Walk Bike Clackamas

Tech Memo 2: Baseline Health Conditions

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INTRODUCTION

Clackamas County is committed to improving the health of people living and working in the region. Part of this improvement is a focus on healthy built environments, including how the County's transportation system, housing, and land use, impact health indicators and outcomes. Health indicators are measurable characteristics that describe the health of the population, determinants of health, and access and cost of healthcare.[1] Health outcomes are measures of communicable and non-communicable illness. This memo will focus on non-communicable chronic illness outcomes. Clackamas County has completed numerous health assessments and continues to seek an interdisciplinary approach to improve health outcomes, including planning for active transportation.

This memorandum:

- Connects and relates the goals and strategies of health assessments in Clackamas County to active transportation planning, policies, and programs;
- Maps current health indicators and outcomes in Clackamas County; and
- Illustrates the relationship between transportation and health outcomes.

APPROACH

Baseline health conditions in this memo draw upon a review of existing health assessments, data from the County, state, and national sources, and the Health Equity Framework developed in Technical Memo #1.

Existing Health Assessments Review

Three recently completed Clackamas County health assessments and health strategies related to active transportation and the built environment are described below.

The *2017 Community Health Assessment*[2] introduced Health Equity Zones (HEZ) as a new concept (Figure 1). Developed by Clackamas County's Public Health Division, HEZs capture the social and geographic diversity of the County, and more accurately reflect the areas of opportunity within the county. The ten HEZ boundaries and names are based on school district boundaries as these districts better communicated the health, equity, and quality of life of populations in Clackamas County.[3]

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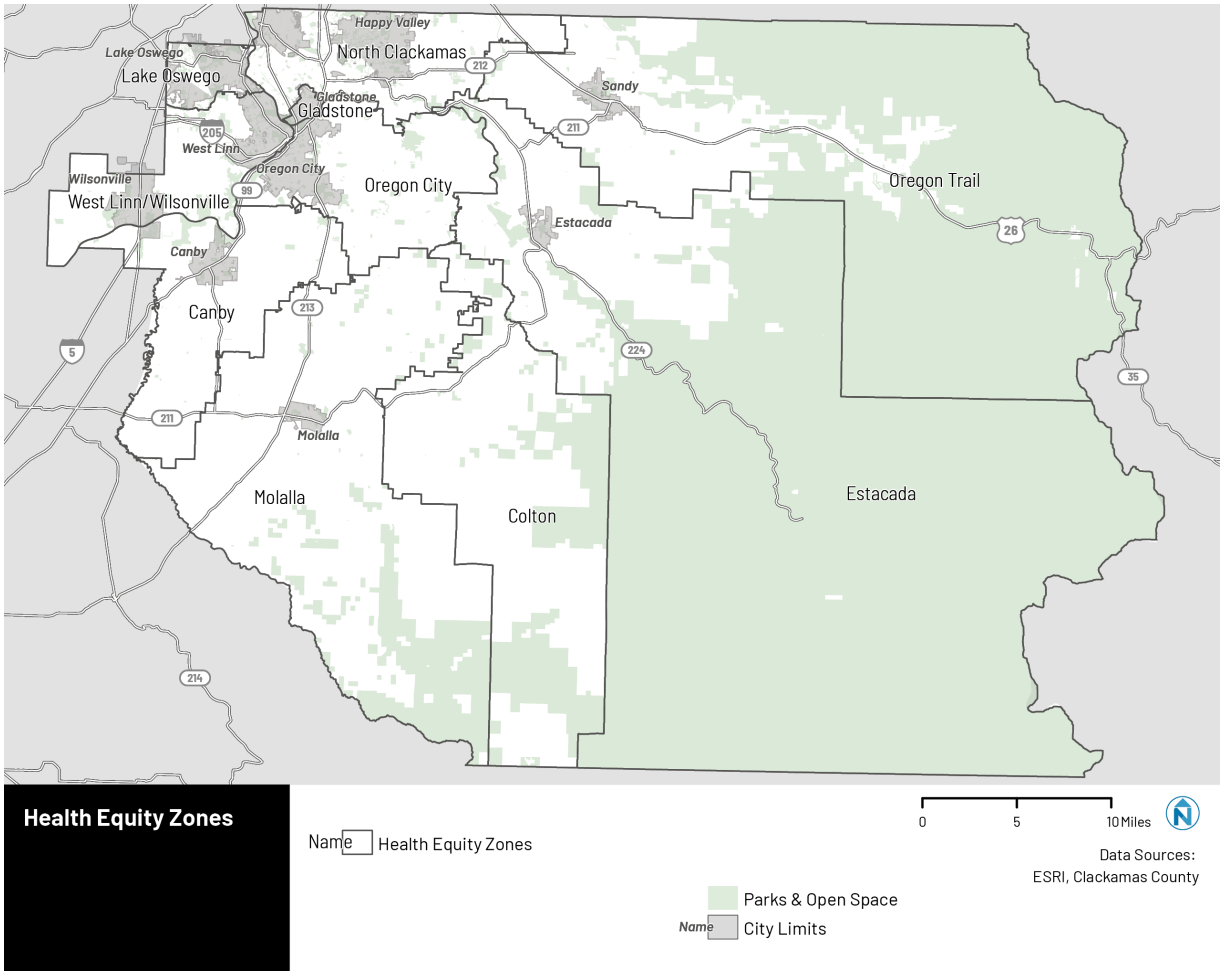
[1] Centers for Disease Control and Prevention. Health Indicators Warehouse. https://www.cdc.gov/nchs/ppt/nchs2012/li-18_churchill.pdf

[2] Clackamas County Public Health Division. 2017 Community Health Assessment. Retrieved from: https://dochub.clackamas.us/documents/drupal/aeb4ac5f-71a0-42cb-be78-65776a97be33

[3] Oregon Coalition of Local Health Officials. Health Equity Zones in Clackamas County. https://oregonclho.org/local-health-departments/local-stories/health-equity-zones-in-clackamas-county/389

Figure 1 Health Equity Zones in Clackamas County



The *2019 Community Health Needs Assessment*[4] by the Healthy Columbia Willamette Collaborative found access to transportation was both a strength and an area for improvement, depending on where residents live and their needs. Both transportation access and transportation options were identified as challenges for residents of rural areas. Lack of transportation results in geographic isolation and reduced access to essential services such as healthcare. This in turn adversely impacts health and wellbeing. The assessment also found access to healthcare should have more of a focus on prevention to understand what has happened in a person's life before they seek healthcare. Another identified area of improvement was coordination between agencies and organizations.

[4] Healthy Columbia Willamette Collaborative. Healthy Columbia Willamette Collaborative 2019 Community Health Needs Assessment. Retrieved from: https://www.healthshareoregon.org/storage/app/media/documents/About%20Us/HCWC%20reports/HCWC-Community-Health-Needs-Assessment-Report-July2019_0.pdf

The *Blueprint for a Healthy Clackamas County 2020-2023*[5] listed priorities that identified the role transportation plays in healthy communities. Clackamas County's 'Access to Health Care and Human Services' goal is to have equitable transportation systems and community design that supports resident health, safety, and access to essential services. Clackamas County's 'Healthy Behaviors' goal is to create and promote opportunities for residents to participate in health-promoting physical activity to lower the risk and complications of chronic disease. The County specifies that these opportunities exist at work, play, school, home, in neighborhoods, and when in transit.[6]

Data Sources

Transportation and health data to support this memo were provided by Clackamas County and were summarized from various sources as listed below. These data act as the evidence-base for this document to understand and visualize health outcomes in the county and guide where active transportation interventions may be allocated in response to these results.

- Behavioral Risk Factor Surveillance System (BRFSS) collects behavioral health data nationwide at the state and local level, including health-related risk behaviors, chronic health conditions, and use of preventive services.
- National Cancer Institute (NCI) provides state and local cancer data.
- CDC PLACES provides small area estimates of health outcomes for counties, places, census tracts, and ZIP Code Tabulation Areas across the United States.
- The American Community Survey (ACS 5-year) collects and releases data every year on social, economic, housing, and demographic characteristics across the United States at geographies as small as census block groups.
- Health Equity Zones (HEZ) as created and defined by Clackamas County.

[5] Public Health Division, Clackamas County. Blueprint for a Healthy Clackamas County 2020-2023. Retrieved from: https://dochub.clackamas.us/documents/drupal/a6f39b3f-5727-4533-a572-d8d8588e2e7d

[6] Clackamas County Public Health Division. Blueprint for a Healthy Clackamas County 2020-2023. Retrieved from: https://dochub.clackamas.us/documents/drupal/a6f39b3f-5727-4533-a572-d8d8588e2e7d (page 36)

Integration of Health Equity Framework

This document draws guidance from Technical Memo #1: Health Equity Framework which touches on the systemic, environmental, and individual capacities of how people experience their built environment through transportation. Health equity is providing fair access to opportunities and resources for an individual to achieve physical and social health and well-being, and reducing barriers to access because of circumstances that are out of an individual's control, such as race, ethnicity, and social background.[7]

Exploring Health Data through Health Equity Zones

Blueprint for a Healthy Clackamas County 2020-2023 included a focus on addressing systemic racism and health equity and highlights the County's definition and continued use of ten Health Equity Zones (HEZ).

This memo builds on HEZs by including variables of the built environment, including pedestrian and biking infrastructure. A health equity lens to consider transportation infrastructure and the built environment can shape how transportation decisions are made to ensure access and resources reach the groups that need them the most. This lens also helps us better understand how past transportation and land use decisions have caused harm and poor health outcomes for people of color and low income.

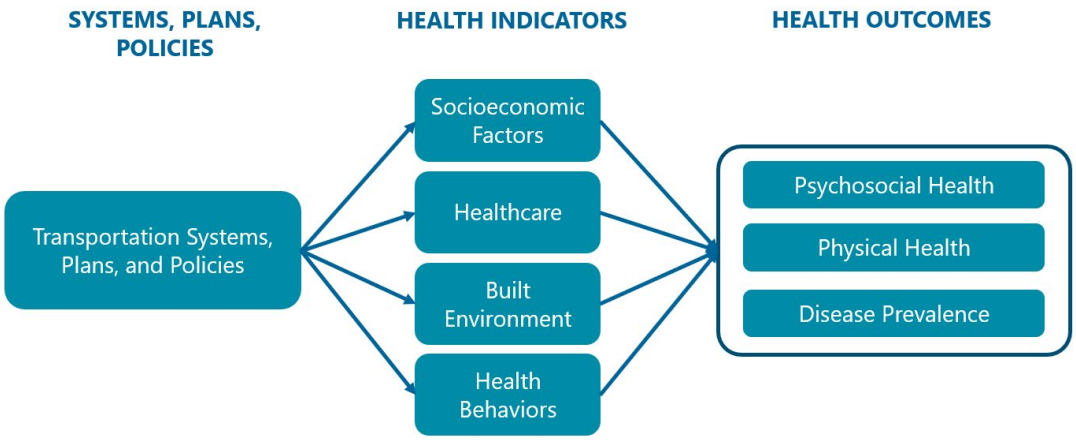
HEALTH PATHWAY DIAGRAM

The ways people move and travel have an impact on their health. Transportation plans, policies, projects, and programs directly influence health indicators such as access to healthcare, and how people behave in and interact with their built environment. Health indicators are measurable characteristics that describe the health of the population, determinants of health, and access and cost of healthcare.[8] These indicators, combined with an individual's socioeconomic background, play a significant role in their health outcomes. The Health Pathway Diagram demonstrates the relationship between these factors (Figure 2). For more information on the relationship between transportation and health equity, see Technical Memo #1: Health Equity Framework.

[7] Definition adapted from National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). Health Equity. Retrieved from https://www.cdc.gov/chronicdisease/healthequity/index.htm

[8] Centers for Disease Control and Prevention. Health Indicators Warehouse. https://www.cdc.gov/nchs/ppt/nchs2012/li-18_churchill.pdf

Figure 2 Health Pathway Diagram



Transportation Systems, Plans, and Policies

Transportation systems, plans, and policies are considered the upstream components of the health pathway. These upstream components determine how investments, projects, and programs are made and shape how we access important destinations such as schools, work, and civic services. For example, transportation investments can prioritize private vehicle infrastructure versus public transit or multiuse paths, resulting in an environment that encourages more people to drive. This increase in driving is more costly, worsens air quality, and increases sedentary time spent sitting in traffic.

Connection to Health Indicators

Indicators that impact health include socioeconomic factors (education, employment, income), healthcare access and quality, built environment (sidewalks, bike paths, parks, shade, lighting, perceived safety), and health behaviors (physical activity such as walking, biking, rolling). These midstream indicators work with both upstream components and downstream outcomes. If people perceive pedestrian or biking infrastructure as unsafe, they will not use it. Policy makers may perceive this as the public not being interested in walking or biking and may then prioritize driving infrastructure. Similarly, if there are no transit connections to healthcare or the distance is too long for reasonable travel, people may not seek the care they need, and their health will suffer.

Connection to Health Outcomes

Health outcomes are the downstream results of transportation systems and health indicators. Lack of promotion, and investment in, active transportation infrastructure results in poor walking and biking environments. There may also not be green space or destinations in the neighborhood to walk or bike to. Without this infrastructure, people are more sedentary

and at higher risk of poorer physical and psychosocial health outcomes, such as diabetes, obesity, cardiovascular disease, depression, and poor mental health.

HEALTH INDICATORS & OUTCOMES

Indicators such as socioeconomic factors, access and quality of healthcare, health behaviors, and components of the built environment can predict the health outcomes of residents in the County.

Socioeconomic Factors

Social and economic factors can significantly affect people's health and wellbeing. Some of these factors, such as race and ethnicity, place of birth, ability, and age, are out of an individual's control but directly impact how they navigate established institutions and systems. The Title VI assessment[9] conducted for this project used factors including population density, race and ethnicity, place of birth and language, financial resources, physical ability and age, and identified equity focus communities in:

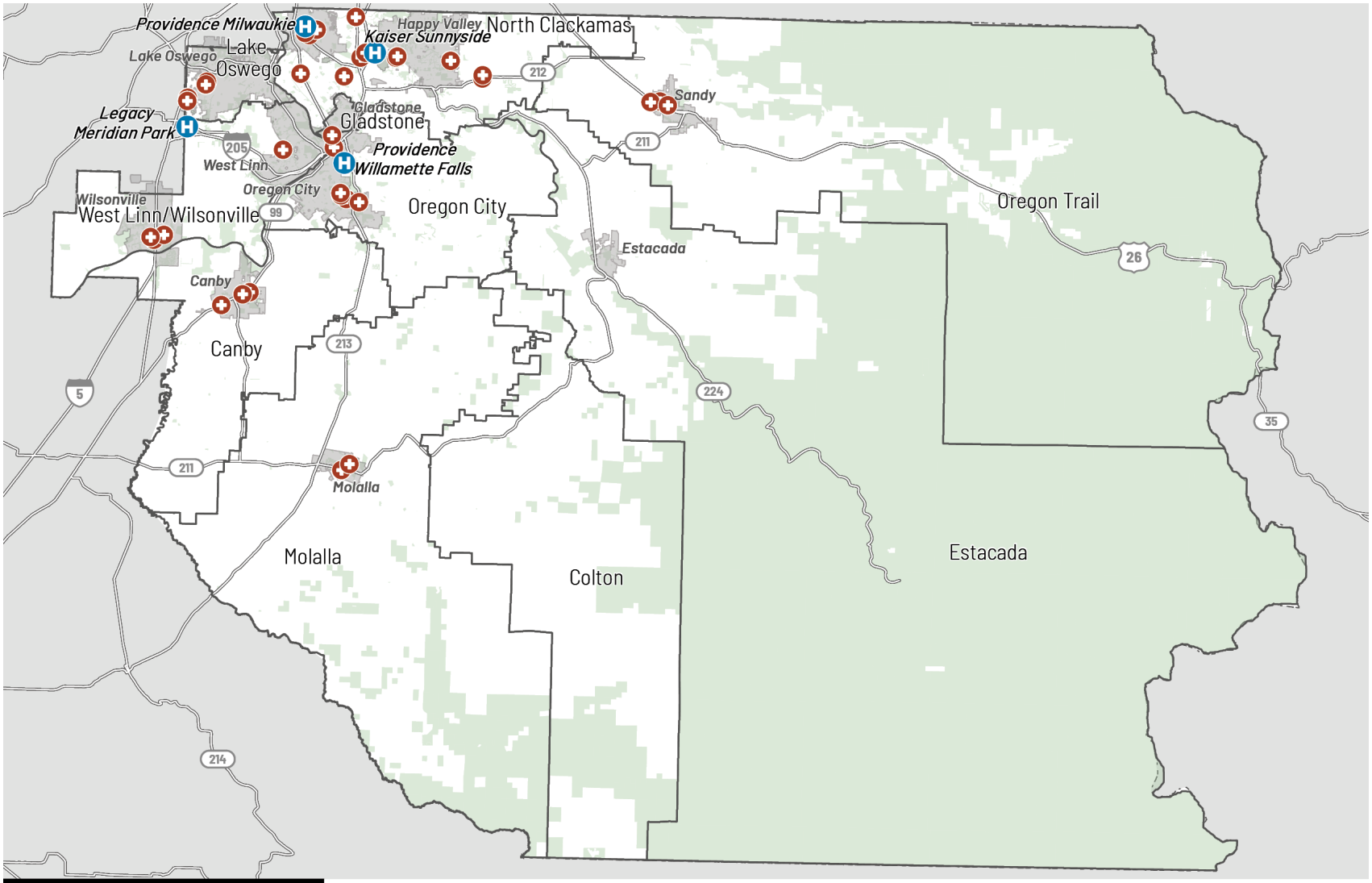
- Developed unincorporated communities adjacent to Portland metro area cities, such as the area between Milwaukie, Gladstone, and Happy Valley.
- Cities at or beyond the edge of the Portland metro area, such as Wilsonville, Canby, Molalla, Estacada, and Sandy.
- The unincorporated communities of Colton and Mt. Hood Villages.
- Exurban and rural areas adjacent to the places described above.

Access to Healthcare

Access to healthcare and the quality of available healthcare options impact health outcomes and behaviors. Having access to healthcare can impact whether someone seeks out medical care and maintains treatment for medical conditions. Using the HEZs as defined by the County, there are four hospitals located in or near city limits in the HEZs of West Linn/Wilsonville, North Clackamas, and Oregon City. Every HEZ except for Colton and Estacada has a pharmacy, in or near city limits (Figure 3). Pharmacies include standalone pharmacies and pharmacies found in grocery stores and retail locations.

[9] Toole Design. Walk Bike Clackamas: Title VI and Equity Assessment Memo.

Figure 3 Access to Healthcare



The number of hospitals and pharmacies is highest in North Clackamas, with 1.23 hospitals and pharmacies per 10,000 residents (Figure 4).

Figure 4 Number of Hospitals and Pharmacies per 10,000 Residents by HEZ

HEZ	Population	Hospitals and Pharmacies in the HEZ	Hospitals and Pharmacies per 10,000 residents
North Clackamas	121,857	15	1.23
Oregon City	58,607	6	1.02
West Linn/Wilsonville	48,432	5	1.03
Lake Oswego	42,182	4	0.95
Canby	31,185	3	0.96
Oregon Trail	30,544	3	0.98
Molalla	21,023	2	0.95
Gladstone	11,125	1	0.90
Colton	4,540	0	0.00
Estacada	13,167	0	0.00

Source: Clackamas County, Oregon Health Authority (hospitals), & Open Street Map (pharmacies)

Built Environment

The built environment plays a role in how people interact with their surroundings which influences how much they walk, roll, bike, and participate in activities that will allow them to reach their daily physical activity requirements. Pedestrian infrastructure is also important in connecting people to places they need and enjoy, such as parks and green space. Communities that foster active transportation feature destinations placed close together such that people in the community feel comfortable walking, rolling, or biking to them. When zoning and land use regulations separate destinations to places far from where people work and live, this discourages active transportation and encourages driving.

Sidewalk Coverage

The availability of sidewalks can influence how much someone walks, rolls, and bikes. In places with limited sidewalk coverage, people needing accessible walkways may need to travel out of direction to reach their destinations. If there are no sidewalks or gaps in sidewalks, the pedestrian experience can feel dangerous and disconnected. People may feel like they have no choice but to walk directly on the road and be at higher risk of injury. Rural Clackamas County, a large portion of Colton, Estacada, and Molalla HEZs have no sidewalk on either side of the street. With the exception of Gladstone HEZ, all HEZs have no sidewalks on over 50% of their streets and roads (Figure 5).

Figure 5 Sidewalk Coverage by HEZ

HEZ	Sidewalk Both Sides (%)	Sidewalk One Side (%)	No Sidewalk (%)
Colton	0	0	100
Estacada	2	2	96
Molalla	6	2	91
Oregon Trail	9	4	86
Canby	12	6	82
Oregon City	20	9	70
North Clackamas	25	14	61
Lake Oswego	12	29	59
West Linn/Wilsonville	31	15	54
Gladstone	42	11	47

Source: Clackamas County

Bicycle Lanes

Providing high quality bicycle lanes is important to ensure there are comfortable and prioritized facilities for people who bike. Without these facilities, people who bike may have to ride immediately adjacent to fast moving vehicles, share the sidewalk with pedestrians, or not bike at all. North Clackamas HEZ has over 75 miles of bicycle lanes; Lake Oswego, Oregon Trail, Gladstone, Molalla and Estacada HEZs all have less than 10 miles, and Colton HEZ has no bicycle lanes at all (Figure 6).

Figure 6 Centerline Mileage of Bicycle Lanes by HEZ

HEZ	Centerline Miles of Bicycle Lane
North Clackamas	75.6
West Linn/Wilsonville	29.6
Oregon City	27.6
Canby	13.2
Lake Oswego	9.0
Oregon Trail	7.8
Gladstone	5.5
Molalla	1.5
Estacada	1.1
Colton	0.0

Source: Clackamas County

Off-Street Trails

Clackamas County includes an abundance of off-street trails for recreation and transportation. While all are valuable assets, those with hard or paved surfaces are more likely to be used for trips that meet daily needs. The North Clackamas and West Linn/Wilsonville HEZs both have more than 45 miles of hard surface trails, while there are no hard surface trails in the Colton HEZ, and there is just more than one mile of hard surface trail in the Molalla HEZ (Figure 7).

Figure 7 Mileage of Hard Surface Off-Street Trails by HEZ

HEZ	Miles of Hard Surface Off-Street Trails
North Clackamas	48.2
West Linn/Wilsonville	45.2
Oregon Trail	26.9
Lake Oswego	26.0
Oregon City	13.5
Canby	10.1
Estacada	6.5
Gladstone	3.4
Molalla	1.2
Colton	0.0

Source: Clackamas County

Health Behaviors

Health outcomes are also a product of personal health behaviors such as participating in physical activity. Adults need 150 minutes of moderate-intensity physical activity such as brisk walking and 2 days of muscle strengthening activity per week.[10] This is achievable when physical activity includes leisure activity such as athletic activities and organized sports, as well as transportation activity such as walking and biking to destinations or transit.

Biking to Work

The percentage of workers who bike to work in Clackamas County did not change between the ACS 5-year estimates of 2015-2019 and 2016-2020. This percentage increased slightly at the state level (Figure 8).

[10] Centers for Disease Control and Prevention. Physical Activity for Different Groups. Retrieved from: https://www.cdc.gov/physicalactivity/basics/age-chart.html

Figure 8 Workers Who Bike to Work

	2015-2019 (ACS 5-year %)	2016-2020 (ACS 5-year %)
Clackamas County	0.6	0.6
Oregon	2.0	2.1

Source: ACS 5-year Table B08301

Walking to Work

The percentage of workers who walk to work has increased slightly in Clackamas County between the ACS 5-year estimates of 2015-2019 and 2016-2020, but decreased slightly at the state level (Figure 9).

Figure 9 Workers Who Walk to Work

	2015-2019 (ACS 5-year %)	2016-2020 (ACS 5-year %)
Clackamas County	2.1	2.2
Oregon	3.7	3.6

Source: Blueprint Clackamas County (ACS 5-year)

Health Outcomes

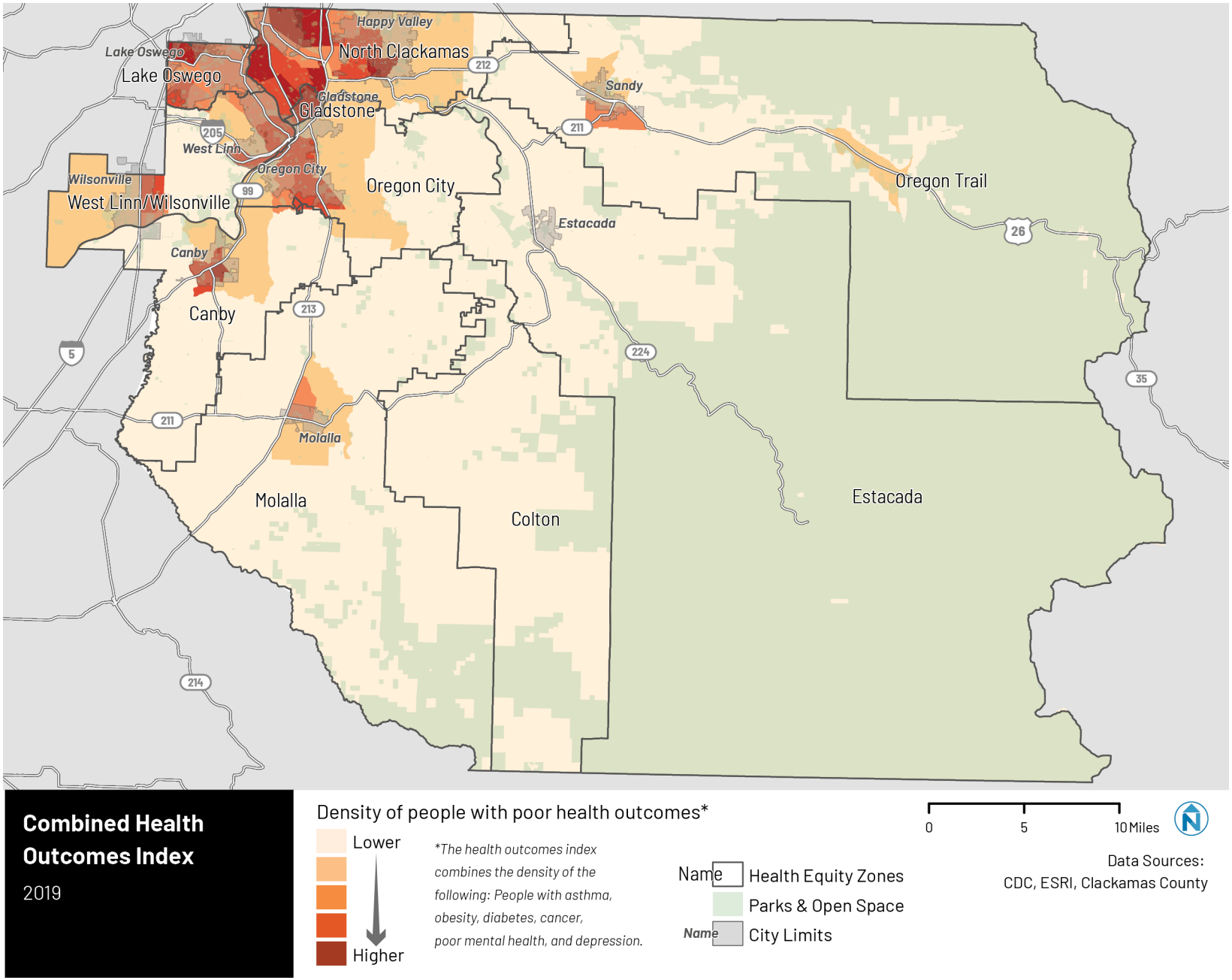
For this memo, a composite health outcomes index was created to better understand the prevalence of chronic health conditions and their concentration as they relate to population density[11] in Clackamas County. This index combines the densities of people with asthma, obesity, diabetes, cancer, poor mental health, and depression. (See Appendix for maps on each individual outcome.)

Figure 10 shows that people with poor health outcomes are concentrated in or near urban areas and city limits.

- Higher densities of poor health outcomes are found in North Clackamas, Lake Oswego, Gladstone, Oregon City, West Linn/Wilsonville, and Canby HEZ.
- Moderate densities are found in the Oregon Trail and Molalla HEZ near Sandy and Molalla, respectively.
- Densities of people with poor health outcomes were low in Colton and Estacada HEZ. Concentrations in these areas are low enough as to not be distinguishable from surrounding rural areas given the size of the census tract geographies.

[11] Population density was calculated using 2019 ACS Population Estimates divided by area of Census Tract in acres.

Figure 10 Health Outcomes Index



Clackamas County Health Trends

Health outcome trends for physical health, psychosocial health, and chronic conditions are presented below to show how Clackamas County compares to Oregon statewide health outcomes.

Physical Health

Clackamas County performs better than Oregon overall on all physical health outcomes, and though the percentage of adults engaging in physical activity is decreasing (Figure 11), residents in Clackamas County overall continue to meet CDC guidelines for physical activity.

Figure 11 Summary of County Physical Health Trends

Outcome	Area	2012-2015 (age-adjusted %)	2014-2017 (age-adjusted %)	2016-2019 (age-adjusted %)	% change (2016-2019 vs. 2012-2015)	Comparison to State in Most Recent Time Period	Clackamas County Trend
In good or better health	County *Oregon*	85.3 *83.1*	85.5 *83.0*	85.1 *82.3*	0.0 *-1.0*	Better	No change
Exercised outside of work	County *Oregon*	83.4 *83.2*	82.7 *82.1*	81.0 *80.2*	-3.0 *-4.0*	Better	Worsening
Met CDC guidelines for physical activity	County *Oregon*	23.0 *24.4*	22.1 *22.7*	25.3 *23.6*	2.3 *-3.0*	Better	Improving

Source: CDC Behavioral Risk Factors Surveillance System (BRFSS) and Oregon BRFSS

Psychosocial Health

Rates for all psychosocial health outcomes are increasing in Clackamas County. Frequent mental distress has increased the most since the 2012-2016 weighted period (Figure 12).

Figure 12 Summary of County Psychosocial Health Trends

Outcome	Area	2012-2015 (age-adjusted %)	2014-2017 (age-adjusted %)	2016-2019 (age-adjusted %)	% change (2016-2019 vs. 2012-2015)	Comparison to State in Most Recent Time Period	Clackamas County Trend
Depression	County *Oregon*	25.4 *25.2*	24.3 *25.6*	25.6 *26.3*	1 *4*	Better	No change
Poor mental health days[1]	County *Oregon*	3.8 *4.6*	4.1 *4.8*	4.3 *4.8*	13 *4*	Better	Worsening
Frequent mental distress[1]	County *Oregon*	11 *14*	12 *16*	14 *15*	27 *7*	Better	Worsening

1 - Data for poor mental health days and frequent mental distress are not combined and weighted every four years. The data shown here for these two indicators are for the years 2015, 2017, and 2019.

Source: Oregon BRFSS

Chronic Conditions / Disease Prevalence

Asthma, diabetes, and obesity rates are better in Clackamas County compared to Oregon, but cancer and cardiovascular disease rates are worse. The rate of cardiovascular disease in Clackamas County is increasing quicker than the state (Figure 13).

Figure 13 Summary of County Chronic Conditions Trends

Outcome	Area	2012-2015 (age-adjusted %)	2014-2017 (age-adjusted %)	2016-2019 (age-adjusted %)	% change (2016-2019 vs. 2012-2015)	Comparison to State in Most Recent Time Period	Clackamas County Trend
Asthma	County	9.6	10.1	10.7	11	Better	Worsening
	Oregon	*10.9*	*11.0*	*11.5*	*6*		
Cancer	County	8.3	7.8	8.5	2	Worse	Worsening
	Oregon	*7.9*	*7.2*	*7.8*	*-1*		
Cardiovascular Disease	County	6.4	6.7	7.4	16	Worse	Worsening
	Oregon	*7.1*	*7.1*	*7.2*	*1*		
Diabetes	County	8.0	7.4	7.8	-3	Better	Improving
	Oregon	*8.6*	*8.6*	*8.7*	*1*		
Obesity	County	25.9	27.5	28.2	9	Better	Worsening
	Oregon	*27.1*	*28.6*	*29.8*	*10*		

Source: Blueprint Clackamas County

CONCLUSION

This memorandum highlights the pathway between transportation planning and health. It also illuminates where specific health outcomes may improve with through the provision of active transportation programs, policies, and projects. Walk Bike Clackamas can include this health equity lens by considering the findings from this memorandum:

- **Clackamas County's health outcomes are better than those at the state level.** However, many chronic disease rates are on the rise, including psychosocial health and chronic conditions like asthma, cancer, cardiovascular disease, and obesity. Immediate action is needed to ensure these conditions do not worsen in the county.
- **People in Clackamas County have lower rates of walking and biking to work than the state**. Improving walking and biking infrastructure near urban areas and city limits can reach higher concentrations of people and encourage them to walk or bike for both recreational and commuting purposes.
- **People with chronic conditions are largely concentrated near urban areas or within city limits**. Encouraging walking and biking through infrastructure and built

environment improvements helps the population reach their daily physical activity requirements, and ultimately improve their health outcomes.

Walk Bike Clackamas will continue building on the established relationships between Clackamas County, the county's public health division, and transportation organizations that represent the interests of individuals of all ages and abilities throughout the county. This will ensure the county creates healthy built environments that improve population health for all of its residents. This interdisciplinary approach will help meet the goals of Blueprint Clackamas County and other health plans by addressing disparities in locations with high concentrations of poor health indicators and outcomes. Public engagement efforts in these communities can provide a clearer understanding of barriers to engaging in physical activity, including using walking and bicycling for transportation.

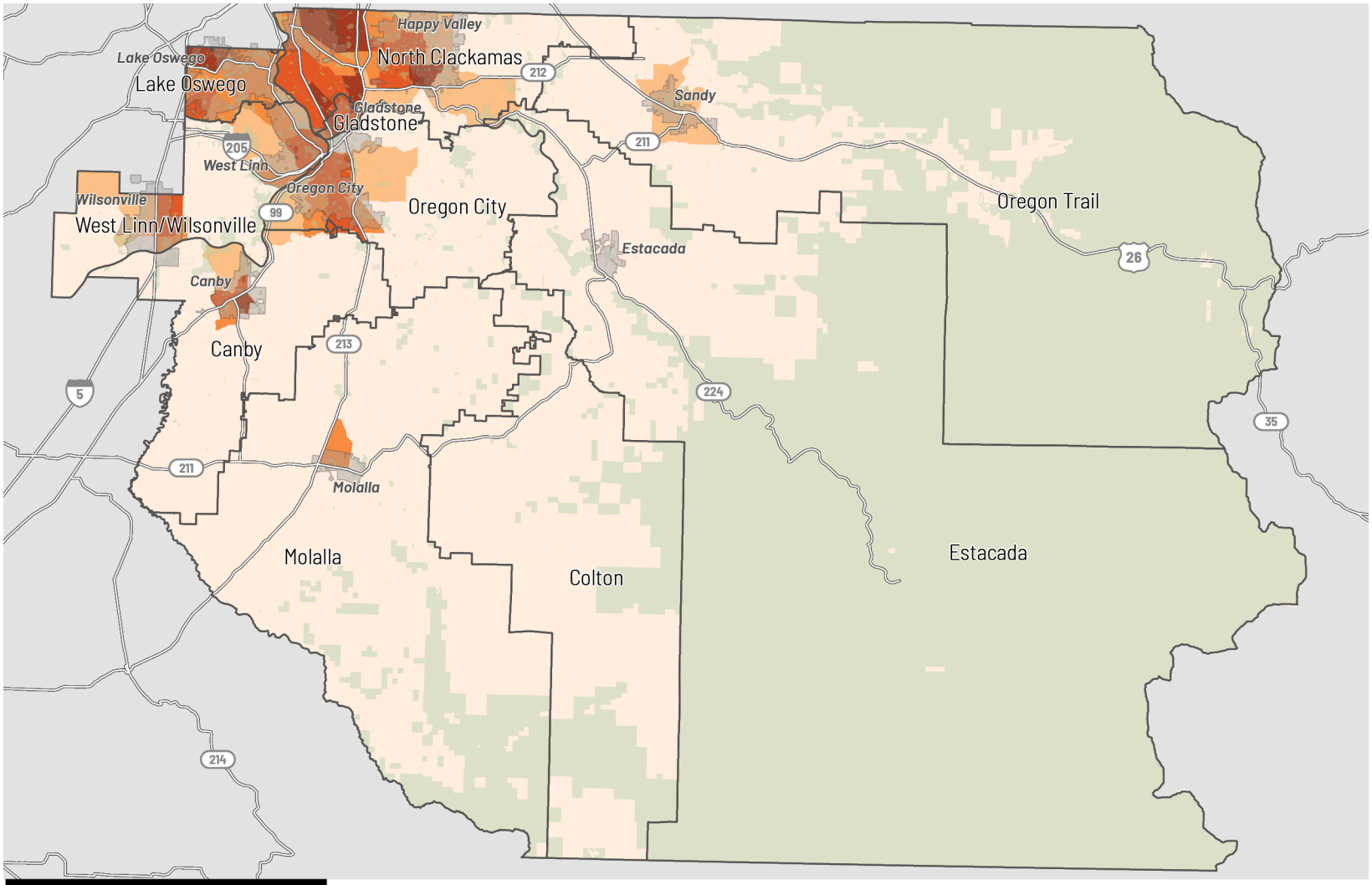
APPENDIX

The following maps show the concentrations chronic health conditions in Clackamas County for people with diabetes, asthma, obesity, cancer, poor mental health, and depression. These concentrations were calculated by multiplying the disease prevalence rate by population and dividing by census tract area in acres.

Of the conditions that make up the health outcomes index, the densities of depression and obesity are highest.

- The highest densities of people with depression (up to three people per acre), can be found in areas of North Clackamas, Lake Oswego, and Canby HEZ.
- The higher densities of people with obesity (more than three people per acre) are found in North Clackamas, Lake Oswego, and Canby HEZ.

Figure 14 Concentration of People with Depression by Census Tract



Density of People Living with Depression

2019

Density of people with depression (ppl/acre)

- 0.0 - 0.2
- 0.3 - 0.7
- 0.8 - 1.3
- 1.4 - 1.9
- 2.0 - 3.0

Name Health Equity Zones

Parks & Open Space

Name City Limits

0 5 10 Miles

Data Sources:
CDC, ESRI, Clackamas County

Figure 15 Concentration of People with Poor Mental Health 14+ Days/Month by Census Tract

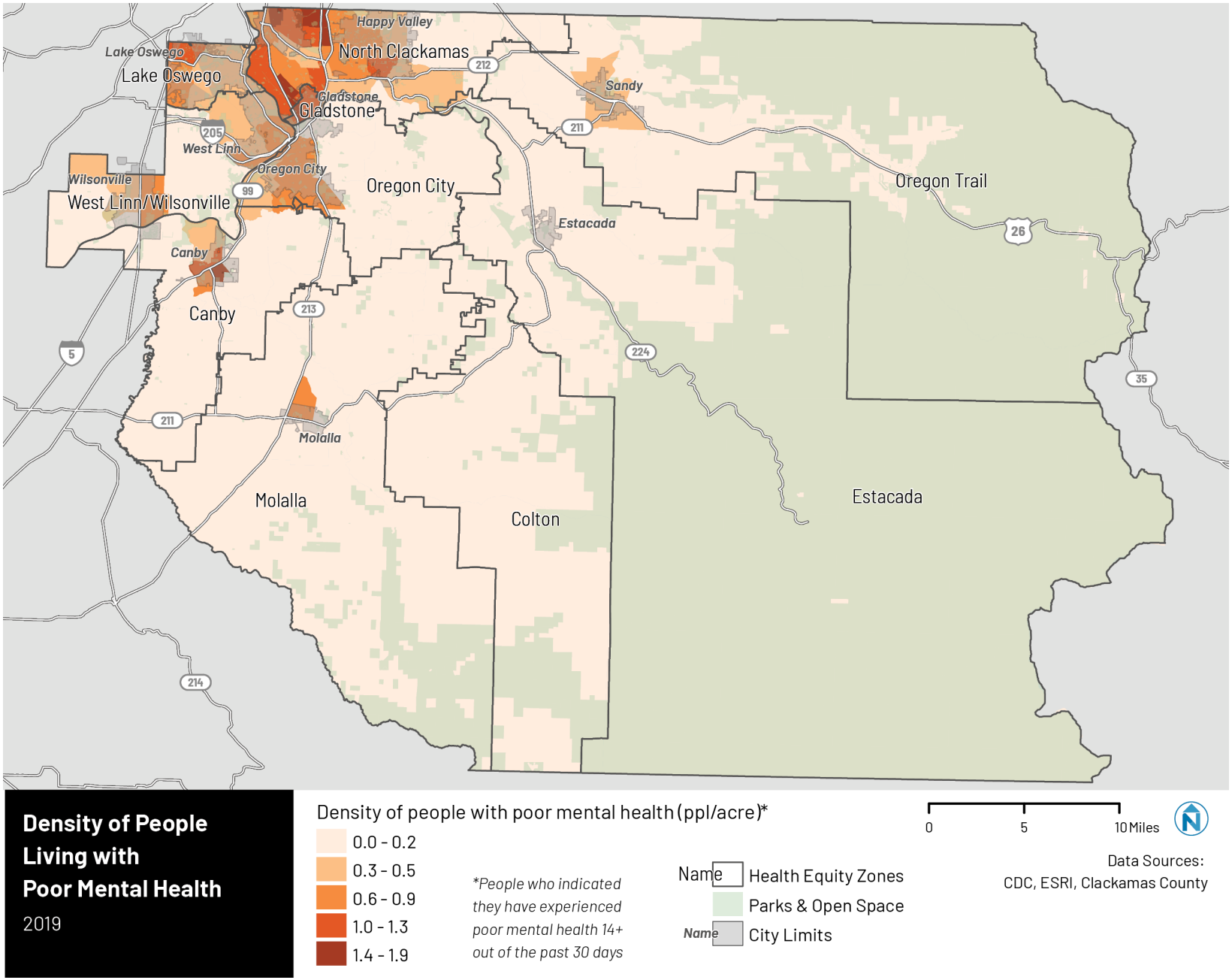


Figure 16 Concentration of People with Asthma by Census Tract

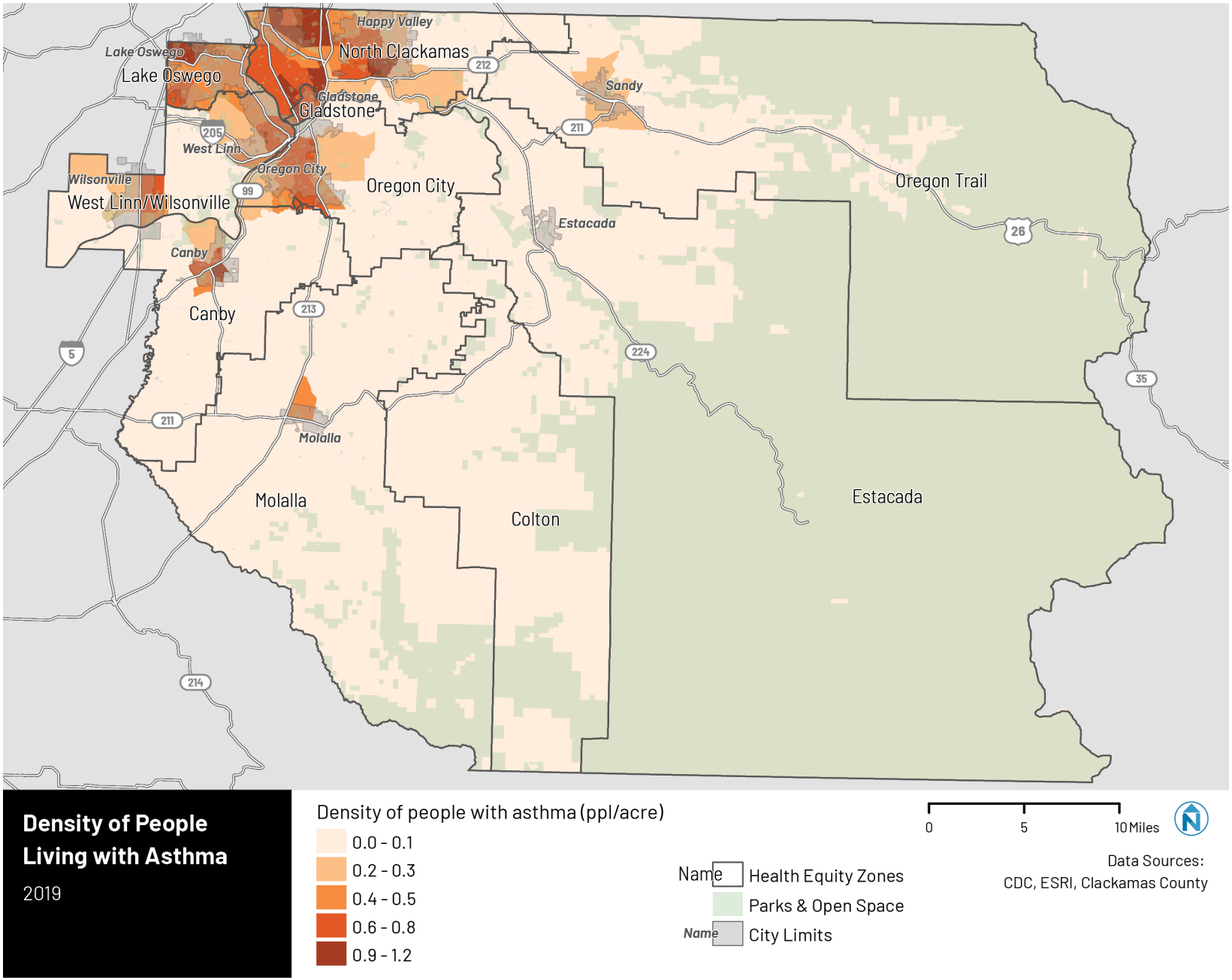


Figure 17 Concentration of People with Cancer by Census Tract

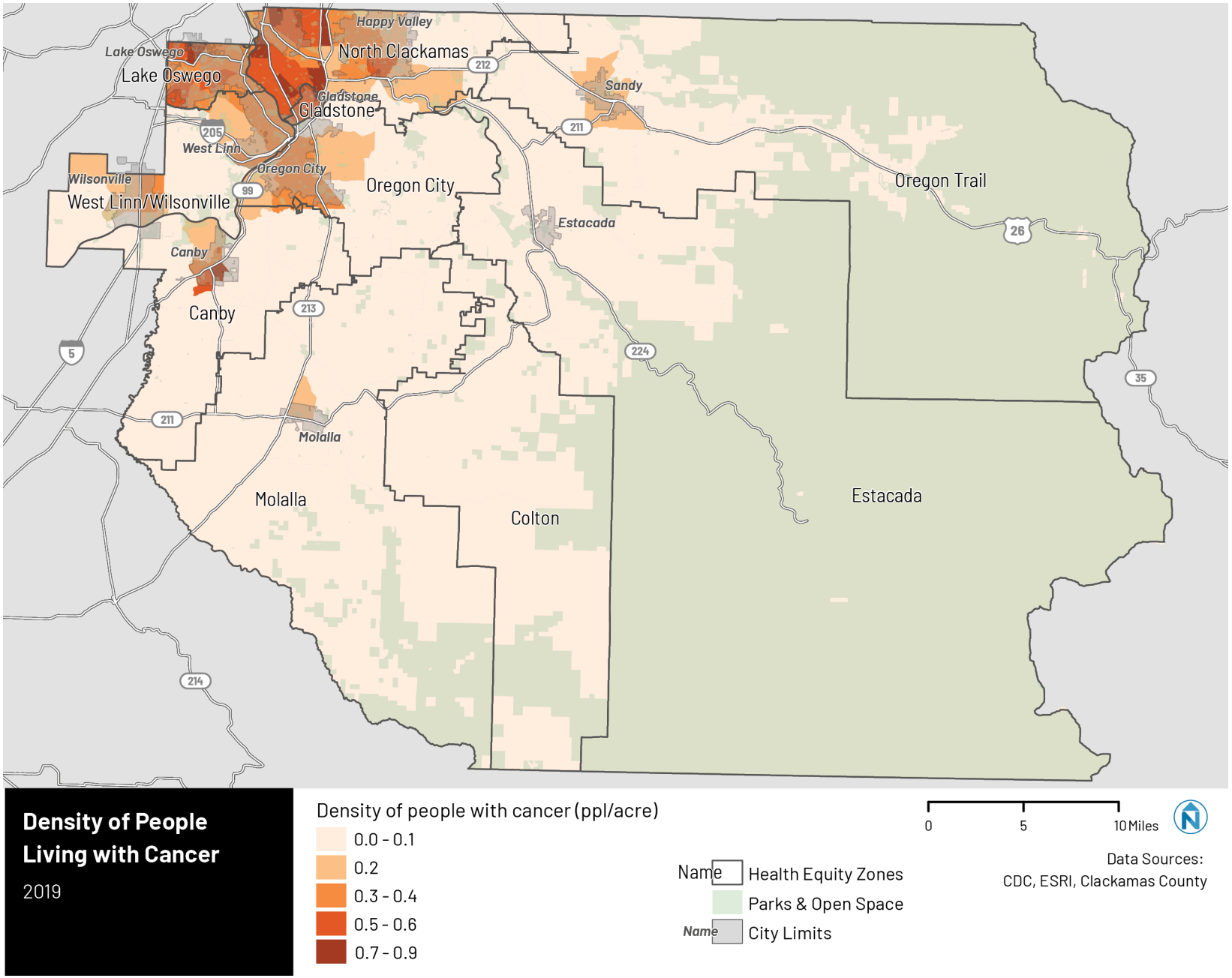


Figure 18 Concentration of People with Diabetes by Census Tract

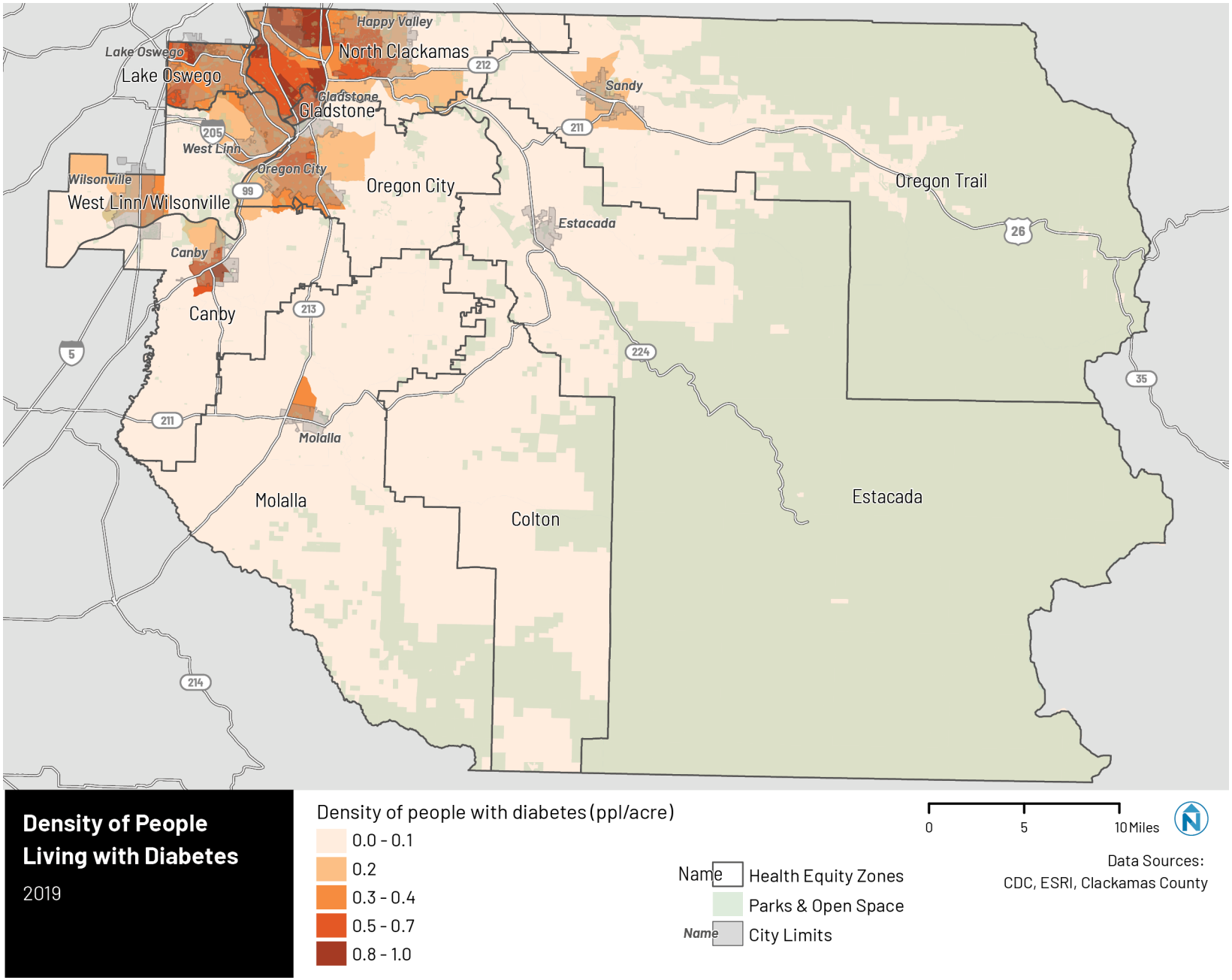


Figure 19 Concentration of People with Obesity by Census Tract