County is named for the Klamath Native American Tribes, who have inhabited the Upper Klamath River Basin region for thousands of years¹. In the late 1800's conflict began to rise between white settlers and the Native Americans. With the arrival of the Southern Pacific Railroad in 1909, the population of white settlers began to grow significantly. By 1930, with the introduction of the railroad and booming lumber industry, Klamath Falls became the fastest growing city in Oregon. In the 1990s, reduced timber supplies and environmental restrictions significantly impacted the timber industry, causing an economic downturn and leaving many in poverty. Since that time the economy has diversified and is focusing on renewable energy sources such as solar power and geothermal heating. However, Klamath is still working on economic recovery to achieve economic wellbeing in the community.

¹ Klamath County Museum. (2010). A brief history of Klamath County, Oregon. Accessed from: <http://museum.klamathcounty.org/images/stories/KlamathHistoryOverview.pdf>

Geography

Klamath County is a rural community set in the high desert of southern Oregon. Geographically, Klamath County is the fourth largest county in Oregon spanning 5,941 square miles, but is home to only 65,455 people--approximately 11 people per square mile. Klamath Falls is the largest city within Klamath County in which approximately 21,000 people live, with an equally large population residing within the city's urban growth boundary^{2,3}.

Service Area

Sky Lakes Medical Center serves 10,000 square miles including parts of Lake County, Oregon and Modoc and Siskiyou Counties in northern California. Klamath County Public Health serves Klamath County exclusively.

Defining the Community

The population is concentrated within the Klamath Falls Urban Growth Boundary (UGB), which is the central hub of activities and services for south central Oregon and northern California. Community health improvement efforts are initially being implemented within the UGB, as to have the greatest impact on the highest concentration of residents. Once the community gains some traction, efforts will spread into the more rural, less populated areas.

Demographics

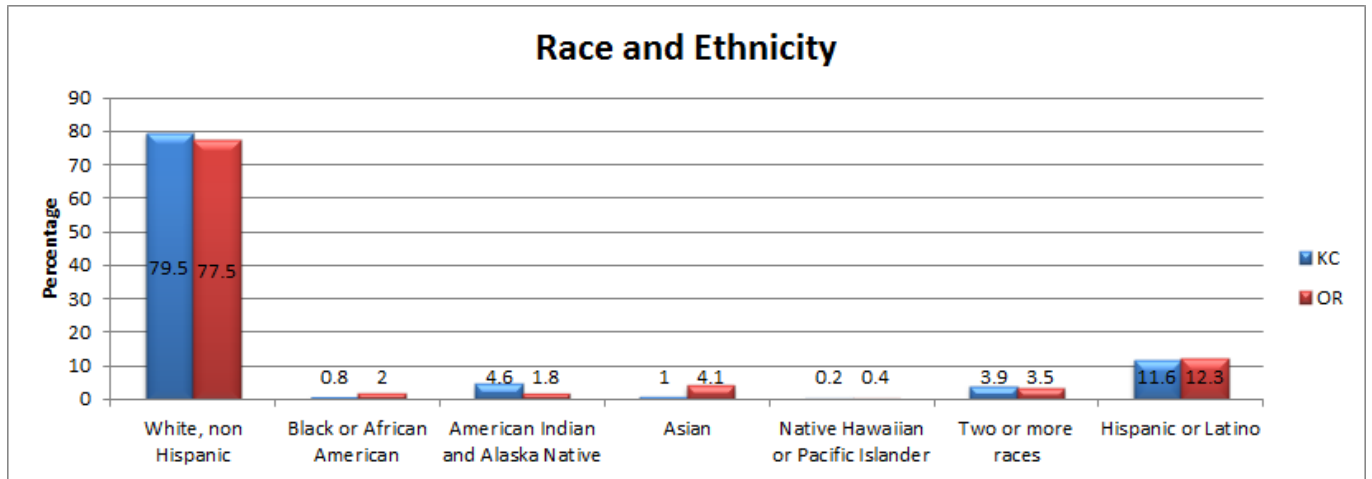
Knowing the characteristics of Klamath County and the context in which its residents live is essential to fully understanding the health of the community. Klamath County is predominantly White and non-Hispanic, however the population of people identifying as Hispanic or Latino is steadily rising and is approximately 12 percent.² This region is also unique in that it has a strong Native American presence that makes up nearly five percent of the population. Nearly four percent of the population identifies as multi-racial, one percent as Asian, nearly one percent Black or African American, and less than half of a percent as Native Hawaiian or Pacific Islander.

The research is clear that health inequities are present among racial minorities and it is imperative to recognize these disparities and take action to eliminate them. When available, throughout this report indicators are stratified by race and ethnicity to reveal the disparities that exist in Klamath County.

² US Census Quickfacts. (2014). Accessed from: <http://www.census.gov/quickfacts/table/PST045214/4139700,41035,00>

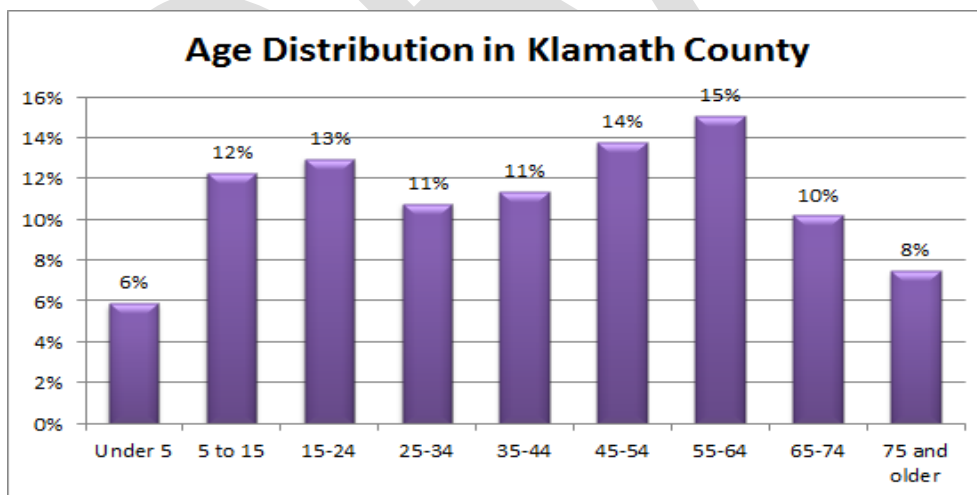
³ Klamath County Chamber of Commerce. (2015). Accessed from: <http://klamath.org/relocation>

Figure 1. Racial and ethnic breakdown of the Klamath County population in comparison with the state of Oregon. Source: US Census²



Age plays a significant role on the health of a community, as different life stages tend to experience health outcomes unique to their age. In Klamath County, the life expectancy for females is 79.2 years and 74 years for males.⁴ The largest age groups in Klamath County are 15-24, 45-54 and 55-64 with a median age of 42 years. The aging population has been a pressing concern nationwide, and Klamath has a large population of older adults as nearly 1 in 4 residents are 60 years or older. Sex distribution is nearly equal with 99 males for every 100 females.⁵

Figure 2. Age distribution in Klamath County. Source: US Census⁵



⁴ HealthyKlamath.org. Accessed from: <http://www.healthyklamath.org>

⁵ US Census Quickfacts. (2013). Accessed from: <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

Health Status

Health Rankings

Health rankings give a high level snapshot of the overall health status of a community. Several entities publish community health rankings, and each one is slightly different. The variance is due to heavier weighting on indicators they deem most important. Therefore a community may rank high on one scale and low on another because of different weighting criteria.

Every year the Robert Wood Johnson Foundation releases the County Health Rankings and Roadmaps. When compared to other Oregon counties, Klamath County has been in the bottom quartile for both Health Outcomes and Health Factors for the past three years. However, other ranking systems tell a different story. The Centers for Disease Control's (CDC) Community Health Status Indicators ranking tool, which matches counties with comparable "peer" counties across the nation, shows that Klamath fares much better. On the majority of indicators, Klamath County falls within the second and third quartiles. Looking at a third ranking system, Gallup Relative Well Being Index (WBI) Scores, Klamath does well in many areas. The WBI measures five elements (Purpose, Social, Financial, Community, and Physical) and classifies scores Thriving, Struggling, and Suffering. Klamath Falls ranked in the middle (third quintile) when compared to all U.S. counties; its strongest elements were Purpose, Social and Physical all of which exceed both state and national averages. Community and financial well-being are both lower than Oregon and the U.S. with Thriving-to-Struggling ratios of 1:1 when the goal is to have a ratio of 5:1. Across all three ranking systems, Klamath ranks high in the social categories, demonstrating resilience and social support, but low on physical and financial health. Beyond the health rankings, which are cumulative scores, it is important to review individual indicators that contribute to the overall health status of the community.

Physical Health

Chronic Conditions

According to the CDC, the top 10 leading causes of death in the United States are heart disease, cancer, chronic lower respiratory diseases, stroke, unintentional injuries, Alzheimer's disease, diabetes mellitus, pneumonia and influenza, kidney disease, and suicide.⁶ Seven of these 10 are chronic diseases that persist for years, decrease quality of life, and strain the healthcare system.⁶ Treating people with chronic conditions accounts for 86 percent of the nation's healthcare costs.⁷

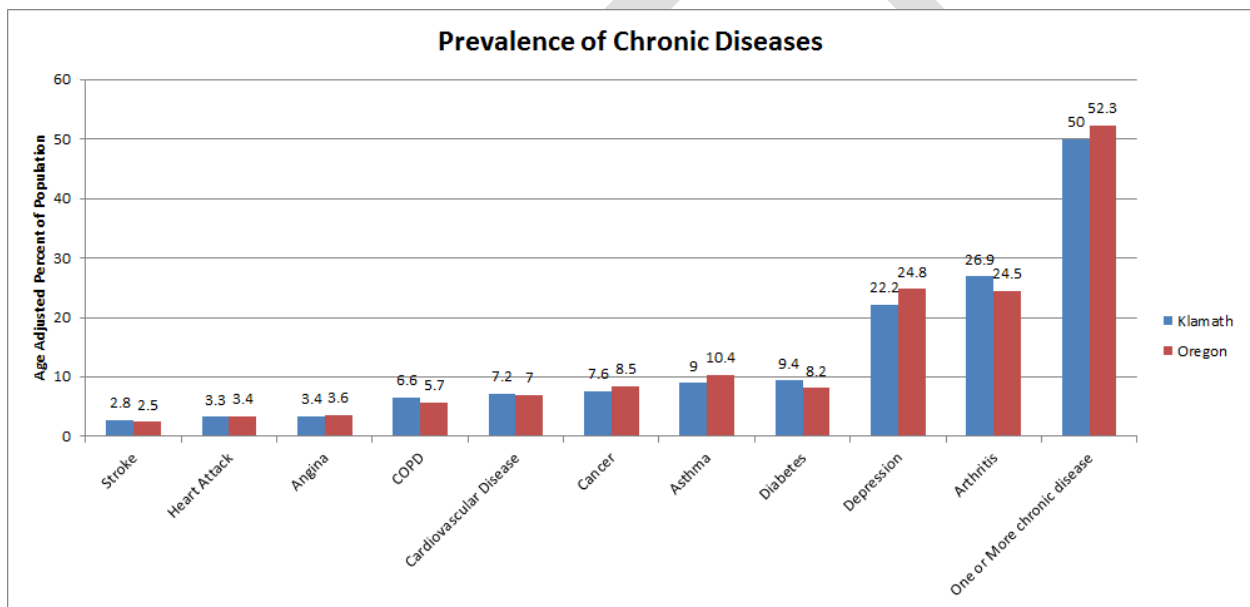
⁶ CDC. (2014). Morbidity and Mortality Weekly Report. Leading Causes of Morbidity and Mortality and Associated Behavioral Risk and Protective Factors--United States 2005-2013. Accessed from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/su6304a2.htm>.

⁷ CDC. (2015). Chronic Disease Prevention and Health Promotion. Accessed from: <http://www.cdc.gov/chronicdisease/index.htm>

Klamath County's rates⁸ of COPD, arthritis, and diabetes are higher than state averages (approximately six, twenty-seven, and nine percent respectively). Prevalence of asthma, heart attack, and stroke are similar to state averages (nine, three, and three percent respectively). The number of people living with multiple chronic conditions continues to rise, and in Klamath County one of every two adults has one or more chronic conditions.

A strong partnership between health, senior, and human services agencies blossomed in an effort to meet the needs of individuals living with chronic conditions. They worked together to bring Stanford University's Living Well with Chronic Conditions program to Klamath Falls. This evidence-based program teaches individuals how to manage their chronic conditions and improve their quality of life.

Figure 3. Prevalence of chronic diseases in adults in Klamath County. Source: Oregon Health Authority Public Health Division⁸



Cancer

Cancer incidence in Klamath County is 438 per 100,000 people.⁹ The age adjusted death rate per 100,000 due to lung cancer is 49.5, breast cancer is 23.2, colorectal cancer is 19.3, and prostate cancer is 18.8. It is important for individuals, especially those ages 40 and older, to be screened for cancer as a preventive measure. Prevalence of preventive screenings is 58 percent for colorectal cancer, 75 percent for mammograms, and 83 percent for pap smears.

⁸ Oregon Health Authority, Public Health Division, Health Promotion and Chronic Disease Prevention Section. (2015) Chronic Diseases among Oregon Adults, by County, 2010-2013. Accessed from: <https://public.health.oregon.gov/Diseases/ChronicDisease/DataReports/Pages/CountyData.aspx>.

⁹ HealthyKlamath.org. Accessed from: www.healthyclamath.org

Sky Lakes Medical Center is preparing to roll out a targeted “early detection” media campaign to educate the community on the importance of preventive screenings and encourage participation.

Obesity

The weight of the nation is a growing concern because of the significant health risks obesity poses on the population. Obesity contributes to numerous chronic conditions including heart disease, stroke, diabetes, depression, and chronic pain.¹⁰ Furthermore, the average annual medical cost of an obese person is estimated to be \$1,429 higher than their normal weight counterparts.¹¹ In Klamath County, 60 percent of adults are overweight or obese⁹, which is consistent with the rest of the nation.

Perhaps even more concerning is 12 percent of preschoolers⁹, 24 percent of 8th graders and 26.5 percent of 11th graders¹² are overweight or obese. Childhood obesity puts children at risk for high blood pressure and high cholesterol, which are risk factors for cardiovascular disease, increased risk of type 2 diabetes, asthma, joint problems, and psychological issues such as depression.¹³ A combination of factors such as decreasing physical education and active play time, increasing absence of walking or biking to school, and lack of nutritious school cafeteria options are contributing to this problem.

Sky Lakes is addressing obesity head on with the implementation of the Wellness Center, which offers nutrition, exercise, and stress management coaching. Many partner organizations are implementing interventions to prevent obesity by offering walking groups, after school activities, nutrition education, and recreation.

Mental Health

Klamath County is a vibrant community faced with some concerning mental health challenges. In 2015, 23 percent of Klamath residents report having been diagnosed with depression¹⁴ and 13 percent of the county’s children had serious emotional distress.¹⁵ Results from the WBI report¹⁴ show that community well-being is very low with 30 percent of residents categorized as “suffering,” which is double of what is found in Oregon (13 percent) and the U.S. (16 percent).

The most dire outcome for an individual experiencing poor mental health is suicide. The Klamath County age-adjusted suicide rate of 22.7 per 100,000 population¹⁶ is significantly higher than both the state (17.7) and national (12.6) suicide rates.¹⁷

¹⁰ CDC. (2015). Adult Obesity Causes and Consequences. Accessed from: <http://www.cdc.gov/obesity/adult/causes.html>

¹¹ CDC. (2015). Adults Obesity Causes and Consequences. Accessed from: <http://www.cdc.gov/obesity/adult/causes.html>.

¹² Oregon Health Authority. (2015). Oregon Healthy Teens Survey.*Note results from City and County School Districts were averaged.

¹³ CDC. (2015). Childhood Obesity Causes and Consequences. Accessed from: <http://www.cdc.gov/obesity/childhood/causes.html>.

¹⁴ Gallup Healthways Well-Being Index (WBI). (2015). Blue Zones Project Klamath Falls Report.

¹⁵ Oregon Health Authority. (2014). Klamath County Behavioral Health Profile.

¹⁶ CDC. (2015). Suicide: Facts at a glance. Accessed from: <http://www.cdc.gov/violenceprevention/pdf/suicide-datasheet-a.pdf>

¹⁷ Oregon Health Authority. (2012). Suicides in Oregon: Trends and Associated Factors 2003-2012. Accessed from: <http://public.health.oregon.gov/DiseasesConditions/InjuryFatalityData/Documents/NVDRS/Suicide%20in%20Oregon%202015%20report.pdf>

Interestingly, despite poor mental health status overall, Klamath Falls ranks high in the Purpose category on the WBI report. With a score of 41 percent, Klamath is well above state (34 percent) and national average (37 percent), meaning people have a sense of belonging and feel they can achieve their goals.

Klamath Basin Behavioral Health has worked hard to meet the high demand for mental health services in the Basin. They have taken their expertise into the schools and have provided much-needed counseling services to youth. Additionally resources are being allocated to hire more therapists and recruit a full-time Child Psychologist to address the high needs of families and children in Klamath County.

Maternal and Infant Health

Pregnancy and childbirth have a significant impact on the physical, mental, emotional and socioeconomic health of women and their families. Appropriate prenatal care increases the likelihood of a healthy baby, and proper post-partum care optimizes the newborn's chances for a healthy childhood.

Infant Mortality

Infant mortality is routinely used as an indicator of a population's health status, as it is associated with education (primarily maternal), economic status and access to care. Leading causes of death among infants in Klamath County are birth defects, disorders related to short gestation and low birth weight, Sudden Infant Death Syndrome (SIDS), and maternal complications during pregnancy.⁹ The infant mortality rate in Klamath County is six-and-a-half per 1,000 live births, which is higher than both the state (five per 1000) and national (six per 1000) averages.¹⁸

Low Birth Weight (LBW)

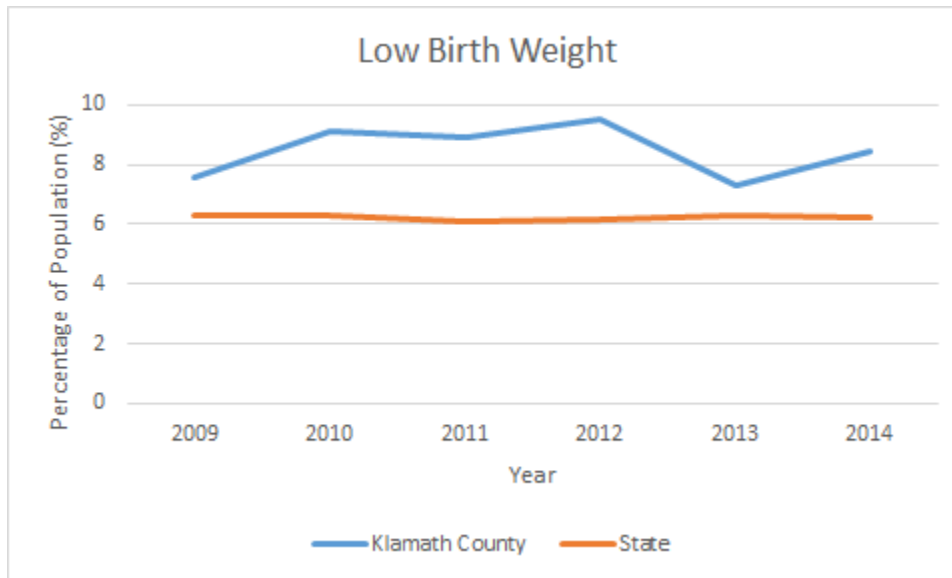
Klamath County has the highest low birth weight (LBW) in the state. In 2014, eight percent of births were LBW compared to the state average of six percent.¹⁹ LBW is heavily-weighted in health outcome rankings and is the culprit for Klamath's low ranking on the Robert Wood Johnson Foundation health outcomes score. This is because birth weight is a predictor of health throughout the lifespan. LBW is associated with severe health issues in the respiratory, vascular, nervous, and digestive systems. Later in life, those born at a low birth weight are at a higher risk for developing diabetes, heart disease, hypertension, and obesity.²⁰ Many of the risk factors associated with LBW in the literature are modifiable, including oral hygiene, tobacco and alcohol use, nutrition, and prenatal care.⁹

¹⁸ Oregon Health Authority. (2015). Oregon state health profile. Maternal and Child Health. Accessed from: <https://public.health.oregon.gov/About/Pages/HealthStatusIndicators.aspx#maternal>.

¹⁹ Oregon Health Authority. (2015). Oregon Public Health Assessment Tool.

²⁰ March of Dimes. (2014). Low Birth Weight. Accessed from: <http://www.marchofdimes.org/baby/low-birthweight.aspx>

Figure 4. Low birth weight prevalence in Klamath County compared to Oregon State. Source: HealthyKlamath.org⁹ and Oregon Health Authority¹⁸



In partnership with Oregon Institute of Technology, Klamath County Public Health is currently conducting research to further understand the biological, social and environmental risk factors and trends associated with LBW in Klamath County. The goal of this initiative is to provide evidence-based prenatal recommendations for at-risk pregnant women throughout the county.

Prenatal Care

Accessing early and regular prenatal care improves the chances of a healthy pregnancy. Babies born to mothers who receive no prenatal care are “three times more likely to be LBW and five times more likely to die than those born to mothers who receive care during their first trimester of pregnancy.”⁹ In 2014, 80.8 percent of pregnant women in Klamath County received early prenatal care (during the first trimester).²¹ This is a significant increase from 2010 where only 64.5 percent of women in the county received this care. Hawaiian/Pacific Islander, Hispanic or Latino, American Indian and African American women are populations at risk for receiving inadequate prenatal care (less than five prenatal care visits or care began in the third trimester).

Breastfeeding Rates

Breastmilk is the ideal nutrition for infants. In Klamath County, 88 percent of new mothers initiate breastfeeding before leaving the hospital.²² The county reports high breastfeeding initiation rates, but continued breastfeeding rates at six and 12 months and exclusively

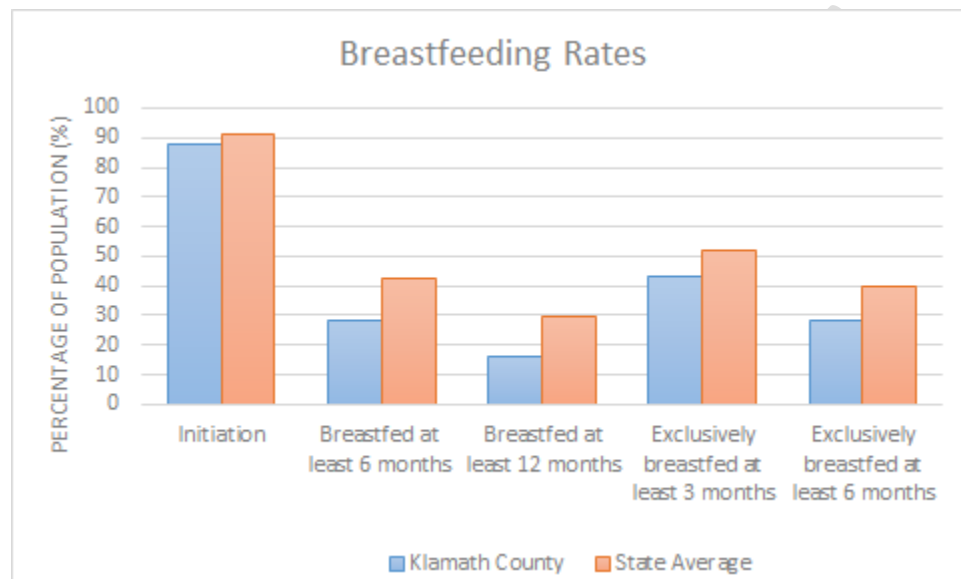
²¹ Oregon Health Authority. (2014). Vital Statistics Annual Report. Accessed from: <http://public.health.oregon.gov/BirthDeathCertificates/VitalStatistics/annualreports/Volume1/Pages/2014.aspx>

²² Klamath County Public Health WIC. (2014). 2014 Oregon Participant Breastfeeding Rates. WIC operations data store, run 7/20/2015.

breastfeeding rates are significantly less. Although Oregon is a national leader in breastfeeding rates, more efforts are needed in Klamath County to improve overall rates of breastfeeding.

Klamath County Public Health’s Women Infants Children (WIC) program provides breastfeeding support and Sky Lakes employs one-on-one consultation with lactation specialists in effort to encourage continued breastfeeding into the first six to 12 months of life.

Figure 5. Breastfeeding rates in Klamath County and Oregon State. Source: WIC²²



Reproductive Health

Teen Pregnancy Rates

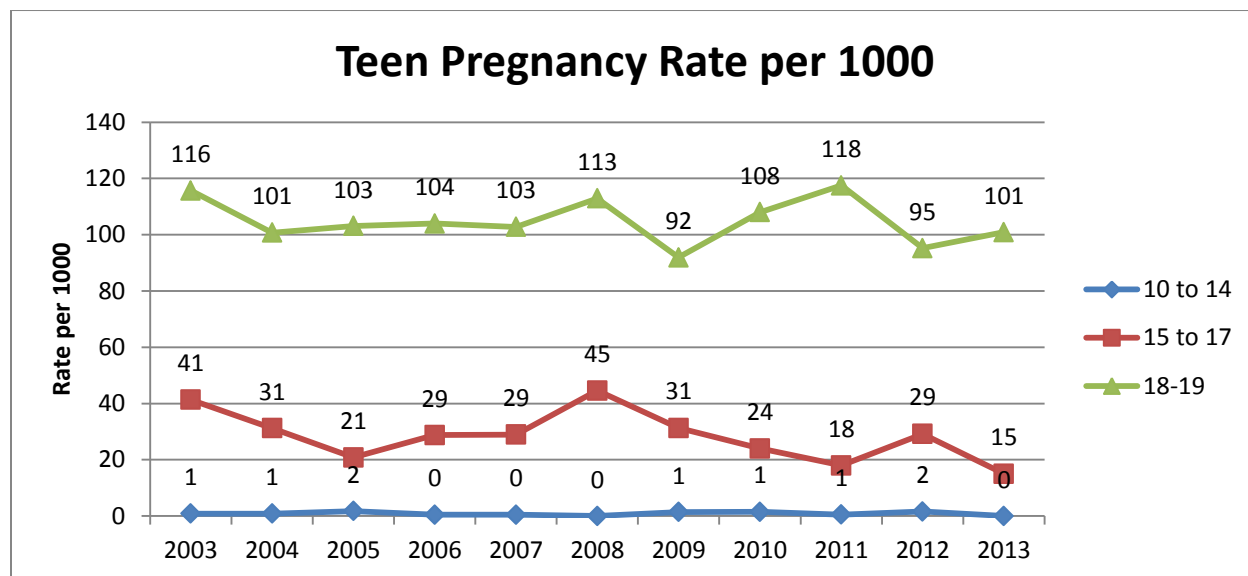
Teen pregnancy has negative social, economic, and educational implications on the young parent. Although teen pregnancy rates have been decreasing for the past several years, the community still identifies this as a major problem in Klamath.²³ In 2013 Klamath County had 15 per 1000 live births to teens 15-17 years old and 101 per 1000 to teens 18-19 years old.²⁴

Youth who become sexually active at a young age are at higher risk for other risky behaviors, dropping out of school, and depression.¹² In Klamath County 13.5 percent of 8th graders and 43.5 percent of 11th graders have had sexual intercourse.¹²

²³ Blue Zones Project by Healthways. (2015). Klamath Falls 2015 Assessment Report.

²⁴ Oregon Health Authority. (2015). Oregon Public Health Assessment Tool.

Figure 6. Time series for teen pregnancies stratified by age groups 10-14, 15-17, and 18-19. Majority of teen births are to 18-19 year olds. Source: Oregon Public Health Assessment Tool²⁴



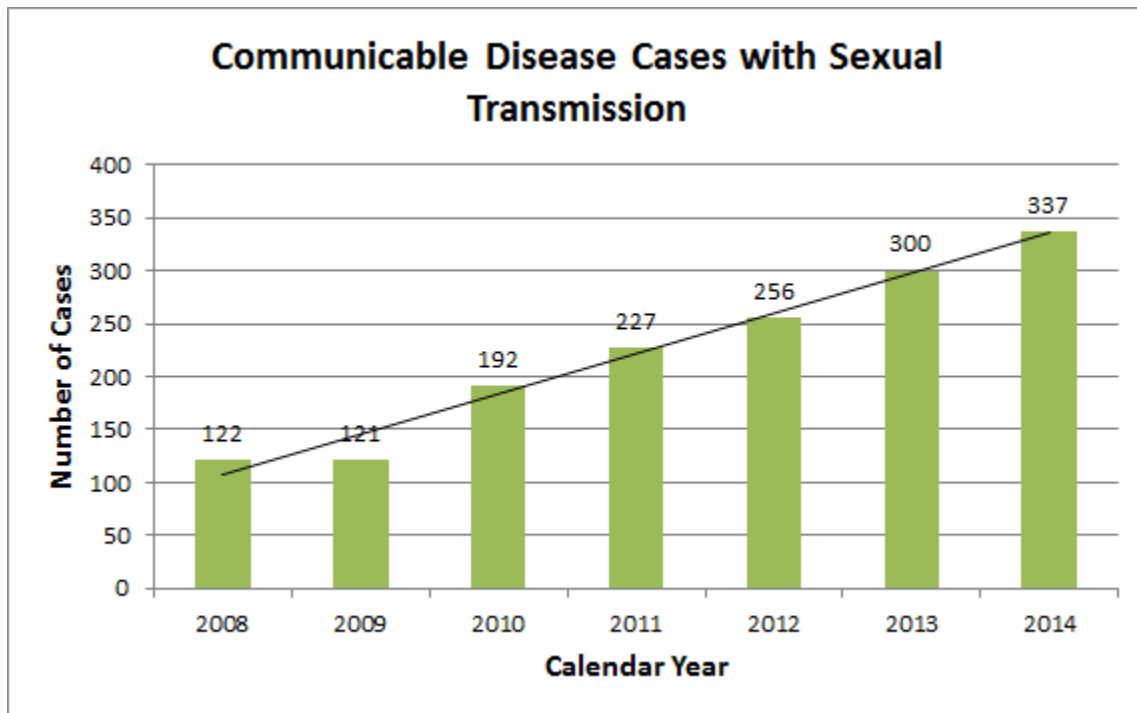
Sexual Transmitted Infections (STI)

Sexually transmitted infections (STI) rates have increased dramatically in Klamath County since 2009.²⁵ The most common infections, chlamydia and gonorrhea, have risen to record high levels. Incidence of STIs is distributed across age groups, but most STI infections occur in 15 to 24 year olds. Yearly screening is recommended for sexually active women younger than 25, however many don't get tested and infections go untreated.

Currently schools are required to provide youth with evidence-based, age-appropriate sexual health education. Considering the unhealthy trend in Klamath County, there is a great need for local health educators to continue to provide parents, youth, and other sexually active individuals with accurate and appropriate sexual health education.

²⁵ Klamath County Public Health. (2015). Clinic Data.

Figure 7. Time series of the number of sexually transmitted infections in Klamath County.
Source: Klamath County Public Health²⁴



Social Determinants of Health

When it comes to health, zip code may be more important than genetic code—place matters! Social determinants of health are factors that affect health beyond the doctor’s office, where we live, learn, work, and play. Eating well, exercising, and other positive health behaviors are important, but health is also strongly influenced by social and economic circumstances. For example, social determinants of health are things like public safety, access to healthy food options, clean and safe housing, access to educational and employment opportunities, income, transportation, access to healthcare, and social support. These factors explain why some people are healthier than others despite their health behaviors.

Health equity is becoming a priority in the health field, as not everyone has the chance to achieve optimal health due to social position or circumstance. Health inequities are demonstrated by marked differences in quality of life, disease rates, and access to resources. Racial and ethnic minorities, sexual minorities, people with disabilities, and other vulnerable groups more often face unnecessary barriers to achieving optimal health but these barriers can be eliminated. When available, data is stratified by race and ethnicity to show disparities.

Health Care access

Health doesn’t solely come from the doctor’s office, but having access to healthcare is an important component of maintaining optimal health. Klamath County is part of an overarching,

statewide effort to achieve the triple aim of better health, better care, and lower costs. The geographic spread and rural location of Klamath County present a range of barriers to accessing necessary health care services, especially those with limited means and mobility.

It is important to have access to healthcare and make regular visits to the doctor and dentist. In Klamath County, 86 percent of adults and 96 percent of children have health insurance.⁹ Approximately one third of Klamath County residents are on Oregon Health Plan (Medicaid) and of those, 62 percent are adults and 38 percent are children.²⁶

According to the WBI report, 94 percent of Klamath Falls respondents reported having health insurance, yet only 73 percent have a personal doctor, which is an unusually large gap. Currently, Klamath County has 56 non-physician providers (nurse practitioners, physician's assistants) per 100,000 residents and 79 primary care providers per 100,000 residents,⁹ which does not provide capacity for all members requiring care.

Maintaining an adequate number of healthcare providers is a top priority for Sky Lakes and partner clinics. They are heavily recruiting on a continuous basis while also working on retention of quality providers.

Oral health is also major component of health that is often overlooked or neglected. Seventy-one percent of Klamath County adults have visited a dentist in the past 12 months.⁹ Additionally, 71 percent of 8th graders and 74 percent of 11th graders have visited a dentist within the past 12 months.¹²

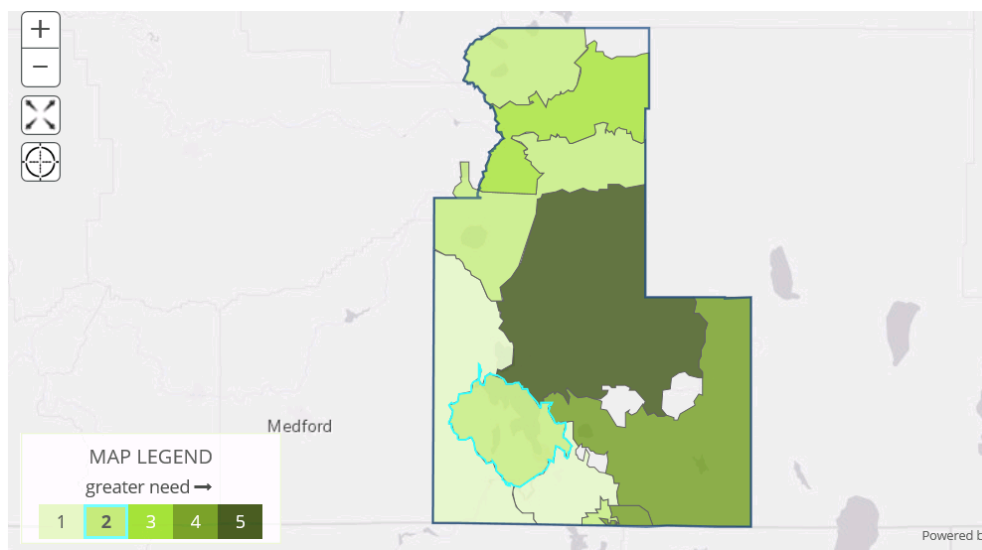
Early oral hygiene is important for healthy development and Advantage Dental, the local Dental Care Organization, and Oregon Tech's local dental hygiene program are partnering with schools, WIC, Head Start, and other community organizations to provide dental screenings and preventive services to children and youth.

Socioeconomic Needs Index

Healthy Communities Institute⁹ provides a tool measuring socioeconomic need that is correlated with poor health outcomes. The Socioeconomic Needs Index score is a relative need ranging from 0-100 where the highest values are correlated with preventable hospitalizations and premature death as compared with the rest of the nation. Klamath County's scores range from 60.9 to 91.3. There are pockets throughout the county with extreme need, often due to the rural environment, poverty, and lack of accessible resources. The focus of this assessment is on the Klamath Falls Urban Growth Boundary, which includes zip codes 97601 and 97603. From this index, it is clear that this community fares better than other, more rural areas.

²⁶ Oregon Health Authority and Department of Human Services. Decision Support and Surveillance Utilization Review System warehouse. September 2015.

Figure 8. Relative need ranging from 0-100 where the highest values are correlated with preventable hospitalizations and premature death as compared with the rest of the nation. Source: HealthyKlamath.org⁹



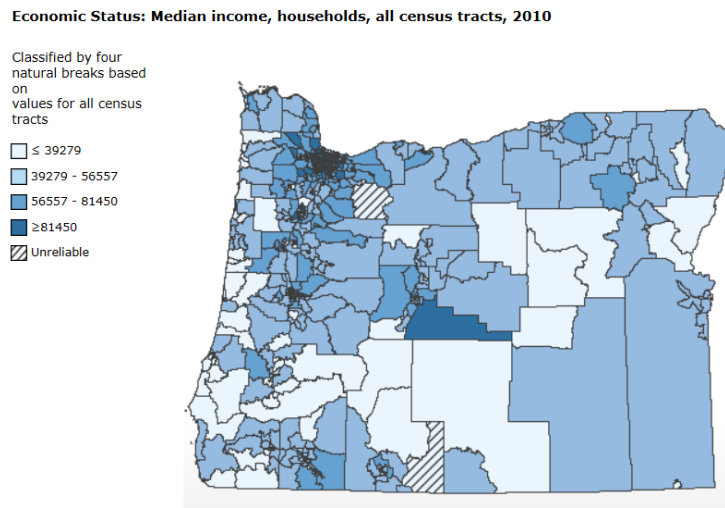
County: Klamath Index Data:

Zip Code	Index	Rank	County
97624	91.3	5	Klamath
97632	87.8	4	Klamath
97623	87.5	4	Klamath
97737	84.1	3	Klamath
97733	82.3	2	Klamath
97601	81.3	2	Klamath
97633	81.3	2	Klamath
97731	80.7	2	Klamath
97627	67.3	1	Klamath
97603	60.9	1	Klamath

Income and Poverty

Poverty is considered a key driver of health status. Those living in poverty face challenges accessing healthcare services, housing, healthy food, and other basic services and opportunities. Klamath County has a greater percentage of people living below the federal poverty level (19 percent) compared to Oregon as a whole (16.2 percent).²

Figure 9. Oregon's median household income and enlarged is Klamath County's median household income. Source: Oregon Environmental Public Health Tracking²⁷



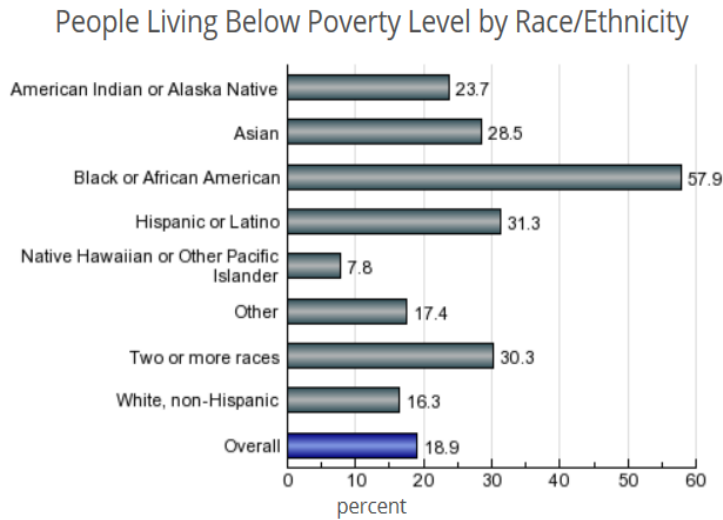
In Klamath County, the per capita income of \$21,489 is significantly less than the \$26,809 per capita in Oregon.⁹ The average median household income in Klamath County is \$39,627, which is also much lower than the Oregon median of \$50,229. Unfortunately Klamath Falls (36 percent) falls below state (40 percent) and national (40 percent) averages in financial well-being.¹⁴ It is of great concern that 46 percent of individuals in Klamath Falls report they have worried about money in the last week.¹⁴

Poverty rates vary significantly by race and ethnicity. While the poverty rates amongst the White, non-Hispanic population is 16.3 percent, it is much higher for people of color, ranging from 31.3 percent for Hispanic/Latino to 57.9 percent for Black or African Americans.²⁸

²⁷ Oregon Environmental Public Health Tracking. Accessed from: <https://epht.oregon.gov/>

²⁸ Oregon Housing and Community Services. (2015). Moving from poverty to prosperity in Oregon. 2015 Report on Poverty. Accessed from: <http://www.oregon.gov/ohcs/pdfs/2015-report-on-poverty.pdf>

Figure 10. Disparities of poverty by race and ethnicity. Source: HealthyKlamath.org⁹



Families with children and single parents are much more likely to be living in poverty than families without children. Just 14 percent of families (in general) live in poverty, compared to 21 percent of families with children, and 42 percent of single parent households.²⁹ Children growing up in low-income families face many challenges that children from more affluent families do not. Research is clear that these children are more likely to experience delayed cognitive and emotional development, below average educational attainment, and poorer health outcomes—all of which contribute to the generational poverty cycle. Nearly one fourth (24 percent) of children under the age of 18 in Klamath County are living below the federal poverty line.⁹

Senior citizens are another group in Klamath County that are challenged economically. Many senior residents live on fixed incomes of social security or pensions that have not kept pace with the rate of inflation.³⁰

In a recent survey³⁰ that asked residents what they thought were the major causes of poverty in Klamath County, top responses included: unemployment, poor job compensation, substance abuse, lack of education, high medical cost, mental or physical health issues, low motivation, and generational poverty.

Education

Education is more than reading, writing, and arithmetic. It is one of the most important investments a community can make for its people and future. According to the Robert Wood Johnson Foundation, “people with more education are likely to live longer and experience better

²⁹ US Census 2009-2013. (2014). 5-Year American Community Survey. Accessed from: <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

³⁰ Klamath Lake Community Action Services (KLCAS). (2015). 2014-15 Community Needs Assessment. Accessed from: http://www.healthyklamath.org/content/sites/klamath/Comm_Needs_Assessment.pdf

health outcomes.”³¹ Education can reduce poverty, increase income, and provide more future opportunities. It helps combat inequality and injustice, is associated with better overall health, and drives sustainable economic growth within a community.³²

Figure 11. Life Expectancy at 25 stratified by educational attainment³¹

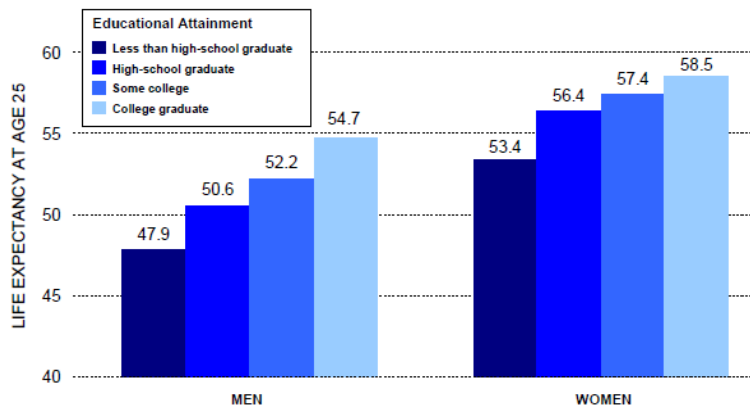
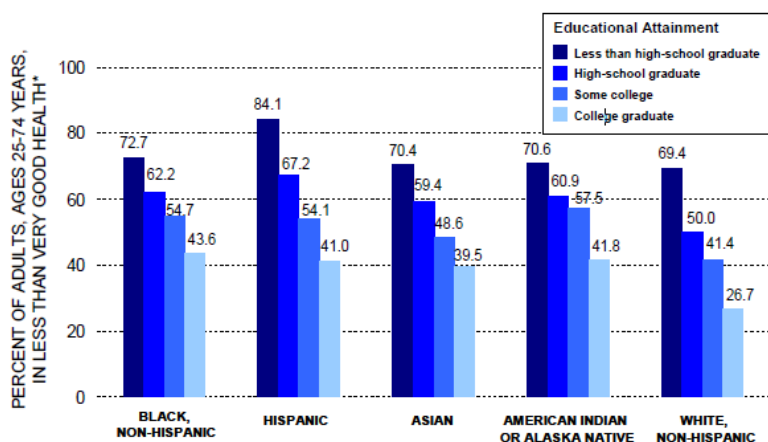


Figure 12. Percent of adults in less than very good health stratified by educational attainment and race/ethnicity³¹



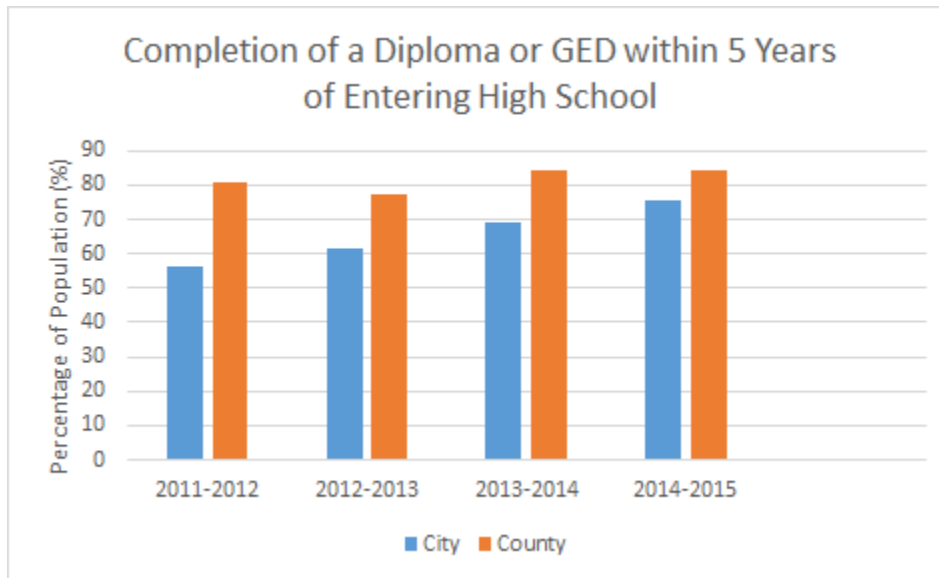
According to the Oregon Report Card³³, the 2014-2015 student completion rates in the Klamath Falls City School District (75.8 percent) is significantly lower than both the Klamath County School District (84.3 percent) and the overall state (82.1 percent) rates. Additionally, students continuing their education after high school in both the City (38.7 percent) and County (26.8 percent) districts are both significantly lower than the state average (60.5 percent).

³¹ Robert Wood Johnson Foundation. (2009). Education Matters for Health. Accessed from: <http://www.commissiononhealth.org/PDF/c270deb3-ba42-4fbd-baeb-2cd65956f00e/Issue%20Brief%206%20Sept%2009%20-%20Education%20and%20Health.pdf>

³² Global Partnership. (2015). The benefits of education. Accessed from: <http://www.globalpartnership.org/education/the-benefits-of-education>

³³ Oregon Report Card 2014-2015. (2015). Graduation Rates. Accessed from: <http://www.ode.state.or.us/data/reportcard/reports.asp>.

Figure 13. Comparison between Klamath Falls City School District's and Klamath County School District's completion of a diploma or GED within 5 years of entering high school. Source: Oregon Report Card³³.



“Health and success in school are interrelated. Schools cannot achieve their primary mission of education if students and staff are not healthy and fit physically, mentally, and socially.” National Association of State Boards of Education³⁴

High rates of chronic absenteeism and mobility within the district have been identified as main factors driving down rates of educational success. This is widely recognized among leadership groups across the county, and as a result, a strong partnership between the local higher education institutions, youth mentoring programs, and public schools has formed. Klamath Promise is a powerful initiative focused on reducing absenteeism and providing mentoring to help Klamath County achieve “a 100% graduation rate one student at a time.”³⁵ Sky Lakes and Klamath County Public Health recognize that healthy kids learn better and work to support these local initiatives.

Unemployment

Employment has a significant impact on physical and mental health and unfortunately Klamath County continues to struggle with high unemployment rates and economic recovery. Klamath County has 13.8 percent unemployment compared to 11.3 percent statewide and 5 percent nationwide.^{36,37} As reported in the survey completed by Klamath Lake Community Action

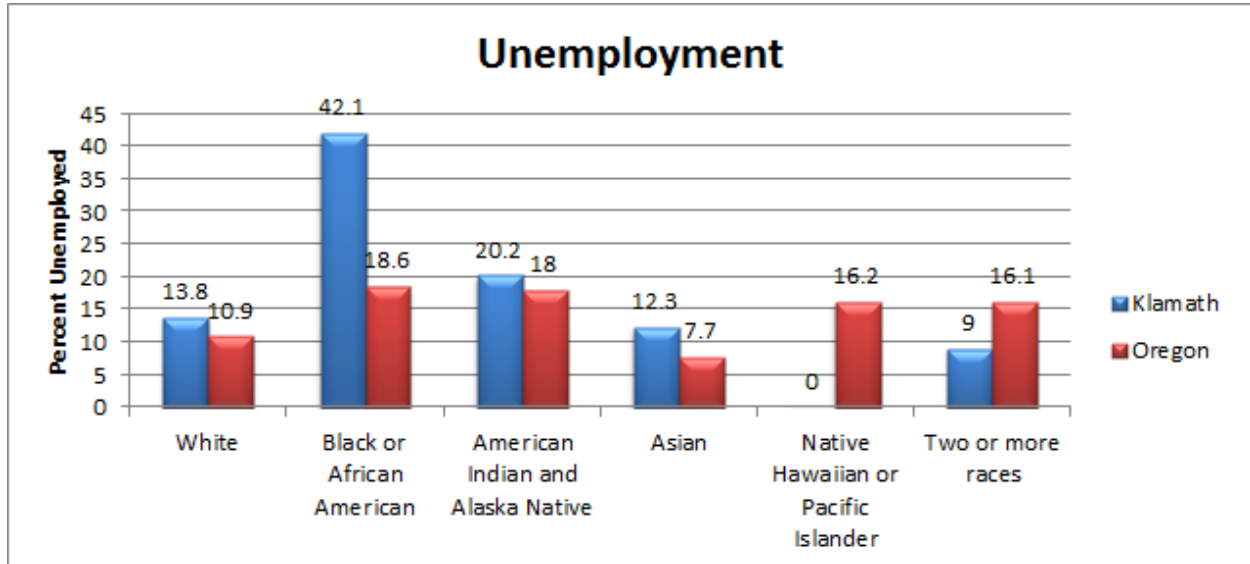
³⁴ Terry O’Toole, PhD Health Scientist. (2008). Physical Activity and Nutrition Policies and Programs in the Nation’s Schools: Are we Making Progress? Division of Adolescent and School Health. CDC and DNPAO Teleconference presentation slides. Accessed from: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=4&ved=0CC4QFjAD&url=http%3A%2F%2Fwww.asphn.org%2Fresource_files%2F67%2F67_resource_file1.ppt&ei=X2ybU8z8JNfroATrYgWbW&usg=AFQjCNEEB9dBdj6CdAEQLCjY7j6lNK8e1Q

³⁵ Klamath Promise. Accessed from <http://klamathpromise.org>

³⁶ US Census. Accessed from: <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

Services, more than one third of respondents reported that a lack of a job and unresolved health problems were the biggest barriers to reaching their goals.³⁰

Figure 14. Disparities in unemployment status by race and ethnicity. Source: US Census³⁶



Sky Lakes has partnered with the grassroots initiative, Klamath Works, an innovative community project that seeks to reduce transiency, substance abuse, and crime by empowering these individuals through jobs programs, skills training, and medical treatment. The ultimate goal is to promote these populations so they can reach their full potential and achieve self-sufficiency.

Housing and Homelessness

Safe and affordable housing is an essential component of achieving optimal health and is a major concern in Klamath. In Klamath County, nearly one in five (19 percent) of residents experience severe housing problems such as overcrowding, high costs, lack of kitchen or plumbing, or unsafe conditions.⁹ According to the Klamath Housing Authority, the vacancy rate is less than two percent³⁸. Additionally, wait time for HUD housing can be up to 18 months.

Individuals without homes often lack access to health care and struggle with chronic health problems, both of which inhibit employment opportunities and academic performance.³⁹ Furthermore, people without homes have higher rates of hospitalizations for physical illnesses, mental illness, and substance abuse than other populations. As of January 2015, Klamath has 252 homeless individuals, 76 of whom were sheltered and 176 who were unsheltered.⁴⁰

³⁷ US Bureau of Labor Statistics. (2015). Accessed from: <http://data.bls.gov/timeseries/LNS14000000>

³⁸ Klamath Housing Authority. (2015). Verbal Presentation

³⁹ American Psychology Association. Accessed from: (<http://www.apa.org/pi/ses/resources/publications/homelessness-health.aspx>)

⁴⁰ State Housing and Community Services (2015). Point in Time Count. Accessed from: <http://www.oregon.gov/ohcs/pdfs/2015-Point-In-Time-Count-Summary.pdf>

Klamath Housing Authority and Klamath Lake Community Action Services understand the relationship between housing, health, and poverty and work tirelessly to meet the housing needs in the community.

Food Insecurity

Food insecurity is defined as “limited or uncertain availability of nutritionally adequate foods or uncertain ability to acquire these foods in socially acceptable ways.”⁴¹ It is associated with chronic health problems in adults including diabetes, heart disease, high blood pressure, hyperlipidemia, obesity, and mental health issues.⁹

Children who experience food insecurity are of particular concern given that limited food resources can pose a risk to a child’s health and development. Research reveals that children who experience food insecurity are more likely to be hospitalized and may be at higher risk for developing obesity, asthma and behavioral and social problems.⁹ In 2013, 28.5 percent of children under 18 years of age and 16 percent of the total population in Klamath County experienced food insecurity at least once during the year.⁹ In city schools, 70 percent of students qualify for free or reduced-priced meals.²³ Fortunately, the National School Nutrition Program (SNP) helps alleviate hunger experienced by school-aged children in Klamath County by providing nutritionally balanced, low-cost or free lunches.

Crime and Safety

Safety is an important social determinant of health. Crime compromises both physical and psychological health. High crime rates also impact property values as well as deter people from healthy outdoors behaviors such as physical activity and outdoor social gatherings.⁴² As of 2012, the violent crime rate in Klamath County was 117 per 10,000, which is in the top quartile (signifying the most crime) for the state.⁹ This is well above the national violent crime rate of 36.79 per 10,000, which has been steadily declining since 2009⁴³. Residents in the community have identified that public safety as a need. During focus groups, when students were asked about how “place matters”, they expressed safety and bullying as health issues they face⁴⁴. Only 54 percent of adults reported they “always feel safe and secure”, which is much lower than Oregon and U.S. Levels¹⁴.

⁴¹ USDA. (2000). Guide to measuring household food security. Accessed from: <http://www.fns.usda.gov/sites/default/files/FSGuide.pdf>.

⁴² Robert Wood Johnson Foundation. (2015). County Health Rankings and Roadmaps. Violent Crime. Accessed from: <http://www.countyhealthrankings.org/app/oregon/2015/measure/factors/43/description>

⁴³ FBI. (2013). Crime in the United States. Accessed from: https://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2013/crime-in-the-u.s.-2013/violent-crime/violent-crime-topic-page/violentcrimemain_final.

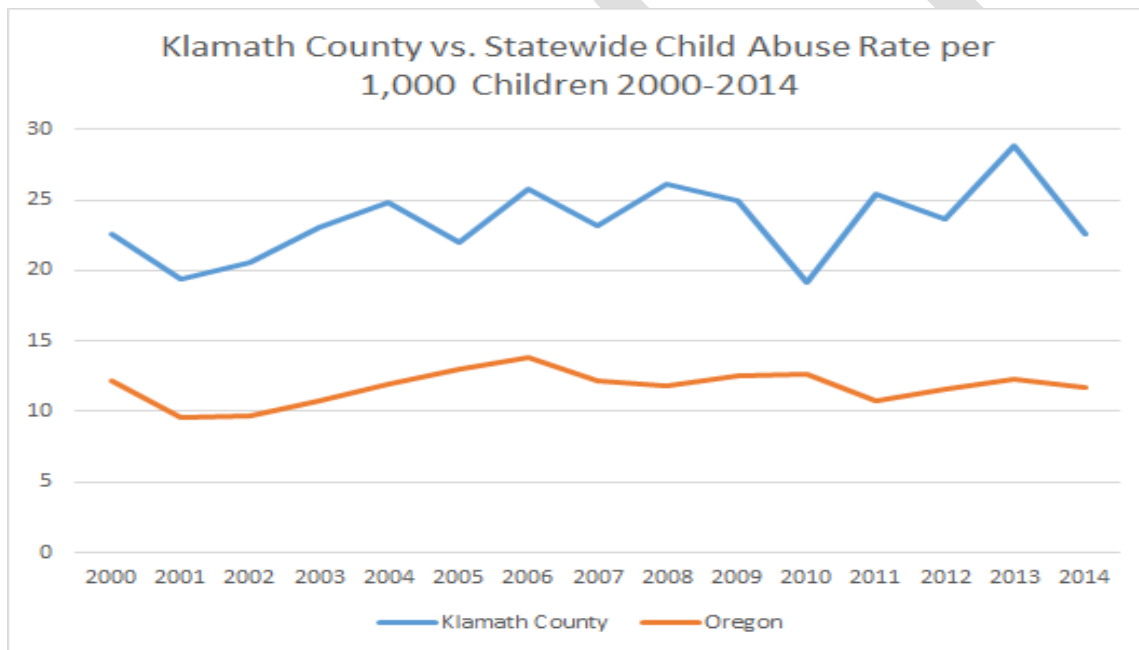
⁴⁴ OHSU School of Nursing Class of 2016. (2015). Klamath County Youth Health and Behavior Assessment. Accessed from: [http://www.healthyclamath.org/content/sites/klamath/Klamath County Youth Health and Behavior Assessment OHSU Class of 2016 Spring2015 FINAL REPORT.pdf](http://www.healthyclamath.org/content/sites/klamath/Klamath%20County%20Youth%20Health%20and%20Behavior%20Assessment%20OHSU%20Class%20of%202016%20Spring2015%20FINAL%20REPORT.pdf)

Fortunately, it looks as though community-wide improvement has begun, as a new report released by the Herald and News shows a drop in overall crime rates for 2015.⁴⁵ There were significant decreases in every category except two--attempted murder and weapons offenses. The sheriff “credits these improvements over last year to his staff of patrol officers, detectives, jail and court staff, administrators and volunteers, as well as the citizens they work for.”

Child Abuse and Neglect

Klamath County has some of the highest rates of child abuse in the state, which unfortunately has been the trend for several years. In 2014, Klamath County reported 28.9 cases of child abuse per 1000 children, a rate much higher than the state (12.3 per 1000).⁴⁶ This disparity is of great significance as child abuse has enormous long-lasting effects on survivors throughout their lives.

Figure 15. Child abuse rates in Klamath County compared to Oregon’s statewide rates. Source: Oregon DHS⁴⁶



Klamath’s child abuse rates remain unacceptably high, but with the appropriate intervention, this vicious cycle can be broken over time. Several organizations including Court Appointed Special Advocates (CASA), Department of Human Services, Sky Lakes’ Child Abuse Response and Evaluation Services (CARES), Citizens for Safe Schools, and Friends of the Children are dedicated and passionate community partners who are working hard to eliminate child abuse in Klamath County.

⁴⁵ Herald and News. (2016). Sheriff’s office reports drop in crime for 2015. Accessed from: http://www.heraldandnews.com/news/sheriff-s-office-reports-drop-in-crime-for/article_44e8b204-304e-5b9f-822c-f30073d3070e.html
⁴⁶ Oregon Department of Human Services. (2015). 2014 Child Welfare Data Book. Accessed from: <http://www.oregon.gov/dhs/children/child-abuse/Documents/2014%20Data%20Book.pdf>

Modifiable Health Risks

Research shows that only 20 percent of our health is influenced by our genes and 80 percent by our environment and health behaviors. Health behaviors (modifiable health risks), are choices and actions impacting health that are influenced by the environment, personal beliefs, and cultural norms. Currently, tobacco, obesity, and alcohol abuse are the three leading causes of *preventable* death in the United States, Oregon, and Klamath County.⁴⁷ These modifiable risk factors are strongly associated with many of the chronic conditions mentioned previously such as asthma, cancer, diabetes, and COPD. Many deaths and chronic illnesses could have been delayed and quality of life could have been improved, through health promoting behaviors, including healthy diet, physical activity, avoidance of tobacco, and other types of risk reduction.⁴⁸

Substance Abuse

Substance abuse is associated with many negative health and safety outcomes including injuries, employment or academic problems, legal issues, financial difficulties, relationship strain, and death (intentional or unintentional). In Klamath County, the majority of substance abuse disorders occur among young adults aged 18-25 years old. According to the Oregon Health Authority's 2014 Behavioral Health Profile,¹⁵ it is estimated that nine percent of youth aged 12-17, nineteen percent of young adults aged 18-25, and eight percent of adults over the age of 26 suffer from a substance abuse disorder. Most concerning is youth substance use, as it is not only illegal, but also detrimental to healthy physical, mental, and social development.

Tobacco

Tobacco, the leading cause of preventable death, contributes to many chronic diseases such as cancer, heart disease, diabetes, asthma, and stroke, which drives the continual increase in the costs of healthcare, both locally and nationally. Klamath Falls residents who completed Blue Zones health survey indicated tobacco use as having the greatest impact on overall community health.²³

In Klamath County, \$39.1 million are spent on tobacco-related medical care and approximately 23 percent of adults smoke, which is higher than the Oregon average of 19 percent.⁴⁹ Although the youth cigarette smoking rate (11 percent of 11th graders) is higher than smokeless tobacco use (four percent), youth reported that smokeless tobacco is the biggest problem.⁴⁴ One youth focus group participant said "Chew is everywhere...there is chew spit in the urinals and on the walls."⁴⁴ Additionally, students did not feel that electronic cigarette use was prevalent despite state and national reports showing a steady increase in youth use.

⁴⁷ Klamath County Public Health. (2014). Retail Assessment of Klamath County: Tobacco, Foods, Alcohol, and Lottery. Accessed from: http://www.healthyklamath.org/content/sites/klamath/Retail_Assessment_of_Klamath_County_comprehensiveFINAL_20150205104505.pdf

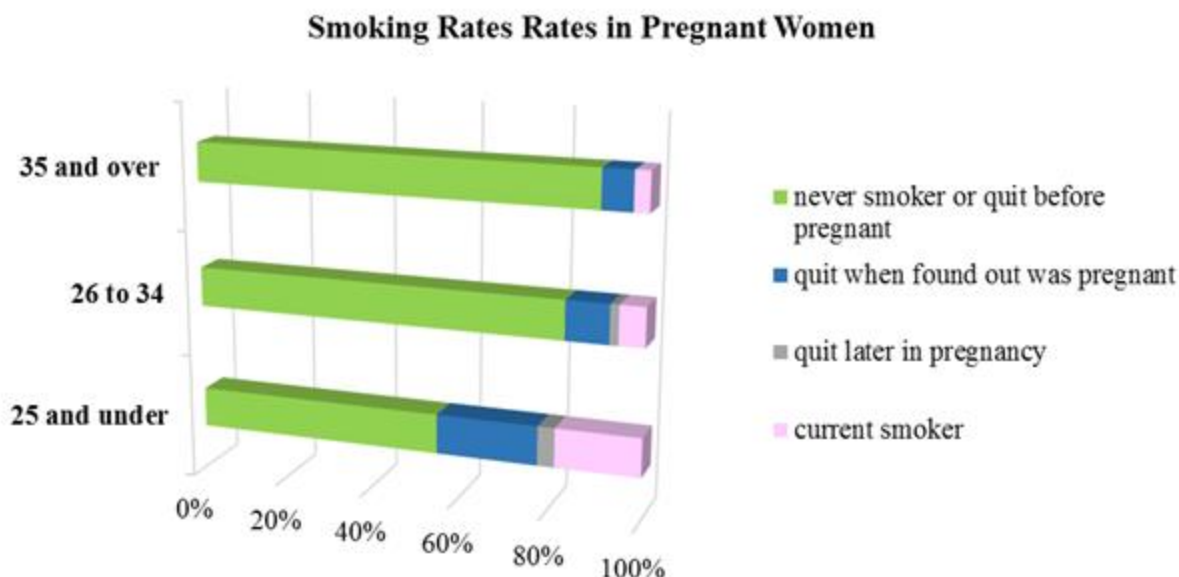
⁴⁸ CDC. (2009). Power of Prevention: Chronic Disease...the public health challenge of the 21st century. Accessed from: <http://www.cdc.gov/chronicdisease/pdf/2009-Power-of-Prevention.pdf>

Tobacco prevention efforts include protecting people from secondhand smoke, preventing tobacco use initiation, and helping people quit. Klamath County Public Health, Sky Lakes, Cascade Health Alliance, and Klamath Basin Behavioral Health have partnered to offer smoking cessation classes for the community.

Pregnancy and Tobacco

Smoking and pregnancy are a dangerous mix. It is “estimated that smoking during pregnancy causes up to ten percent of all infant deaths.”⁴⁹ Klamath County rates were recently estimated to be as high as 19.6 percent⁴⁹. In 2014, a survey⁵⁰ conducted by Klamath County Public Health’s Tobacco Prevention and Education division, asked Klamath Falls women receiving prenatal care if they were current tobacco users. Of the 254 respondents, 14.5 percent identified themselves as smoking tobacco sometime during their pregnancy.

Figure 16. Smoking rates among pregnant women in Klamath Falls stratified by age group and smoking status. Source: Klamath County Public Health⁵⁰



Smoking rates, whether a current smoker or a smoker who quit during pregnancy, were highest in the 25 years old and younger category. Happily, 92 percent of pregnant smokers indicated that they wanted to quit. The most common barriers to quitting were overwhelmingly related to stress (73 percent), fear of adverse effects to their baby from nicotine withdrawal (27 percent), and several respondents commented on the addictive nature of tobacco itself.

Although several cessation programs exist in Klamath Falls, the needs of pregnant women are unique. In response, a partnership between Klamath County Public Health and Cascade Health

⁴⁹ Oregon Health Authority. Tobacco Prevention and Education Department. (2014). Klamath County Tobacco Fact Sheet. Accessed from: <https://public.health.oregon.gov/PreventionWellness/TobaccoPrevention/Documents/countyfacts/OHA-Klamath-TobaccoFactSheet.pdf>

⁵⁰ Klamath County Public Health. Tobacco Prevention and Education Division. (2014). Survey on women smoking during pregnancy.

Alliance has formed; a trained cessation counselor is now piloting a targeted cessation program for pregnant or postpartum women and their families.

Alcohol

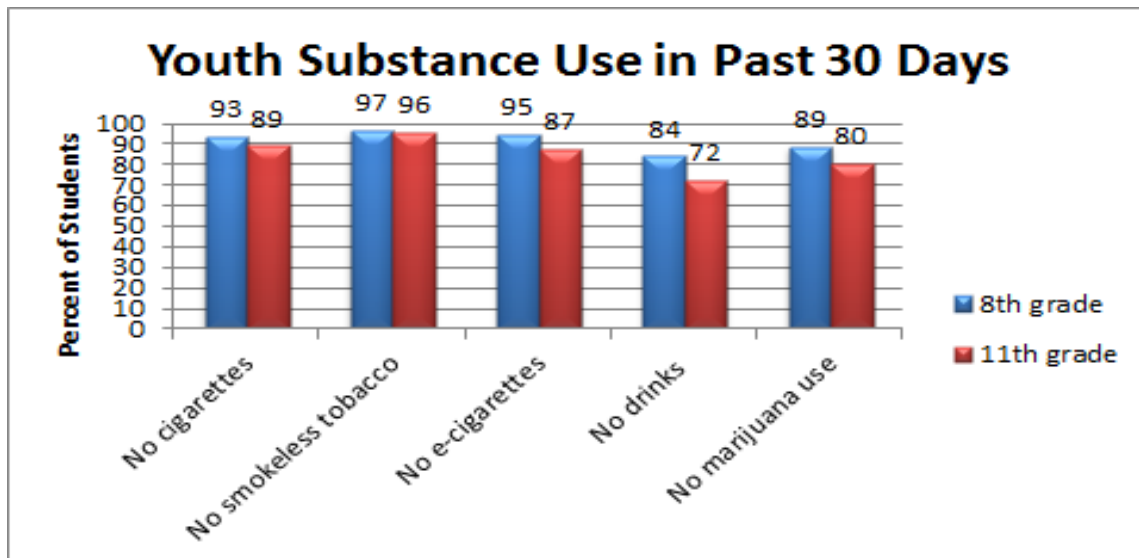
Alcohol often accompanies social events and can be used responsibly in moderation. However, serious health consequences occur when drinking in excess or binge drinking. In Klamath County males have more than double (over 15 percent) the prevalence of binge drinking within the past 30 days when compared to females (nearly seven percent).⁹ As with tobacco, alcohol prevention is a major concern regarding youth. Teens report alcohol use more often than any other substance. According to the 2015 Healthy Teens Survey,¹² 16 percent of 8th graders and 28 percent of 11th graders have consumed alcohol in the past 30 days. It is worth noting that majority of youth are not consuming alcohol.

Marijuana

Marijuana use is a newly emerging issue, and in July 2015, Measure 91 was passed, allowing adults 21 years or older to possess and grow limited amounts of marijuana for nonmedical use. Both Klamath Falls City Council and Klamath County Commissioners voted to ban sales of recreational marijuana, but the City allowed sales of medical marijuana. Data on adult marijuana use is not readily available, but there is information on youth use. Youth report using marijuana more often than tobacco. Eleven percent of 8th graders and 20 percent of 11th graders report using marijuana in the past 30 days.¹²

Fortunately, the majority of youth have not used tobacco, alcohol, or marijuana within the last 30 days. Lutheran Community Services works in the schools to promote substance free lifestyles by implementing a Positive Social Norms framework, reinforcing the fact that that most teens are not using illegal substances. Additionally, there are several substance abuse counseling and treatment services available throughout the county including Klamath Basin Behavioral Health, Best Care Treatments, Transformations Wellness, and Lutheran Community Services.

Figure 17. Percentage of students in 8th and 11th grade *not* using tobacco, alcohol, and marijuana. Source: Oregon Healthy Teens Survey¹²



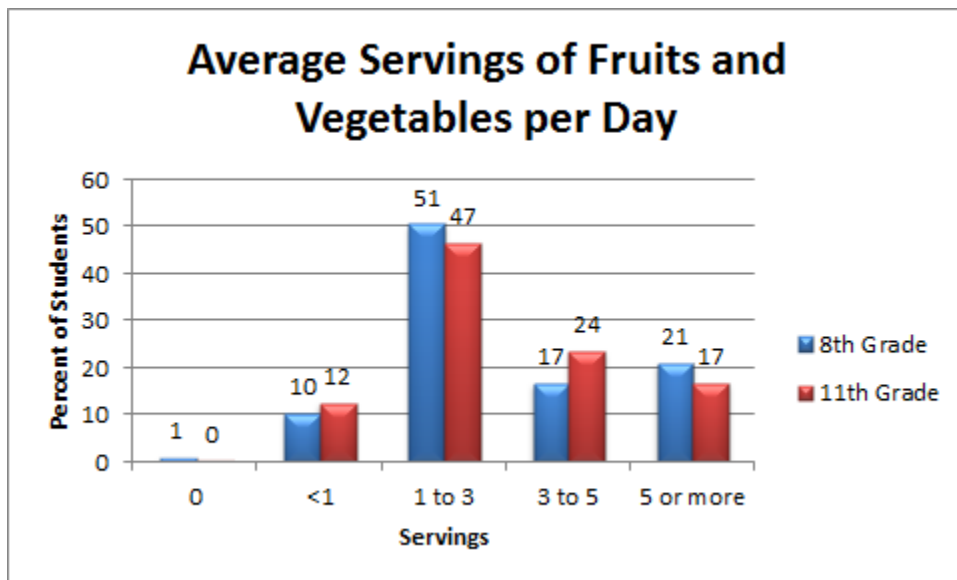
Nutrition

Eating a well-balanced diet rich in whole grains, fruits, and vegetables is essential to health and longevity.⁵¹ In Klamath County, less than one in three adults are getting the recommended servings of fruit and vegetables (five or more) per day.⁹ However within the Klamath Falls Urban Growth Boundary, more than half (54 percent) of the residents report eating 5 or more servings of fruit and vegetables 4 or more days last week.¹⁴ According to the Oregon Healthy Teens survey,¹² nearly 50 percent of teens are getting one to three servings of fruits and vegetables per day and nearly 20 percent are getting the full recommendation of five or more servings.

A common theme amongst all high schools was students want more healthy options at lunch.²³ This sentiment was echoed by high school students during the OHSU focus groups. One student felt that cafeteria food “all came out of a can.”⁴⁴

⁵¹ USDA My Plate. (2015). Accessed from: <http://www.choosemyplate.gov/>

Figure 18. Quantity of fruits and vegetables 8th and 11th graders are eating per day. Source: Oregon Healthy Teens Survey¹²



As nutrition is a crucial element to achieving optimal health, several organizations are providing education on how to purchase and prepare affordable, healthy, and tasty foods. The Klamath County Health Department’s WIC program provides nutrition education and supplemental nutritious foods for qualified women and children from birth to age five years. Oregon State University’s Klamath Basin Research and Extension Center (KBREC) provides nutrition education in schools and Sky Lakes’ Wellness Center is slated to open its teaching kitchen to the community to offer healthy cooking education.

Physical Activity

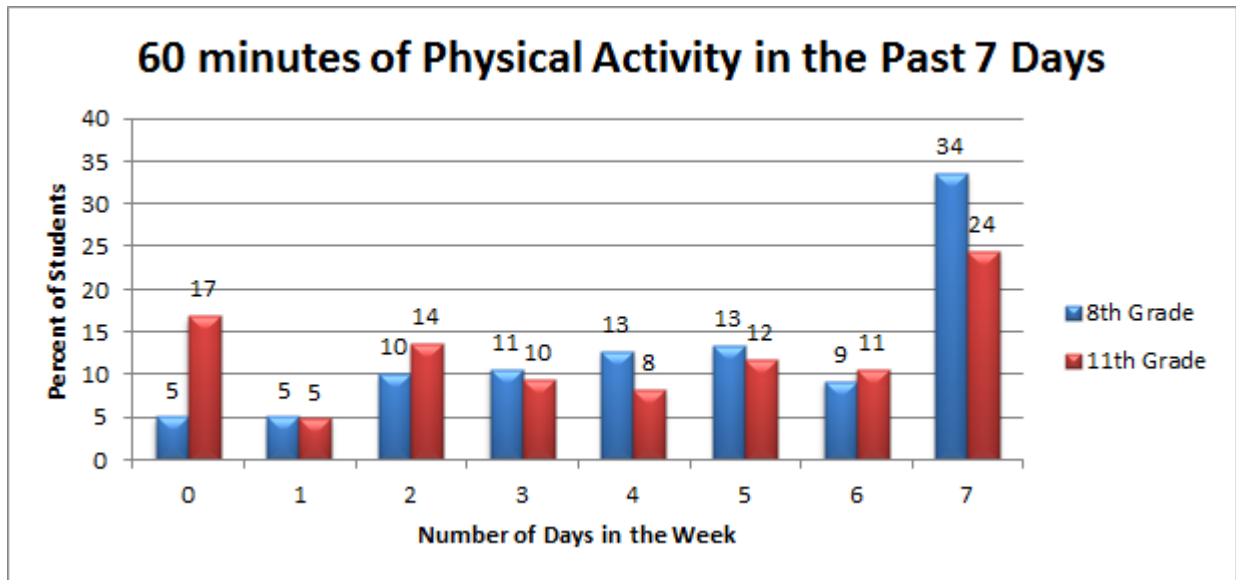
In addition to nutrition, physical activity is an essential component to health. The CDC recommends at least 150 minutes of moderate physical activity a week for adults and at least 60 minutes per day for children and youth. This is correlated with healthy weight, high academic performance, increased self-esteem, decreased stress and aggression, and helps prevent chronic conditions.^{12,52}

In Klamath County, nearly 60 percent of adults are engaging in regular physical activity.⁹ Youth are also getting regular physical activity, whether it’s during PE class, outside of school, or in the home. It appears that as youth enter into high school, the amount of physical activity declines. Ninety-five percent of 8th graders report getting 60 minutes of physical activity at least once a week whereas it drops to 85 percent for 11th graders.¹² Between 12-13 percent of 8th and 11th graders get adequate physical activity five days per week. One in three 8th graders and one in

⁵² CDC. (2015). How much physical activity do adults need. Accessed from: <http://www.cdc.gov/physicalactivity/basics/adults/>

four 11th graders are getting 60 minutes of physical activity seven days per week. According to both the Blue Zones report and OHSU focus groups, school students want more physical activity opportunities at school.

Figure 19. Number of days 8th and 11th graders got 60 minutes of physical activity in the past week. Source: Oregon Healthy Teens Survey¹²



Opportunities for physical activity are critical to achieving the recommended amounts of physical activity whether it's a safe route to actively commute to school or work, available sports and recreation, or home and work environments that encourage movement. Sky Lakes offers Walk with a Doc where participants walk with local doctors around a track; KBREC initiated the Walk with Ease program, peer-led walking groups; Commute Options brings Safe Routes to Schools programming to schools; and the Blue Zones Project Klamath Falls will be starting walking social groups all in effort to promote a safe and free physical activity opportunity to the community. Additionally, Healthy Klamath successfully applied for an AmeriCorps member to explore recreation opportunities in Klamath and unite the various organizations that are currently promoting recreation and physical activity.

Built Environment

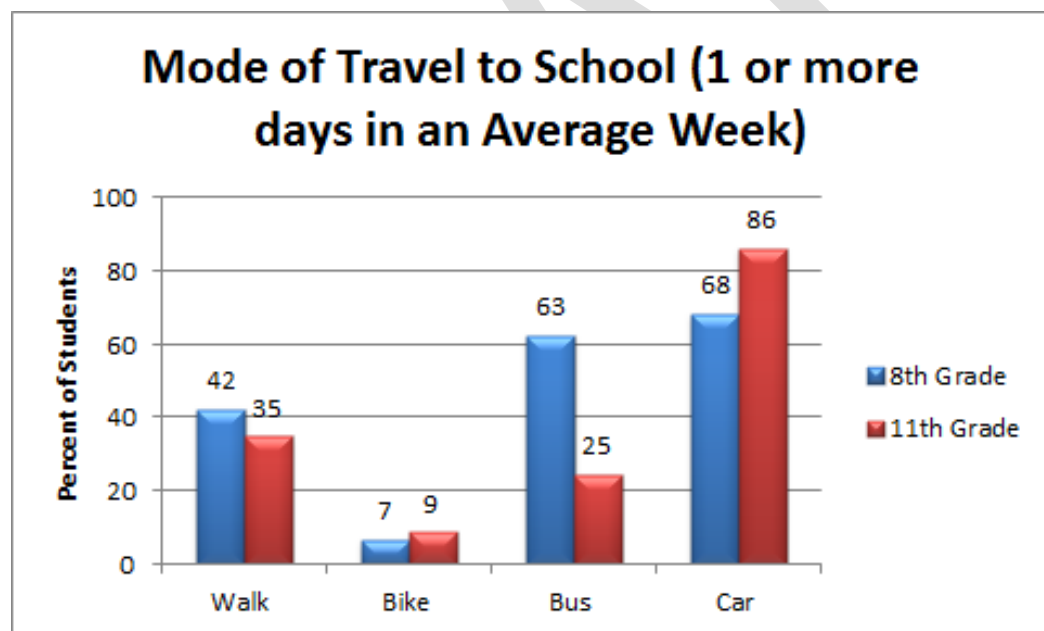
As previously mentioned, the environment in which a person lives, works, and plays has considerable impact on health behaviors and health outcomes. The built environment is defined as our human-made surroundings that influence activities and therefore health behaviors and social norms. Public health is shifting its focus to improving the built environment because of the important role it plays in promoting health and preventing chronic disease. "Many health challenges are directly related to transportation choices, land use patterns, infrastructure, and accessibility".²³ For example, when there are safe, accessible areas (green spaces, parks, safe

routes, thriving businesses) nearby, it's easier to be physically active and walk to these places, feel safe, and meet with social groups--all which improve health. One local youth noted, "There are no sidewalks or streetlights on the street I live on,"⁴⁴ demonstrating the influence infrastructure can have on accessibility and perceived safety.

Active Transportation

Ensuring the built environment is conducive to active transportation--walking, biking, or other human-powered modes--is currently a major focus in Klamath Falls. Unfortunately, very few people in Klamath Falls are actively commuting in comparison to other Oregon cities. In Klamath Falls, less than one percent bike (0.3) and two percent (2.2) walk to work whereas in other small communities they have over 11 percent.⁵³ Youth have much higher rates of active transportation compared to adults, but those numbers drop as they enter high school and can drive themselves. It is worth noting that Klamath County is geographically expansive and travel distances are often not conducive to active commuting. As one youth focus group participant pointed out, "Town layout is not convenient...we have to drive a lot".⁴⁴

Figure 20. Modes of travel 8th and 11th graders take to school in an average week. Source: Oregon Healthy Teens Survey¹²



The walkability of a community is associated with physical activity levels, and therefore correlates with some chronic diseases. Walkability is simply the environment in which walking is a safe and easy choice. Sky Lakes partnered with Oregon Tech and used Geographical Information Systems (GIS) mapping to analyze walkability in comparison to prevalence of high

⁵³ US Census. (2012). Commuting (Journey to work). Accessed from: <http://www.census.gov/hhes/commuting/data/commuting.html>

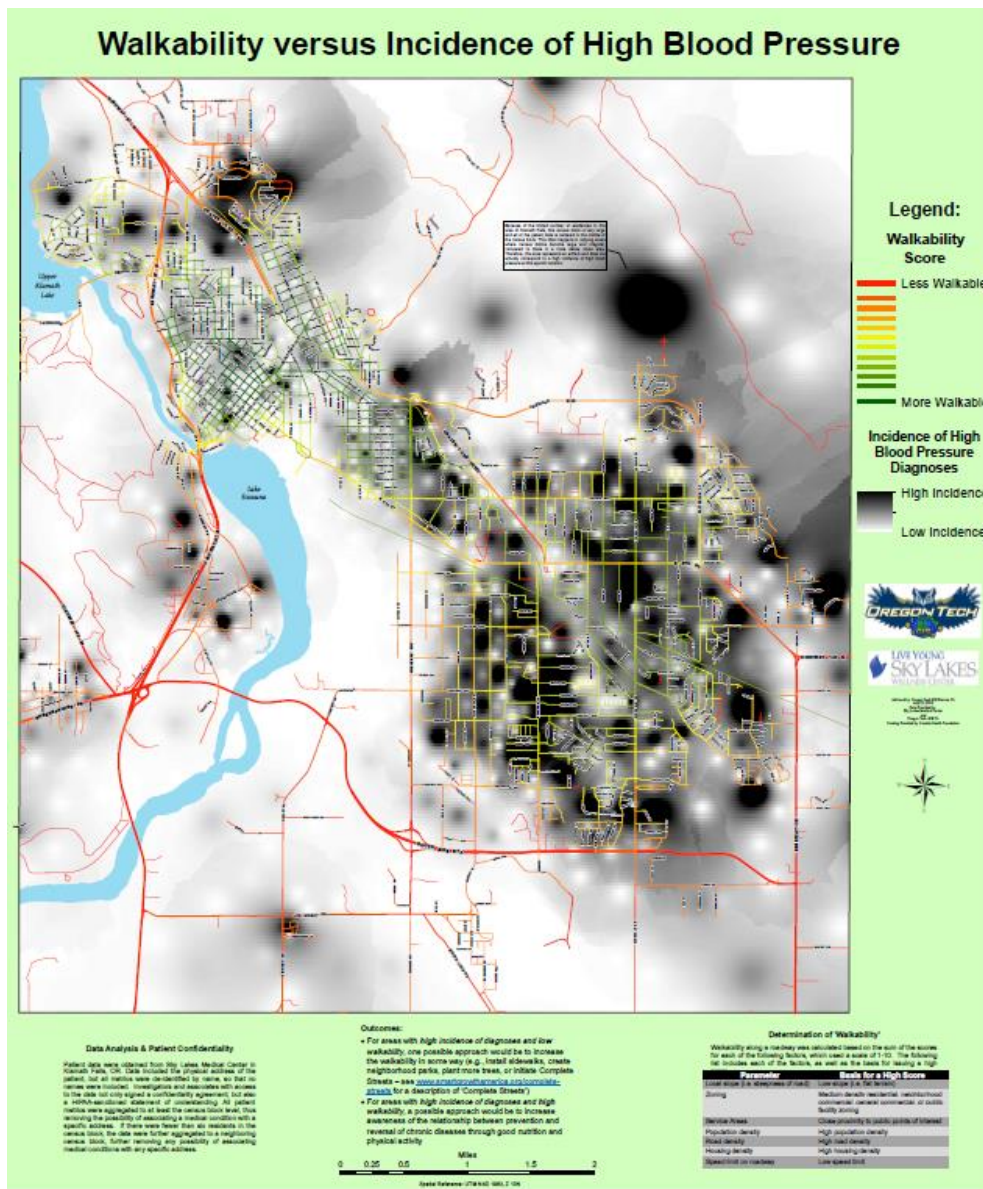
blood pressure, obesity, hyperlipidemia, and cost of care. As hypothesized, areas that are less walkable have higher rates of residents experiencing adverse health conditions compared to areas that are more walkable. This is not a direct, causal relationship, because many factors contribute to these conditions. But broader research shows similar findings for the built environment and the association it has with chronic health conditions.

According to the built environment assessment conducted by the Blue Zones Project,²³ Klamath Falls is automobile-focused and has an overall Walk Score of 40,* demonstrating that most of the city is car-dependent for most errands. Downtown has a Walk Score of 72 because it has more connectivity, accessibility to key destinations, and shorter walking distances.

Stemming from findings such as these, several community partners have stepped up to address the infrastructure of Klamath Falls. The City of Klamath Falls is in the midst of completing an Urban Trails Master Plan to identify priority interventions that can improve walk- and bikeability of the community. They also are working on a Brownfields initiative to identify and remediate dilapidated, contaminated sites within the UGB. Additionally, Sky Lakes spearheaded a Protected Bike Lane project that emerged from the GIS maps mentioned above. Finally, Blue Zones Project Klamath Falls has a designated built environment committee aimed at strategically and systematically making sustainable changes to the infrastructure in a way that is health-centric.

**Walk Score is a tool that measures the proximity of destinations by foot to an address from 1-100 where 0 is not walkable and 100 is very walkable.*

Figure 21. Map of Klamath Falls showing walkability in comparison to high blood pressure. More walkable streets are green and less walkable areas are red. The black spots represent high blood pressure. The larger and darker areas signify higher prevalence of high blood pressure. Overlaying these two indicators shows that in more walkable areas there is lower prevalence of high blood pressure. **Source:**



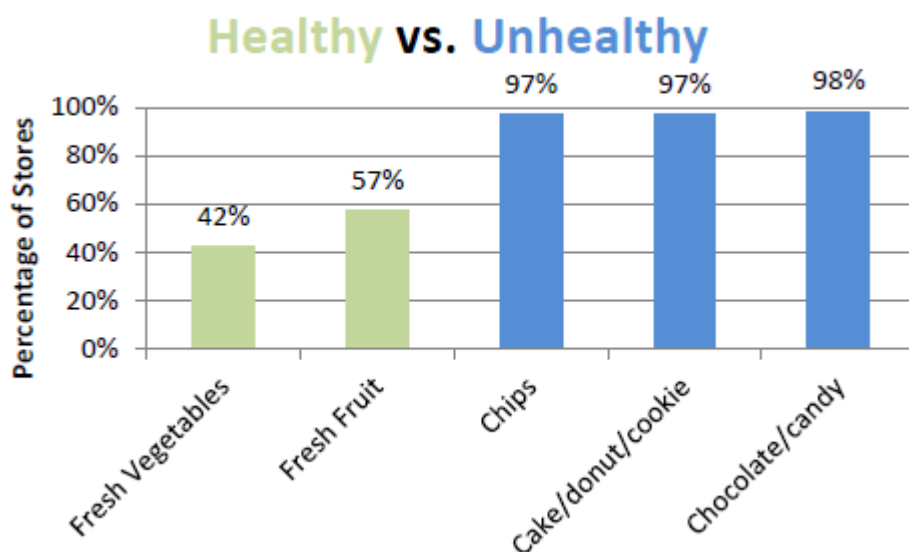
Food

When there is accessible and affordable healthy food people are more likely to make healthy choices. Klamath County has pockets of food deserts, which according to USDA are neighborhoods without ready access to fresh, healthy, affordable food. Instead of grocery stores these communities have either no food access or are only served by fast food restaurants or convenience stores.⁵⁴ The criteria for a food desert are “at least 500 people and/or at least 33 percent of the census tract’s population must reside more than one mile from a supermarket or large grocery store”.⁵⁵ The concept behind this definition is that it is reasonable for a shopper to walk within a mile carrying groceries, but anything greater presents unreasonable physical and economic barriers in obtaining nutritious foods.

According to the Oregon Environmental Public Health Tracking tool,²⁵ the average walking distance to a grocery store in Klamath County ranges from 0.5- 30 miles with only one quarter of grocery stores within reasonable walking distance (less than one mile away). In comparison, half of convenience stores are less than than one mile away, making unhealthy options more accessible.

In 2014, Klamath County Public Health conducted a retail environment assessment⁴⁷ to learn more about tobacco, food, and alcohol choices available in the community. When analyzing the "gold standard" for healthy options—fresh fruits and vegetables—there is a significant disparity when compared to typical unhealthy options such as chips, cookies, and candy. They found that 57 percent of surveyed locations sold fresh fruit whereas 97 percent sold chips, cake or cookies. Furthermore, of the stores that sold food only three of them had advertisements for healthy options.

Figure 22. Comparison of healthy and unhealthy food choices among surveyed locations in Klamath County. Source: Klamath County Public Health Retail Environment Assessment⁴⁷



⁵⁴ USDA. Accessed from: <https://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx>

⁵⁵ American Nutrition Association. Accessed from: www.americannutritionassociation.org/newsletter/usda-defines-food-deserts.org

Tobacco

Smokefree environments promote tobacco free lives, prevent exposure to secondhand smoke, and continue to promote cultural change showing that tobacco is not the norm. Prevalence of stores that sell tobacco--tobacco retailers--has a significant impact on tobacco use rates and social norms. Klamath County has approximately 72 tobacco retailers and of those nearly one of every two tobacco products or advertisements are placed in ways that are appealing to children--displayed within 12 inches of toys, candy, gum, soda or ice cream or within three feet of the floor, at child's eye level.⁴⁷

Sky Lakes, Klamath County Public Health, and Oregon Tech have been pioneers in the community by implementing 100 percent tobacco free campuses. Klamath County Public Health and Klamath Tribal Health and Family Services have been actively combating commercial tobacco use for years and now they are partnering with Blue Zones Project to increase the number of tobacco free policies in the community.

Environmental Health

Klamath County, located in a basin that lends itself to poor air movement, experiences moderate to high levels of air pollution, especially during the winter months. Poor air quality is exacerbated by unique temperature inversions, unfavorable airflow patterns, and particulates emitted from wood stoves. Klamath County Public Health's Environmental Health Department estimates 74 percent of poor air quality comes from uncertified woodstoves and fireplaces.⁵⁶ Residents with heart or lung disease, older adults and children are most often affected by poor air quality. Scientific studies connect air pollution to a variety of health issues, including: reduced lung function, irregular heartbeat, asthma attacks, heart attacks, and premature death.⁵⁷

Currently, Klamath County has a single air quality monitoring station located at Peterson Elementary School in suburban Klamath Falls. The air pollution level is currently in non-compliance status with the Environmental Protection Agency's (EPA) PM_{2.5} particulate matter standard. The standard of 35ug/m³ must be met over the average of three years for consecutive rolling periods. Klamath County has successfully met the first rolling period in 2012-2014, and avoided serious non-attainment status, which would have imposed tighter restrictions on industry and local burning--a huge win for the community. Klamath County Public Health is working toward attainment by implementing a school flag program, issuing and enforcing burn advisories, and educating the public to uphold air quality standards and achieve attainment status in coming years. They have also partnered with South Central Economic Development District to replace uncertified woodstoves to create lasting change.

⁵⁶ Klamath County Public Health Environmental Health. (2015). Air Quality. Accessed from: <http://www.klamathcounty.org/depts/publichealth/eh/AQ.asp>

⁵⁷ Air Now. (2015). Particle Pollution. Accessed from: <http://www.airnow.gov/index.cfm?action=aqibasics.particle>

Figure 23. Shows the PM_{2.5} concentration in Klamath Falls from one monitoring station. Source: Klamath County Public Health Environmental Health Division

3-Year Peterson Elementary Monitor Values Exceptional Events Excluded The following data was obtained from EPA at http://www.epa.gov/airdata/		
Calendar Year	Daily Standard 35 micrograms per cubic meter (98 th Percentile)	Annual Standard 12 micrograms per cubic meter (four quarters averaged)
2012	26	10.1
2013	46	11.8
2014	30	8.8
3-Year Average	34 - Meets Standard	10.2 - Meets Standard

Conclusion

Klamath County is ready and excited to move the needle and improve health for all of its residents. Taking a careful look at the current health status and factors that affect it will allow the community to strategically implement interventions.

Klamath has high rates of obesity, chronic disease, and sexually transmitted diseases. Many challenges stem from social determinants of health like poverty and modifiable health behaviors such as tobacco use.

Despite its needs and challenges, Klamath is resilient and has many assets including high breastfeeding rates, a downward trend in crime rates, and youth who are becoming increasingly health conscious. Community partners are collaborating to provide robust education and resources to offer residents a hand up rather than a hand out. Blue Zones Project Klamath Falls is a wonderful opportunity that has united the community and has great potential to significantly create a healthy, thriving place to live.

Sky Lakes and Klamath County Public Health are resolute in their dedication to ensuring health for everyone and will continue to be leaders in the community, driving change and health improvement.