



LIVABLE CITY YEAR 2017–2018
IN PARTNERSHIP WITH
CITY OF TACOMA

CITY OF TACOMA

TACOMA NEIGHBORHOOD LIVABILITY:
DEVELOPING INDICATORS FOR SOCIAL
DETERMINANTS OF HEALTH

UNIVERSITY OF WASHINGTON

HSERV 581
SOCIAL DETERMINANTS OF HEALTH

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ABOUT LIVABLE CITY YEAR

The University of Washington's Livable City Year (LCY) initiative enables local governments to engage UW faculty and students for one academic year to work on city-defined projects that promote local sustainability and livability goals. The program engages hundreds of students each year in high-priority projects, creating momentum on real-world challenges while enabling the students to serve and learn from communities. Partner cities benefit directly from bold and applied ideas that propel fresh thinking, improve livability for residents and invigorate city staff. Focus areas include environmental sustainability; economic viability; population health; and social equity, inclusion, and access. The program's 2017–2018 partner is the City of Tacoma; this follows a partnership with the City of Auburn in 2016–2017.

The LCY program is led by faculty directors Branden Born (Department of Urban Design and Planning), Jennifer Otten (School of Public Health) and Anne Taufen (Urban Studies Program, UW Tacoma), with support from Program Manager Teri Thomson Randall. The program was launched in 2016 in collaboration with UW Sustainability and Urban@UW, with foundational support from the Association of Washington Cities, the College of Built Environments, the Department of Urban Design and Planning, and Undergraduate Academic Affairs.

LCY is modeled after the University of Oregon's Sustainable City Year Program, and is a member of the Educational Partnerships for Innovation in Communities Network (EPIC-N), the collection of institutions that have successfully adopted this new model for community innovation and change.

For more information, contact the program at uwlcy@uw.edu.



ABOUT TACOMA

The third largest city in the state of Washington, Tacoma is a diverse, progressive, international gateway to the Pacific Rim. The port city of nearly 210,000 people has evolved considerably over the last two decades, propelled by significant development including the University of Washington Tacoma, the Tacoma Link light rail system, the restored urban waterfront of the Thea Foss Waterway, the expansions of both the MultiCare and CHI Franciscan health systems, and a significant influx of foreign direct investment in its downtown core.

Washington State's highest density of art and history museums are found in Tacoma, which is home to a flourishing creative community of writers, artists, musicians, photographers, filmmakers, chefs, entrepreneurs, and business owners who each add their unique flair to the city's vibrant commercial landscape. The iconic Tacoma Dome has endured as a high-demand venue for some of the largest names in the entertainment industry.

A magnet for families looking for affordable single-family homes in the Puget Sound area, Tacoma also draws those seeking a more urban downtown setting with competitively priced condos and apartments that feature panoramic mountain and water views. The city's natural beauty and proximity to the Puget Sound and Mount Rainier draws hikers, runners, bicyclists, and maritime enthusiasts to the area, while its lively social scene is infused with energy by thousands of students attending the University of Washington Tacoma and other academic institutions.

The City of Tacoma's strategic plan, Tacoma 2025, was adopted in January 2015 following unprecedented public participation and contribution. The plan articulates the City's core values of opportunity, equity, partnerships, and accountability, and expresses the City's deep commitment to apply these values in all of its decisions and programming. Each Livable City Year project ties into the principles and focus areas of this strategic plan. The City of Tacoma is proud of its 2017–2018 Livable City Year partnership with the University of Washington and of the opportunity this brings to its residents.



TACOMA 2025 STRATEGIC PLAN

The *Tacoma Neighborhood Livability: Developing Indicators For Social Determinants of Health* project supports the Livability and Equity and Accessibility goals of the Tacoma 2025 Strategic Plan and was sponsored by the City's Planning and Development Services and Neighborhood and Community Services Departments.



Goal #1 Livability

The City of Tacoma will be a city of choice in the region known for connected neighborhoods, accessible and efficient transportation transit options, and vibrant arts and culture. Residents will be healthy and have access to services and community amenities while maintaining affordability.



Goal #2 Economy and Workforce

By 2025, Tacoma will be a growing economy where Tacoma residents can find livable wage jobs in key industry areas. Tacoma will be a place of choice for employers, professionals, and new graduates.



Goal #3 Education

Tacoma will lead the region in educational attainment amongst youth and adults. In addition to producing more graduates from high school and college, more college graduates will find employment in the region. Lifelong learning and access to education will be prioritized and valued.



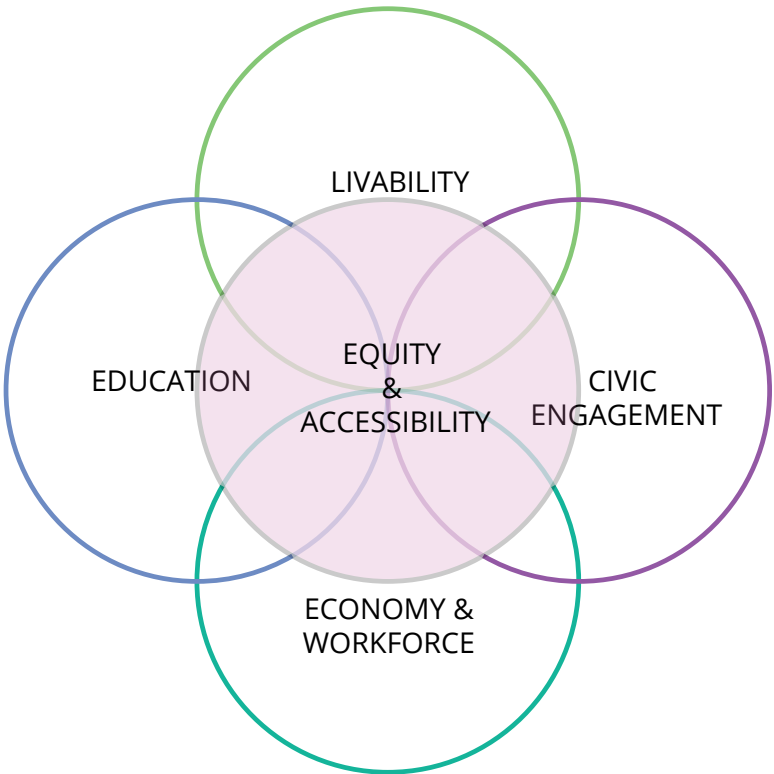
Goal #4 Civic Engagement

Tacoma residents will be engaged participants in making Tacoma a well-run city. The leadership of the city, both elected and volunteer, will reflect the diversity of the city and residents and will fully participate in community decision-making.



Goal #5 Equity and Accessibility

Tacoma will ensure that all residents are treated equitably and have access to services, facilities, and financial stability. Disaggregated data will be used to make decisions, direct funding, and develop strategies to address disparate outcomes.



RESOURCES

Tacoma 2025 Strategic Plan: https://www.cityoftacoma.org/tacoma_2025

Department of Planning and Development Services Department:

https://www.cityoftacoma.org/government/city_departments/community_and_economic_development

Neighborhood and Community Services Department: https://www.cityoftacoma.org/government/city_departments/neighborhood_and_community_services

Livable City Year: <https://www.washington.edu/livable-city-year/>

University of Washington Department of Health Services:

<http://depts.washington.edu/hserv/>

EXECUTIVE SUMMARY

The goal of this project was to develop a list of indicators, across a number of social determinants of health, that the City of Tacoma can use to track and monitor neighborhood health and livability. The structural conditions under which people are born, live, work, and play share an important role in shaping individual and population-level health outcomes. These factors include the schools, grocery stores, parks, employment opportunities, rates of foreclosure, age, race, and ethnicity that can influence both individual and community-level health. By implementing usage of these indicators, City leadership and departments can analyze, interpret, and correlate indicators of social determinants of health and track efforts to promote neighborhood well being.

Students collaborated with representatives from the departments of Neighborhood and Community Services and Planning and Development Services to identify indicators across seven domains. The students performed literature reviews, key informant interviews with community leaders, and neighborhood stakeholders to generate a list of recommended indicators for each domain, complete with potential data sources or plans for how indicators could be collected in the future by other students and/or City staff. Students focused on three neighborhoods in the report—Hilltop, Lincoln District, and the South End—due to these neighborhoods’ disparate health outcomes.



Students from HSERV 580 who contributed to this report and partners from the City of Tacoma.
TERI THOMSON RANDALL

The following are a selection of the proposed domains of neighborhood livability that the City of Tacoma may consider as they move forward. Within each of these domains, students have proposed individual indicators and metrics to understand the health impacts of each of these domains at the neighborhood level:

- **Health and Social Services:** These critical services include health promotion activities, illness prevention, diagnosis and treatment, and rehabilitation. They span preventive medicine, mental health, chronic care management, oral health, reproductive health, pediatric care, public safety, and emergency care.
- **Housing:** Beyond the basic human need for shelter, housing is a social determinant of health that impacts access to health and social services, income & employment opportunities, environmental exposures, access to quality education, and food access.
- **Education:** Not only is more education linked to better health outcomes, this social determinant of health also intersects with income, employment, and social status and, by extension, housing, food security, working conditions, and access to health care.
- **Income and Employment:** Economic opportunities play an important role in the health of a community and impact housing choices, environmental exposures, access to education and food, and directly impact the health of individuals.
- **Food Access:** Inadequate food access can impact health and lead to poor nutrition and chronic health conditions, but it can also impact academic and professional performance, economic attainment, social well-being, and have far reaching consequences for other intersecting social determinants of health.
- **Parks and Recreation:** The quality and accessibility of parks and recreation can play a major role in promoting healthy behaviors within communities and these changes towards healthier lifestyles can improve physical and mental health and a sense of investment and connection to a community.
- **Arts and Culture:** Participation in arts and cultural events improves both physical and mental health outcomes and also foster economic development, community building, and higher-quality education.

By implementing this system of improved, neighborhood-level data collection, the City of Tacoma can have more information to prioritize funding and programming to address barriers to health and livability. Most importantly, if Tacoma can implement and act upon these metrics, residents across the city would have greater opportunities to lead healthier lives and thrive within their communities.

Much of Tacoma's appeal comes from the uniqueness and spirit of its neighborhoods, and the City has ongoing efforts to improve the places where people live to promote neighborhood health and vitality. As the City continues in this work, however, developing a system of metrics will contribute to an improved understanding of both the successes and the ongoing areas of need. This report offers an opportunity for the City of Tacoma to analyze, interpret, and correlate indicators of social determinants of health that directly impact neighborhood health. By measuring the impact of these social determinants of health, City departments can improve decision-making around service provision and promote better health outcomes.

Under the social determinants of health framework (ODPHP, 2017), service providers can take into account the structural conditions under which people are born, live, and work and better understand their health impacts. While an individual's health behaviors, risk factors, and access to high-quality care and social services are important determinants of health, the physical, social, and economic features of neighborhoods also shape an individual's opportunities to practice healthy behaviors and access quality care (Robert Wood Johnson Foundation, 2011; Institute of Medicine, 2009). Using this framework, social conditions can be better understood through indicators like social engagement and cohesion, sense of security, or perceptions of well-being, while income and employment indicators can help capture a community's economic conditions. Indicators like safe and affordable housing, education access, food access, and availability of health and social services can provide a more nuanced picture of the physical conditions and resources within

Under the social determinants of health framework, service providers take into account the conditions under which people are born, live, and work to understand their health impacts.

The physical, social, and economic features of neighborhoods shape an individual's opportunities to access quality health care and to practice healthy behaviors.



A group of cyclists ride through Wright Park, located in Tacoma's Hilltop Neighborhood, very nearby the North Slope Historic District, the Stadium District, and downtown Tacoma. This park serves diverse populations and provides a recreational outlet for people of all ages. CITY OF TACOMA

While Tacoma benefits from being one of the most diverse cities in Washington State, significant health inequities exist across its neighborhoods.



Farmers markets, like downtown Tacoma's Broadway Farmers Market, bring opportunities for people to walk in the open air, socialize with colleagues and friends, and eat locally produced and prepared food. CITY OF TACOMA

a community. Each determinant plays an important role in shaping individual and population-level health outcomes. Better understanding these social determinants of health can help to orient policy makers to create policies that improve the social, economic, and physical conditions, better support health promotion and individual health behaviors, and improve the health of populations (ODPHP, 2017).

While Tacoma benefits from being one of the most diverse cities in Washington State, significant health inequities exist across neighborhoods. After studying some of the basic inequities across the city, students collaborated with the City of Tacoma and prioritized the three neighborhoods of Hilltop, Lincoln District, and the South End for this report. For instance, obesity rates exceed 75% in the zip code surrounding the Lincoln District as compared to less than 60% in North and West Tacoma (TPCHD, 2014). The zip codes surrounding the Hilltop neighborhood have some of the highest smoking rates in Pierce County. Hilltop, Lincoln District, and South End residents live up to 20 fewer years than those in other parts of Tacoma and Pierce County (TPCHD, 2014).

The goal of this project was to develop a tool for use by City of Tacoma staff to track and monitor neighborhood health and livability, promoting health outcomes while simultaneously improving safety and security, transportation access and infrastructure, affordable housing, and availability of public parks and recreation. Since the concept of livability is often subjective, students and faculty worked closely with City of Tacoma staff to prioritize a list of seven domains across a number of pre-specified social determinants of health.

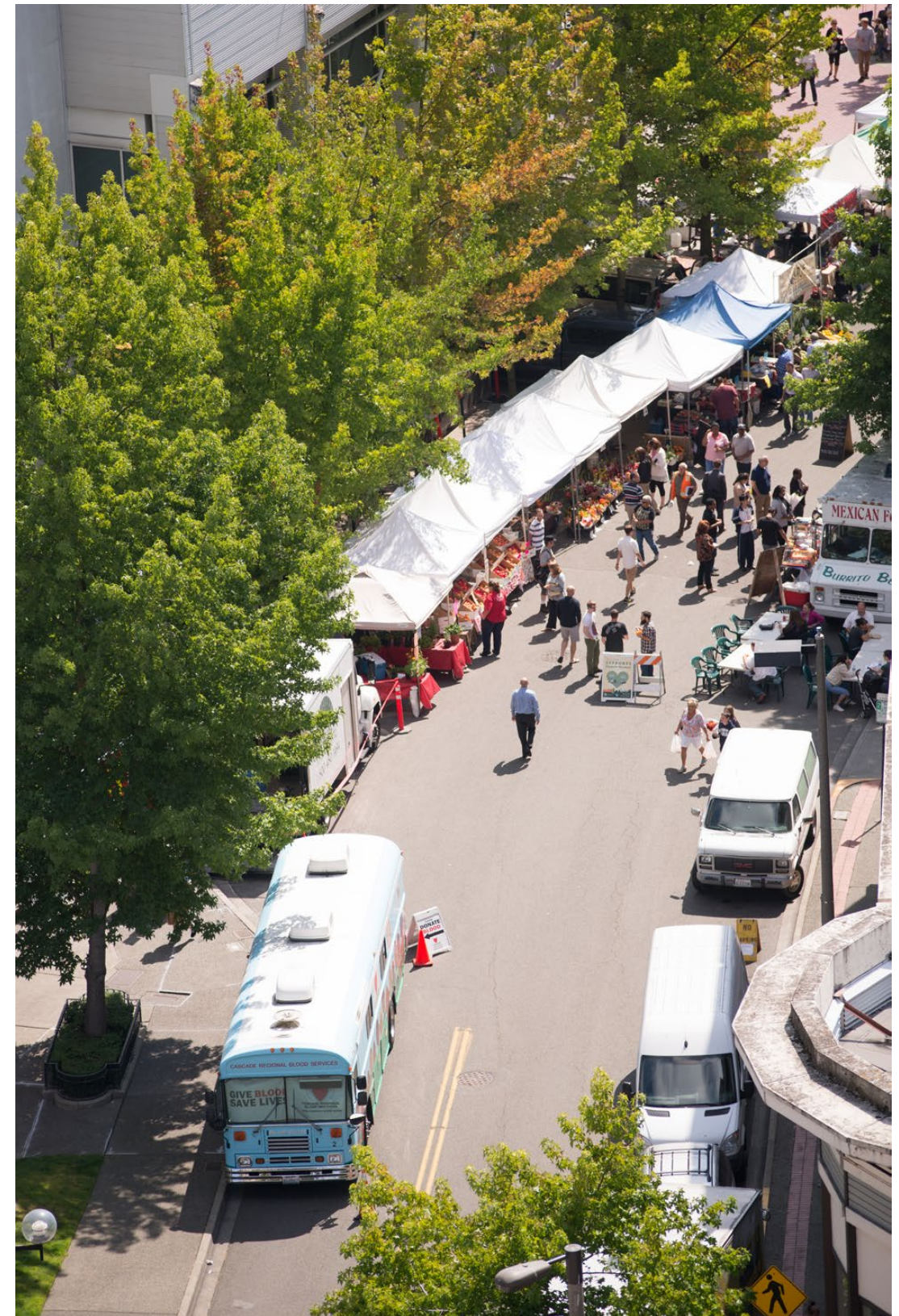
The recommended domains and indicators are outlined in detail in the chapters of this report, including: health and social services, housing, education, income/employment, food access, recreation and parks, and arts and culture. For each domain, students selected indicators to provide quantitative and qualitative data, providing a way of measuring the structural intersections between health and community well being. These categories were further refined through literature review, interviews with key stakeholders, and background research on available data sources. These indicators were pilot-tested by collecting available data in the neighborhoods of Hilltop, Lincoln District and the South End.

With a more nuanced understanding of various social determinants of health within neighborhoods, this report supports the City of Tacoma's ability to utilize neighborhood health as part of their decision-making process.

The social determinants of health framework (ODPHP, 2017) provided grounding for this project. In addition, students used literature review, research on data sources, and key informant interviews to identify and recommend the specific domains and indicators outlined in this report.

Students began by examining the field of social determinants of health and performing a literature review on each of the seven domains, researching how these distinct domains intersect to affect health outcomes. Based on the literature and available data sources, each group selected five to ten indicators that best assessed their particular domain at the neighborhood level. While increasingly robust, work around social determinants of health suffers from gaps in literature, and students were encouraged to individually identify these gaps and propose indicators that would best assess the domain at the neighborhood level. For this reason, the description of each indicator includes a brief justification for its inclusion.

In addition, faculty and students sought to include elements of community participation in this project. Borrowing from Dr. Barbara Israel's work on Community Based Participatory Research, students performed a series of key informant interviews. For each domain, students conducted three to five interviews with community leaders and stakeholders. Each interviewer completed a case summary of each interview and then identified the main themes and key priorities from their interview. The opinions and perspectives gained from informant interviews allowed each group to build upon the academic foundation from the literature review and focus additional attention on indicators that reflected the needs and priorities of specific parts of the Tacoma community.



Beyond providing access to healthy, locally produced food, farmers markets promote public health in the way that they provide public open space within in which people may walk, socialize and network, and educate themselves.
CITY OF TACOMA



This section provides an overview of the seven recommended domains, and provides detailed information about the suggested indicators to measure neighborhood health and livability within each domain. Each section begins with an introduction to a particular domain, a brief review of the literature, a summary of stakeholder interviews (when possible), and ends with a review of specific indicators for the domain. Within each domain, indicators are presented in order from highest to lowest priority. Priority was determined by 1) the feasibility and ease of measurement, with higher priority given to indicators that can be more easily defined and measured; 2) the availability of similar data across city, state, and national levels, with higher priority given to those metrics that can be used to compare Tacoma to other communities or to compare Tacoma to the region (e.g., Washington State, the United States); and 3) the input of our stakeholders, with high priority given to indicators aligned with the themes emphasized during stakeholder interviews. Indicators are further broken down into individual metrics, and we have provided some rationale for each metric to help prioritize their selection and use. When possible, potential data sources and examples of available/existing data are also included here.

DOMAIN 1: Health and Social Services

Health and social services encompass the programs and policies that directly promote the well being of communities and individuals, and therefore their presence in a neighborhood is a central factor of promoting population health. The domain of health and social services concerns a community's physical, mental, and social well-being (Institute of Medicine, 2009). These services can be divided into four categories:

- **Health promotion:** Aims to reduce the risk of disease while advocating for community members to maintain optimal health and lifestyle. Examples include hospitals that offer family planning or gyms that offer nutrition classes.
- **Illness prevention:** education efforts that are designed to teach members to be advocates of their own health, recognize different risk factors, identify and reduce environmental concerns that cause illness, and instill public health education programs and legislation.
- **Diagnosis and treatment:** individuals seek medical attention from specialists.
- **Rehabilitation:** Aims to restore a person back to their normal function after physical or mental illness (Stanfield, 2009).

Community-level health outcomes improve significantly when individuals are able to access culturally appropriate, people-centered, high-quality preventative care.

As a result, health and social services are multidimensional and include, but are not limited to, preventive medicine, mental health, chronic care management, oral health, reproductive health, pediatric care, public safety, and emergency care. This breadth of support and services reflects the nature and needs for health and social support required by individuals within a large, diverse community. Barriers to receiving adequate health care can include availability, cost, lack of insurance coverage, and language access for those with limited English proficiency (Determinants of Health, (n.d.)). Community-level health outcomes are significantly improved if individuals are able to access culturally appropriate, people-centered, and high-quality preventive care in addition to timely treatment.

The City of Tacoma has multiple ongoing initiatives to decrease health disparities in its community. To further support these programs, we suggest six indicators to measure the availability and ease of access to health care services across the city. However, our research has consistently demonstrated that health care-specific programs are most effective if they utilize cross-sector collaboration to provide services to the most marginalized populations.

Indicator Recommendations: Individual-level Indicators

Indicator 1: Burden of Chronic Illness on Community Health

Metric 1: Percentage of adults who currently smoke

Metric 2: Percentage of adults who are obese

Rationale: Understanding the prevalence of chronic conditions is an important measure of a neighborhood's health. The overall death rate due to preventable disease among residents of Pierce County is higher than the death rate observed among Washington State residents (City of

Tacoma, 2015). Smoking and obesity are important risk factors for chronic diseases and conditions, including cardiovascular disease and diabetes. These indicators align with the priorities and key health needs of Tacoma; have an established, valid measure used across communities; and existing data sources are available.

Data source: Behavioral Risk Factor Surveillance Survey (BRFSS)

These indicators have been widely measured using data collected from the Behavioral Risk Factor Surveillance Survey (BRFSS), a national telephone survey that collects information on health conditions, behaviors, and preventive service utilization from adults aged 18 and older (CDC, 2017). Both MultiCare Health System and Tacoma-Pierce County Health Department have previously used BRFSS data to generate estimates for service areas by ZIP code (MultiCare, 2016; Tacoma-Pierce County Health Department). However, there are two main limitations to using BRFSS data. First, the lowest geographic units available for analysis are zip codes or census tracts, which do not map neatly to the neighborhood boundaries set by the City. Second, BRFSS data before 2011 is not comparable to data collected after 2011 because methodological changes were made to BRFSS to improve the representativeness of the sample. To better estimate the percentage of adults currently smoking within relevant neighborhood boundaries, it may be prudent to collect this information with a community survey, track responses by neighborhood, and analyze trends over time.

Available data: Tacoma-Pierce County Health Department analyzed BRFSS data from 2011 to 2013. Smoking prevalence from this dataset, for example, is generally higher in the Lincoln neighborhood (98418) and even higher in the Eastside neighborhood (98404). During 2011-13, 34.8 – 44% of adults were currently smoking in Lincoln compared to 19% of adults in Pierce County and 27% of adults in Washington State (County Health Rankings 2011-13: Pierce County). The percentage of adults who are overweight or obese is higher in Lincoln than in surrounding neighborhoods (ZIP code: 98418). During 2011-13, 75.6 - 86% of adults were overweight or obese in Lincoln compared to 31% of adults in Pierce County and 27% of adults in the State of Washington (County Health Rankings 2011-13: Pierce County).

Indicator 2: Health Insurance Coverage

Metric 1: Percentage of adults with health insurance coverage

Rationale: This indicator is a proxy for ease of access to the health care system (IOM, 1993). Additionally, understanding current trends is crucial because health insurance policy is sensitive to the overall United States political climate.

Data sources:

- Behavioral Risk Factor Surveillance Survey
- National Health Interview Survey
- Census Small Area Health Insurance Estimates
- Medical Expenditure Panel Survey
- Center for Medicare & Medicaid Services State Data Resource Center

Available data: Health insurance coverage among adults is commonly measured by the proportion of persons with medical insurance. In their “Pierce County Health Indicators,” Tacoma-Pierce County already measures this indicator as the “Percent of adults under 65 years with health insurance” using data from BRFSS (Office of Assessment, Planning & Improvement, 2016). Beyond this existing resource, various data sources are available, including the National Health Interview Survey (NHIS), CDC/NCHS Census Bureau’s Small Area Health Insurance Estimates (SAHIE), and the Medical Expenditure Panel Survey (MEPS). The unit of data collection for these datasets are county, state or national level. None of them, including BRFSS data, are collected at the sub-county level (e.g. Lincoln, South End, and Hilltop). In the BRFSS and the SAHIE, the smallest unit of measure related to health insurance coverage is the county level. The County Health Rankings (2017) provides a trend graph using indicators of health insurance coverage from the SAHIE dataset.

Alternatively, to understand health insurance coverage for adults by smaller geographic units such as Lincoln, South End, and Hilltop, the City of Tacoma may consider applying data from the Centers for Medicare & Medicaid Services (CMS). The State Data Resource Center (SDRC) from CMS provides services to assist in obtaining and using Medicare data

(SDRC, 2017). The SDRC website has detailed information about these services. The Medicare system collects data at the unit of the individual, so it is possible to get information about health care coverage for smaller regions.

Indicator Recommendations: Facility-level Indicators

Indicator 3: Percentage of Health Care Facilities with Multilingual Resources

Metric 1: Count languages available per facility

Rationale: Cultural factors are a key component to health care access, particularly for communities of color and those who may experience language barriers. Providing a wide selection of multilingual health care resources can help reduce barriers to health care access, particularly for immigrant and refugee populations. In addition, both health care professionals' training and systemic support around cultural competency can improve services to a diverse array of communities, ultimately reducing health disparities (Derose, Gresenz, & Ringel, 2011).

Surveys for patients who are not native English speakers can address their experiences and needs when seeking health care services with their native language. The data collected through these surveys could be used to improve multilingual services by calculating the unmet need for these services and emphasize the importance of marketing service availability.

Data source: American Community Survey (ACS) has limited data on languages spoken. Primary data collection would be most successful.

Available data: We were unable to find robust sources of available data to measure percentage of health care facilities with multilingual resources. Therefore, to measure this indicator, we recommend that the City of Tacoma conduct primary data collection through surveys. These surveys can be conducted to target both clinics and patients. The survey for clinics can ask whether multilingual resources are available including translators, multilingual websites and written materials, and the number of available languages.

Indicator 4: Equitable Access to Health Care Resources

Metric 1: Number of health facilities with extended hours of operation

Rationale: In the United States, being a member of an ethnic or racial minority is associated with lower health care utilization. Compared to their White counterparts, Blacks, Latinos, and Asian Americans obtain fewer preventive services and schedule fewer appointments with their primary care providers. Studies have found that facility hours are one important barrier to care. Extended hours for health facilities may improve access to services for low-income and marginalized groups who may not have the flexibility in their work schedules or reliable child care to obtain care during normal facility hours. Therefore, this indicator is an important measure of equitable access to health care that is particularly relevant for Tacoma and its residents.

Data source: Primary data collection

Available data: To collect data on the number of health facilities with extended hours of operation, the City of Tacoma may work with an existing department that oversees Tacoma businesses, such as the Tacoma-Pierce County Chamber, to generate a list of all health facilities by neighborhood. It is likely that extended hours for in-clinic operations will be documented, as it is likely tied to city permits. However, information on the availability of 24-hour phone consultations may need to be collected by other means (e.g., web search or direct contact with facilities). The City may also consider collecting data on proxy measures such as resident experience and satisfaction with the availability of health facilities with extended hours, through a community survey. This may be used to ascertain patient demand and provider capacity.

Validated questions exist like the ones from the Agency for Health Care Research and Quality Medical Expenditure Panel Survey that may be adapted for this purpose (MEPS, 2016):

- Does {PROVIDER} have office hours at night or on weekends? (Response categories: Yes, No, I don't know)
- How difficult is it to contact (a medical person) at {PROVIDER} after their regular hours in case of urgent medical needs? Would you say it is... (Response categories: Very difficult, Somewhat difficult, Not too difficult, or Not at all difficult?, I don't know)

Other questions, including those ascertaining need and satisfaction for extended facility hours, may need to be designed and cognitively tested, resources permitting.

Indicator 5: Geographic Availability of Health Care Resources

Metric 1: Number of pharmacies

Rationale: Pharmacies are an increasingly important resource in serving marginalized communities. Beyond filling prescriptions, pharmacies already play a critical role in vaccine programs, screening services, and occasionally urgent care. Counting the number of pharmacies is one alternative method to assessing the geographic availability of health care services and highlighting resource gaps. Additionally, as telehealth programs gain popularity and health care initiatives become more innovative, it is likely that pharmacies will continue to expand their role. To prepare for these innovative programs, it may be beneficial for the City to begin tracking the availability of pharmaceutical services as potential partners.

Data sources: MedImpact, National Community Pharmacists Association (NCPA), Co-located pharmacies (Albertsons, Safeway, etc.).

The websites MedImpact and the National Community Pharmacists Association (NCPA) both provide tools to search pharmacies using zip codes. The Washington State Department of Health provides GIS (geographic information system) data on pharmacies (Washington State Department of Health).

DOMAIN 2: Housing

Where people live impacts their lives and health in a number of ways, including the availability and quality of safe and affordable housing regardless of socioeconomic factors (National Academies of Sciences, Engineering, and Medicine, 2017) as well as the neighborhood conditions surrounding their homes (Braveman et al., 2011). Each of these aspects is interrelated and is influenced by other social determinants of health such as race, income, education, and employment.

Research around housing, as it relates to health, traditionally focuses on the ways that physical housing conditions can lead to health risks for individual residents and their families (Saegert et al., 2003; Shaw 2004). However, when considering impacts of individual and community level health outcomes, it is important to analyze both “hard” physical/material

factors, such as proximity to and availability of services or physical effects on health like dampness, cold, mold, etc., as well as on “soft” social factors, such as effects on mental health and feelings of security and autonomy, that are impacted by housing condition.

Housing and Health

Inadequate housing layout, temperature control, and air quality can have physical health consequences for individuals, usually described as “hard” issues (Shaw, 2004; Institute of Medicine, 2012; Hernández, 2016; Hood, 2005). Beyond poor housing quality, “hard” factors also include negative mental and physical health impacts that follow from housing instability and homelessness. All of these factors have demonstrable health repercussions and have been the catalyst for many housing-related public health interventions. In addition, neighborhood characteristics including an individual’s proximity to health and social services as well as other necessary facilities are a key factor in overall resident health. Including these elements within the housing and health framework acknowledges the ways that the built environment directly impacts health outcomes. Not only does housing location determine access to quality food sources, but it also determines proximity to a number of different resources including employment opportunities, quality education, and public services like the police and fire departments, all of which can have direct implications for neighborhood- and individual-level health (The Robert Wood Johnson Foundation, 2011).

Social conditions within a neighborhood are considered the “soft” issues and, like the “hard” issues, can also directly and indirectly affect health as it relates to housing (Shaw, 2004). Studies have shown that strong social ties and trust among people in a neighborhood promote better health, indicating that community can impact overall health. Additionally, just as social factors play a role in health, studies have found that a neighborhood’s socioeconomic conditions can affect health behaviors. Residents in low-income neighborhoods for example are more likely to

Strong social ties and trust among people of a neighborhood promote better health.



At the policy and societal levels, neighborhoods have disparate access to opportunities and resources.

smoke, while residents in higher-income neighborhoods are more likely to have a healthy diet. These factors have enormous health consequences and have been linked to variability in individual mortality rates, general health status, disability, birth outcomes, chronic conditions, health behaviors, as well as with mental health, injuries, violence and other health indicators (Robert Wood Johnson Foundation, 2011).

At the policy and societal level, neighborhoods have disparate access to opportunities and resources. The segregation of minority communities via redlining practices relegated minority groups to live in dilapidated neighborhoods with concentrated poverty, creating a pervasive cycle for intergenerational poverty and health disparities. This type of housing discrimination remains ingrained in society and continues to exclude Black, Latino, and other minority populations from living in healthier neighborhoods. Structural inequalities are also maintained through a preponderance of substandard housing in poorer neighborhoods, further exacerbating racial, ethnic, and socioeconomic health disparities (Ornelas, 2017). These historic and continued racial underpinnings in housing discrimination directly impact individual and community health disparities.

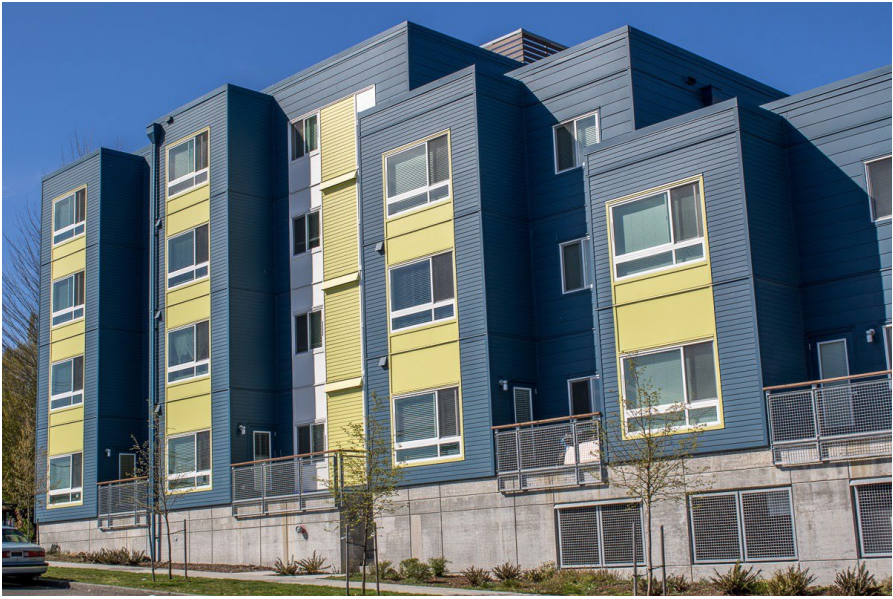
Themes from Stakeholder Interviews:

Students interviewed seven community stakeholders and key informants from Hilltop, Lincoln District, and South End to understand their perspectives around housing in Tacoma. Stakeholders represented various backgrounds and experiences with housing: one respondent works for the City of Tacoma; others work with community-based organizations including the Tacoma Rescue Mission, Tacoma Housing Authority, Catholic Community Services, and Hilltop Action Coalition; one respondent is a landlord and small business owner. Interviewees shared various perspectives on housing in Tacoma based on their personal and professional experiences. As a result, affordability and gentrification were identified as key themes, and highlighted the need for policy solutions related to affordable housing.

A primary area of concern is this perpetuation of concentrated poverty and how that relates to housing affordability and health. Affordable housing is classified by spending 30% or less of a household’s income on housing costs (Braveman et al., 2011; Pollack et al., 2010). In areas where housing affordability is at risk, households often experience reduced buying power by spending over 30% of their annual income on housing. This reduced buying power and choice compromises other health

determinants. For example, food security is impacted by buying power, as is the ability to afford preventative health care, forcing families to choose between necessities (Johnson, Albee, and Lubell, 2015). In Tacoma, rent prices have surged in the past two years as well as corresponding increases in homelessness. Tacoma residents are experiencing rising rent costs and increased pressure to affording housing and increasingly struggle to find, lease, and retain their housing. The pressures often fall upon low-income residents and members of racial/ethnic minorities, causing a “rising trajectory of inequality,” gentrification, and displacement (Cockrell, 2018).

In the navigation between affordability and location, many individuals and families experience displacement. Gentrification, or “the process of renewal and rebuilding, which precedes the influx of new, more affluent residents,” has become common in urban neighborhoods and prominently contributes to the issue of displacement (National Academies of Sciences, Engineering, and Medicine, 2017). According to the CDC, both gentrification and the resulting displacement magnifies health disparities by decreasing proximity to vital health and social resources while contributing to the rising numbers of individuals experiencing homelessness (CDC, 2013).



Bay Terrace, located in downtown, is one example of newly designed, high-density, affordable housing. Tacoma Housing Authority (THA) works locally, at the political and social levels, to supply affordable housing options for the residents of Tacoma. TACOMA HOUSING AUTHORITY

Gentrification, and the resulting displacement of a neighborhood’s historic residents, magnifies health disparities by decreasing proximity to vital health and social services while also contributing to increased homelessness.

Indicator Recommendations:

Indicator 1: Homelessness

Metric 1: Number of people experiencing homelessness

Rationale: In 2017, the Mayor of Tacoma declared a public health emergency on homelessness in May 2017 out of concern for the wellbeing of the growing homeless population (“Emergency Temporary Aid and Shelter Plan - City of Tacoma”, 2017). This number illustrates both the current scope of the homelessness problem and also provides an indication of increased need for temporary housing, affordable housing options, and other services.

Data sources: Pierce County Point-In-Time Count or other data sources or counts that the City has access to

Available data: The 2018 Point-In-Time Count showed that Tacoma had approximately 1,628 people experiencing homelessness. The report also stratified data by gender, veteran status, race/ethnicity/people of color, and whether individuals are youth, chronically homeless, victims of domestic violence, belong to household with children. The survey also reported the main causes of homelessness. Towards the very end of the project, the City of Tacoma indicated that it has access to additional data beyond the Point-In-Time Count. Therefore, we recommend using the most robust data available, provided that it can be stratified in order to identify underlying structural factors and causes of homelessness (as was done in the most recent Point-In-Time count.)

Metric 2: Number of shelters and the number of beds available at each shelter

Rationale: This number is a useful secondary measure of homelessness. Counts of the number of people experiencing homelessness (Metric 1) can be compared to the number of shelter beds and availability to assess whether shelter capacity in Tacoma is meeting current needs. It can therefore be used to estimate the availability of resources for those experiencing homelessness and the effectiveness of the City’s response to the crisis.

Data sources: Currently none available
The U.S. Conference of Mayors conducts an annual survey to assess homelessness assistance. This survey is intended to be conducted by mayors, and a modified version of this survey has been proposed for shelters to be conducted by a supervisor at the shelter, which could be easily conducted in Tacoma. This survey includes three questions:

- How many beds are available at the shelter?
- How often does the shelter reach capacity?
- Asks participant to rate the top three things about the shelter.
- Available Data: This data has not yet been collected in Tacoma.

Indicator 2: Housing Affordability and Accessibility

Metric 1: Income spent on housing

Rationale: Lack of affordable housing can have direct health on individuals and their families. Therefore, measuring affordability and accessibility in a quantifiable way is critical in providing the City of Tacoma with next steps to address housing options. Those spending over 30% of their annual median income on housing would be considered to be living in unaffordable housing, and therefore, at higher risk of related negative health outcomes (Braveman et al., 2011; Pollack et al., 2010). Often this is reported via the median multiple, which contrasts the ratio of income to the amount spent on rent.

Data sources: American Housing Survey Data
Data on metro-area monthly housing costs, rent subsidies and voucher programs is available through the American Housing Survey Data provided through the United States Census Bureau (2015). Although the City of Tacoma is not included as a metro-area in this dataset, it does provide an example of what information is collected and can provide Tacoma with a guideline in collecting data on this vital information moving forward.

Available data: While we couldn't find data specific to Tacoma for this metric, the City may have access to data we did not. The City might consider collecting or separating data by zip code in future so comparisons can be made across neighborhoods.

Metric 2: Rent or own ratio

Rationale: This metric compares the number of individuals or families that are renting versus the number of individuals or families that own their home. It is often used as a way to estimate how affordable or achievable home ownership is within a neighborhood or community.

Data sources: American Housing Survey Data

We could not find Tacoma-specific data, but this information is included in the American Housing Survey Data and is used as a means to evaluate monthly rent as well as to measure trends in mortgage costs and housing prices across major metro-areas (United States Census Bureau, 2015).

Available data: Although Tacoma is not included in this dataset, related data for the City of Tacoma might be available internally. If the data truly doesn't exist or doesn't seem robust enough, we recommend the City of Tacoma use the American Housing Survey Data as an example of how to collect and organize this metric. Again, collecting and stratifying this by neighborhood will help to identify disparities and areas for increased focus.

Indicator 3: Building Compliance and Quality

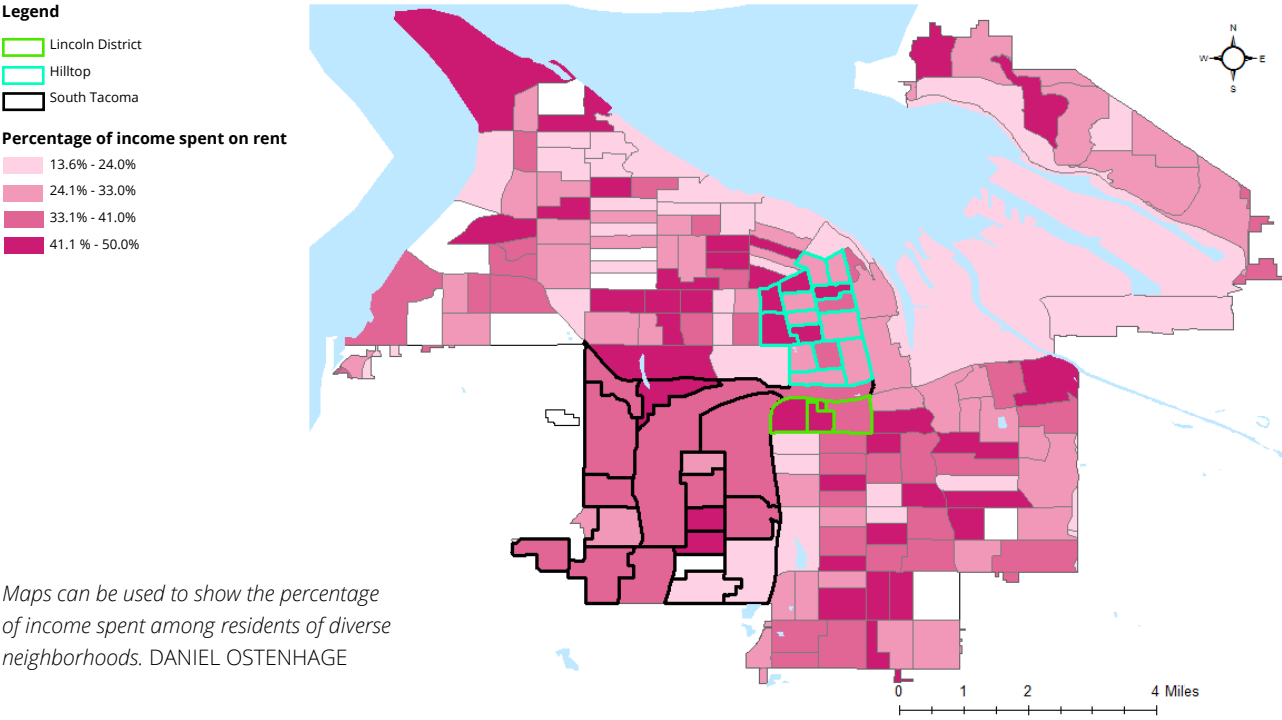
Metric 1: Measures of building quality/proportion of derelict or substandard housing options

Rationale: Lower building quality and a higher proportion of available housing options that are derelict or substandard are typically found in neighborhoods with concentrated poverty, which also often have high levels of unaffordable housing (Johnson, Albee, and Lubell, 2015). In addition to illustrating housing affordability and accessibility, it also helps to estimate the housing stock condition across neighborhoods and highlights the potential health impacts of living in substandard housing.

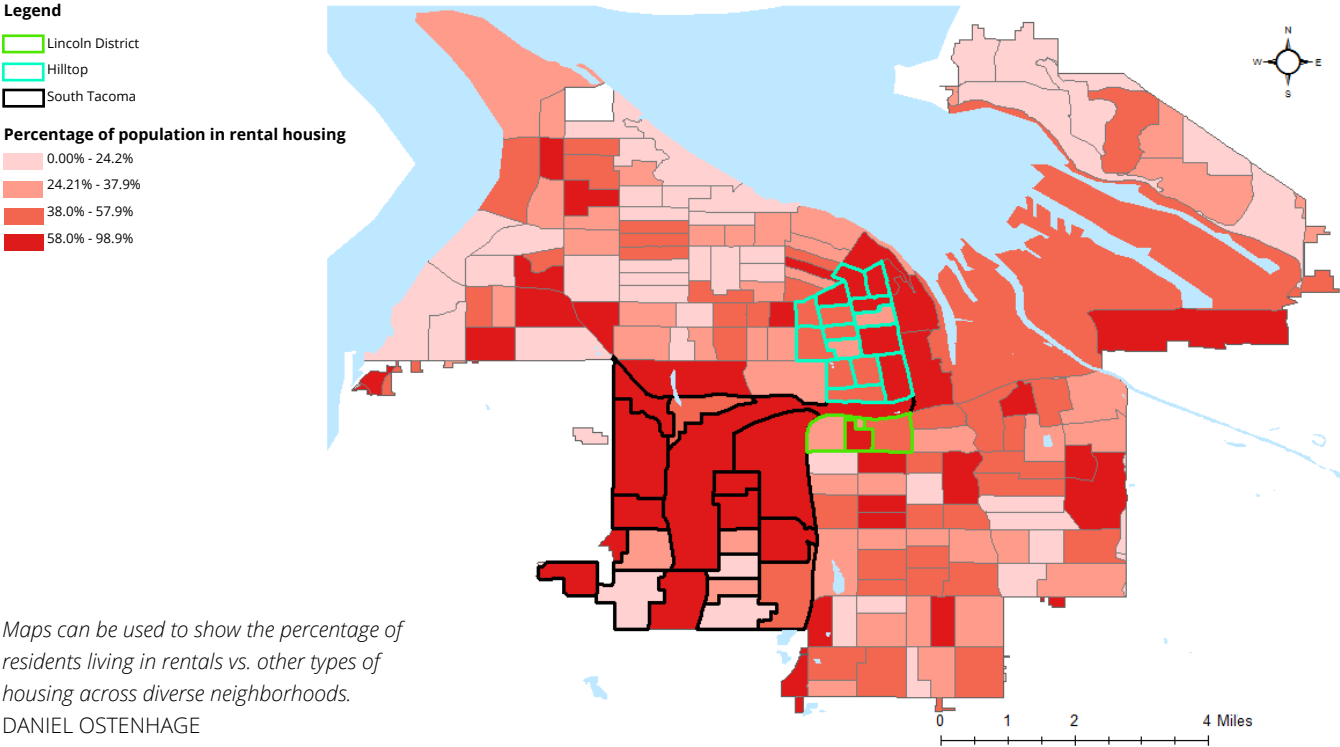
Data sources: Internal datasets

This metric is often evaluated by reviewing building code enforcement violations. We found out that there are internal datasets already available for the City of Tacoma, which detail the number of open and closed code enforcement violations from 2011 to the current date.

Tacoma 2015: Percentage of Household Income Spent on Rent



Tacoma 2015: Percentage of Population Living in Rental Housing



Available data: While the City of Tacoma has access to this data, to the best of our knowledge it is not yet organized by neighborhood. With this information already tracked within the City of Tacoma, applying and analyzing the data, in accordance with other housing indicators and through a housing-focused lens, could help the City to better understand the impact of affordability as it relates to housing quality and health.

Indicator 4: Displacement and Gentrification

Metric 1: Year-to-year changes in racial and ethnic composition

Rationale: By comparing annual changes in the race/ethnicity composition of a neighborhood to annual changes in median household income, the city could track the impact of gentrification. Significant decreases in racial/ethnic diversity and or decreases in income diversity could signal gentrification and might help the city prioritize policies to help lessen displacement.

Data sources: Racial and ethnic composition as well as median household income data can be obtained from the Social Explorer, which maps data from the U.S. Census Bureau.

Available data: The data above is organized by census tract and would need to be disassembled and reorganized using the neighborhoods of Tacoma. The data could be presented visually by working with the City's GIS department to visualize demographic changes over time.

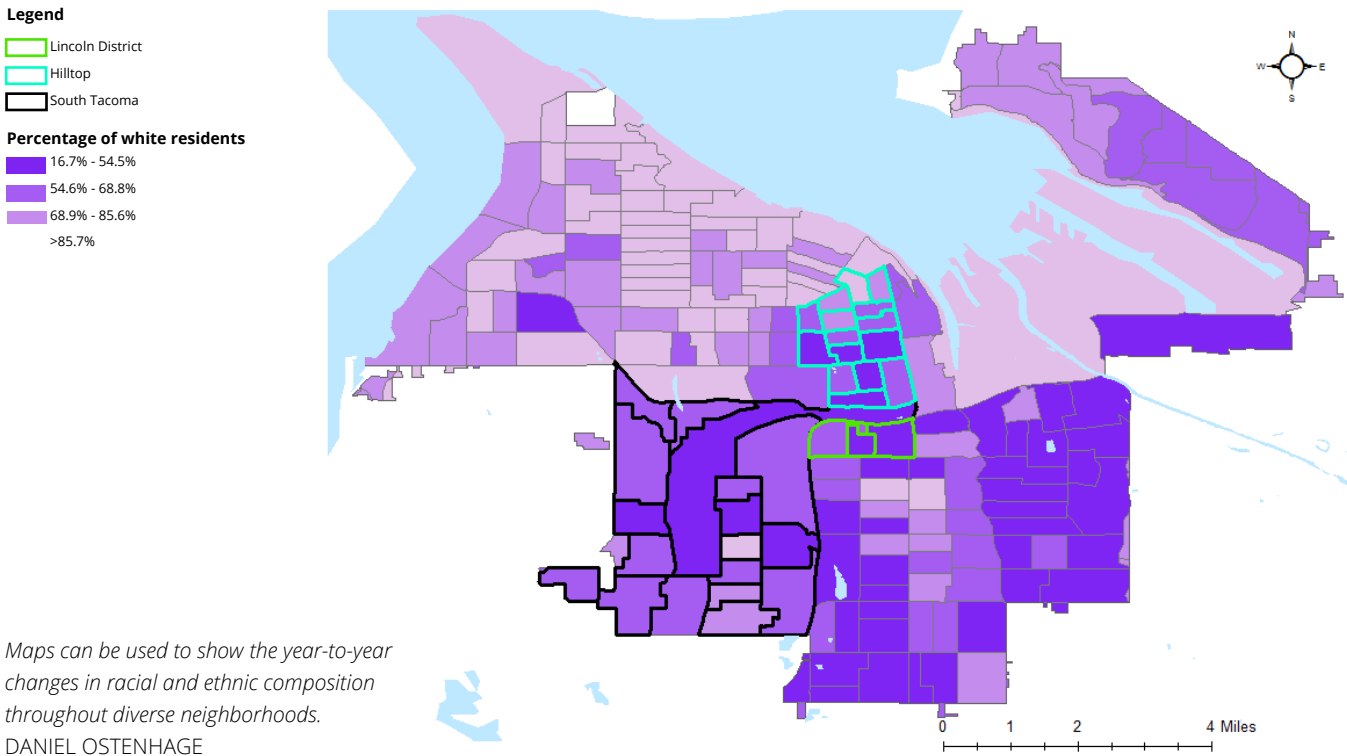
Indicator 5: Neighborhood Safety

Metric 1: Crime statistics

Rationale: As seen throughout the public health literature, the sense of neighborhood safety has direct implications for the physical and mental health of residents (Robert Wood Johnson Foundation, 2011; Hernández, 2016). Measuring crime statistics in each neighborhood of interest may provide quantifiable data on what neighborhoods experience higher levels of crime and where targeted interventions may be most useful.

Data sources: This information is already tracked through the City of Tacoma, again through the Results 253 website, and can provide the data needed to evaluate crime and safety as they relate to community, housing, and health outcomes.

Tacoma 2015: Population Distribution of White and Non-White Residents





DOMAIN 3: Education

Educational attainment has been associated with positive health outcomes, including better self-reported health status (Egerter et al., 2011; Ross & Wu, 1995), disease-specific outcomes such as lower rates of chronic stress and disease (Cutler & Lleras-Muney, 2006), lower infant mortality rates and longer life expectancy (Hummer & Hernandez, 2013), independent of other factors such as income (Egerter et al., 2011). Education also has an intersectional interaction with various other social determinants of health including income, employment, and social status.

For many, education begins before one enters a classroom and extends throughout the lifetime. Furthermore, at any given age, education may happen both in and outside of schools and classrooms. These observations highlight the importance of considering the “whole child” or “whole person” when attempting to define and measure the health impacts of a community’s education system. Many schools in Tacoma have adopted a framework that marries traditional achievement-based indicators, such as graduate rates and aptitude, alongside community- and family-based indicators, such as parental engagement and equity. While the “whole person” approach generally considers learning throughout the lifetime, within this report discussion is limited to the period of institutional learning, from early childhood education to secondary school graduation within the Tacoma public school system.

Although there is still much to be learned regarding the complex relationship between education and health, in general, more years of education and an earlier start to education lead to better health. Educational attainment and participation in early childhood education are generally easy to measure. Other important measures, such as educational quality, family and community involvement, diversity and

Many schools in Tacoma use both achievement-based indicators, such as graduation rates, and community-based indicators, such as parental engagement and equity, to understand student health.

inclusion, and equity among students, are harder to define and quantify. Our proposed indicators focus on measuring the quality education, both in and out of the classroom; access to early education; the involvement of parents and the community; and preparation and motivation to pursue post-secondary education.

Themes from Stakeholder Interviews:

To build upon the existing quantitative data in this domain, we interviewed stakeholders from a variety of organizations in Tacoma including: Tacoma Board of Education, Tacoma Parent Teacher Association (PTA), Tacoma Public Schools Early Learning, and the Tacoma Housing Authority’s Education Project. All stakeholders described a healthy community as one that recognizes and prioritizes education and in which the community is engaged in improving the education of its students. Engagement was a common term used by all we interviewed to describe active participation in the education system by students, parents, educators, and community partners. Stakeholders stressed that parental buy-in and involvement are important, both for the academic achievement of their children and for the vitality of schools. The broad concept of equity was also a concern for all; in particular, stakeholders often raised concerns about how access to basic needs affects a child and family’s ability to participate in learning. Stakeholders also emphasized the importance of inclusivity and diversity in the education system.

Indicator Recommendations:

Indicator 1: Graduation Success

Metric 1: On-time graduation (from high school), continuation graduation, and dropout rates

Rationale: Graduation success is a widely-used indicator of academic achievement and a marker of educational attainment, which has been correlated with life expectancy and inversely correlated with mortality rates; i.e., increased educational attainment is associated with longer life (Hummer & Hernandez, 2013). Three metrics could be combined by the City of Tacoma to provide a more complete assessment of graduation success than overall graduation rate alone. They include: 1) on-time graduation rate, defined as the proportion of students graduating from high school in the expected four-year period, 2) continuation graduation rate, defined as students who graduate high school within five years, and 3) drop-out rate, defined as the proportion of students who fail to graduate.

More years of education, and an earlier start to education, link to better health.

Data sources: Tacoma Public Schools, Graduate Tacoma

Available data: The 2017 on-time graduation rate for Tacoma Public Schools was 86.1%, up from 55% in 2010 and the highest since the state began tracking the data in 2003. The 2017 continuation graduation rate was 4.8%. Graduation rates for vulnerable (low-income, homeless) students in Tacoma are higher than overall Washington State rates by 12% and 19%, respectively. The 2016 dropout rate was historically low at 10.2% (Tacoma Public Schools, 2017a). However, graduation rates vary widely between individual high schools in Hilltop, Lincoln, and the South End, with 2016 graduation rates ranging from >90% (SOTA, 97.2%; Stadium, 94.2%) to less than 80% (Mount Tahoma, 79.7%; Foss 78.4%) (Tacoma Public Schools, 2017a).

Indicator 2: Enrollment in Postsecondary Education

Metric 1: Proportion of Tacoma Public Schools graduates who enroll in two- or four-year colleges, apprenticeships, or technical certification courses within one year of graduation

Rationale: Educational attainment is associated with increased life expectancy, decreased mortality rates, and improved overall health status. Higher educational attainment often leads to improved employment and economic opportunities (Center on Society and Health, 2014; Egerter et al., 2011; Ross & Wu, 1995). Lifetime earnings increase with increasing levels of educational attainment (Carnevale, Rose, & Cheah, 2011). Even pursuing some college can add nearly \$38,700 to one’s annual earnings compared to no college. Four additional years of education has been associated with improved health behaviors, such as regular exercise, better diet, abstaining from smoking, and receiving recommended health screenings (National Poverty Center, 2007).

Data sources: Tacoma Public Schools requires all high school students to complete at least one college admission application in order to graduate as well as submit a Verification of Acceptance at Next Institution (VANI) form indicating acceptance to a four-year university, two-year college, vocational school, another degree program, trade apprenticeship, or the military. These forms may be used by the City of Tacoma to track the proportion of students enrolling in postsecondary education. Tacoma could also track enrollment data from Washington State Education Research and Data Center with the goal of measuring the proportion of

students successfully enrolling in two- or four-year colleges or universities. Available Data: Between 2010 and 2014, the proportion of Tacoma Public Schools graduates enrolling in two- or four-year colleges, apprenticeships, or technical certification courses within one year of graduation increased from 32% to 45% (Graduate Tacoma, n.d.-a).

Indicator 3: Enrollment in Early Childhood Education

Metric 1: Preschool enrollment

Rationale: High-quality early-childhood programs lay the foundation for educational success (Cohen and Syme, 2013) and can lead to long-term health and higher lifetime earnings (Graduate Tacoma, n.d.-b). Early education programs provide opportunities for children and families to build social-emotional skills, learn about appropriate nutrition, and engage with teachers and schools, preparing students for future academic success.

Data sources: Tacoma Public Schools, Graduate Tacoma

Available data: Enrollment in early childhood education programs in Tacoma increased from 1,175 students in 2010-2011 to 1,533 students in 2015-2016. According to Graduate Tacoma, “students in poverty comprise the lion’s share of enrollments.” While the proportions of Hispanic and multi-racial students enrolled in preschool increased over this time, the number of Black/African American children enrolled in preschool decreased (Graduate Tacoma, n.d.-b). The City of Tacoma could continue to assess changes in student demographics to evaluate community impact of the early childhood education system.

Enrollment metrics provided by Tacoma Public Schools and Graduate Tacoma measure enrollment in public early education programs only (Graduate Tacoma, n.d.-b). The City of Tacoma could develop a more complete picture of early childhood education in the community by expanding Tacoma Public Schools and Graduate Tacoma data to include private program data. The City could also measure the quality of existing early childhood education programs. For example, data on compliance with state licensing standards could be matched with data detailing the presence and availability of quality, licensed programs in various neighborhoods, such as Hilltop, Lincoln, and the South End.

Indicator 4: Student Mobility

Metric 1: Student mobility rate (the number of transfers into and out of a school divided by the number of enrolled students)

Rationale: Students may change schools voluntarily and involuntarily. Voluntary reasons may include transferring to a better-performing school and moving for the career promotion of a parent. Involuntary reasons may include expulsion, bullying, homelessness, or moving for an unwanted reason, such as increased rents or the job loss of a parent (Rumberger, 2015), and may also reflect a student's underlying income, housing, or food instability. Changing schools can negatively affect a student's academic performance and disrupt his or her relationships with peers (Rumberger, 2015).

Data source: Tacoma Public Schools enrollment statistics

Available data: The most recent data for Tacoma Public Schools is for the 2015-2016 school year. The average mobility rate for K-5 schools was 57.71%. The average mobility rate for 6-8 schools was 40.22%. The average mobility rate for high schools was 42.23%. Rates vary dramatically between schools. Data for schools in the Hilltop, Lincoln, and South End neighborhoods are summarized in Table 1 (Tacoma Public Schools, n.d.-d). McCarver Elementary School has notably implemented a housing assistance program aimed at reducing student mobility through the use of housing vouchers. The program has decreased rates of student mobility as well as increased reading scores among students (Johnson and Milner (n.d.).

Table 1: School Mobility for Three Neighborhoods in Tacoma

School Type	Hilltop	Rate (%)	Lincoln	Rate (%)	South Tacoma	Rate (%)
K-5	McCarver Stanley Bryant	90.86	Reed Whitman Lyon Blix	74.17	Manitou Park Edison Arlington Reed Whittier	75.81
		71.61		49.32		55.69
		45.54		82.63		68.82
				58.20		74.17
Middle (6-8)	Jason Lee	56.18	Stewart Giaudrone	62.81	Gray Giaudrone	46.61
				49.68		49.68
High (9-12)	Stadium SOTA	32.34	Lincoln	48.63	Mount Tahoma Foss	50.50
		15.65				58.52

Indicator 5: Student Poverty

Metric 1: Proportion of students receiving free or reduced-price meals

Rationale: Eligibility for free or reduced-price meals is based on either enrollment in federal assistance programs (e.g, Supplemental Nutrition Assistance Program, Head Start); whether a student is homeless, a migrant, runaway, or foster child; or if their household income is at or below certain thresholds of federal poverty level (185% for reduced meals, 130% for free meals) (United States Department of Agriculture, 2017). The proportion of students receiving free or reduced-price meals may be used an indicator of the proportion of students living in poverty.

Data source: Washington Office of the Superintendent of Public Instruction

Available data: The proportion of Tacoma Public School students receiving free or reduced-price meals exceeds Washington State averages, with 58% of Tacoma students and 42.9% of Washington State students, respectively, receiving this assistance as of May 2017 (Office of the Superintendent of Public Instruction, 2017).

Metric 2: Proportion of students experiencing homelessness

Rationale: Individuals experiencing homelessness include those “who lack a fixed, regular, and adequate nighttime residence” (Office of Superintendent of Public Instruction, n.d.). Homelessness is likely to be associated with poverty and often contributes to student mobility. Data Sources: Washington Office of Superintendent of Public Instruction - Education of Homeless Children and Youth Data Collection and Reports (from school registration and social support services data)

Available data: Data from the 2015-2016 academic year indicates that 1,747 Tacoma students (6% of the total student population) identified as homeless. 33% of these students experiencing homelessness were Black/ African American, 23% were White, and 18% were Hispanic/Latino (Office of Superintendent of Public Instruction, n.d.).

Indicator 6: Parent Engagement

Metric 1: To be determined. Currently unaware of an existing metric that accurately and completely captures this indicator.

Rationale: The City of Tacoma defines parent engagement as the presence of “a community of supporting adults sharing responsibility in fostering

the success of every child” (Graduate Tacoma, n.d.-c). Students’ academic performance, as well as their behavior, are positively associated with the involvement of their parents (Henderson and Berla, 1994). Parent engagement is currently measured through the number of registered volunteers (families and community members) in schools as a measure of parental engagement. Issues of inequity and lack of access to basic needs may limit a parent’s ability to participate so actively in his or her child’s education. This indicator could be improved by considering the diversity of parents’ life experiences and how their social and economic statuses affect their ability to participate.

Data source: To be determined.

Proposed metric(s):

Epstein (1992) proposes a typology that includes six types of parental engagement (in Catsambis, 2001):

1. Parent practices that establish a positive learning environment at home;
2. Parent-school communications about school programs and student progress;
3. Parent participation and volunteering at school;
4. Parent and school communications regarding learning activities at home;
5. Parent involvement in school decision-making and governance; and
6. Parent access to community resources that increase students’ learning opportunities.

While these may be difficult to measure, the City of Tacoma could consider them when developing measures of parent engagement. The City may also consider gathering information from parents via surveys, email or phone conversations, parent-teacher meetings, and attendance at Family and Community Learning Academy and related events. Since Graduate Tacoma’s Parent Advisory Council is currently working to establish a metric to measure this indicator, the city could collaborate to establish a robust metric of parent engagement.

Indicator 7: Reading and Math Proficiencies

Metric 1: Proportion of 3rd, 8th, and 11th grade students meeting or exceeding reading and math proficiencies

Rationale: Reading and math are recognized as foundational skills that can

also serve as predictors of student performance and high school dropout rates (Education Commission of the States, 2013). Reading and math proficiency is also an indicator of inequity, as children “from lower- and middle-income families are, on average, far behind their wealthier peers in reading, mathematics, and general knowledge” (Education Commission of the States, 2013).

Data sources: Tacoma Public Schools, Washington Office of the Superintendent of Public Instruction

Available data: The proportions of third-grade students in Tacoma Public schools meeting reading and math standards in elementary schools are low compared to state averages. These rates, encouragingly, have been increasing across nearly all demographic groups, but disparities in achievement vary widely based on poverty status (Graduate Tacoma, n.d.-d; Graduate Tacoma, n.d.-e).

Indicator 8: Involvement in Extracurricular Activities

Metric 1: Number of students enrolled in one or more club and/or sport

Rationale: Extracurricular activities extend educational programming beyond academics. Students who participate in extracurricular activities have “higher grade-point averages, better attendance records, lower dropout rates, and fewer discipline problems” (Tacoma Public Schools, n.d.-e). Extracurricular activities can help promote education as a central piece of community life and a building block for later success, create opportunities for students to engage with their communities, and develop relationships and partnerships with community organizations (Tacoma Public Schools, n.d.-f).

Data source: Tacoma Public Schools

Available data: Over the last two years, Tacoma has seen a substantial increase in the number of students involved in extracurricular activities at both the middle- and high-school levels (Tacoma Public Schools, n.d.-e). Moving forward, the City of Tacoma could evaluate relationships between the proportions of students enrolled in extracurricular activities and metrics of academic success, such as graduation success or reading and math proficiency, as well as relationships between the proportions of students enrolled in extracurricular activities and metrics of parental engagement.



DOMAIN 4: Income and Employment

Economic opportunity plays a major role in determining health outcomes for a population. On an individual level, socioeconomic factors (including income, wealth, and employment) are associated with many aspects of personal health, including smoking rates, nutrition and reproductive health. The intersectional impacts of socioeconomic factors at the community level are important to consider as well. Lower-income neighborhoods are often subject to poor quality housing, pollutants, fewer employment opportunities, and lower quality schools, contributing to disproportionate health outcomes and decreased economic mobility. These adverse outcomes affect everyone who lives in a community, regardless of their personal income and employment situation (Roux and Mair, 2010).

Research has shown that that people experiencing unemployment early in life (ages 16-21) are more likely to smoke, experience anxiety and depression, and have other negative health outcomes by age 30 (Hammarstrom and Janlert, 2002). Beyond unemployment rates, the level of job insecurity within a community has a major impact on neighborhood health. Employment insecurity creates stress and financial strain, and can cause negative health effects such as diabetes and depression (Ferrie, et al., 2016; Lam and Ambrey, 2017). Perceived job insecurity has been shown to lead to worsened self-reported health at the community level, as well as greater prevalence of cardiovascular disease, depression and anxiety (Benach et al., 2014). Temporary unemployment is associated with increased mortality due to tobacco and alcohol use (Wilkinson and Pickett, 2006).

At the community level, public health research has focused on two main definitions of income: income inequality and concentration of poverty and affluence.

People experiencing unemployment early in life (ages 16-21) are more likely to experience anxiety and depression, and to suffer other negative health outcomes.

Income Inequality

Income inequality is defined as the distribution of income among individuals within a community. While the literature is mixed about a causal relationship, data consistently shows that greater inequality is associated with poorer health outcomes overall. When a society is extremely unequal, community trust erodes, those with less feel that disparity more powerfully, and resulting psychological effects cause them to be less healthy. Income inequality is more likely to be a determinant of overall health in larger communities, where inequities might stem from the overall structure of a society (Wilkinson and Pickett, 2006). Within neighborhoods, where samples are smaller, and inequities are more difficult to measure, studies are mixed on the impact of economic inequality on health (Rachele et al., 2017).

Concentration of Poverty and Affluence

Living in a high-poverty area has a negative effect on one's health, including self-reported health and depression, contagious diseases, obesity, high blood pressure, chronic conditions such as heart disease, and cancer mortality (Yen and Kaplan, 1999; Barr et al., 2001; Rachele et al., 2017; Lippert et al., 2017; Robert, 1998; Fleisch et al., 2017). These outcomes hold true even after controlling for individual-level factors, indicating that those who are not poor themselves also experience the negative health effects of living in a high-poverty community (Fleisch et al., 2017). Conversely, when affluent families live in a neighborhood, the community often has greater access to more resources (better education, public transportation, parks and physical infrastructure, crime prevention, stronger cultural and social organizations). This translates to better health for all members of that community.

Themes from stakeholder interviews:

- **Income and employment intersect with other social determinants.** This intersection makes it challenging to solve socioeconomic problems without engaging with other domains. Solutions to unemployment could engage a variety of sectors and stakeholders. Government can be a catalyst to improving economic conditions by connecting people to resources, making the process of obtaining a state issued ID or license more accessible to marginalized communities, and raising standards for employers, but systemic issues such as racism and socioeconomic factors need to be tackled outside of government.

Data consistently shows that greater inequality is associated with poorer health outcomes overall.

- **Smaller employment sectors are growing.** Communities across Tacoma are looking to attract more business to the area. The city is experiencing growth in the education, technology, retail and artisan sectors due to the city's ability to nurture small businesses and some overflow from the major growth up north in Seattle.
- **Broad economic disparities exist among neighborhoods.** Most stakeholders identified major disparities between neighborhoods when it comes to economic opportunity in Tacoma. Lincoln and Hilltop, which historically have struggled to attract businesses, are catching up to more successful neighborhoods. Cost of living differs significantly within neighborhoods due to differences in housing prices, and as a result the definition of "livable income" will differ from neighborhood to neighborhood. Regardless, the neighborhoods of Hilltop, Lincoln District, and the South End could benefit from more employment opportunities with higher wages.

Indicator Recommendations:

Indicator 1: Unemployment

Metric 1: Unemployment rate

Rationale: Unemployment is associated with multiple negative health outcomes on an individual level, which has a major impact on the overall health of a community.

Data sources: Unemployment data is currently tracked at the national, state, city and local levels and the City of Tacoma likely already has easy access to this data.

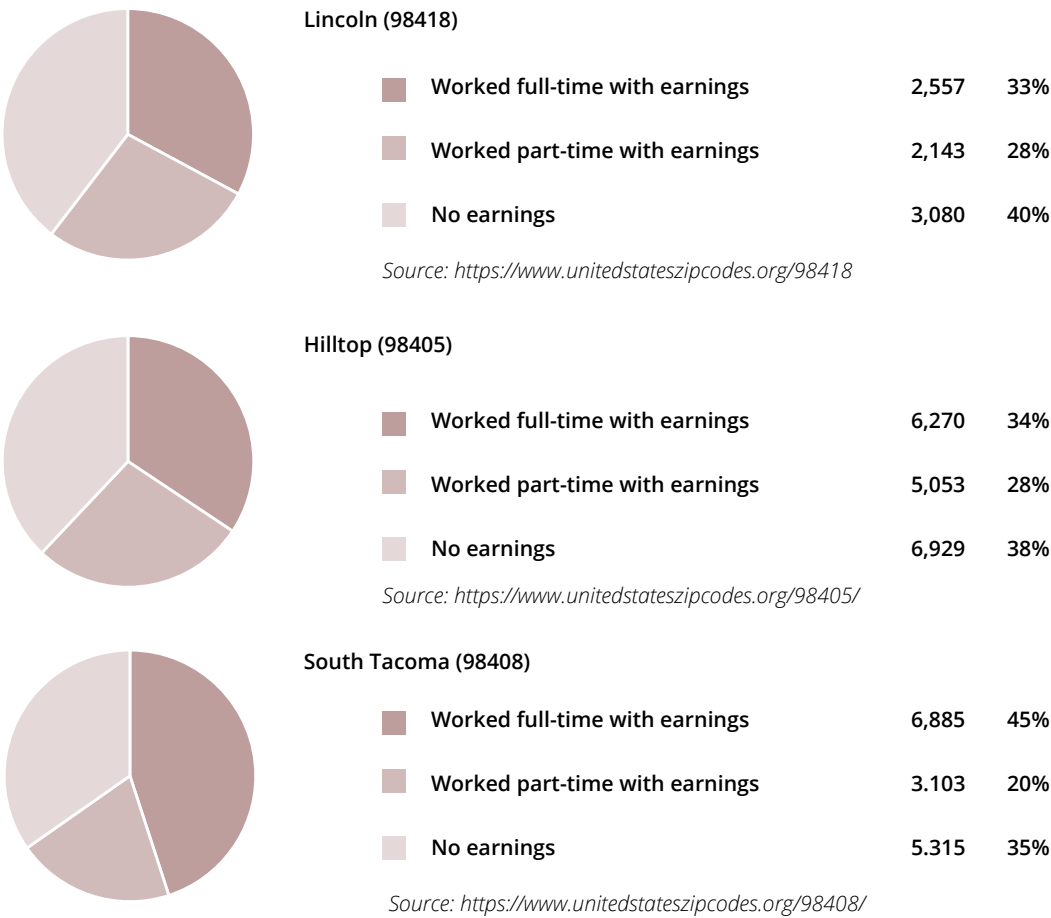
Available data: The City of Tacoma falls behind the rest of the state, with an overall unemployment rate of 7.8% (Table 2). Unemployment is considerably higher in Lincoln, Hilltop and South Tacoma (Table 2). Specifically, over one third of residents of Hilltop, Lincoln, and South Tacoma reported no earnings in 2014 (Figure 1).

Table 2. Unemployment rate in Lincoln, Hilltop, and South Tacoma

Neighborhood	Unemployment Rate *
Lincoln (98418)	11.2%
Hilltop (98405)	11.3%
South Tacoma (98408)	12.9%
Tacoma	7.8%
Washington State	5.6%

**age 25 and above*
Source: <http://www.city-data.com/city/Tacoma-Washington.html>

Figure 1. Employment status in Lincoln, Hilltop, and South Tacoma (2014)



Indicator 2: Neighborhood Wealth
Metric 1: Median Income

Rationale: Increasing median incomes are good indicators of improvement in neighborhood health. (However, this indicator alone is not an adequate measure of positive change in regard to income/employment unless it is cross-referenced with housing data to ensure increased incomes aren't a result of displacement due to gentrification.)

Available data: While Tacoma as a whole has a median household income in line with the rest of the country, the Lincoln, Hilltop and South Tacoma neighborhoods have a lower household income than the average for the rest of the city (Table 3).

Table 3. Median Household Income

Neighborhood	Median Household Income (2016)
Lincoln (98418)	\$46,295
Hilltop (98405)	\$36,164
South Tacoma (98408)	\$44,491
Tacoma	\$52,437
USA Average	\$54,149

Source: Tacoma Means Business District Profiles, 2016,

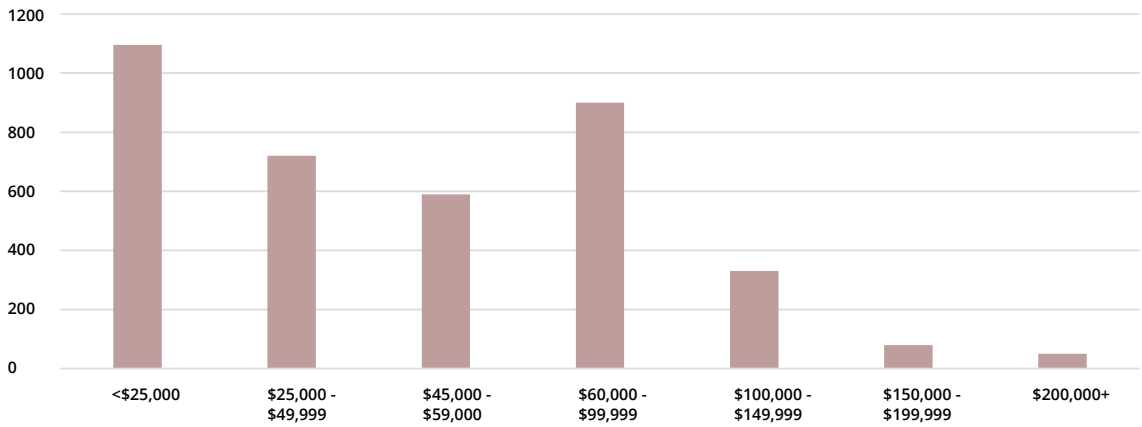
Indicator 3: Distribution of Wealth within Neighborhoods
Metric 1: Distribution of income

Rationale: See rationale for indicator 2.

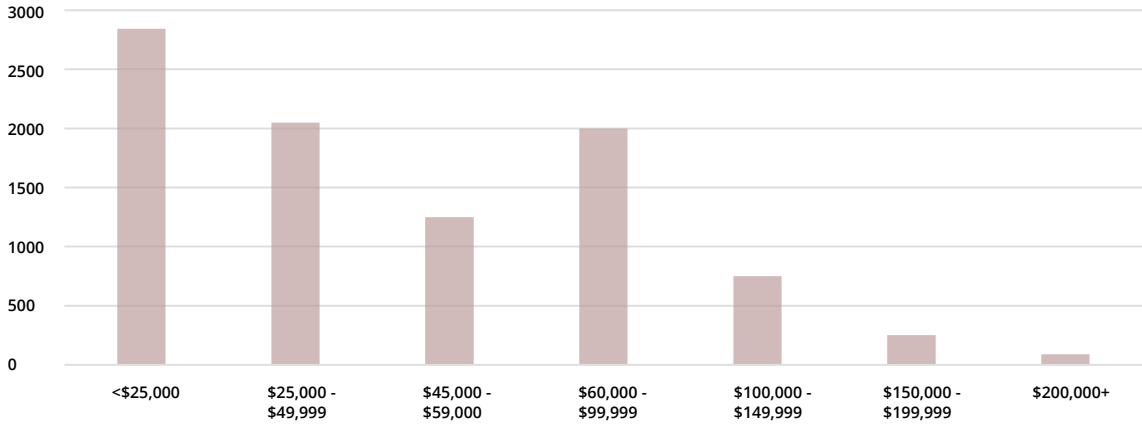
Available data: Average household income levels in neighborhoods of interest (Lincoln, Hilltop and South End) have been increasing since 2005; however, the distribution of household income indicates that the average household income in these neighborhoods is noticeably lower than many other neighborhoods in the city. Lincoln District and Hilltop both see a large proportion of household incomes less than \$25,000, while in the South End the largest proportion of household incomes fall between \$25,000 and \$44,999 (Figure 2).

Figure 2. Distribution of Household Income in Lincoln, Hilltop, and South Tacoma (2014)

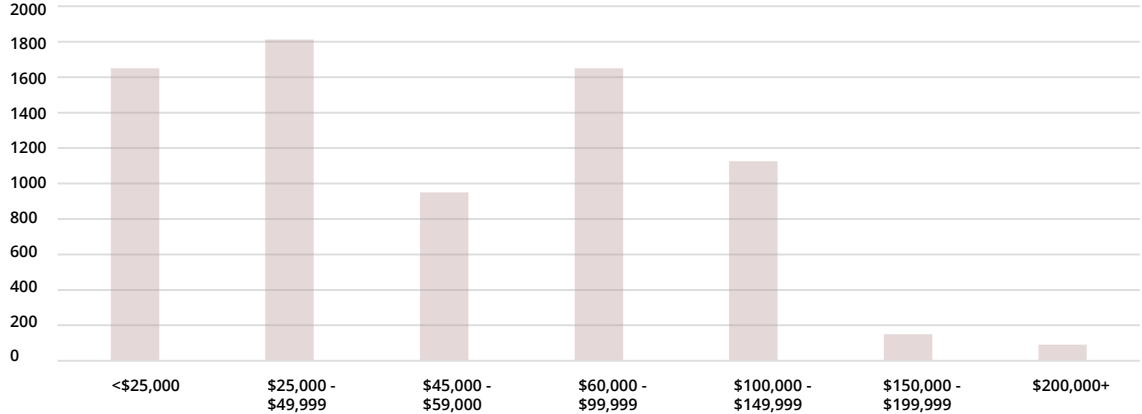
Lincoln (98418) Household Income Source: <https://www.unitedstateszipcodes.org/98418/>



Hilltop (98405) Household Income Source: <https://www.unitedstateszipcodes.org/98405/>



South End (98408) Household Income Source: <https://www.unitedstateszipcodes.org/98408/>



Indicator 4: Poverty

Metric 1: Percent of households with income below the federal poverty level (FPL)

Rationale: Even when controlling for individual factors, people who live in high-poverty neighborhoods tend to be less healthy. Lower proportions of residents with an income below the federal poverty level can therefore be used as an indicator of a healthy community.

Available data: Hilltop, Lincoln and South Tacoma are considerably poorer than the average Tacoma neighborhood and have a prevalence of poverty two to three times that of the rest of WA state (Table 4). Tracking poverty data by neighborhood could allow the City of Tacoma to better assess where to focus anti-poverty programs, as well as evaluate the effectiveness of the interventions the City is using to combat poverty and improve community health.

Table 4. Percentage of population below federal poverty level in Tacoma

Neighborhood	Percentage of population below federal poverty level
Lincoln (98418)	29.6% ¹
Hilltop (98405)	20.1% ¹
South Tacoma (98408)	21.6% ¹
Tacoma	16.2% ¹
Washington State	11% ²
USA	% ²

Sources:
1) City of Tacoma Community Needs Assessment, 2016, Report.
2) Kaiser Family Foundation, 2017, Report.

Indicator 5: Concentrated Poverty

Metric 1: Community Disadvantage Index (CDI)

Rationale: The CDI combines three factors that collectively indicate a high concentration of poverty: percentage of people living below the poverty line, percentage of people receiving public assistance, and the percentage of female headed households with children (Robert, 1998). A CDI of 10 indicates a highly disadvantaged community.

Available data: Hilltop, Lincoln and South Tacoma all have high CDIs, indicating high concentrations of poverty in those communities (Table 5).

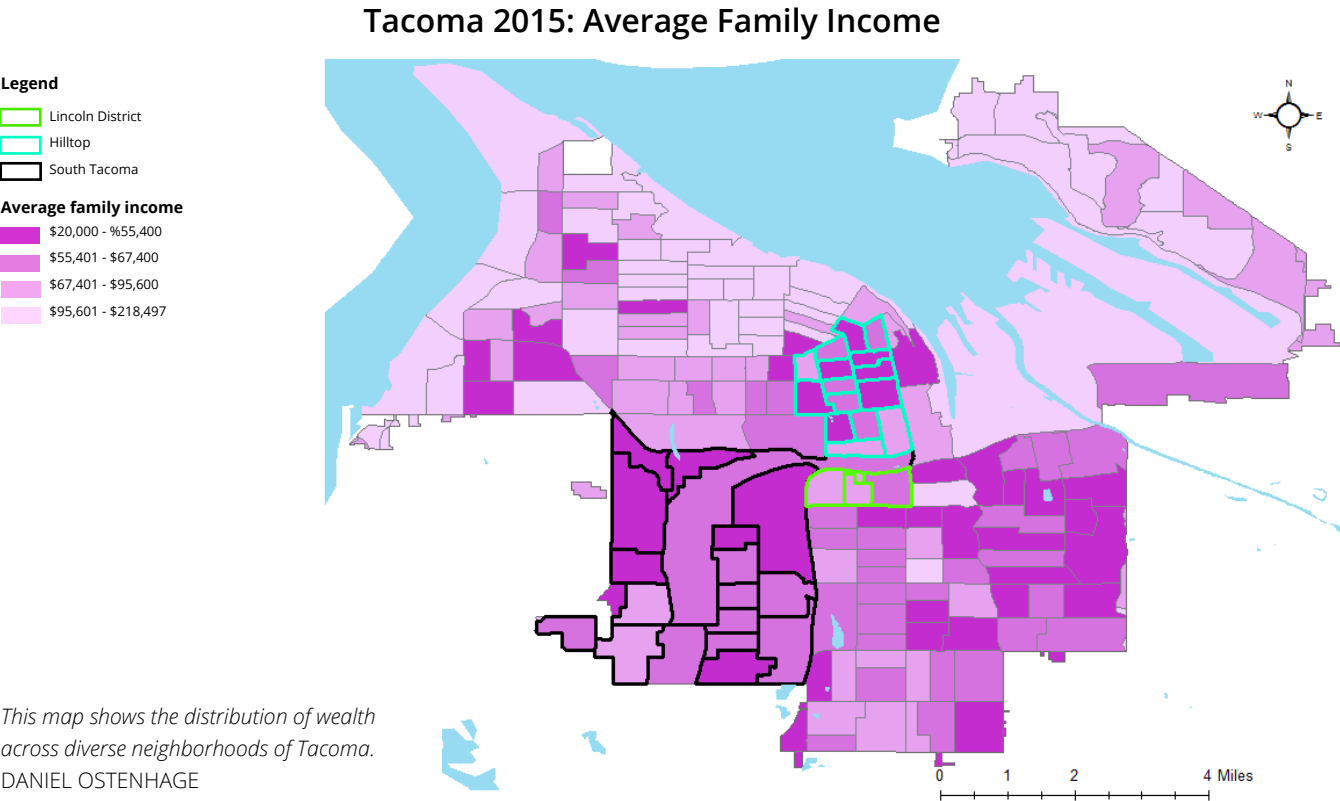


Table 5. Community Disadvantage Index for Lincoln, Hilltop, and South Tacoma

Neighborhood	CDI
Lincoln (98418)	9
Hilltop (98405)	10
South Tacoma (98408)	10

Source: Office of Juvenile Justice and Delinquency Program, U.S. Department of Justice, Report.

Indicator 6: Utilization of City Funded Business Opportunities

Metric 1: Proportion of certified businesses applying for city contracts

Rationale: Individuals who own small businesses or are seeking personal employment may not be aware of opportunities to apply for City contracts or employment assistance programs, or they may not have the resources and training to meet complex regulatory/compliance requirements. Identifying and recording the proportion of businesses applying for contracts among total number of businesses, stratified by neighborhood, would indicate to the city the level of awareness of these opportunities in various communities. Improved and increased outreach and employment assistance programs could improve this indicator among communities with low utilization of existing city programs and opportunities.

Data sources: This data is already available to the City through the Tacoma Small Business Enterprise Program.

Available data: The dataset exists, but has not yet been organized by neighborhood and analyzed for the purposes of neighborhood health and livability.

DOMAIN 5: Food Access

Adequate food accessibility exists when individuals have regular access to supermarkets, culturally appropriate grocery stores, and other affordable food sources that offer the variety of food needed to maintain a healthy diet. These types of food include fresh fruits, vegetables, whole grains, and fresh dairy and meat products (United States Department of Agriculture, 2009).

The Centers for Disease Control (CDC, 2017) has published data on adverse health outcomes associated with poor nutrition, including trends in rising obesity rates and heart disease often associated with additives that are frequently found in low-cost processed food. According to the Robert Wood Johnson Foundation (2012), adults living in neighborhoods with either a supermarket or multiple grocery stores have the lowest rates of obesity (21%) and overweight (60% to 62%). Adults living in neighborhoods who only had access to convenience stores, or smaller grocery stores, had the highest rates of obesity (32% to 40%) and overweight (73% to 78%). Adult obesity rates in Pierce County were 30%, higher than the statewide average of 27%. In 2017, 15% of Pierce County residents were food insecure, and 8% had limited access to healthy foods (County Health Rankings, 2017) .

The indicators detailed below illustrate gaps and assets in a neighborhood's food system. With deeper knowledge of a neighborhood's food environment, communities can begin taking strides to dismantle barriers and ensure equal access to healthy food.



Adult obesity rates in Pierce County were 30% higher than the statewide average of 27%. In 2017, 15% of Pierce County residents were food insecure, and 8% had limited access to healthy foods.

Food deserts are characterized by a lack of fresh, healthy food and by the prevalence of convenience stores and fast food restaurants.

Fast Food vs. Real Food

Food Access Opportunities

- Convenience store
- Grocery store
- Farmers market

Fast Food Locations

- Fast food

Neighborhood Boundaries

- South Tacoma Neighborhood
- Hilltop Neighborhood
- Lincoln Neighborhood

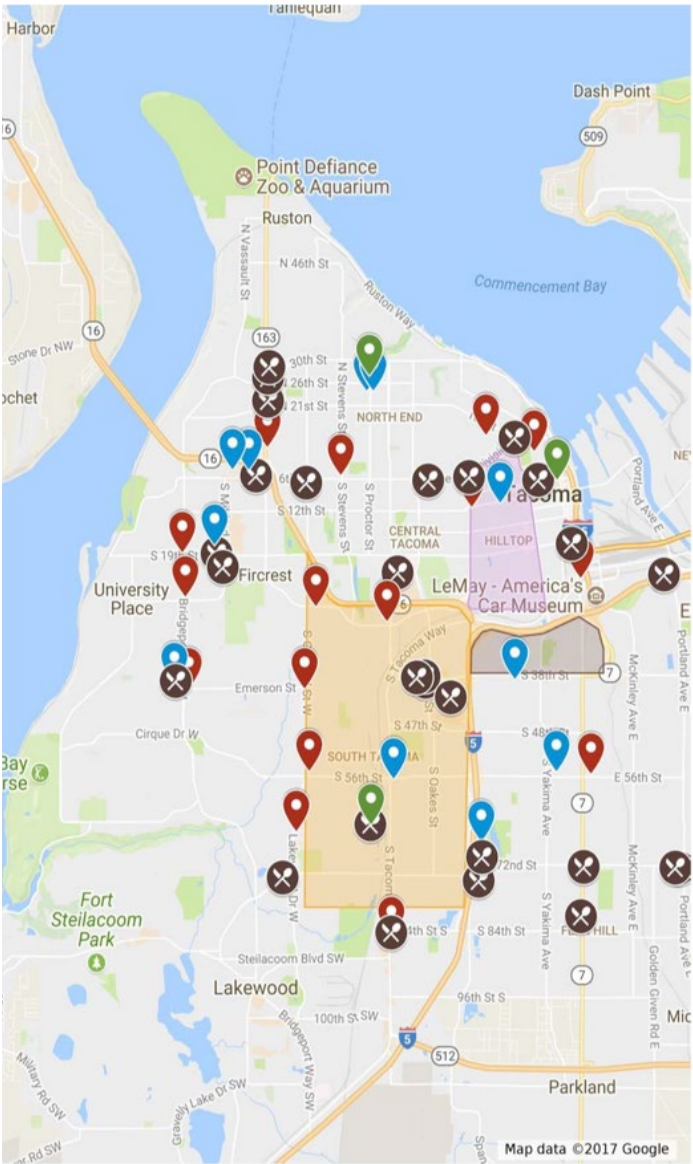


Figure 4: This map shows residents' access, from their neighborhoods, to fast food and real food establishments.

Themes from Stakeholder Interviews:

In stakeholder interviews, a number of themes emerged regarding food access: inadequate access to grocery stores; a lack of inclusivity and an unwelcoming atmosphere in some food-related spaces; and a need for greater community collaboration.

Indicator Recommendations:

Indicator 1: Physical Access to Quality Food

Metric 1: Availability of grocery stores

Rationale: Individuals living in urban food deserts do not have a supermarket within a 1/2 mile from their homes (Trust for America's Health, 2014). Food deserts are characterized by the lack of healthy, high quality foods and the prevalence of convenience, corner, and liquor stores as well as fast food chains (Treuhart & Karpyn, 2010). The foods that are available are typically high in fat and sugar contents. Individuals living in low-income communities of color are disproportionately affected by adverse health outcomes from limited food access.

Data sources: Websites such as Google Maps and the online Food Environment Atlas from the EPA can provide spatial data that is regularly updated for quick access to local food sources (Figure 4).

Metric 2: Mapping additional food assets

Rationale: When supermarkets are missing from the equation, alternative food assets—including farmers markets, community gardens, orchards, and food banks—can help to create a buffer against food insecurity. For example, Tacoma has multiple farmers markets in Broadway, South Tacoma, and Eastside. Each market provides fresh, local and organic foods while also providing avenues for low-income shoppers with Electronic Benefits Transfer (EBT) matching and senior discount programs. Additionally, the greater Tacoma area has approximately 80 gardens in addition to multiple orchards and food forests. Harvest Pierce County, a program within Pierce Conservation District, works with residents to connect them with their local food system. Lastly, over 40 food bank locations are present in the Tacoma area, serving as an emergency food resource for community members.

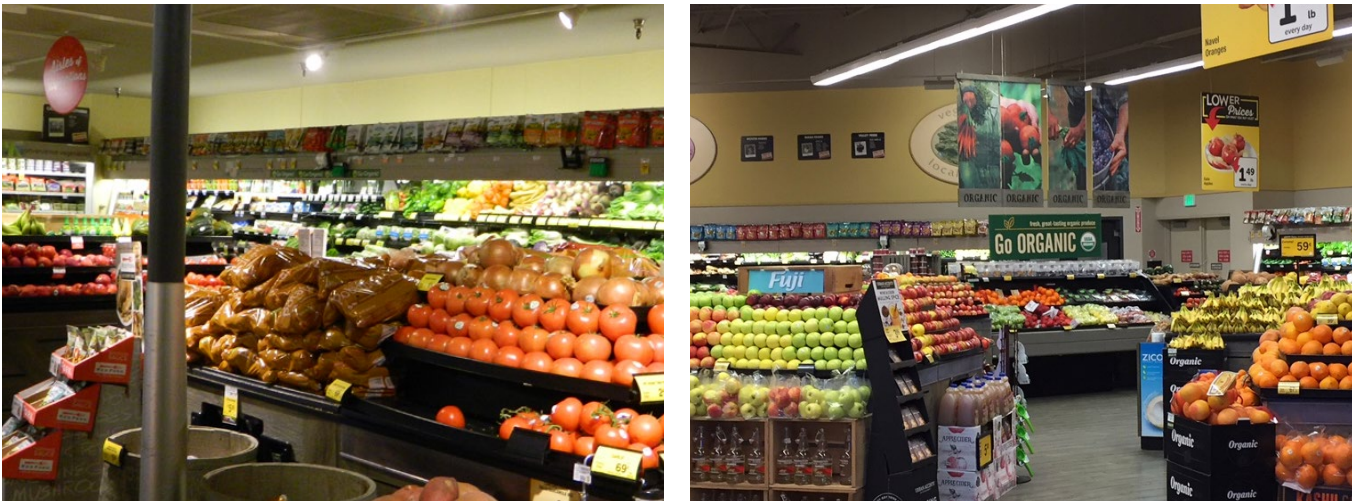
Data source: None currently available. Recommend creating a neighborhood food asset map.

Available data: A food audit or asset map could help to inform the City of Tacoma about where there are existing assets and gaps in the food system. However, this data could also be used as an interactive online map, allowing users to see a variety of food related providers, growers, educators, and social programs. This interactive tool would allow people of all ages and demographics to learn about the best food options for themselves and their family. One local example of this work is Harvest Pierce County's Community Garden Map (see Figure 4) (Harvest Pierce County, 2016).

Metric 3: Quality measurement and shelf-space comparison

Rationale: Nutritional quality of food has a significant impact on health outcomes, and quality of produce can be measured using a scale ranging from poor to excellent. Measuring shelf space of high fat and sugary food items in comparison to shelf space dedicated to healthier options can also provide insight into the types of foods that are available in a neighborhood (Bodor et al. 2010). Measuring food availability at this level of detail would allow the City to better understand where additional resources are needed beyond communities' proximity or physical access to a store. In some cases, improving the quality of available food in existing stores may be a more economical option than trying to bring in large-scale grocers.

Data source: None currently exist. This could be generated as part of a neighborhood food audit or asset mapping exercise.



Top: An example of a grocery store with limited shelf-space for fresh produce.
Bottom: An example of a grocery store with generous shelf-space for fresh produce. LCY STUDENT TEAM

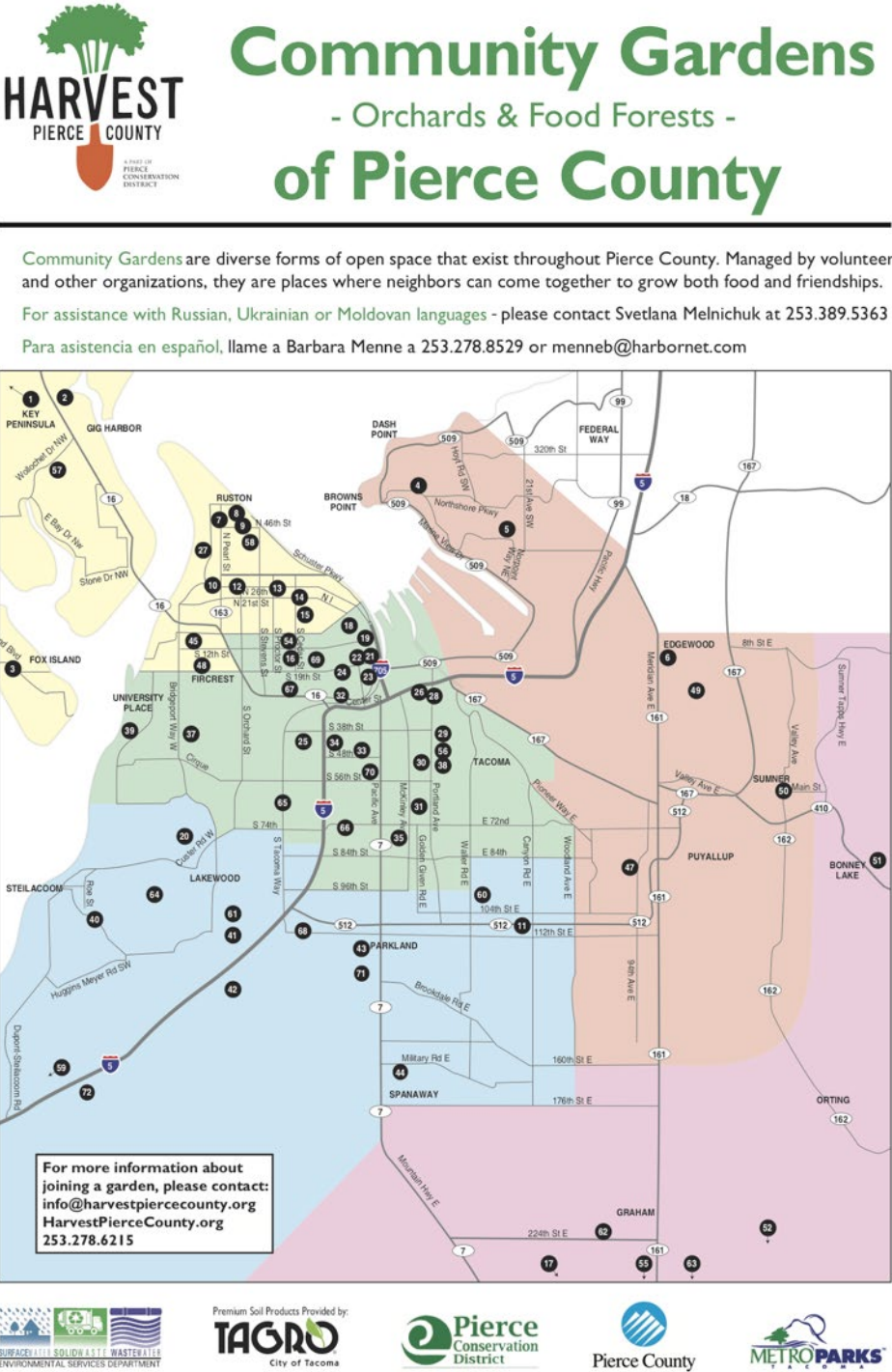


Figure 5: This map demonstrates where community gardens are located throughout the greater Tacoma area.

Indicator 2: Transportation Access to Food

Metric 1: Car ownership

Rationale: Car ownership data can provide a good indication of peoples' ability to easily access grocery stores or other food providers. In areas with lower levels of car ownership, the importance of locally available food is even more important.

Data sources: This data can be accessed via U.S. Census data and Social Explorer (Table 7 and 8).

Metric 2: Public transportation availability/use

Rationale: Having proximate and frequent bus lines and other forms of public transportation nearby grocery stores/food sources is vital for food accessibility for low-income residents. In addition, improved distribution of bus stops and regular service could allow Tacoma residents to travel farther distances in order to access healthy food options, rather than the half-mile that is typically considered accessible for walking.
Data sources: Pierce Transit is a likely source of route map and time table data, GIS could be used to cross-reference food providers and public transit routes.

Indicator 2: Economic Access to Food (Purchasing Power)

Metric 1: Average cost of food

Rationale: Low-income Americans spend 16.1% of their income on food while middle and high-income Americans spent 13.2% and 11.6%, respectively (Trust for America's Health, 2014). Larger grocery stores present a wide range of prices, allowing individuals to purchase items that best fit their budget. This flexibility is not offered in convenience stores and smaller grocers that have limited products. This difference especially impacts low-income individuals, particularly those living in food deserts.

Data source: Food Basket Survey (not yet available, but could be conducted by the City of Tacoma.)

Available data: Average cost of food can be estimated using a food basket survey (Figure 6). One way to complete this is to sum the total price of

Table 7: Car ownership among all household types

Occupied Housing Units:	79,026	
No Vehicle Available	7,692	9.7%
1 Vehicle Available	29,192	36.9%
2 Vehicles Available	27,294	34.5%
3 Vehicles Available	10,376	13.1%
4 Vehicles Available	3,202	4.1%
5 or More Vehicles Available	1,270	1.6%

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Table 8: Car ownership data for occupants of rental housing

Renter-Occupied Housing Units:	39,098	
No Vehicle Available	6,445	16.5%
1 Vehicle Available	19,002	48.6%
2 Vehicles Available	10,424	26.7%
3 Vehicles Available	2,346	6.0%
4 Vehicles Available	578	1.5%
5 or More Vehicles Available	303	0.8%

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Figure 6: Pilot food basket survey used to estimate average cost of food

Pilot Food Basket Survey in Lincoln District		
Grocery Store	Food Item Price	
Safeway	\$2.99	\$2.99
Walgreens	\$2.79*	\$3.19
Zip-Mart	\$2.99	\$3.29
East Asia Supermarket	\$3.29	\$3.49
*12 count eggs		

the cheapest prices for each similar basket item at a store, equating to the least amount of money a household would need to spend to fill their basket. This can be used to compare nutritious food pricing between different neighborhoods (Sadler, C., Gilliland, A, Arku, Godwin, 2013). If equitable food access is the goal, then the cost for these typical items of the same quality should be available in all neighborhoods in Tacoma.

Metric 2: Government assistance

Rationale: Purchasing power can be increased for low-income individuals and families with assistance from hunger safety net programs, including the Supplemental Nutrition Assistance Program (SNAP), Nutrition Programs for Women, Infants and Children (WIC), and the Senior Farmers Market Nutrition Program (SFMNP). Keeping a database of the number of participants in WIC, SNAP, SFMNP, and Children utilizing the Free and Reduced Lunch program can help the City to assess the magnitude of the need for improved food access (Figure 6).

Data sources: Washington State Office of Superintendent of Public Instruction Child Nutrition Report Cards; Washington State Department of Health

Available data: In 2015, Pierce County had over 18,500 WIC participants. 59% of Pierce County school district students were enrolled in Free and Reduced Lunch in 2015 (Choi, 2016).

Metric 3: Median income

Rationale: Median income can show the unequal distribution of wealth based on neighborhoods, and impacts purchasing power of families as they seek to (Figure 7 & Table 7).

2015 Percentage of Households Using Public Assistance

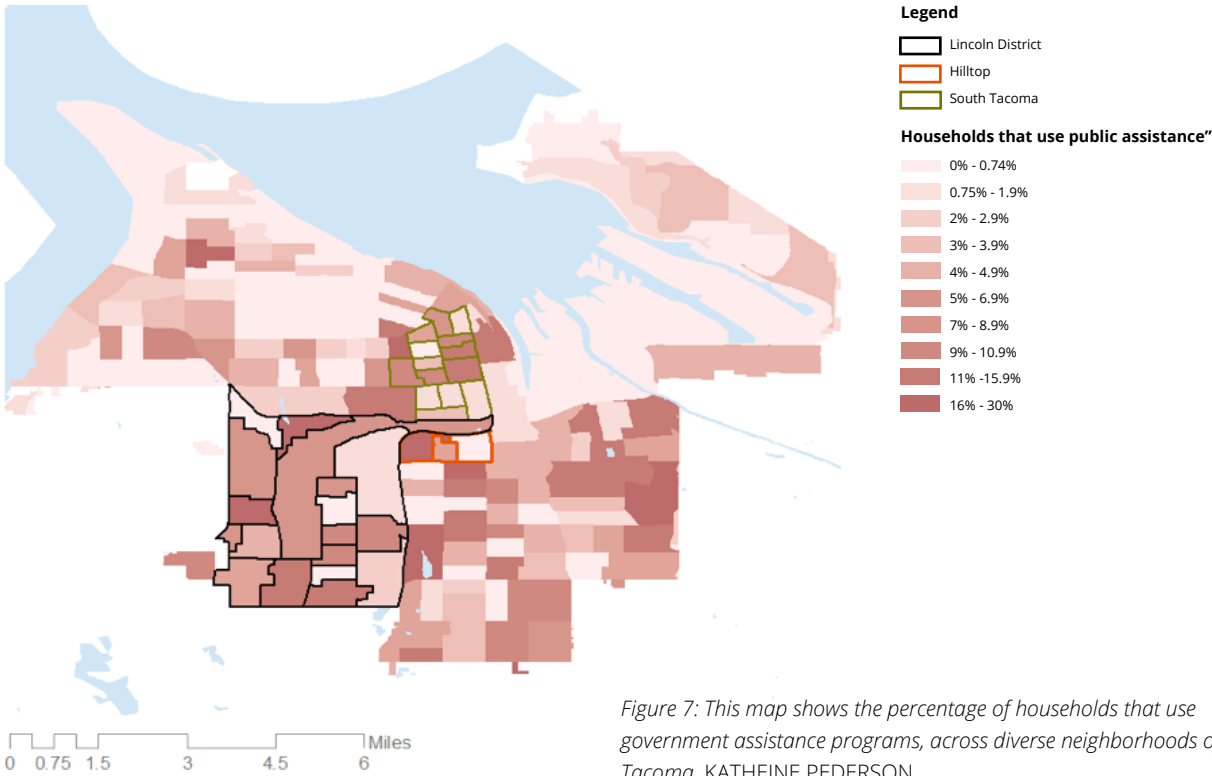


Figure 7: This map shows the percentage of households that use government assistance programs, across diverse neighborhoods of Tacoma. KATHEINE PEDERSON

2015 Median Household Income by Census Block

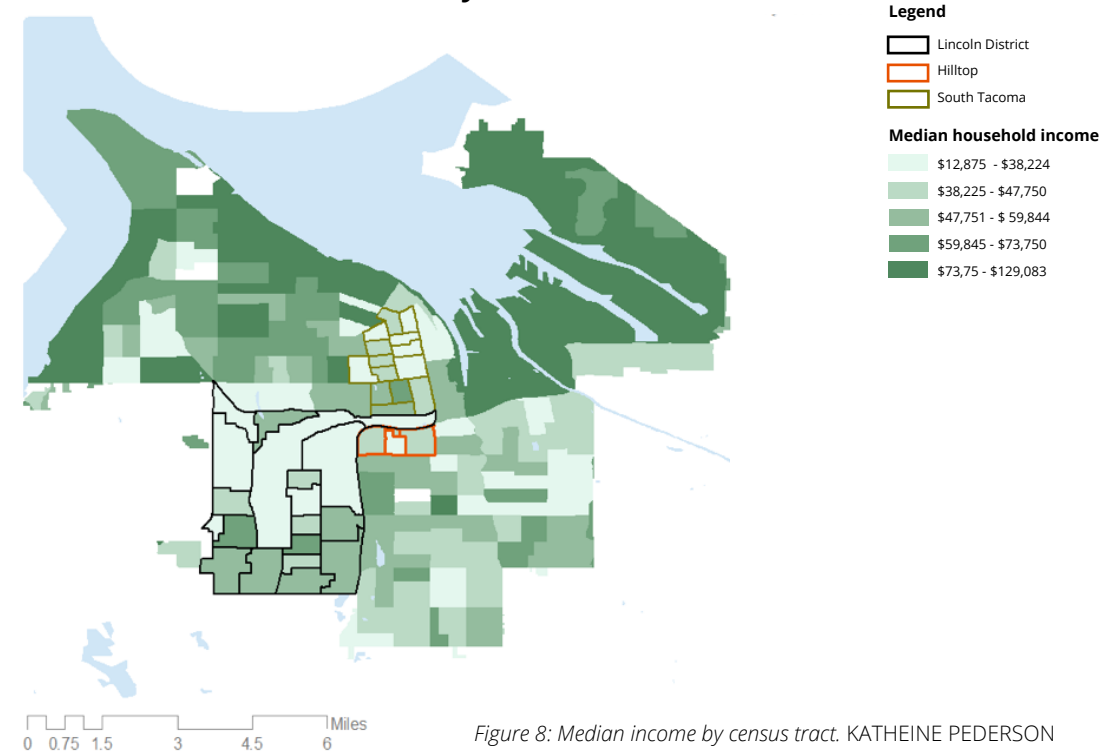


Figure 8: Median income by census tract. KATHEINE PEDERSON

Data sources: U.S. Census Bureau. Data is also available from online sources, such as Social Explorer.

Note: This metric also appears under Income/Employment, highlighting the intersectional nature of the indicators.

Metric 4: Unemployment rates

Rationale: Like government assistance, understanding the scope of need and diminished purchasing power based on unemployment rates is beneficial.

Data sources: U.S. Census Bureau. Data is also available from online sources, such as Social Explorer.

Note: This metric also appears under Income/Employment and highlights the intersectional nature of the indicators.

Indicator 3: Sociocultural Factors

Physical and economic access to healthy food options within a neighborhood does not necessarily ensure that all community members have equal access. Individuals experience and interpret grocery stores differently depending their social positions and identities. Numerous obstacles can impact these experiences, particularly if the vast majority of other shoppers don't resemble an individual's identity or if a group's cultural foods are not represented. For example, according to a study by Boule (2012), while many low-income and people of color feel that healthy food is important and desirable, they find that the culture surrounding it is often inaccessible.

Metric 1: Availability of cultural grocery stores

Rationale: The presence of cultural grocers reflects whether a community is providing ethnically significant food access points.

Data sources: None currently available. The City could measure the number of stores, cultural groups represented, and how this relates to the demographics of a neighborhood. A neighborhood food audit could prove useful, allowing the City to collect data on the many small businesses that may not have an online presence.

Metric 2: Demographics

Rationale: Though cultural food preferences are certainly not easy to measure, a baseline knowledge of the demographics of each neighborhood can help as the City seeks to better understand the need for culturally-appropriate food offerings throughout the City.

2015 Unemployment Rate by Population of Labor Force

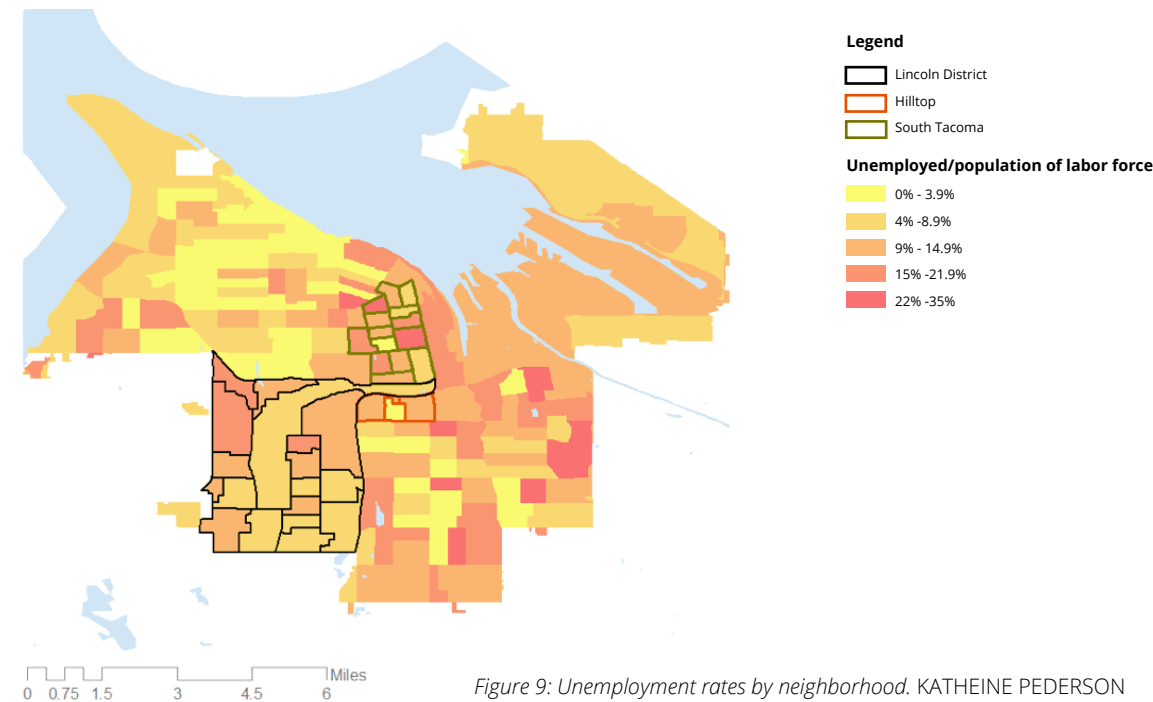


Figure 9: Unemployment rates by neighborhood. KATHEINE PEDERSON

Data sources: U.S. Census Bureau. More detailed, qualitative information could also be collected through partnerships with community organizations, or via a neighborhood food audit.

Available data: A variety of demographic factors can be found on the U.S. Census, including race, ethnicity, and country of origin.

Indicator 4: Individual Health

Metric 1: Unspecified health demographic data

Rationale: Between 2006 and 2010, Tacoma had an obesity rate of 34.1%, nearly 10% higher than the State of Washington’s obesity rate. According to the Tacoma 2025 strategic plan, heart disease is the leading cause of death in Pierce County, which is compounded by obesity (Tacoma 2025, 2015). The CDC, the Institute of Medicine, and the American Heart Association have all recognized that access to healthy food is essential to reduce rates of obesity, diabetes, and cardiovascular disease (Bell et al., 2013).

Data sources: WA State Department of Health

Available data: The WA State Department of Health regularly compiles county level statistics in regards to health risk indicators of chronic diseases. The City of Tacoma could use these reports to develop a City of Tacoma-specific report to identify which health burdens related to food affect their residents most and design prevention and management interventions. Some health statistics that could be tracked are:

- Percent of adults age 18 or older who have body mass index 30 kg/m2 or higher.
- Percent of adults age 18 or older who report eating fruits and vegetables 5 or more times per day.
- Percent of adults age 18 or older who have ever been told by a doctor that they have diabetes.
- Percent of adults age 18 or older who have ever been told by a doctor that they have heart disease.

DOMAIN 6: Parks and Recreation

The built environment plays a vital role in human health behavior (Walton, 2014). Community features either limit or expand opportunities for people to practice healthy behaviors. (Robert Wood Johnson Foundation, 2011). Parks, recreation, and other similar neighborhood features are a commonly-cited example of this relationship (Frumkin, 2003; Robert Wood Johnson Foundation, 2011). Within the literature about the relationship between open space and health, there are various definitions of parks and recreation, but there is no one overarching consensus on what defines a park (Bedimo-Rung et al., 2005; Koohsari et al., 2015). The lack of a comprehensive definition likely results from the fact that parks can range widely in size, contain green spaces or be more formal in their design, and include a wide variety of amenities and programs. For the purposes of this project, we define parks as community spaces with recreational amenities and/or green spaces that allow for human interaction with nature, physical recreation, leisure activities, and/or group interactions.

We recommend the City of Tacoma consider using the following indicators to better understand the impact of parks and recreation on community health: prevalence, accessibility, amenities, safety, park utilization, and neighborhood engagement. Tacoma Metro Parks (TMP) and other entities are already measuring several of these metrics. However, to ensure equitable distribution of health-promoting features and amenities, these data could be reported on the neighborhood level, helping the City of Tacoma assess the health and livability of its neighborhoods with respect to parks and recreation. It also could help to identify opportunities for future resource allocation to ensure equitable health opportunities throughout Tacoma.



Community features either limit or expand opportunities for people to practice healthy behaviors.

Themes from Stakeholder Interviews:

All of the stakeholders who we interviewed agreed that parks and recreational facilities have numerous benefits, including contributing to physical, mental, and social health of communities. Community members described parks as great places to exercise, be active, and enjoy green spaces, including both physical assets (green spaces, natural areas, paths, spray parks and exercise equipment, and dog parks) as well as community center features (pools, classes, and facilities for recreation in all seasons). Some interviewees expressed strong concerns that parks are not equitably distributed throughout the city, with those living in higher income areas having access to higher-quality parks and recreation facilities. Interviewees also highlighted the importance of community involvement in park design and management.

Indicator Recommendations:

Indicator 1: Prevalence

Metric 1: Acreage of parks within a neighborhood

Metric 2: Number of parks within a neighborhood

Rationale: Understanding the prevalence of parks will allow the City to assess the quantity and size of parks at the neighborhood level. Increasing prevalence of parks could mitigate accessibility barriers like public transportation by placing more parks within walking distance of neighborhood residents (Bedimo-Rung et al., 2005). By using these two metrics in tandem, we emphasize the importance of both the acreage of large parks as well as the importance of smaller neighborhood parks. Data Sources: TMP provides data on the number and acreage of parks, reported in their Annual Community Impact report.

Metric 3: Number of “neighborhood” parks vs. larger parks within a neighborhood

Rationale: A neighborhood can contain a multitude of parks, but some spaces are more or less accessible to some groups. Key accessibility features and factors that affect parks could include: park proximity, sidewalks, public transportation stops, parking lots, streetlights, and Americans with Disabilities Act (ADA)-approved features such as wheelchair ramps and ADA parking.

When a park is designated as neighborhood park because of its size and local appeal, it is not required to include restrooms or parking. While this

designation assists in resource allocation, a neighborhood with only this type of park might have limited ability to access parks by car, which could influence park use by families with very young children, the elderly, or the disabled.

Indicator 2: Amenities

Metric 1: Type and quantity of park amenities

Rationale: Amenities or public goods include features like play structures, water fountains, bathroom facilities, exercise equipment and picnic areas. Amenities or features have been shown to support specific activities and behaviors within park spaces, catering to certain populations and demographics (Cohen et al., 2006; Giles-Corti, B., et al., 2005; Kaczynski et al., 2008). Amenities can indicate the type of park, and therefore the demographic, that the park is primarily catering to. For example, dog parks cater to dogs and their owners; sporting complexes cater to sports teams and recreation; and play structures cater to park users who have children. The quality and state of park amenities and features is also important as it dictates the usability of the features by park goers.

Data sources: These indicators could be relatively easily collected using existing information published by TMP on their website regarding the features found within each park and classified in a comparative matrix by neighborhood. Additional community engagement could help the city to better understand what residents feel is desirable or missing in their parks.

Indicator 3: Safety

Metric 1: Perceptions of safety related to parks and other recreational spaces

Rationale: Safety in parks can be defined as both physical and perceived environmental safety. Researchers often use residents’ perceptions of safety of parks, recreation and physical spaces by park users rather than objective measurements because they are easier to associate with individual behaviors (Bennett et al., 2007; Nichol et al., 2010). Data Source: No existing data to our knowledge. This qualitative data could be collected through surveys and focus groups of park users and community members.

Metric 2: Crime reports related to criminal activities in parks

Rationale: For community-wide assessments, neighborhood statistics may provide a similar picture and require fewer resources to collect than primary data collection of qualitative data described in Metric 1. Since assessing community perceptions of safety is difficult without resources to conduct primary data collection, a collaboration with the Tacoma Police Department and the city could help to provide a snapshot of safety concerns within parks in respective neighborhoods.

Data source: Tacoma Police Reports and Public Records

Indicator 4: Park Utilization and Engagement

Metric 1: Data and recreation

Rationale: Research shows that park usage and physical activity are linked to increased individual and community health, so understanding the usage of a park can provide necessary insight into areas for growth or need (Kruger, 2008; Walsh, 1986). This indicator would help the City to understand the amount of time park users spend within parks and recreational spaces, as well as how they are using the space and its features (i.e. walking, sporting events, picnics, etc.)

Data Sources: Tacoma Metro Parks collects some data on park and recreational program utilization that is reported in their Annual Community Impact report. In order to address concerns for equity across individual Tacoma neighborhoods, we recommend using current data collection methods but reporting utilization data by neighborhood.

Metric 2: Public life annual day of observation

Rationale: If resources are available, additional primary data collection could focus on obtaining a snapshot of park utilization, outside of special park programming, through an annual day of observation.

Data sources: While TMP does release an Annual Community Impact Report, this primary data collection could add new data around who is using the parks and for what purposes. Emphasis could be placed on counting the number of park users in all parks throughout Tacoma. In addition, surveyors could collect observations around which specific features and amenities are being used and with what frequency. Further data collection and analysis could also identify the demographics of park users throughout the day. (For an example, see the Gehl “Public Spaces/ Public Life” methodology).

Indicator 5: Community Participation

Community participation can contribute to an increased sense of ownership and stewardship towards parks in Tacoma. Therefore, fostering increased neighborhood support can also encourage community members to utilize the health activities that these neighborhoods offer. This is sometimes expressed through involvement of community members in various decision-making, administrative, or volunteer capacities related to parks.

Metric 1: Attendance at community meetings

Rationale: This indicator might be measured by reporting attendance at TMP public meetings, which occur frequently, are advertised on the TMP website, and relate to park operations in general or to specific parks and projects.

Metric 2: Attendance at park volunteer days

Rationale: The Annual Community Impact report from Tacoma Metro Parks includes information about volunteer efforts, but further analyzing and reporting neighborhood-level participation could help to ensure community engagement and investment in parks in all neighborhoods.

DOMAIN 7: Arts and Culture

Arts and culture are a major priority outlined in Tacoma 2025: Citywide Vision and Strategic Plan. They capture the spirit and ethos of the city's growing and diverse population while also helping to facilitate economic growth, wellness, health, and improvements in education. Increased attendance at cultural institutions or events (i.e., museums, concerts, and art exhibitions) is associated with improvement in self-perceived health and lower mortality after adjusting for other variables. (Bygren, Konlaan, & Johansson, 1996; Johansson, Konlaan, & Bygren, 2001). Additional studies in older populations have found that participation in arts programs and other community social activities is associated with increased physical and mental health (Murray & Crummett, 2010; Wang et al, 2002). Unfortunately, access to these activities is notably unequal throughout the city and varies by factors such as ethnicity, race and socioeconomic background (City of Tacoma, 2015). As a result, Tacoma has prioritized initiatives to increase attendance, particularly for young people, at arts and cultural events. While no set of objective measures can fully encompass the meaning of these or other domains, the indicators



Access to art and cultural opportunities is currently unequal throughout the city.

provide opportunities to gauge the existing resources of neighborhoods throughout the city and measure progress toward Tacoma’s own stated goals.

Indicator Recommendations:

Indicator 1: Funding and Employment

The Tacoma Arts Commission outlines 4 specific indicators that can be utilized to assess the effectiveness of arts funding: funding distribution; the amount of money residents spent on arts and cultural events; the number of people served; and the number of free events that are offered. We believe that assessing local funding distribution and the number of people served will be the most useful to assess equity and access to arts programs, and have offered several other metrics to supplement these two. We’d also like to highlight that efforts to ensure equal distribution may not translate to equitable distribution and that different needs should be reviewed to offer sub-communities within Tacoma the opportunity to grow and expand their access and utilization of arts & culture.

Metric 1: Number of people served

Rationale: One can measure direct funding distribution and the number of people served through arts and cultural events. Currently, several organizations track these numbers, which can help to illustrate the overall impact of arts programming. For example, from 2015-2016, the Tacoma Artist initiative program distributed \$40,000 to 16 local artists, who in turn served 22,090 people in the community.

Data sources: Year in Review report from the Arts Commission

Metric 2: Number of free events

Rationale: Economic accessibility to arts and cultural events is an important component of cultural vitality, and can be measured by the number of free events and the number of admissions to free events. It may also be useful to survey the demographics of attendees to better understand which members of a community are attending certain events. Data sources: The most current data can be found through the 2016 Year in Review report provided by the Tacoma Arts Commission and additional demographic data could be obtained through surveys at events.

Metric 3: Employment opportunities in the arts and culture sector

Rationale: Arts and culture can provide economic growth to a neighborhood, as evidenced by the employment opportunities that it offers. For example, in 2015, Tacoma had 1,507 individuals (1.6% of the city’s population) employed in occupations related to arts and recreation. In addition, the arts, entertainment, and recreation industry employed 3,148 individuals (3.4%), contributing to the city’s economic sustainability and growth.

Data sources: DATAUSA, which aggregates U.S. Census and other reliable data sources, has information on Tacoma employment, broken down by industry.

Indicator 2: Schools and Youth Programming

Schools can provide a major point of contact for youth to engage with arts and culture, promoting short- and long-term healthy behaviors. Key to this success is the school and community partnerships that increase access to arts & culture for students. For example, literary organization Write 253 provides in-school programming and a slam poetry club for students. Grand Cinema runs a film club in Lincoln High School that educates students on storytelling and technical aspects of filmmaking techniques and through which students can produce their own stories. Hilltop Artists operates tuition-free glass-making workshops and programs at Jason Lee Middle School in Hilltop.

Metric 1: Number of clubs dedicated to arts and culture per school

Rationale: At the institutional level, we propose measuring the number of schools that have access to arts and cultural programming as measured by the number of clubs dedicated to arts and culture per school. Schools that have less programming should be targeted for future funding, and this metric should be assessed yearly with a goal to increase

Increased attendance at cultural institutions and events is associated with improved perceptions of one’s health and with lower mortality.

programming in schools most in need. Assessing the expansion goals of successful programs and increasing the number of schools that have programs with proven track records is another institutional metric that should be measured.

Data sources: Tacoma Public Schools may have data available about partnerships per school.

Metric 2: Impact assessment

Rationale: In measuring the impact of these programs, there is often a disconnect between funders, who often want hard-number data such as improvements in test scores, and the experience of educators and artists, who often see results in areas such as the emotional development of students or students’ abilities to manage stress, which can have beneficial health impacts. Evaluating the success of these programs on multiple levels would help to reveal the health impacts of these programs.
Data Sources: A new impact assessment could be conducted through a collaboration by the city and a coalition of funders and community organizations/community members.

Indicator 3: Community Program Accessibility

Arts and culture provide avenues for belonging to communities larger than oneself and work to “help a community break down walls of social isolation and share collective visions—shared experiences that can be particularly important in oppressed or marginalized communities” (Minkler & Wallerstein 2008, 163). Much of this work happens in community programming, and Tacoma has a wealth of organizations and programs focused on arts and culture. However, as with youth programs, we need to look beyond a simple measurement of the number of programs. Instead, understanding who is using these programs, and the barriers they face, is critical in assessing their potential health benefits. For even more detailed information, qualitative interviews with residents regarding their experience with programs in their neighborhoods would be useful.

Metric 1: Program utilization stratified by various demographic identities

Rationale: The City could benefit from better understanding who is accessing available programming and where there may be gaps. In addition, it would be helpful to map the availability of programs that

recognize and respond to the different identities that shape the lives of residents, including language, religion, socioeconomic status, racial & ethnic background, gender, sexuality, ability, and more.

Data sources: The City of Tacoma may have this kind of data already, as it appears to have been included in visualizations on Results253. If data does not exist, mapping the existing programs and organizations in Tacoma would be helpful.

Available data: Some such maps already exist (see Results253 2017, Community Attributes 2017).

Metric 2: Representation in leadership

Rationale: Research has demonstrated that representation is important for equity and helps create buy-in for community collaboration (MacQueen, McLellan, Metzger, et al., 2001). For these reasons, it is one of the best ways to ensure that programs are representative of their communities.

Data sources: The City could count the number of community members on boards and committees that make decisions regarding funding for arts and cultural programming.

Indicator 5: Culturally Relevant Food

Food is another area that is of central importance to maintaining culture, community, and identity. Food equity and access is covered in the Food Access section of this report; however, we include it here to reinforce its importance in the meeting point between culture and health.

Metric 1: Access to culturally relevant food and grocery stores

Rationale: Metrics for this indicator could include documentation of both the existence of and the accessibility of ethnic grocery stores, ensuring that stores are located in the communities that they serve and are affordable.

Note: This metric also appears under Food Access, highlighting the intersectional nature of the indicators.

This report is intended to provide guidance around indicators, across seven key social determinants of health, that the City of Tacoma can use to track, monitor, and improve neighborhood health and livability. We believe our list of indicators will give the City new tools to better engage with and understand the experiences of the diverse residents of Tacoma. Armed with a wealth of new data, the City of Tacoma can start to develop and prioritize new and existing programs and policies to improve health and livability for all.

We believe that this is particularly important given the changes underway in Tacoma and broader region. The three neighborhoods that we focused on in our report—Hilltop, Lincoln District, and the South End—are all experiencing significant changes, as economic opportunities, housing affordability, and even the very residents within these neighborhoods are shifting. Without intervention, these changes are likely to serve different neighborhoods, and different communities, disparately. Increasingly, other cities across the county are seeing increasing social and economic disparities, and Tacoma has an opportunity to be an innovator and leader in social justice, health, and equity.

The list of indicators we have provided is by no means exhaustive, but serves as a reasonable starting point that the City can use to help influence individual and community health policy development. In some cases, we have suggested the City frame existing data around additional dimensions of social determinants, or pair together existing datasets from varying departments to provide nuanced and multidisciplinary views of livability and health at the neighborhood level. We have suggested new qualitative and quantitative metrics that would help capture more information about the health and experiences of individuals and neighborhoods. When possible, we offered potential data sources or

If Tacoma acts upon the metrics of health and livability, all residents will have opportunities to lead healthy lives and to thrive within their communities.

Armed with a wealth of new data, the City of Tacoma can develop and prioritize new and existing programs and policies to improve health and livability for all.

examples of surveys and other tools to help guide new data collection. We have also provided any examples of any available data that we could uncover that could be suitable to begin to paint a clear picture of health and livability, with a particular focus on these three target neighborhoods.

Without data, it is challenging to know what the many individuals and diverse communities are experiencing and how this influences health outcomes. As students, we learned so much by engaging with the diversity of residents across the many neighborhoods of Tacoma. We believe that improved data collection is an important first step to engaging residents from historically marginalized and underrepresented communities, providing the City with more information to prioritize funding and programming to address barriers to health and livability. Most importantly, we strongly believe that—if Tacoma can implement and act upon these metrics of health and livability—that all residents across the city would have even greater opportunities to lead healthier lives and thrive within their communities.

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