Rapid Health Impact Assessment: Vancouver Comprehensive Growth Management Plan 2011

Clark County Public Health
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Executive Summary

Health Impact Assessment (HIA) is a set of tools used to evaluate proposed policies, projects, or programs. The goal of HIA is to ensure that the health consequences of decisions are made explicit. Clark County Public Health (CCPH) undertook a rapid HIA on part of the 2011 Vancouver Comprehensive Plan to examine its impact on important determinants of health: physical activity and access to healthy food.

Pathway: built environment to health

Every additional hour per day spent in a car increases the odds of obesity by 6%.

Regular physical activity protects against obesity and many chronic diseases, including diabetes, cancer, and heart disease. In combination with unhealthy diets, lack of physical activity is the second leading cause of death in the United States, after tobacco. Characteristics of cities such as land use mix, density, and availability of parks can influence the amount of physical activity achieved by individuals, an d automobile-dependent lifestyles reinforce sedentary habits.

People living far away from a grocery store are less likely to eat healthy foods.

Like physical activity, a healthy diet reduces the risk of obesity and many chronic diseases. Studies show that the retail food environment is associated with eating habits. For example, people who live closer to supermarkets tend to eat more produce, while those who live near fast food restaurants consume less healthy foods.

Baseline assessment

CCPH analyzed baseline conditions to determine the extent to which the physical activity and access to healthy food are currently supported in Vancouver. Key findings are summarized below.

Table 1. Percent of Vancouver residents living within 1/2 mile of opportunities for physical activity and healthy food

	Park	Bikeway	Healthy food retail	Fast Food or convenience stores	Any food store
Percent within 1/2 mile of:	71%	70%	24%	58%	58%

- 30% of Vancouver adults are obese, and an additional 33% are overweight.
- Large areas of residential land use likely contribute to low levels of walkability.

- 41% of Vancouver residents live within 1/4 mile of a transit stop.
- Only 6% of Vancouver commuters use active transportation modes to get to work, the lowest of 8 similarly sized Northwest cities.

30% of Vancouver adults are obese.

Impact assessment

CCPH finds that the proposed planning direction changes, policy changes, and zoning changes will likely be beneficial to community health by promoting greater walkability and increased access to healthy food. We find no evidence of negative disproportionate impacts on vulnerable populations, and several of the proposals are likely to contribute to reducing disparate health outcomes.

Whereas the proposed changes to the comprehensive plan are likely to benefit community health, it is critically important that they be implemented through development standards to be effective. CCPH recommends additional actions the City could take to further improve opportunities for physical activity and access to healthy food.

Recommendations

Physical activity

1. Develop land uses and transportation networks that support physical activity.
2. Enhance connectivity.
3. Manage parking to encourage active transportation and efficient land use.
4. Improve safety and comfort for pedestrians.
5. Increase safety and comfort for bicyclists.
6. Increase the use of active transportation modes.
7. Reduce disparities in access to physical activity and protect vulnerable populations.

Access to healthy food

1. Recruit and retain healthy food retail.
2. Promote opportunities to grow food in home and community gardens.
3. Reduce the availability of unhealthy food options relative to healthy food options.
4. Promote food security.
5. Reduce disparities in food access and protect vulnerable populations.

Introduction

Health Impact Assessment (HIA) is a combination of procedures, methods, and tools used to evaluate the potential health effects of a policy, program, or project.

- World Health Organization

Health is shaped by the places we live, work, learn, and play. In the interest of highlighting this relationship, Clark County Public Health (CCPH) undertook this Health Impact Assessment (HIA) to assess changes proposed in the City of Vancouver 2011 Comprehensive Plan update. In comparison with more comprehensive HIA efforts, this HIA is not as extensive and is therefore referred to as a "rapid" HIA.

Purpose

This rapid HIA of the Vancouver Comprehensive Plan provides an opportunity for CCPH to assess policy changes that have potential to help the most vulnerable residents in Clark County. The central goal of the HIA is to raise the visibility of the impacts on health rooted in the built environment. Based on this assessment, CCPH made recommendations on policies and plan implementation strategies intended to maximize health benefits.

HIA process

Like other HIAs, this process included the steps typically applied in HIA. These include:

Screening — determining whether an HIA is appropriate for a given project or decision

Scoping — setting parameters of assessment and identifying the most relevant health outcomes

Assessment — describing baseline conditions and estimating future impacts

Reporting — disseminating findings and making recommendations

Monitoring — evaluating the effectiveness of the HIA and health impacts of the implemented proposal

Meeting practice standards

It is the intention of Clark County Public Health (CCPH) to advance the practice of Health Impact Assessment (HIA) while producing a useful tool for policy evaluation. In the interest of this goal, CCPH reviewed the Minimum Elements and Practice Standards for Health Impact Assessment by the North American HIA Practice Standards Working Group (November 2010), a document that provides guidance on effective practices and offers a metric for comparison to other HIAs. This section describes how the different stages of HIA were applied for this project.

Screening

Based on findings from an HIA conducted on the Bicycle and Pedestrian Master Plan during 2010, CCPH identified both strengths and areas of concern within the City of Vancouver. Vancouver is home to the largest and most concentrated populations affected by health disparities, such as racial and ethnic minorities and people of low socioeconomic status (SES). With this information CCPH met with the City of Vancouver Long Range Planning Department to discuss ways to incorporate health concerns into planning. Both the City and CCPH agreed that an HIA on the City's Plan update would be valuable. Subsequently, CCPH received a grant from the Northwest Health Foundation to fund the HIA work.

In this rapid HIA, CCPH uses relevant health data to describe the potential to maximize the health benefits of the Community Development chapter of the comprehensive plan, particularly regarding physical activity and healthy eating. The HIA identifies areas of concern and potential ways to mitigate these and improve community health.

As described in the scope of work for the grant, the HIA will:

1. Describe the environmental determinants of increased physical activity and healthy nutrition, and identify barriers and opportunities embedded in planning policy and code.

2. Analyze Vancouver's physical infrastructure to identify and map built environment characteristics that promote or impede

access to opportunities for physical activity and healthy foods.

3. Identify new or modified policies or codes that would benefit vulnerable or high-risk populations.

4. Report findings and recommendations

Additionally, the timeframe for the HIA is coordinated with the Plan development to maximize the utility of the findings.

Scoping

Decision & Alternatives
The primary decision assessed by this HIA is whether to adopt the set of modifications made to the existing comprehensive plan through the update process. The decision makers include the City Long-Range Planning Department and the Vancouver City Council.

Potential impacts
Opportunities for physical activity and healthy eating are the focus of the HIA. Lack of physical activity and lack of healthy nutrition are causes of obesity, which in turn leads to various chronic illnesses resulting in poor health and premature death. The influence of the built environment on this widespread health trend is the primary impact considered in the HIA.

In addition to opportunities for physical activity and access to healthy food, the HIA considers one other health impact, albeit to a more limited extent. At the request of city planners, we have included impacts on safety from injuries and fatalities resulting from traffic crashes.

Boundaries of Analysis
The assessment of impacts is limited to the City of Vancouver. With certain data, boundaries are set to approximate the city limits. And still other data are available only at the county level; however, these data are useful for background information.

The entire population of the city is considered in the analysis, with special attention given to subpopulations of low socioeconomic status (SES), racial and ethnic minorities, youth, and the elderly. These subpopulations are affected by

documented health disparities.

Research
Existing data are used in the analysis, including county assessor's parcel data, roadway networks, and census data. A donation of updated census estimates from ESRI, Inc. enables us to use 2009 figures for many variables. Tract-level data from the American Community Survey also provide recent estimates; these estimates are given preference over ESRI data when feasible. Health data, including physical activity, obesity and nutrition, come from the Healthy Youth Survey (HYS) and the Behavioral Risk Factor Surveillance System (BRFSS). Data on food stores come from a database maintained by CCPH, and data on opportunities for physical activity are compiled from city and county GIS.

Vulnerable subgroups
Through the HIA process, CCPH identified vulnerable subgroups of the population that may be more at risk of negative influences on health. These subgroups include low-income residents, racial and ethnic minorities, youth, and the elderly population.

Distribution of impacts
Distribution of impacts is also described in terms of the vulnerable subgroups identified above. For proposals specific to a location, we describe the geographic distribution of impacts to the extent possible.

Roles
The City Long-Range Planning Division prepared the Comprehensive Plan with the final adoption decision belonging to the Vancouver City Council. CCPH conducted the HIA, with support from the City Long Range Planning Division.

Standards
The HIA is based on relationships between impacts and health outcomes identified in peer-reviewed literature. This rapid HIA examines only the direction of change in health outcomes, not the potential magnitude of change. We use the Centers for Disease Control and Prevention recommendations for physical activity and a food store typology developed by CCPH.

We recognize that research on the connections between physical activity and the built environment is still developing, and there is statistical uncertainty surrounding the causal nature of the relationship. Most available studies, including those referenced in this HIA, are cross sectional, or point-in-time, in design.[1, 2] To reflect the varying levels of certainty, associations that are supported by theory and by multiple studies with similar outcomes are classified as having the strongest evidence. Evidence coming from a smaller body of published research is categorized as "moderate". For many proposals, there is emerging evidence or examples of successful implementation. These cases are labeled "some evidence". Where evidence is lacking, assessment is based instead on case studies, best practices, and theory. We categorize such findings as "limited". Table 2 summarizes this system of categorizing evidence, which is used to evaluate polices and programs.

Disparities based on socioeconomic status, race/ethnicity, and age are reported when apparent.

Table 2. Strength of evidence categories

+	Limited evidence:	Few case studies, theoretically supported
++	Some evidence:	Limited research, some case studies
+++	Moderate evidence:	Rigorous, peer reviewed research
++++	Strong evidence:	Multiple rigorous, peer reviewed research studies with similar findings

Review & Dissemination

CCPH and the City of Vancouver Long Range Planning Division met regularly to review the process and initial findings. City staff served as the primary reviewers of the HIA.

The HIA will be posted on the county's website and distributed through public outreach events. The HIA will be shared with many community groups such as the Community Choices Health Equity Coalition and the Friends of Clark County Active Transportation Committee.

Assessment and Recommendations

The assessment portion of this HIA includes baseline conditions, identification of potential health impacts, and recommended strategies for implementing and updating the plan.

Baseline conditions are reported for the area of the city and its population as a whole as well as for vulnerable sub-populations. Limitations, gaps in data, and uncertainties are explicitly noted. Assessment of project impacts is based on GIS analysis combined with relationships established in research literature.

As recommended by the Practice Standards, it is important to acknowledge data gaps in order to increase transparency and aid interpretation of our findings. Notable gaps in available data for this project include:

- Qualitative data on existing bicycle and pedestrian infrastructure
- Comprehensive inventory of pedestrian facilities
- Record-level local health data (morbidity/mortality) linked to built environment data
- Data on most types of morbidity by neighborhood
- Data on physical activity by neighborhood
- Data on some racial/ethnic disparities (due to small numbers)

Recommendations are based on the findings from assessment and on the best available evidence from research literature.

Reporting

This report and executive summary constitute the primary reporting activity related to this HIA. The report includes a summary of findings and discussion of scientific evidence for the identified health impacts. The report will be available for distribution and posted on the CCPH website.

Monitoring

Monitoring of health outcomes and changes in the determinants of health will take place through routine assessments conducted by CCPH, most notably through the Community Assessment Planning, and Evaluation (CAPE) report.

Evaluation

Evaluation of this HIA will be conducted in two parts: procedural evaluation and impact evaluation. Process evaluation will examine how the HIA influenced the decision-making process and to what degree health issues were exposed. Impact evaluation will determine the extent to which the HIA changed the content of the comprehensive plan, and whether implementation is likely to be affected by the HIA.

CCPH will conduct key informant interviews to accomplish process evaluation. Interviews will be scheduled shortly following adoption of the comprehensive plan update. Impact evaluation will consist of a qualitative analysis of the adopted plan, which CCPH will complete by the end of 2011.

Pathways from the built environment to health

This section explains the connection between the built environment and health, specifically relating to physical activity and healthy food. The research on both topics is summarized below with a focus on documented disparities and resulting health outcomes.

Physical activity & active transportation

In combination with unhealthy diets, physical inactivity is a leading cause of death in the United States, second only to tobacco use.[3,4] Regular physical activity reduces the risk of obesity and many other chronic diseases, including cancer and heart disease. Therefore, creating environments that foster and encourage physical activity is an important strategy to achieve greater population health and well-being. The Centers for Disease Control and Prevention (CDC) recommends a minimum of 150 minutes per week of physical activity for adults, with additional health benefits gained from 300 minutes per week. It's recommended that children and adolescents engage in physical activity 60 minutes each day. Providing opportunities for physical activity through active transportation will help children and adults meet these recommendations.

Defining Active Transportation

Research literature identifies two distinct types of cycling and walking. The first is leisure, also known as recreational or non-derived demand travel. This type of cycling and walking is done simply for the sake of the activity and has the strongest associations with the proximity, quantity, and quality of recreational paths.[5] The second type of cycling and walking is for travel, also known as utilitarian travel or active transportation. This type of activity is a means to some end and is likely influenced by route directness, proximity of destinations, and cycling, walking, and transit facilities.[6,7,8] Examples of active transportation are commuting to work or traveling to grocery store. Both types of travel can be influenced by healthy community design. Transit use is often considered active transportation because of the physical activity achieved by walking to and from stops. Research findings demonstrate that nearly a third of transit users meet daily physical activity recommendations simply through accessing transit.[9]

Pathways from active transportation to health

Since World War II, many American communities have been developed in a way that necessitates reliance on a privately owned automobile for transportation. This has been a self-perpetuating trend: cars enable low-density sprawl, and low-density sprawl requires cars.[10] Depending almost exclusively on automobile transportation has led to many negative health effects, and chief among these is the increase in sedentary lifestyles that has accompanied the rise of drivable suburbanism.[11] Daily exercise that was once built into every day life by the simple act of moving from point A to B has nearly disappeared from suburban life. For example, in 1969 nearly half of American school children walked or biked to school, compared with just 13 percent in 2009.[12] Improving health through active transportation requires communities to design built-in exercise derived from routine travel. This can be accomplished through community design that encourages walking, bicycling and transit. Research supporting this approach is summarized below.

Built environments that provide opportunities for physical activity lower the risk for obesity. Measures of the built environment that are correlated with physical activity include the presence of bicycle and pedestrian infrastructure, park

proximity, greater street network density, higher residential density, greater land use mix, and quality urban design.[13, 14, 15] Bicycle and pedestrian facilities are associated with more adults and children meeting physical activity recommendations through both leisure and transportation-related physical activity.[16, 17 ,18] Some studies have found that residents of older, more traditionally designed neighborhoods (pre-WWII) get more physical activity than residents of newer, auto-dependent suburban neighborhoods.[19] A recent study of neighborhoods in Seattle and Baltimore found that even among high-income, low-walkable neighborhoods, residents had about a 50% increased risk for obesity compared to high-income, walkable neighborhoods.[20] These studies demonstrate a clear and convincing association between the built environment and physical activity.

Best practices in urban design promote physical activity. One widely cited study found associations between walking behavior and physical, quantitative design features. Measurable physical features include sidewalk width, street width, traffic volumes, tree canopy, building height, number of people present, and weather. Associations were also demonstrated between walking behavior and qualitative features which are summarized in Table 3.[21] In addition to the design of streetscapes and buildings, the layout of streets themselves is also linked to physical activity. More connected street grids with more through-routes are correlated with increased walking and cycling, whereas closed-loop and cul-de-sac street grids are associated with less active transportation.[22,23]

Table 3. Qualitative elements of pedestrian-friendly design

Imageability	The quality that makes a place recognizable and distinct
Enclosure	The degree to which streets and spaces are defined by buildings, trees, and other elements
Human Scale	The size, texture, and articulation of physical elements that match the size and proportions of humans and match the speed at which humans walk
Transparency	The degree to which people can see or perceive what lies beyond the edge of a space, especially the degree to which they can see other human activity
Complexity	The visual richness of a place, defined by variety in the physical environment

Density and mixed land use promote active transportation. Many studies have found a positive association between density and active transportation, indicating that a dense mix of land uses promotes physical activity. An early study on the subject

found more walking related to density, land use diversity, and urban design.[24] Saelens et al report that density is among the most consistent positive correlates of walking and cycling. This reflects the consistent observation that more destinations closer together lead to more walking and cycling.[25]

Access to parks is associated with physical activity. Adults who perceive that they have access to parks are almost twice as likely to meet physical activity recommendations.[26] Among children, higher numbers of parks and larger parks in a neighborhood correlate with increased physical activity. One study found that for each 1 percent increase in park area within a community, there was a 1.4 percent increase in physical activity.[27] In addition, living near a trail is associated with a 50% increase in the likelihood of meeting physical activity recommendations.[28, 29]

Auto-dependent development reinforces sedentary lifestyles. In a study of counties across the United States, researchers found that residents of the most sprawling counties walk less, weigh more, and have a greater prevalence of hypertension than their counterparts in more densely built counties.[30] Each additional hour per day spent in a car increases the odds of obesity by 6%, while each additional kilometer walked results in about a 5% reduction in the odds.[31]

The benefits of increased physical activity through active transportation translate into monetary savings. Among the many benefits of bicycle and pedestrian-friendly development are health-related savings. These come in the form of reduced long-term healthcare costs and reduced mortality. A study of Portland's bicycling investments found that for an investment of $138 million to $605 million, the city will save up to $594 million in health care costs and up to $12 billion as a result of reduced mortality by 2040.[32] Another study found that for every $1 invested in trails, about $3 was saved in direct medical costs.[33] Studies outside the US have found returns on investment in bicycle infrastructure ranging from less than one to a ratio of 5-to-1.[34]

Real and perceived danger to pedestrians and bicyclists can deter individuals from choosing active transportation. Over the past decade, research has more closely examined features of our built environments that may increase risk of pedestrian and

bicyclist injury. Some approaches have looked at area characteristics on the census tract level, finding that traffic volume, arterial streets without transit, land area, land use, and population characteristics (socioeconomic and demographic factors) were all significant predictors of pedestrian injury.[35] Additional studies have found that crash risk is higher around schools, and risk in this area is further increased among non-white populations.[36, 37, 38] Other studies have looked at even smaller geographical areas. An examination of traffic corridors in King County, Washington found that increased use of transit stops is associated with more pedestrian-motor vehicle collisions, while an analysis of pedestrian crash points in New Zealand found significant associations between both traffic volume and curb parking in relation to pedestrian-motor vehicle collisions.[39, 40] These measures indicate the presence of environmental attributes that may influence individuals' choices whether to travel by active modes.

Disparities in Access to Physical Activity

Some groups are at greater risk for obesity than others, and are therefore in greater need of reinforcement and opportunities for physical activities. Blacks and Latinos experience higher obesity rates than Whites in nearly every U.S. state.[41] Similarly, recent data show a strong relationship between socioeconomic status and obesity. About 35% of adults earning less than $15,000 were obese in 2009, compared to only 24.5% of those making $50,000 or more.[42]

Low-income groups are beneficiaries of opportunities for active transportation, as these modes are generally free or very low-cost. However, studies suggest that residents of low-income, walkable neighborhoods do not experience the same benefits as residents of high-income walkable neighborhoods.[43] This suggests that there are other necessary preconditions that must be satisfied, such as safety improvements, for this population to fully benefit from the health-promoting effect of a walkable neighborhood.

Access to Healthy Food

Accessing healthy food is a daily challenge for residents of many communities. This is especially true when cheaper, less healthy alternatives are more convenient. The challenge of accessing healthy food is widely recognized as a leading contributor to the nation-wide trend of increasing obesity rates.

Changes in food production have contributed to rising obesity rates. While increased centralization of food production has led to cost efficiencies and inexpensive food for consumers, it has also led to more processed and calorie-dense foods. This has contributed to an increase in the daily calories consumed by Americans from an average of 2,172 in 1970 to 2,704 in 2007.[44]

Defining access

As measured for this HIA, the two important factors in food access are the proximity of food and the type of food available. CCPH acknowledges that proximity and food type do not provide a complete description of food access and that other organizations have used a variety of indicators. For example, some research-tested measures include affordability, distance, and neighborhood food environment (such as a measure of density or ratio of stores to population). Other measures stress affordability, availability, and appropriateness of the food sold.[45]

The term "food desert" describes a geographic area in which food access is difficult or in which no healthy food stores are available. Distance is widely used as a measure of food access and is significantly associated with Body Mass Index (BMI), consumption of produce, and years of potential life lost.[46] CCPH uses ½ mile street-network distances to define areas with high access to food stores. Within incorporated areas, neighborhoods beyond this distance are considered a food desert.

Pathways from food to health

Consumption of healthy foods lowers the risk of chronic disease. Healthy diets protect against many diseases, including diabetes, obesity, and leading causes of death such as cancer and cardiovascular disease.[47] Access to healthy food results in healthier diets and improved health outcomes. A study in Los Angeles found that residents needing to travel more than 1.75 miles to a supermarket had higher BMIs.[48] In another study, Chicago researchers found that years of potential life lost increased with an increase in distance from supermarkets.[49]

Increased access to healthy foods results in greater consumption of healthy foods. Several recent studies have examined access to healthy foods and eating habits, consistently finding that healthier eating habits are associated with better access to healthy food.[50, 51] One study demonstrated that each additional supermarket in a census tract is associated with an 11%-32% increase in produce consumption among residents.[52] Findings also indicate that there is an association between the amount of grocery store shelf space devoted to healthy foods and consumption of healthy foods such as low-fat milk and fresh produce.[53, 54]

An overabundance of unhealthy food leads to an increased risk of chronic disease. While access to healthy food is important for consumption of healthy food, access to unhealthy food may be a more important factor in explaining chronic health conditions and the obesity epidemic. Many neighborhoods have food options that are limited to stores that typically sell high-calorie, energy-dense foods. These foods, which are often more convenient and less expensive than healthier alternatives, are associated with higher BMI.[55] There is a great deal of research linking convenience stores and fast food restaurants with obesity and BMI.[56, 57, 58] Studies in New York and California found that areas with a high density of fast food restaurants and convenience stores are associated with higher rates of diabetes and obesity.[59, 60] One study concluded that removing a fast food restaurant from a neighborhood with high fast food density had the effect of decreasing residents' weight by one pound, and adding a supermarket decreased weight by three pounds.[61]

Local food production increases food access. Farmers markets, farm stands, produce stands and CSA (Community Supported Agriculture) Farms increase opportunities to purchase and

consume more fruits and vegetables. The 2007 Agriculture Census reported that although farms have reduced in size, the number of farms in the U.S. increased 4% from 2002 to over 2.2 million farms in 2007.[62] The growth of local food production offers more opportunities for healthy eating behaviors.

Disparities in access to healthy food

Low-income people and people of color have unequal access to healthy food. In the United States, 5.7 million households, or approximately 5.4% of all households, live more than a half a mile from a supermarket and don't have access to a vehicle.[63] These food deserts are occupied by rural residents living far from services and by low SES and ethnic minorities living in marginalized urban neighborhoods.[64, 65, 66] For example, in Baltimore, lower income neighborhoods are three and a half times more likely to have limited access to healthy foods than higher income neighborhoods.[67] Food retailers in marginalized neighborhoods are likely to operate convenience stores and fast food outlets, sources of energy dense, processed foods. Retail food environments with abundant fast food restaurants and convenience stores are correlated with conditions associated with unhealthy diets, such as obesity and diabetes.[68, 69] While the causes of chronic diseases are complex, it is likely that the retail food environment is a contributing factor to the poor health of individuals living in these communities.

Healthy food can be inaccessible due to either a lack of retail establishments or to affordability. As a result of changing markets, marginalized neighborhoods often lack food retailers. As cities changed in the 1970s and 1980s, large supermarket chains at city fringes were able to out-compete smaller urban grocery stores that paid higher property costs, had smaller store footprints with limited options, a declining customer base, and higher rates of theft.[70] Today, chain supermarkets are almost four times more likely to be located in majority white census tracts compared to census tracts with a majority of black residents.[71] Low rates of car ownership among residents of these communities and the costs associated with getting to a supermarket outside their immediate neighborhood also reduce access.

Low-income families face higher prices and lower quality. Emerging research from around the U.S. has revealed a disparity

in food price and quality by geography. Low-income and minority neighborhoods tend to have less produce, inferior quality produce, and higher prices when compared to wealthier neighborhoods.[72, 73, 74, 75]

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Baseline assessment

In this baseline assessment we have described current conditions by mapping various measures of access to healthy food and opportunities for physical activity. The map at left displays the boundaries of west, central, and east Vancouver, as defined for this assessment. Most maps in this assessment include the Vancouver Urban Growth Area, represented by shading over parts of Clark County that are neither in Vancouver nor its UGA. Unless stated otherwise, the color spectrum used to classify geographic areas is divided into five classes based on quintiles. For example, darkest color represents block groups among the lowest 20% of block groups in terms of median income.

Overview

Demographics

Vancouver population in 2010: 161,791

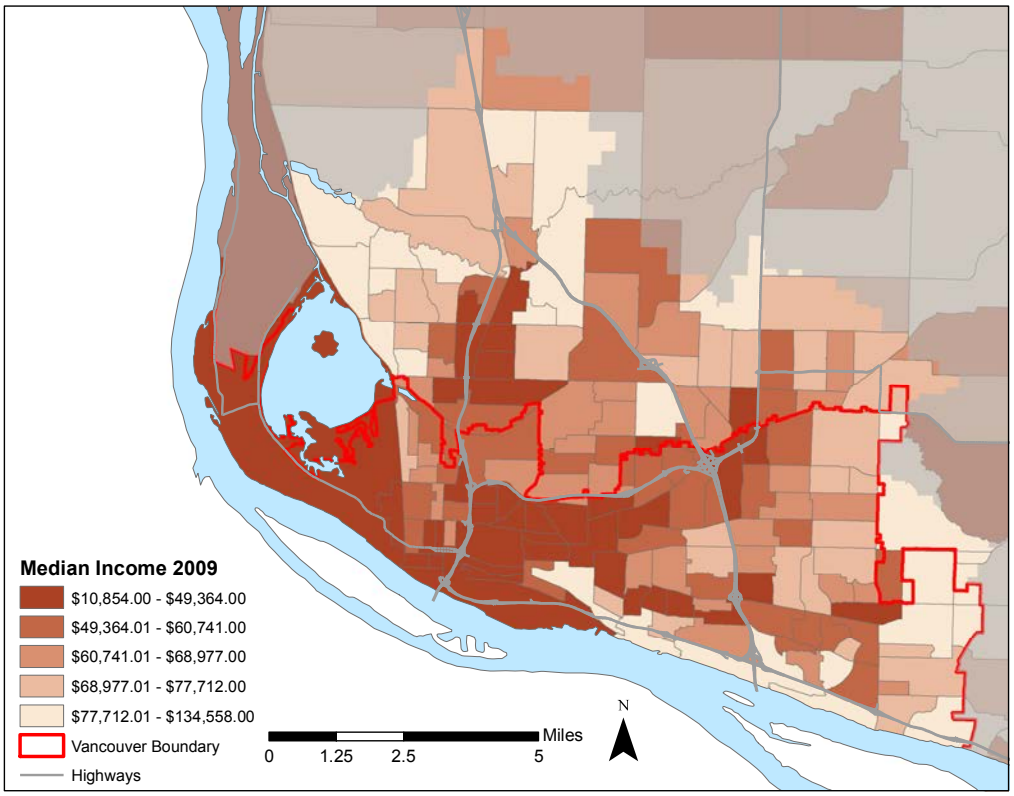
The city of Vancouver is home to about 161,000 people, many of whom are residents of the most diverse neighborhoods in Clark County. This HIA examines disparities based on four vulnerable sub-populations: low socioeconomic status, racial & ethnic minorities, youth, and aging adults. The portion of the city population represented by each of these subpopulations is displayed below in table 4. These measures are mapped on the following pages in maps 1-4.

Table 4. Vancouver Demographics

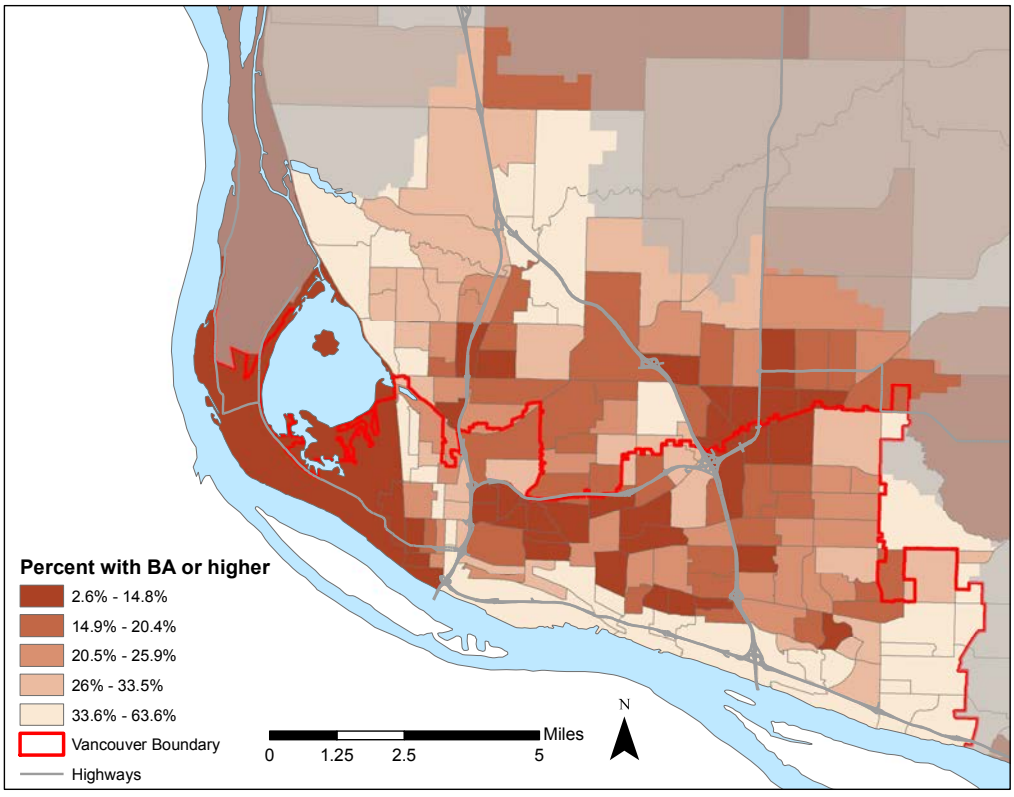
Category	Indicator	Percent of population
Low SES	Adults age 25+ with a bachelor's degree	24%
	People with incomes below the federal poverty line	15%
Race & ethnicity	Hispanic or Latino	10%
	Asian	5%
	Black	3%
	Non-Hispanic White	76%
Youth	Under age 20	26%
Aging adults	Age 65 or older	12%

Source: U.S. Census Bureau, 2010 Census

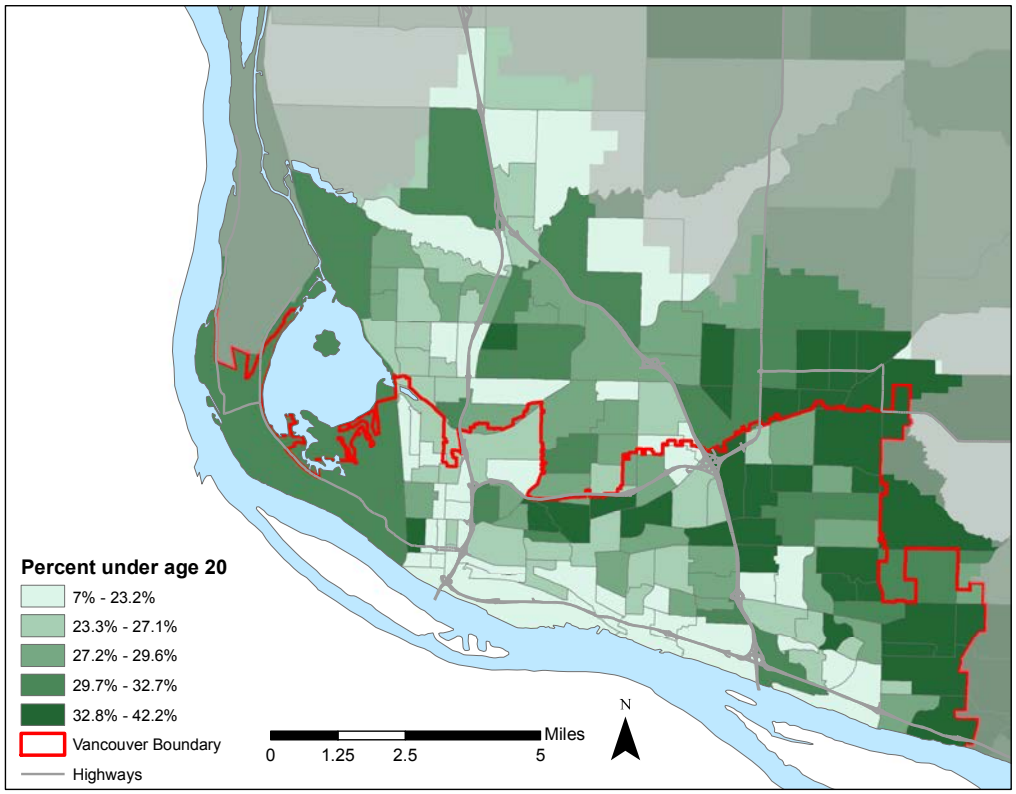
Map 1. Median household income by census block group, 2009



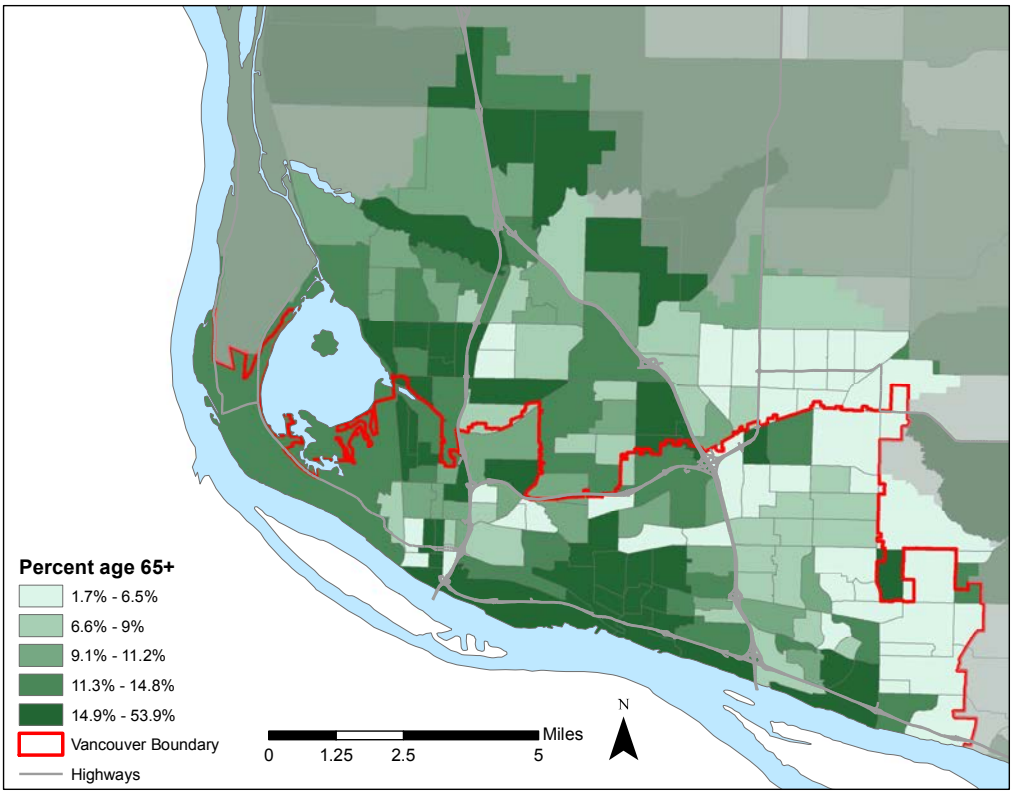
Map 2. Educational attainment by census block group, 2009



Map 3. Percent of population under age 20 by census block group, 2009



Map 4. Percent of population aged 65+ by census block group, 2009



Health Data

Data below provide an overview of health indicators in Vancouver. Each of the indicators listed in the table are related to healthy eating and active living. These indicator values are similar to those of Clark County and Washington State. Nearly a third of adults are obese, and about another third of adults are overweight.

Table 5. Health indicators for Vancouver

Indicator	Vancouver
Life Expectancy at Birth (years)	79.1
Percent of adults who are obese (BMI ≥30)	30%
Percent of adults who are overweight or obese (BMI ≥ 25)	63%
Percent of adults with leisure time physical activity in past month	81%
Percent of adults who consume five or more servings of fruits and vegetables per day:	24%

Source: BRFSS, 2009

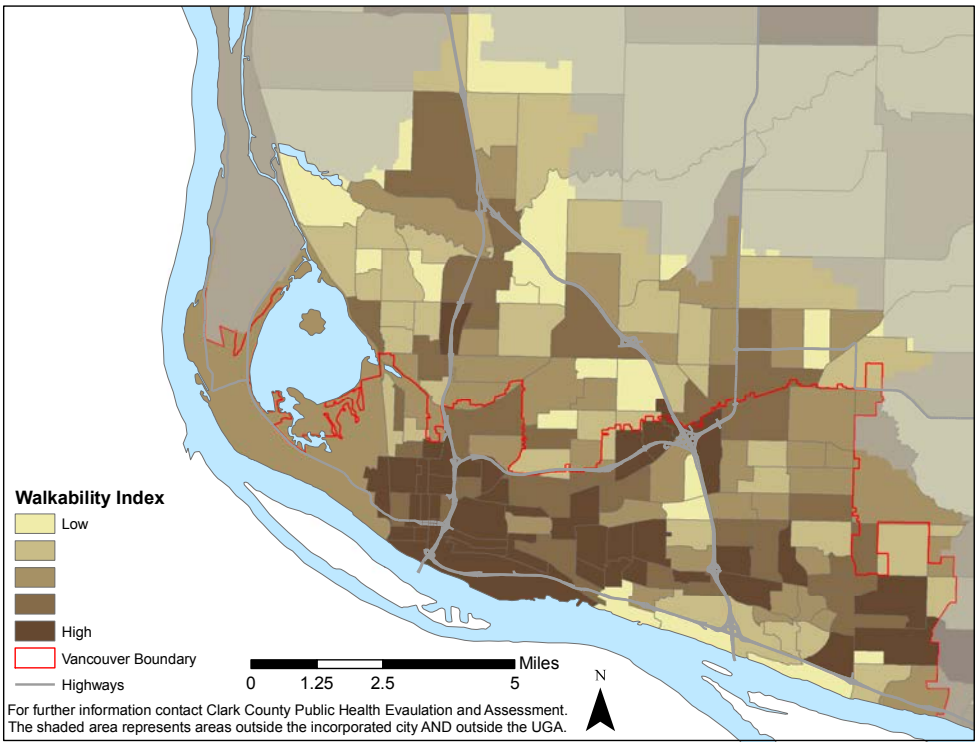
Physical Activity and Active Transportation

Opportunities for physical activity vary widely within Vancouver. Some neighborhoods feature a mix of uses, a connected street grid, and convenient parks and trails. Others, however, are characterized by single land uses which often necessitate driving to most destinations. The built environment can facilitate physical activity by making active transportation an attractive option and by offering convenient access to parks and trails. Existing conditions relating to access to physical activity are documented in this section, organized into the categories of walkability, bikeability, transit availability, and travel behavior. Each of these categories overlaps slightly with the others, and ideal conditions in one category reinforce ideal conditions in another. For example, good access to transit contributes to travel behavior. Also included is an analysis of access to parks, which promote physical activity both for recreation and transportation.

Walkability

Walkability within Vancouver is described below in terms of the four categories identified in research as predictors of active transportation: land use, connectivity, building design, and density. CCPH calculated a single index from these indicators creating the walkability index displayed in map 5. As evident from this map, the most walkable areas are concentrated in the older neighborhoods of west and central Vancouver, while east Vancouver and the UGA tend to have lower levels of walkability.

Map 5. Walkability index by census block group

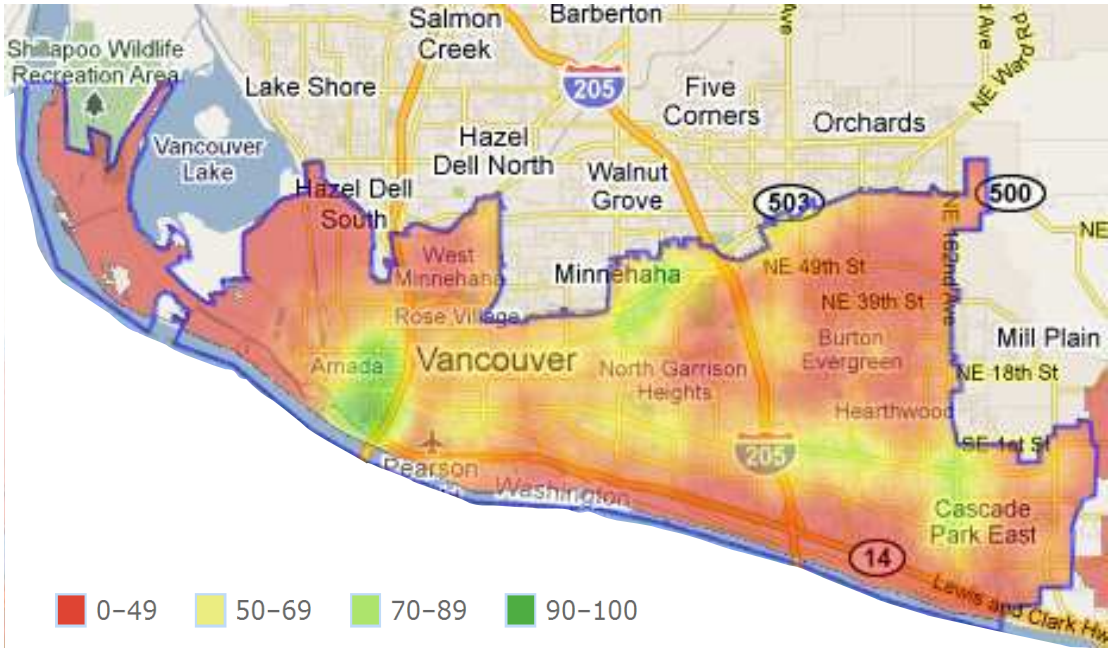


Land use

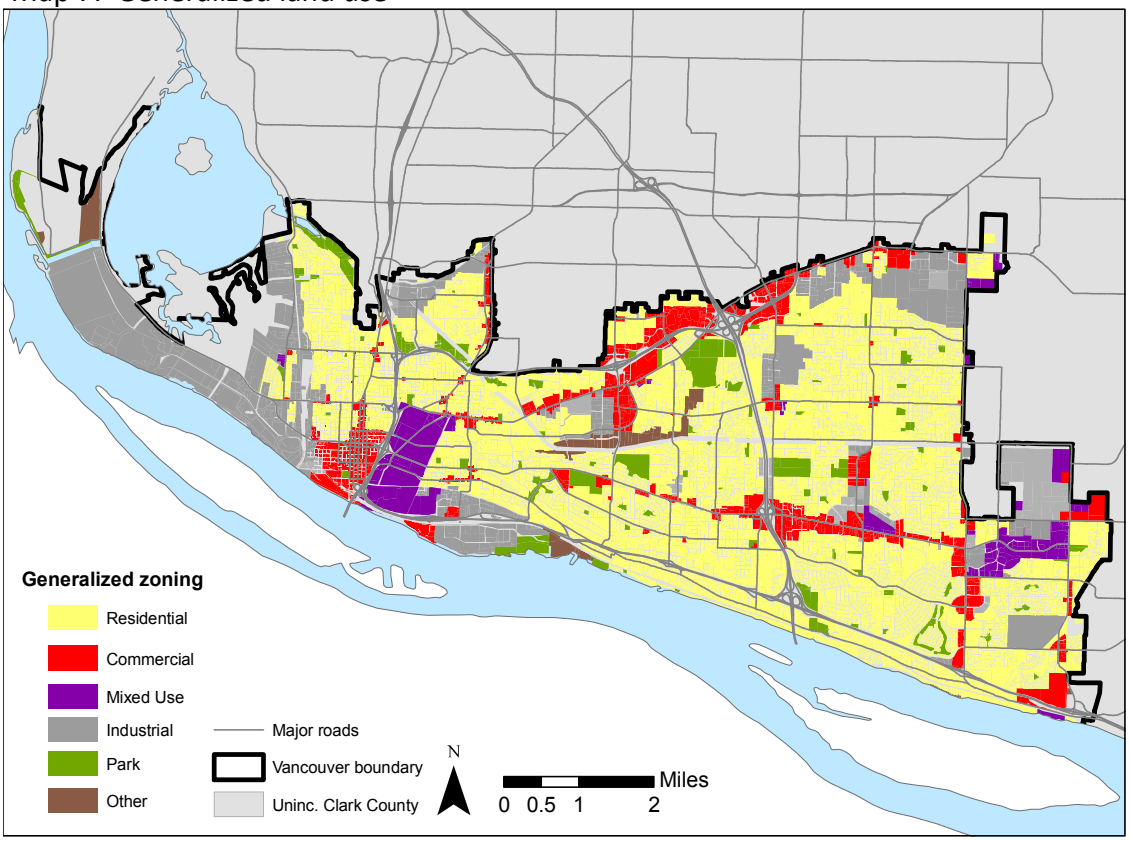
Vancouver contains some neighborhoods with land uses that are highly conducive to walking and cycling. On the other extreme, some neighborhoods effectively discourage active transportation. A dense mix of land uses results in neighborhoods that have destinations close enough to promote walking or cycling. The Walk Score index is one way of measuring land use mix, calculating the distance to a variety of destinations. It generates an index value ranging from 0 to 100, with 100 being the most walkable. The “heat map” on the following page shows the results for Vancouver, with more walkable areas shown in green. The index reflects the dense mix of land uses in the downtown area and a few pockets beyond.

However, much of the city has a low Walk Score, indicating a lack of closely-spaced destinations that facilitate active transportation.

Map 6. Walk Score heat map



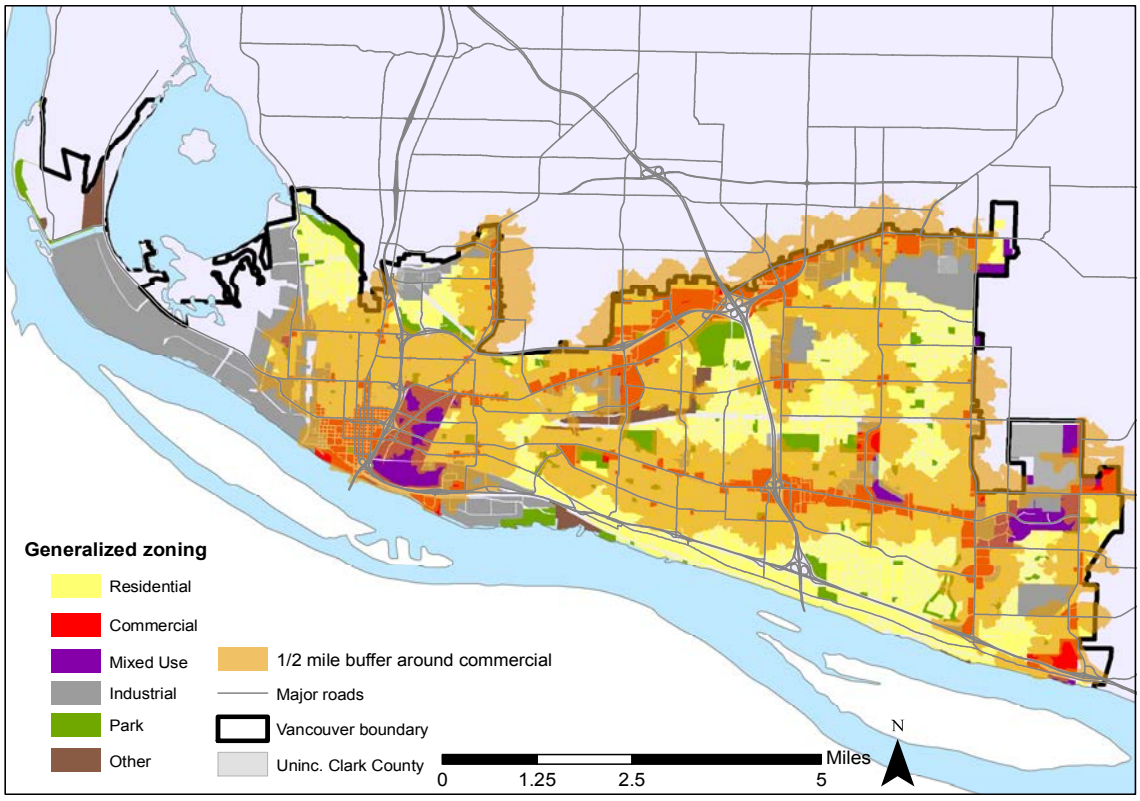
Map 7. Generalized land use



When compared to a generalized zoning map of Vancouver, it is clear that expansive areas of single-use residential land uses are key contributors to the lack of walkability. This land use pattern reflects a spatial distribution of commercial uses that is not conducive to walking and cycling. In these areas, zoning is a barrier to active transportation.

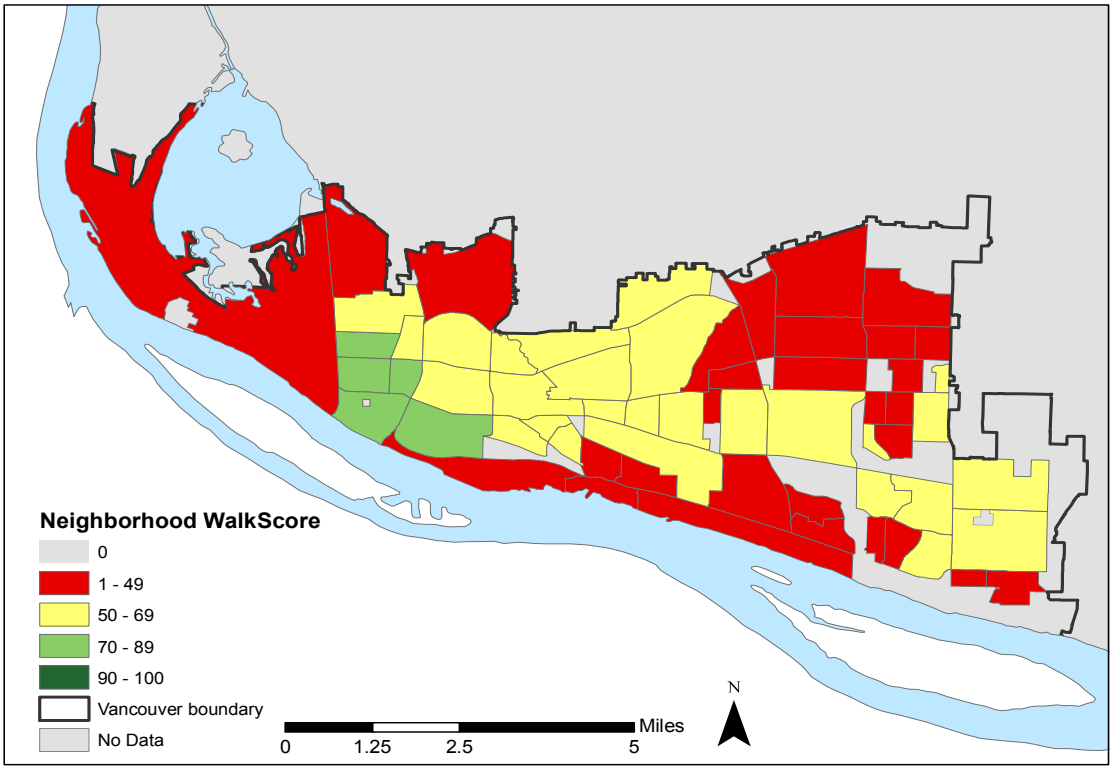
When ½ mile network buffers are drawn around commercially zoned properties, the potential for walkable destinations becomes clear. In map 8 below, the transparent orange shading represents areas that are within ½ mile of a commercially zoned property. Beyond these buffers, retail is not normally permitted. Some common destinations, such as parks and schools, are beyond these buffers, but these areas largely consist of large areas of residential zoning that would prohibit most other uses.

Map 8. Generalized land use with 1/2 mile buffers around commercial



Walk Score also scores individual neighborhoods, which are reflected in map 9 , opposite.

Map 9. Walk Score by neighborhood



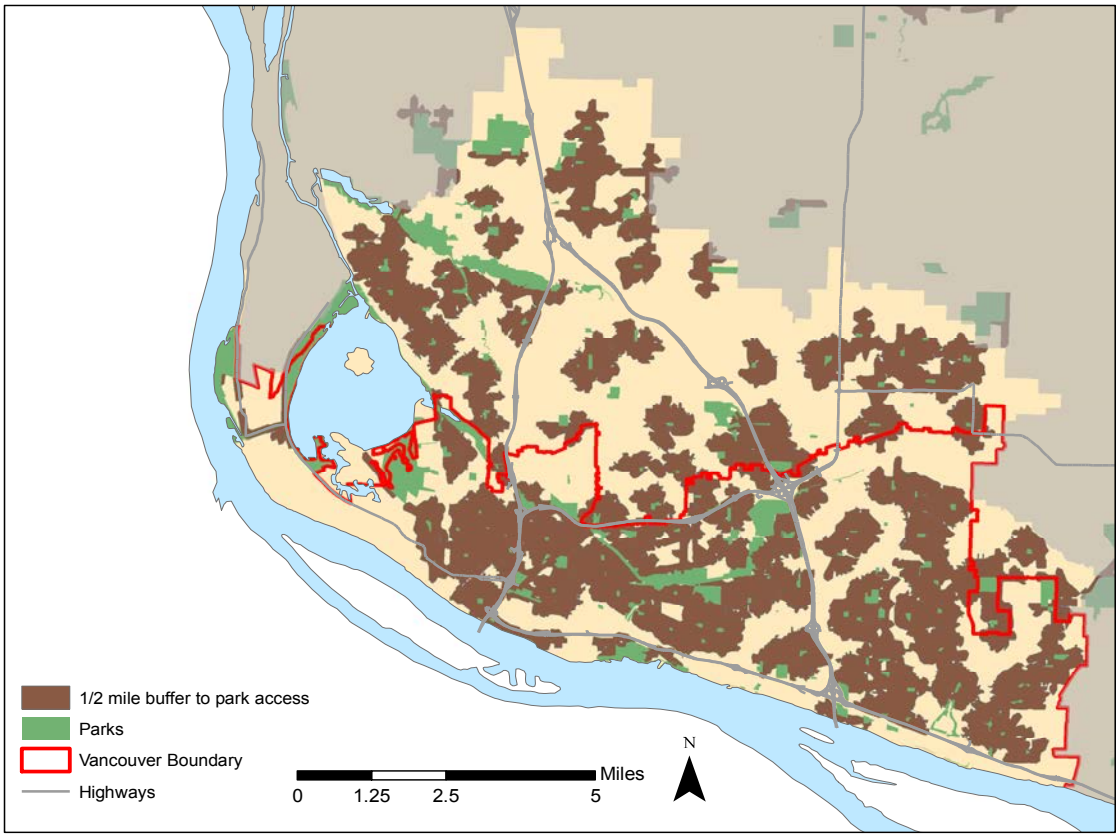
Access to physical activity in parks

Parks are a land use that is exceptionally important for physical activity, both as a destination for active transportation and as a recreation facility. Park coverage is fairly ubiquitous in Vancouver, but gaps are more common in the eastern part of the city as displayed in table 6. The lower levels of access to the east are visually displayed in map 10 indicates the areas that are within ½ mile walking distance of a park.

Table 6. Percent of residents living within 1/2 mile of a park access point

Area	Parks
West Vancouver	83.9%
Central Vancouver	73.6%
East Vancouver	65.4%
Vancouver (city-wide)	70.8%

Map 10. Area within 1/2 mile access to parks

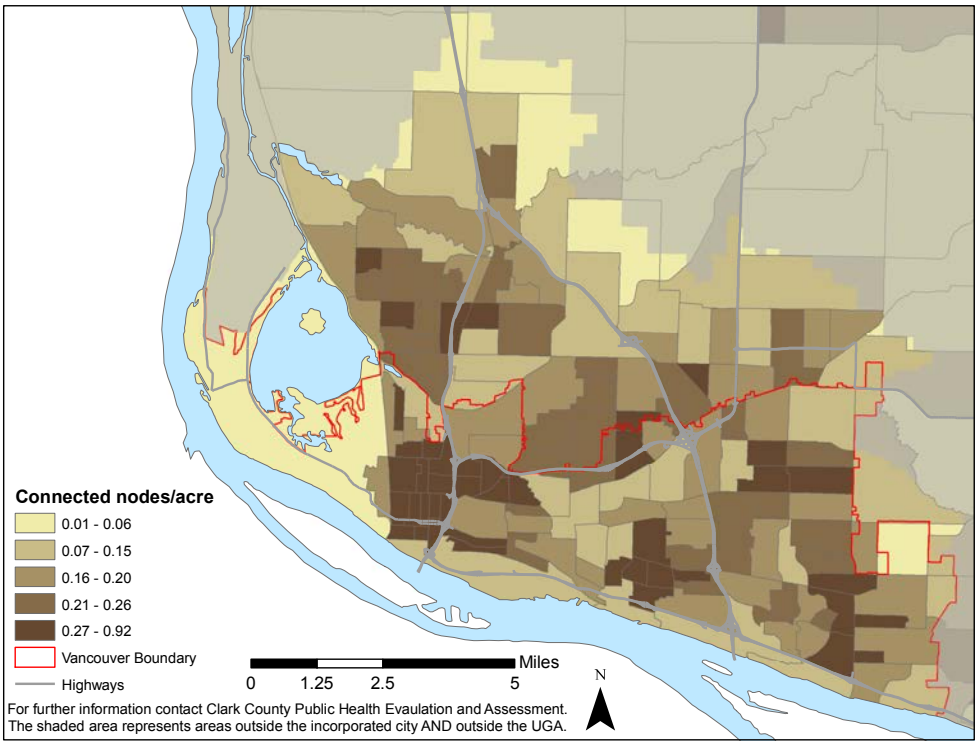


Connectivity

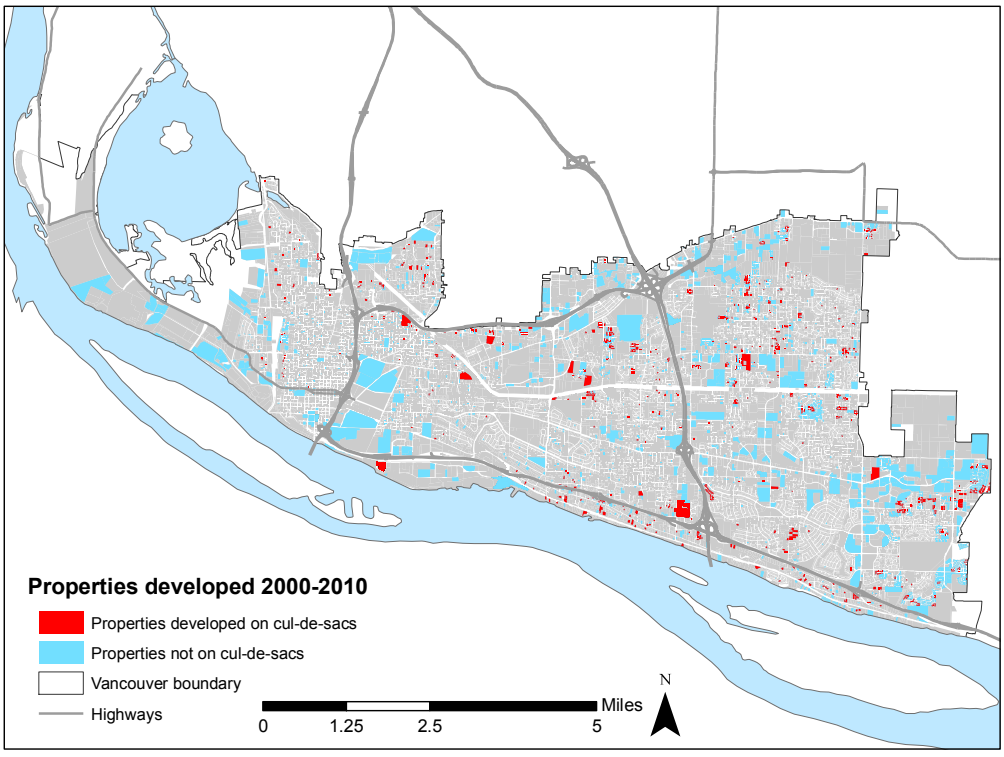
Research shows that highly connected street networks promote physical activity, as they minimize the travel distance between any two points. A measure of connectivity often cited as a predictor of physical activity is known as Connected Node Ratio (CNR). The measure is calculated by dividing the total number of intersections with 3 or more legs by the area of a given geography. In map 11, we have calculated CNR for census block groups in Vancouver and its UGA, where darker colors represent better street connectivity. This map largely corresponds with the "heat" map from Walk Score.com, indicating a correlation between land use and street network connectivity. Areas near downtown Vancouver have the highest values, which is a reflection of the small block sizes and traditional grid pattern that facilitates walking.

Cul-de-sacs and dead-ends have many benefits to property owners, such as privacy and low traffic volumes. However, they preclude street connectivity in many circumstances, inhibiting

Map 11. Connected node ratio by census block group



Map 12. Development on cul-de-sacs, 2000-2010



opportunities for active transportation. Map 12 identifies new construction on cul-de-sacs and dead ends from 2000-2010. It is clear that cul-de-sacs continue to proliferate in Vancouver, diminishing connectivity and thereby reliance on collector boulevards. Such street networks offer few redundant or parallel routes in close proximity to each other, which can mitigate congestion and provide safe route options for active transportation. Additionally, many of the newer cul-de-sacs appear to be a result of being located near a major road, suggesting that a system of collector boulevards and cul-de-sacs is self-reinforcing and leads to more of the same style of development.

Building Design

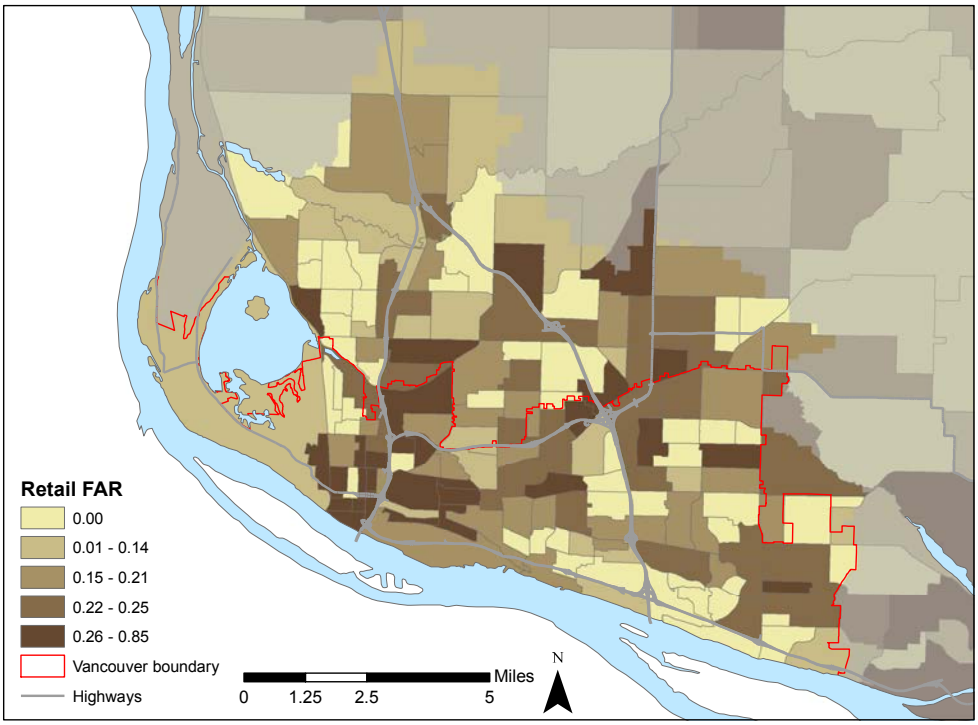
Buildings designed in a way that encourages physical activity share certain characteristics that are described in table 7.

Table 7. Design characteristics associated with physical activity

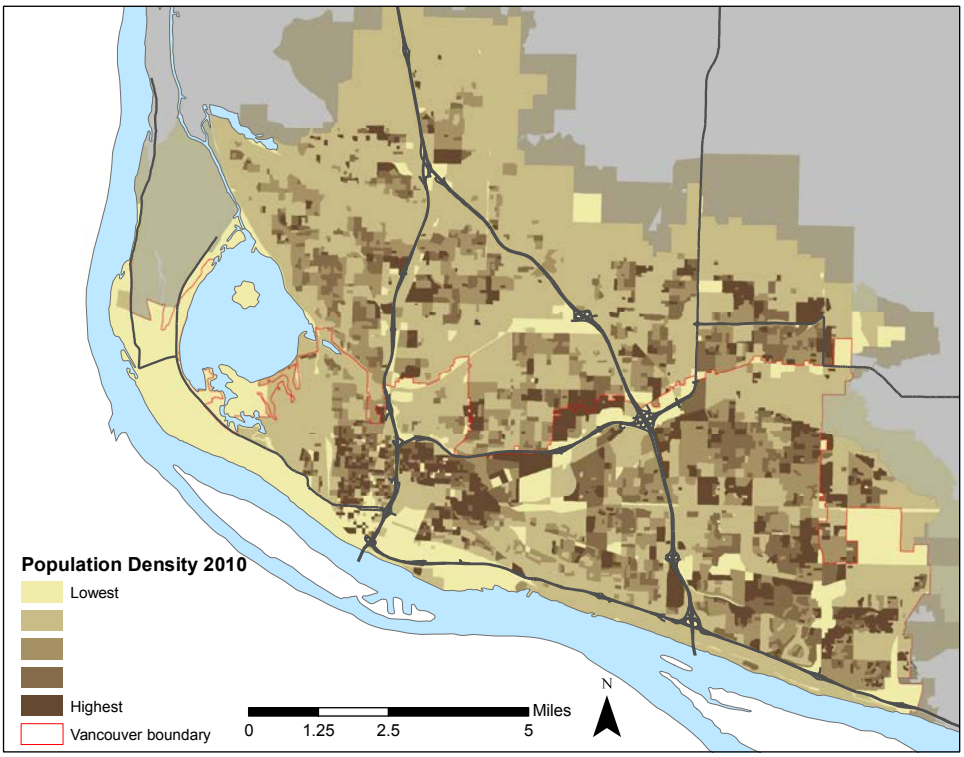
Characteristic	Description
Imageability	The quality that makes a place recognizable and distinct
Enclosure	The degree to which streets and spaces are defined by buildings, trees, and other elements
Human Scale	The size, texture, and articulation of physical elements that match the size and proportions of humans and match the speed at which humans walk
Transparency	The degree to which people can see or perceive what lies beyond the edge of a space, especially the degree to which they can see other human activity
Complexity	The visual richness of a place, defined by variety in the physical environment

One measure used to approximate these characteristics is the total Floor Area Ratio (FAR) for all retail buildings within each block group. This measure gives an idea of the dominant building types in a block group. In contrast to a traditional measure of FAR using only one site and one building, total FAR uses the total building square footage of all retail buildings and is divided by the total area of land dedicated to retail use. A total FAR near 1.0 would indicate a fairly dense pattern of retail development similar to that found on Main Street in Uptown Village. Retail FAR is mapped in map 13, which indicates higher retail FAR in many of the same areas identified by the Walk Score heat map as most walkable.

Map 13. Retail floor-area ratio by census block group



Map 14. Population density by census block , 2010



Density

Large numbers of people are able to support features of the built environment that make it walkable, such as retail and transit. Density in Vancouver varies widely, from the mid-rise apartment and condominium buildings downtown to the suburban single-family homes more common in east Vancouver. Map 14 shows residential density by census block. Areas with lower residential density generally represent lower potential to support walkable destinations. Employment density can compensate for the lack of residential populations in some areas. For example, the large number of employees in downtown Vancouver makes it a vibrant commercial environment that facilitates active transportation.

Bikeability

Many of the features that make a neighborhood walkable also make it bikeable, especially connected street networks and a dense mix of land uses. In addition to measures of walkability, CCPH calculated bikeway network density by census block group. This metric represents the miles of bikeway (bike lanes and trails) per square mile within each block group, with higher values indicating better bikeway coverage.

Similar to park access, the percent of residents within ½ mile of a bikeway decreases moving from west to east across Vancouver, as displayed in table 8.

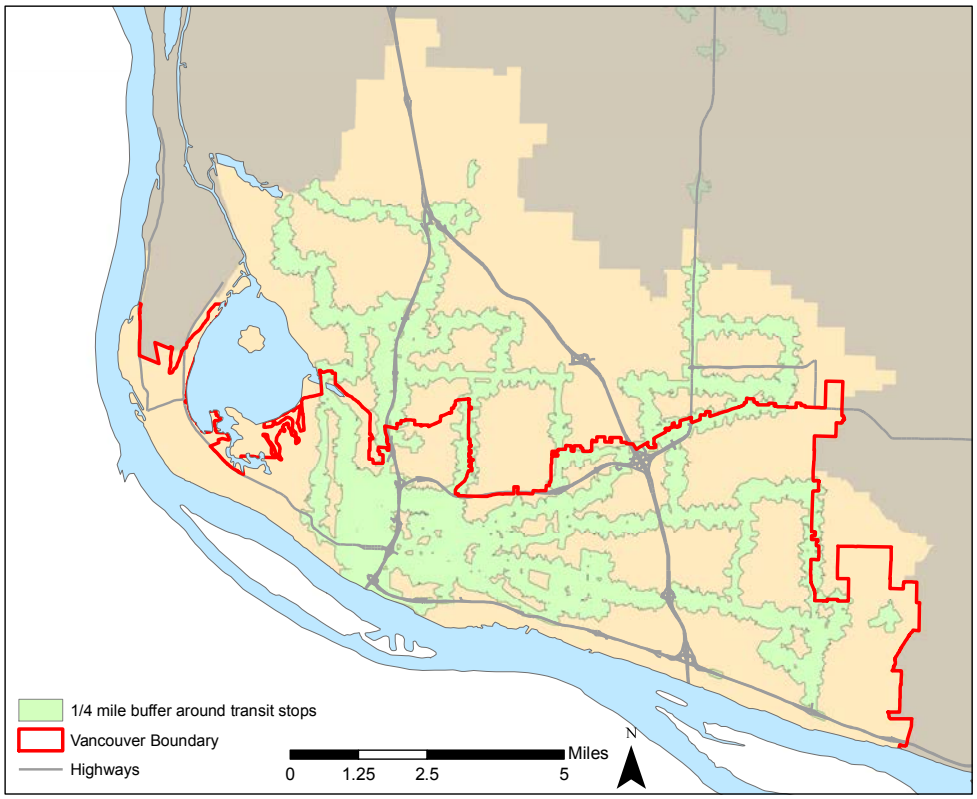
Table 8. Percent of residents within ½ mile of a bikeway

Area	Percent
West Vancouver	83.3
Central Vancouver	76.3
East Vancouver	61.2
Vancouver (city-wide)	69.9

Transit

Transit is considered an active transportation mode because of the physical activity necessary to access stops. In Vancouver, about 47% of the population lives within ¼ mile of a transit stop. Map 15 displays ¼ mile buffers around transit stops, illustrating the broad coverage in downtown Vancouver, but sparse service in eastern parts of the city.

Map 15. Transit access



This difference is quantified in the table below, which displays the percent of residents living within ¼ mile of a transit stop.

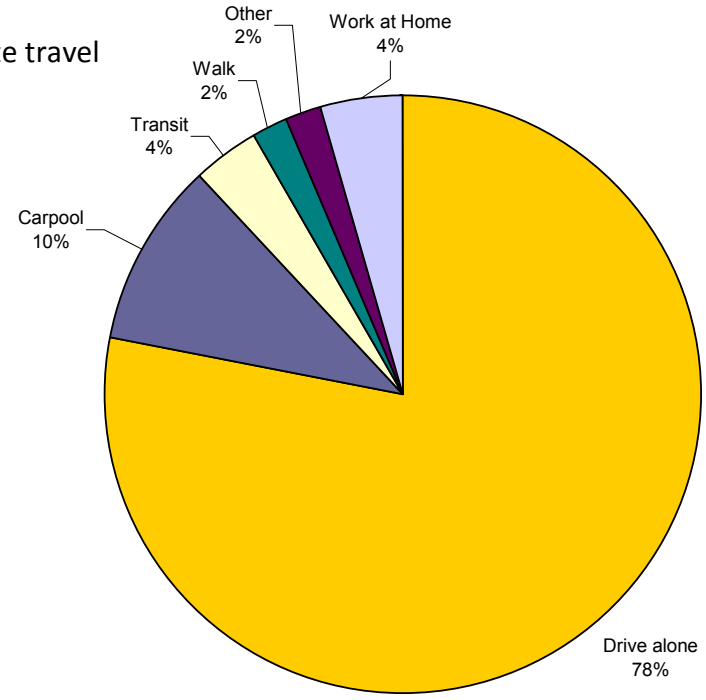
Table 9. Percent of residents living within ¼ mile of a transit stop

Area	Percent
West Vancouver	85.3
Central Vancouver	60.1
East Vancouver	27.4
Vancouver (city-wide)	47.3

Travel Behavior

Figure 1 on the following page shows the mode split for Vancouver commuters in 2009. The vast majority of residents drive alone to work, and about 9 in 10 travel by car. Only about 6% travel to work by active modes, which include bicycling, walking or transit. Table 10 shows Vancouver's active transportation mode share compared to similarly sized northwest cites. The range of active mode shares ranges from Vancouver's 6% up to 21% in Eugene. Eugene and Bellingham

Figure 1. Vancouver commute travel mode split



have large student populations that likely explain some of the higher mode share in those cities, but even cities without universities have achieved higher active transportation mode shares than Vancouver. Citywide walk scores are also provided for each city, which are mostly in the mid-to-low fifties. For comparison, the top ten most walkable cities in the US have scores above 65, including Portland (66) and Seattle (72). These data indicate that there is room for improvement for Vancouver when compared to other cities of similar size.

Table 10. Walk score and active transportation in mid-size Northwest cities

City	Total Commuters	Walk Score	Active Transportation Mode Share
Bellevue, WA	61,816	50	15%
Eugene, OR	68,140	56	21%
Everett, WA	47,108	55	8%
Gresham, OR	45,842	53	10%
Salem, OR	65,625	52	8%
Spokane, WA	90,986	54	8%
Tacoma, WA	87,929	58	9%
Vancouver, WA	73,383	50	6%

Source: U.S. Census Bureau, American Community Survey 5-year estimates 2005-2009. All Washington and Oregon cities with populations 100,000-250,000 were included in this analysis

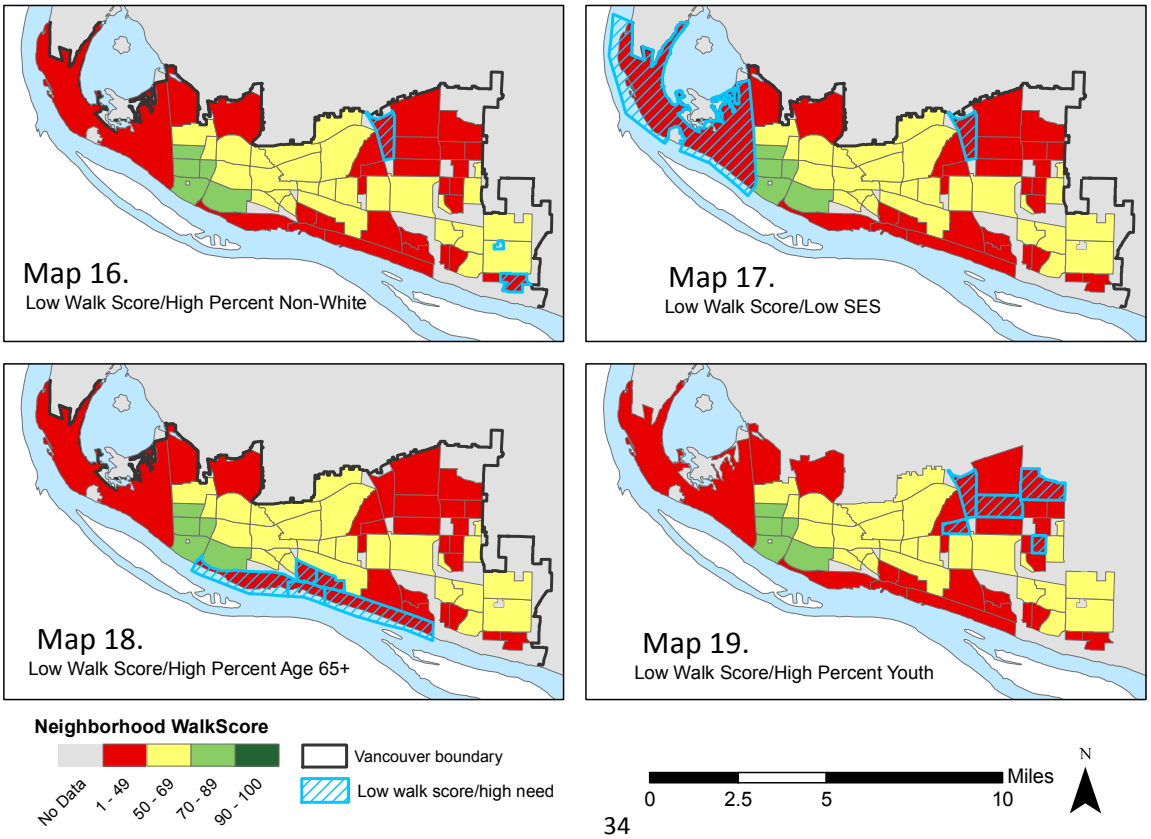
Disparities

For each of the categories described above, we analyzed disparities in access based on socioeconomic status (SES), race/ethnicity, and age.

Walkability

There is a significant correlation between walk scores and percent of population living in poverty and with percent youth population. For the city as a whole, we can conclude that as walk scores increase, so does the percent of the population living in poverty and the percent of the population under age 20. There is no evidence of a causal relationship between these measures; they merely demonstrate that on the whole, low SES and youth populations already have greater access to physical activity than the population as a whole. This is likely due to the tendency of low SES populations to live in multi-family housing in older neighborhoods. A closer look reveals some neighborhoods with both poor walk scores and disadvantaged populations. The maps below display neighborhoods with low walk scores *and* disadvantaged populations. Each map highlights the 12 neighborhoods with the highest values in each category that also have walk scores below 70. These maps suggests that several

Maps 16-19. Disparities and walk scores by neighborhood



neighborhoods with disadvantaged populations would benefit from improvements in walkability. The Kevanna Park neighborhood in East Vancouver stands out as an area with a high non-White population, low socioeconomic status, and a high percent of youth under 20, *in addition* to a low walk score of 47.

Bikeability

The 2010 Clark County Bicycle and Pedestrian Master Plan Health Impact Assessment found that there is no significant difference in bikeway network among census block groups based on SES, percent youth population, or percent age 65 or older. However, there is a significant positive correlation between bikeway network density and percent of non-White population (.45; $p<0.001$).

Transit

Disadvantaged populations in Vancouver have transit access that is similar to or better than that of the city population as a whole. Table 11 details the percent of several groups living within ¼ mile of a transit stop, reported by geography. As evident in the table, disadvantaged groups consistently have similar or better access to transit than the population as a whole, but access diminishes moving west to east across the city. Like walkability, this relationship is likely due to the tendency of low SES populations to live in areas that are older, denser, and with more multi-family housing — the same areas that can support transit service.

Table 11. Estimated percent of residents living within 1/4 mile of a transit stop

	Total Population	Non-White	Low SES	Adults age 65+	Youth under age 20
West	85.3%	84.3%	87.3%	86.0%	83.4%
Central	60.1%	63.5%	69.1%	60.2%	61.0%
East	27.4%	26.5%	32.1%	31.9%	26.6%
Vancouver (city-wide)	47.3%	47.6%	61.1%	53.1%	45.3%

Travel Behavior

Mode choice is heavily influenced by the characteristics of walkability, bikeability, and transit access described above. In this respect, disparities in these measures also reflect disparities in influences on travel behavior. However, census data show that commute mode choice is very similar across racial and

ethnic groups. A notable exception is that Hispanic commuters are much more likely to carpool. Compared to the population as a whole, which carpools at a rate of about 10%, Hispanics carpool at a rate more than double, 22%.[1]

Commute patterns shift toward single-occupant vehicles as income increases. The median income of a transit commuter in 2009 was about $28,700, whereas the median among single-occupant vehicle commuters was about $33,800. Of commuters living in poverty, about 7.4% use transit, compared to just 3.2% of commuters living at or above 150% of the poverty level.[2]

Access to Healthy Food

Healthy food is a fundamental part of a healthy lifestyle. As a result of development patterns and demographics, some areas have better access to healthy food than others, and the following assessment provides a snapshot of access in Vancouver. In recognition of the fact that unhealthy food is sometimes closer and more convenient than healthy foods, we examine access both to healthy food stores such as grocery stores, and to less healthy food stores, such as fast food restaurants and convenience stores. We also look at zoning to determine whether food retail is permitted in areas that currently lack access. Finally, disparities in food access are described in terms of SES, race/ethnicity, and age.

CCPH categorizes food stores according to the variety of options offered at each establishment type. The theory driving these definitions is that establishments that offer more choices *in general* will offer more healthy choices. There are six categories of food stores, as summarized in Table 13 on the following page.

Table 12 below details the percent of residents who live within ½ mile walking distance of a food store. An analysis of food access

Table 12. Percent of residents living within 1/2 mile of food stores

Area	Healthy Stores	Fast food & Convenience	Any food Store
West	41.9	80.7	80.7
Central	26.1	68.5	68.7
East	17.8	42.7	44.3
Vancouver (city-wide)	23.9	57.5	58.4

reveals that over 40% of Vancouver residents live farther than ½ mile from any food store, and that access is much better in west and central Vancouver than in east Vancouver.

Table 13. Types of food stores

Food Store Type	Defining Characteristics
Fast Food Restaurant	• Food is prepared in advance of customer orders or are able to be quickly prepared for consumption on or off the premises AND • Food is ordered and served over counters or at drive-through windows AND • Food is paid for before being consumed
Full Service Restaurant	• All other restaurants (not including fast food)
Convenience	• Limited variety of groceries and variety of choices. • Little or no fruit, vegetables, or fresh meats. • May be associated with a gas station
Produce/Grocery	• Primarily engaged in the sale of fresh fruits and vegetables • May stock a limited range of groceries such as dairy, dry goods, meat, fish, or poultry
Grocery	• Offers a full range of groceries, including fruits, vegetables, diary, and fresh meats, poultry or fish. • Stocks more limited variety of choices. • Not part of a national or regional chain or franchise system. • May provide services such as delis, bakeries, and meat counters. • Usually has two or more check out stands.
Supermarket	• Offers a full range of groceries including fruits, vegetables, dairy, and fresh meats, poultry or fish. • Stocks a large variety of choices. • Part of a national or regional chain or franchise system. • Provides services such as delis, bakeries, and meat counters. • Usually has three or more check out stands.

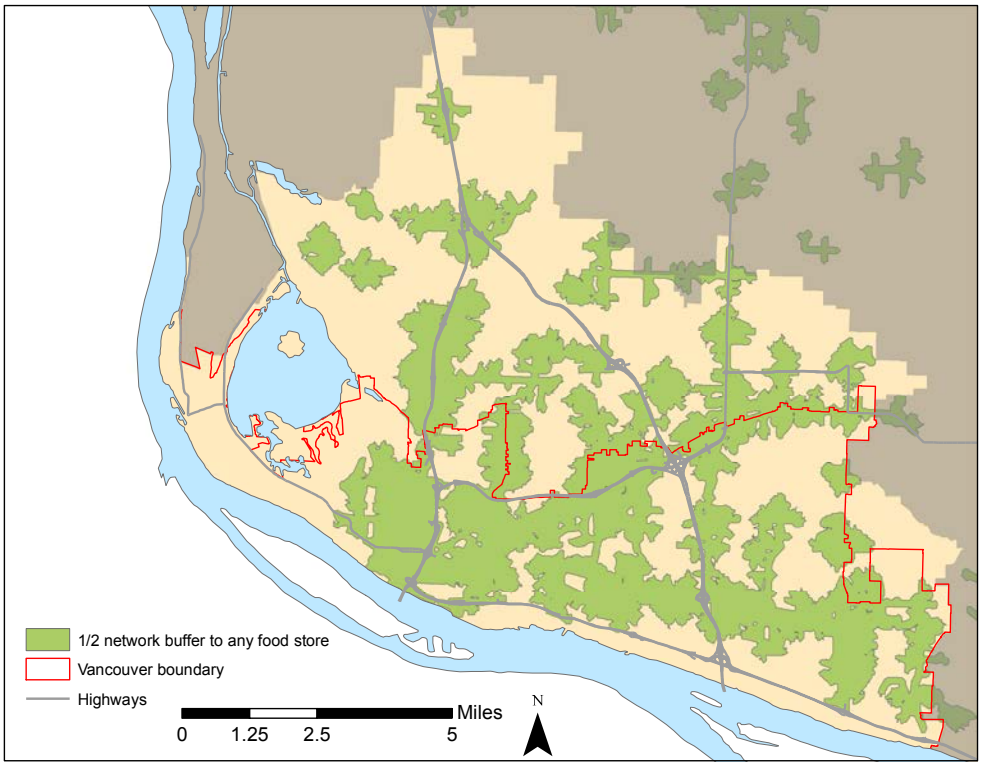
Healthy food retail: stores that offer a wide variety of choices, including fresh fruits, vegetables, dairy, and meat. Examples include supermarkets, grocery stores, and farmers markets.

Areas within ½ mile of any food store are depicted in green on Map 20, opposite. Whereas most of west and central Vancouver are served by some type of food store, there are large gaps in east Vancouver.

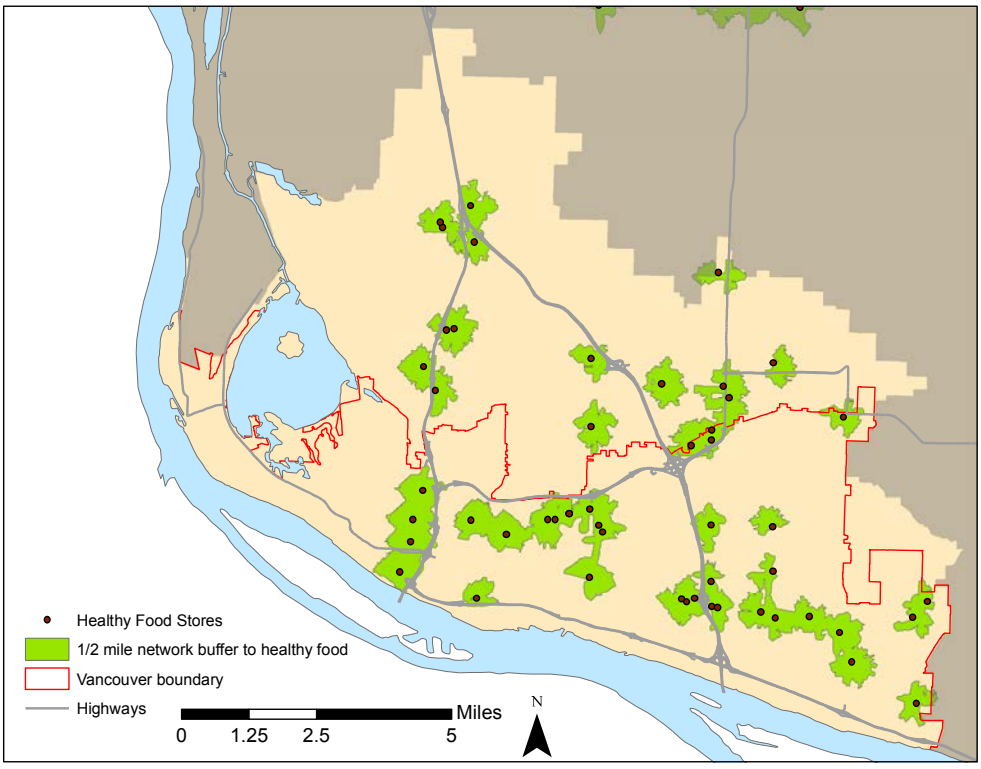
Healthy Food Retail

Health food retail, including supermarkets, grocery stores, produce vendors, and farmers markets, are depicted in map 21. The map shows both the location of these stores and the area within ½ mile walking distance. Within the city boundary, healthy food stores tend to be clustered along corridors such as Main Street, Fourth Plain Boulevard, and Mill Plain Boulevard.

Map 20. Areas within 1/2 mile of any food store



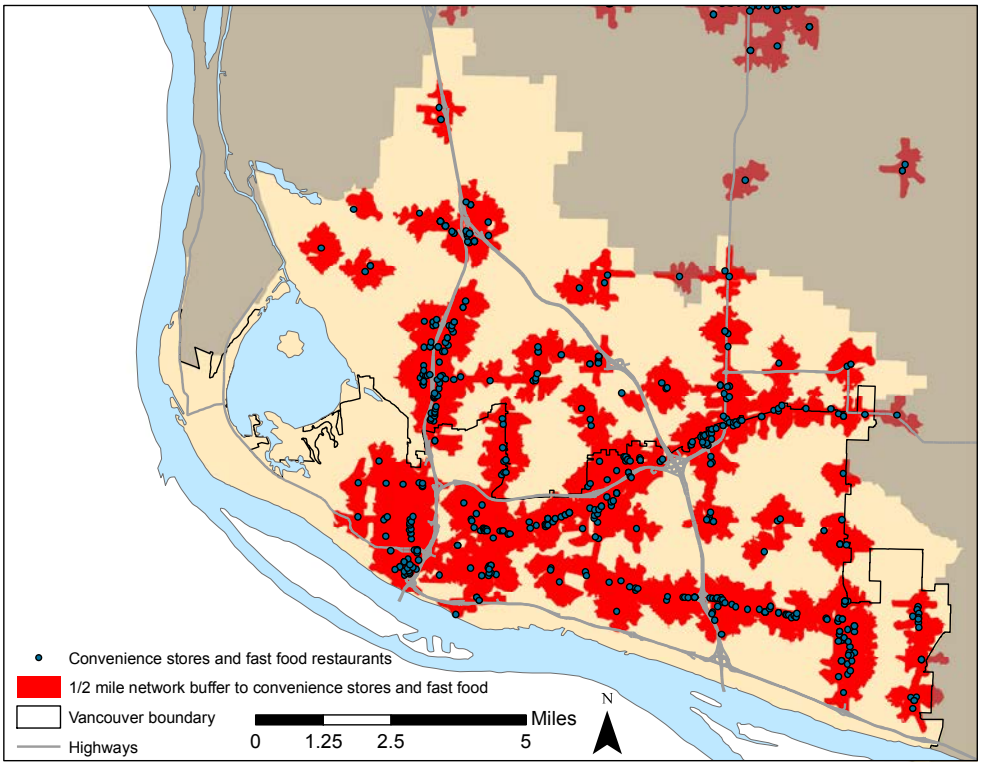
Map 21. Areas within 1/2 mile of food stores with healthy options



Convenience Stores & Fast Food

Convenience stores and fast food restaurants cluster tightly around most major corridors in Vancouver. There are especially high densities of convenience stores and fast food along Fourth Plain, Mill Plain, 164th, and in Downtown. In the UGA, Highway 99 is the dominant corridor for these establishments. Areas within 1/2 mile of a convenience store or fast food restaurant are displayed in Map 22.

Map 22. Areas within 1/2 mile of a convenience store or fast food restaurant

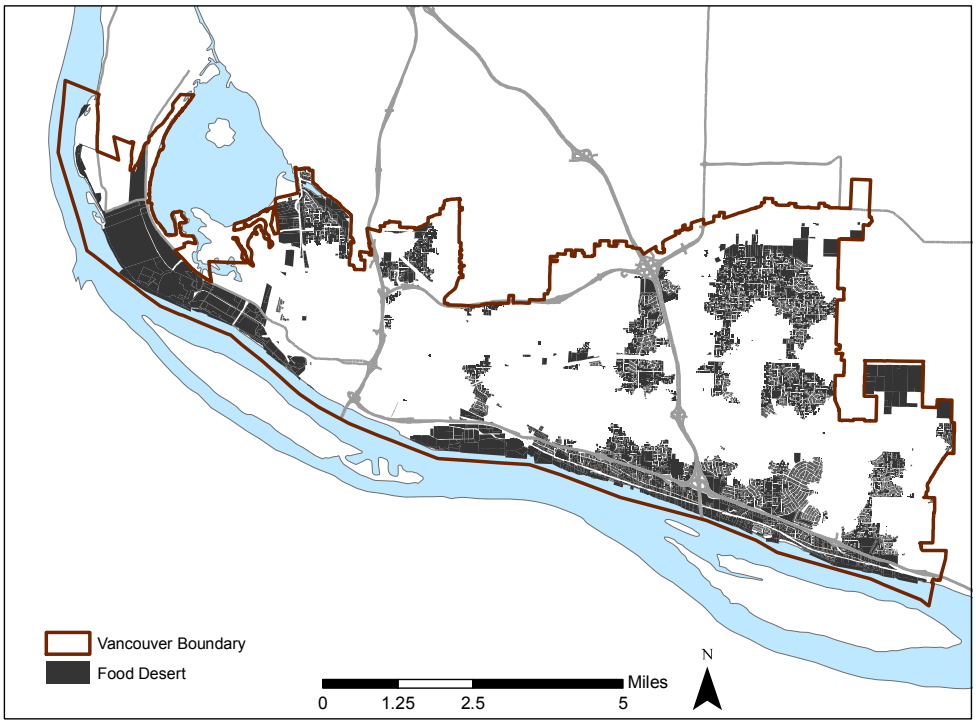


Food Deserts

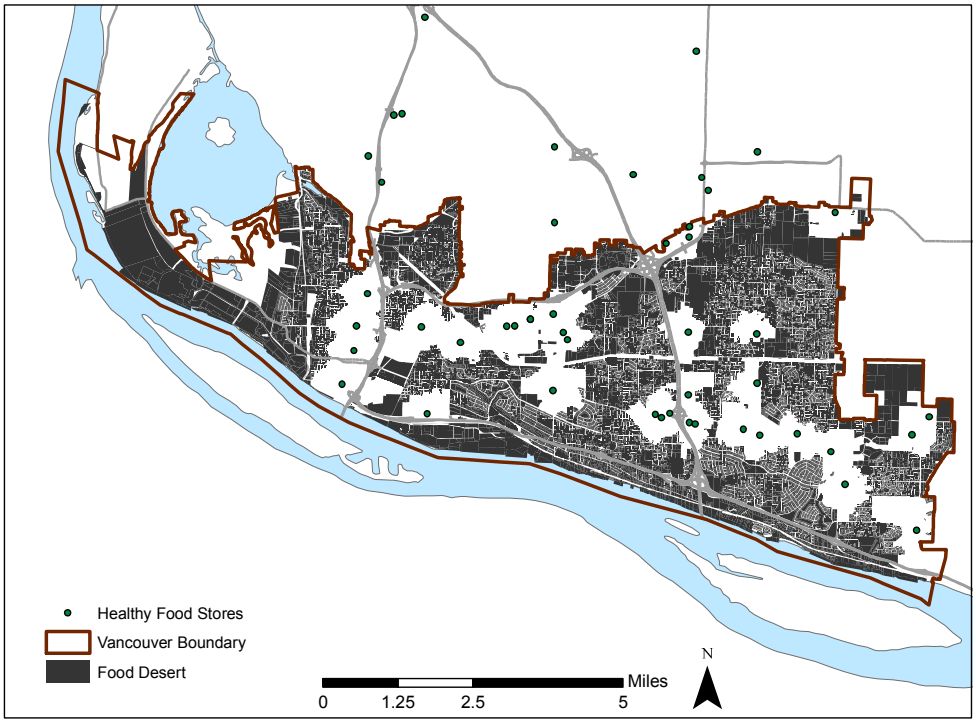
The term "food desert" describes an area with poor access to food. Researchers and policy makers have varying definitions of this term, sometimes linking it to socioeconomic status or vehicle ownership. We use ½ mile to define the walkable service area of a food store. This distance is applied to identify areas with low access to healthy food, as described by three categories:

- Areas that are farther than ½ mile from *any food store*;
- Areas that are farther than ½ mile from a *healthy food store*; and
- Areas that are farther than ½ mile from a healthy food store, but within ½ mile of a fast food restaurant or convenience store.

Map 23. Food deserts: Properties farther than 1/2 mile from any food store

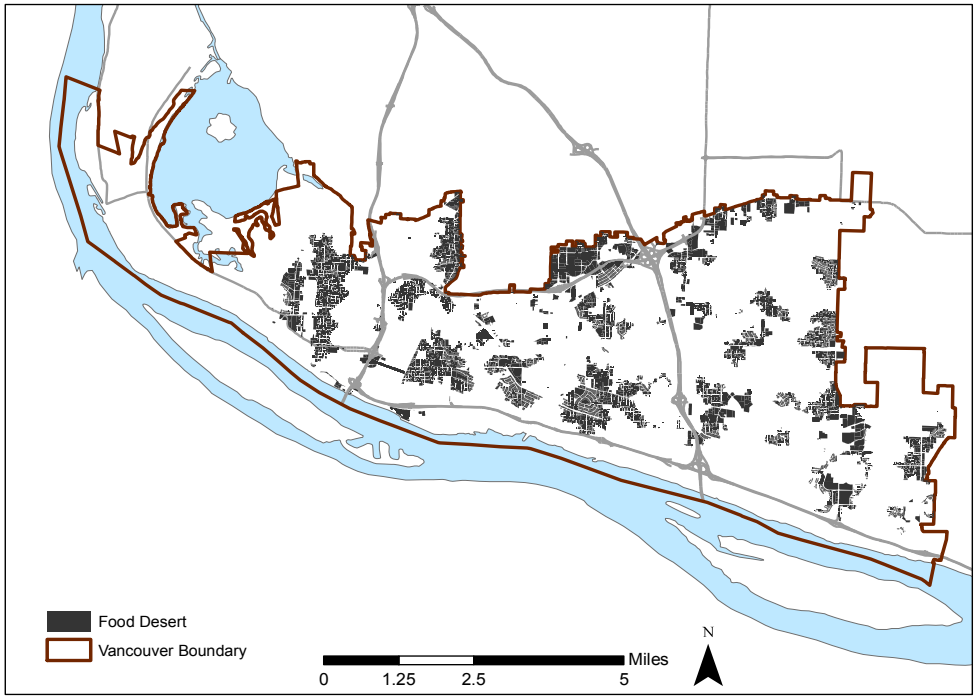


Map 24. Food deserts: Properties farther than 1/2 mile from food stores with healthy options



We have therefore analyzed three kinds of food deserts. The first describes areas that have low access to food of any kind. The second describes areas that have low access to healthy food stores. The third describes areas in which access to convenience stores and fast food restaurants is greater than access to healthy food stores. In this respect, the third type of food desert can be thought of as describing access to healthy food relative to unhealthy food.

Map 25. Food deserts: properties farther than 1/2 mile from a healthy food store, but within 1/2 mile of a fast food restaurant or convenience store.



Overall, fast food and convenience stores are much more prevalent in Vancouver than healthy food retailers. Table 14 shows that there are nearly ten times as many fast food and convenience stores as healthy food retailers throughout Vancouver.

Table 14. Number of food stores by category

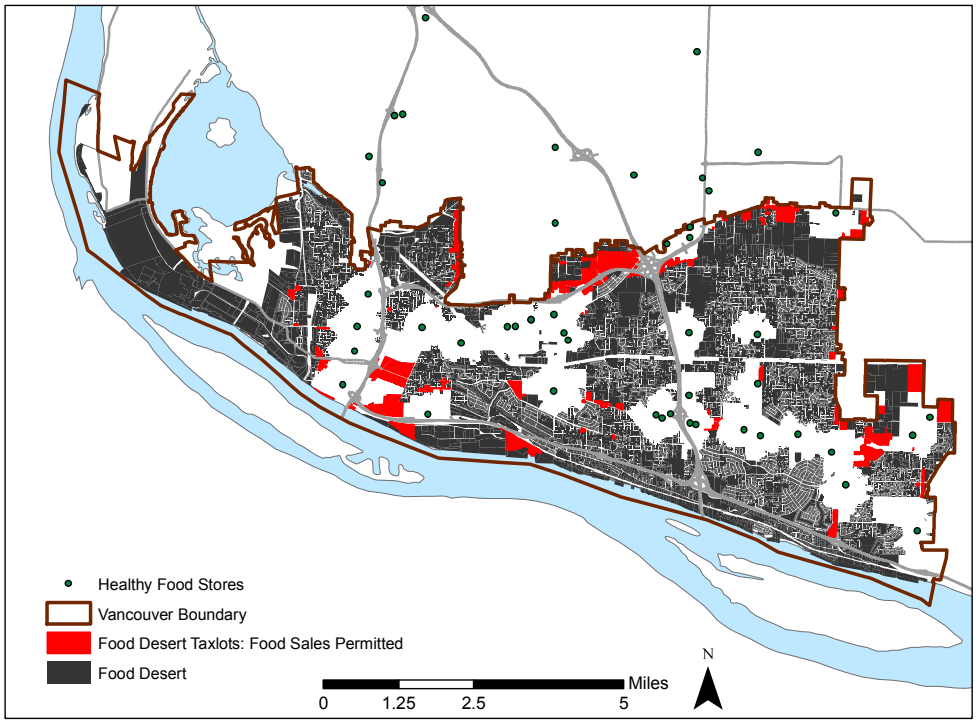
Area	Fast Food & Convenience	Healthy Retail
West Vancouver	47	4
Central Vancouver	158	14
East Vancouver	154	17
Vancouver	359	35

Land Use

Research cites prohibitive zoning as a common barrier to providing healthy food retail. Properties that are farther than ½ mile from a healthy food store are represented in map 26. Those shaded dark grey are not zoned to allow food retail, and those shaded in red allow food retail. This map reveals that there are several areas of the city where zoning is a barrier that contributes to the absence of a healthy food store.

It is important to recognize that zoning is just one of many barriers to healthy food access, and that the market is a strong driver of the location of healthy food stores. Land assembly can be a challenge in some areas, and there is not always the density or demand for an additional food store. Additionally, there were many reasons for zoning land as it is presently zoned, some of which may outweigh the need to provide land for healthy food retail. However, where possible, the city can address this barrier. For example, the City could consider re-zoning in neighborhoods that are lacking a healthy food store and have demand for one, but are lacking land designated to allow food retail.

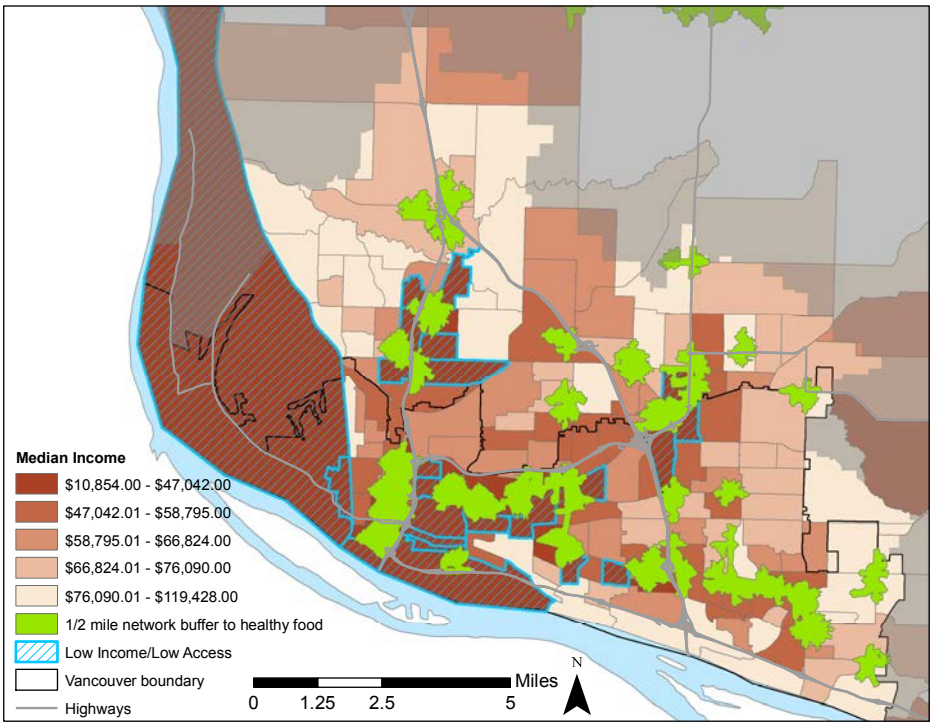
Map 26. Food deserts and land use



Disparities

Disparities based on SES, race and ethnicity, and age are mapped below. In each map, the hatch marks indicate census block groups that meet two conditions: (1) the are not within ½ mile of a food store with healthy options, and (2) they are among the 20% of block groups that have the highest disadvantaged population for the given measure. For example, block groups identified with hatch marks in Map 27 are among the 20% of block groups with the lowest median incomes and are farther than 1/2 mile from a food store with healthy food options.

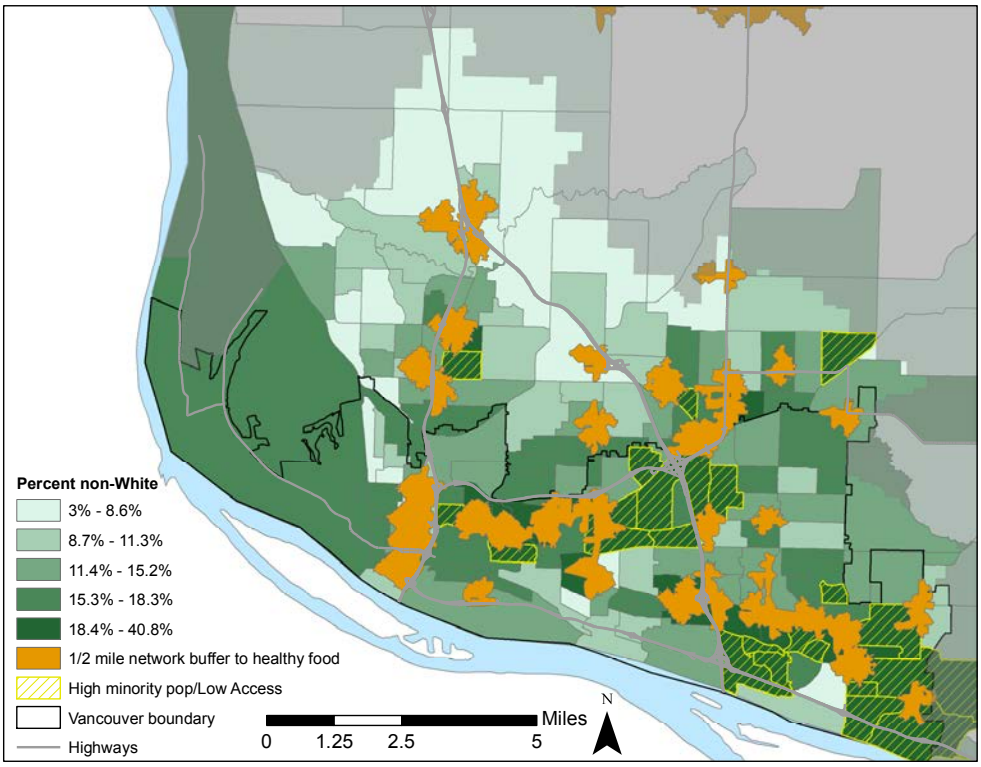
Map 27. Access to healthy food and median income by census block group



SES

As illustrated by map 27 above, there are several neighborhoods where the adverse health determinant of low SES overlaps with low food access. Block groups with median incomes below $47,042 are among the lowest 20% of block groups in the Vancouver UGA. Within Vancouver, there are large, highly populated areas of central Vancouver with low food access. Fruit Valley is also beyond the 1/2 mile service area of stores with healthy options. About 33,000 people live in the block groups identified as low SES that also have low food access to healthy food.

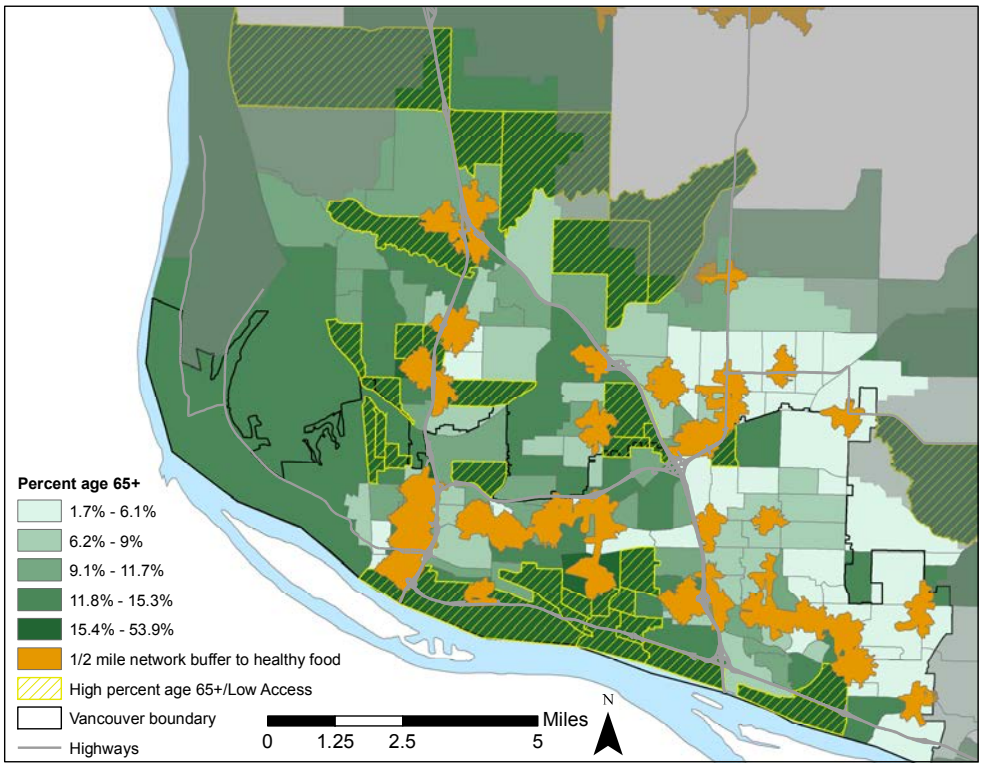
Map 28. Access to healthy food and percent non-White population by census block group



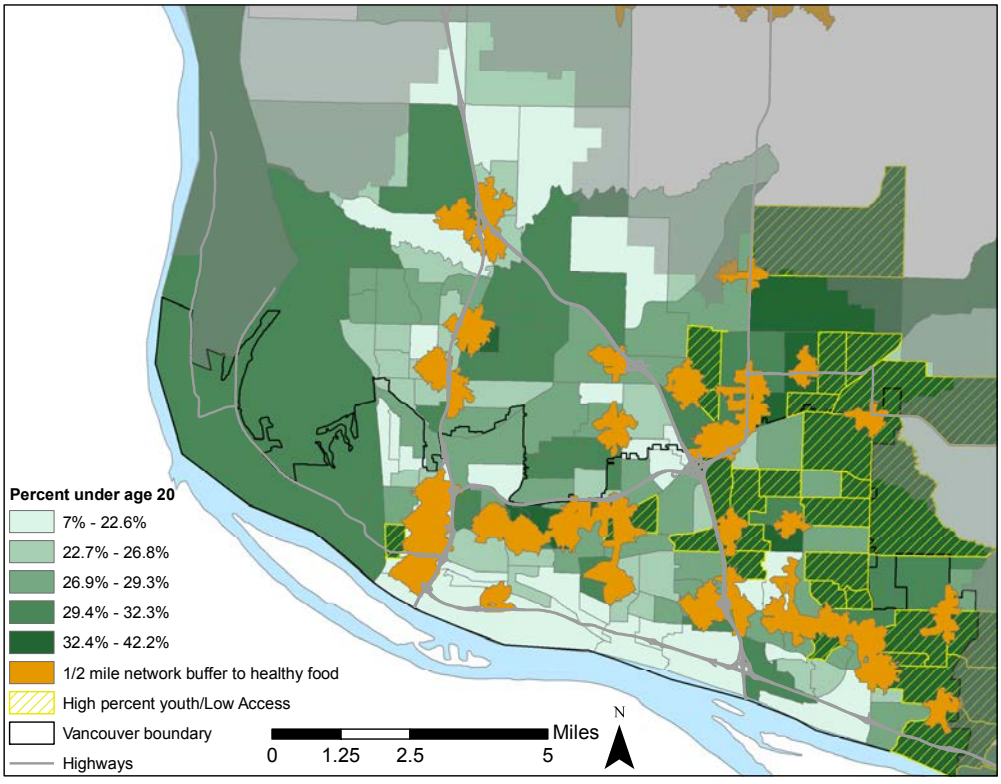
Race and Ethnicity

Map 28 displays block groups by percent non-White population along with 1/2 mile buffers around stores with healthy food options. A block group with more than 18.3% non-White residents is among the 20% of block groups with the highest non-White populations. Block groups with high proportions of non-white residents and low access to healthy food are found mostly in the eastern part of central Vancouver and in east Vancouver. About 45,000 people live in the block groups identified as high minority population and low food access to healthy food.

Map 29. Access to healthy food and percent population aged 65+



Map 30. Access to healthy food and percent population under age 20



Age

Different patterns are observable based on which end of the age spectrum is displayed. For older adults, low access to healthy food is more widespread geographically, with block groups in almost every part of the city affected. Among younger populations, low access to healthy food is primarily a problem in east Vancouver.

References

1. US Census Bureau. (2010). American Community Survey 2005-2009 estimates

2. US Census Bureau. (2010). American Community Survey 2005-2009 estimates

Impact assessment

Two types of proposals are considered in this HIA. **Planning direction changes** in the Community Development chapter of the comprehensive plan constitute the first type of proposal, and the second type is the proposed city-sponsored **zoning changes**. Planning direction changes are substantive changes to statements on plans for future development, land use description changes, and policy changes. Zoning changes modify the allowable uses for a given parcel of land. Both of these proposal types are evaluated in terms of their impact on access to healthy food and physical activity. Where appropriate, negative disparate impacts of these proposals are identified.

Impact of planning direction changes

Direction for future development

The text of the Community Development chapter is the central part of the comprehensive plan, describing a vision for future growth in Vancouver. Direction for future development in the past plan (2003-2023) included three key components: Maintaining and enhancing livability, Planning for growth, and Enhancing urban centers and corridors. The proposed changes include four new areas of concentration: Facilitating connected communities, Promoting public health, Fostering Sustainability, and Planning for an aging population. By facilitating connected communities, the city hopes to begin to achieve 20-minute neighborhoods in which residents can use a variety of travel options to access nearby services. The Community Development chapter commits the city to encouraging land use and transportation that promotes and protects health, and to integrating the goals of the 2009 Creating a Sustainable Vancouver Plan. In anticipation of demographic changes, the City also added statements that stress the importance of addressing the needs of an aging population.

CCPH finds that the four additions to the direction for future development will have positive impacts on community health.

Clark County Public Health finds that the four additions to the direction for future development will have positive impacts on community health. This finding is based on literature indicating connections between the built environment and health,[1,2,3] connections between climate change and health, [4,5] and needs arising from the demographic shift to an aging population.[6] Each

of the four additions to the plan will likely have a positive impact on access to physical activity and healthy food.

Land Use Description Changes

The plan update includes proposals to change the description of several comprehensive plan land use designations. For each of three commercial use designations under the comprehensive plan, the descriptions of general intent are broadened by removing language describing the preferable spacing and service area of such uses. These changes represent an effort by city planners to be sensitive to the context of existing land uses. The changes are summarized below in Table 15.

Table 15. Land use description changes

Zone corresponding to Comprehensive Plan Commercial Use	Change in Description of General Intent
Neighborhood Commercial	Remove language indicating that new commercial areas should be spaced less than two miles from similar uses or zones, serve a population of up to 5,000, locate along a neighborhood collector at an intersection, and serve a 1 mile radius.
Community Commercial	Remove language indicating that community commercial should be spaced two to four miles from similar uses or zones, serve a population of 10,000 to 20,000, and serve a radius of 2 to 4 miles.
General Commercial	Remove language indicating that new general commercial areas should generally be more than 20 acres in size, spaced more than four miles from similar uses, serve a population greater than 20,000, and serve a radius of 3 to 6 miles.

Clark County Public Health finds that the proposed changes to land use descriptions will positively impact health. This finding is based on research indicating that a dense mix of land uses is associated with higher levels of physical activity.[7]

Community Development Policy Changes

The City is proposing four new policies in addition to the thirteen policies that currently comprise the Community Development policies. The four new policies are reproduced here:

CD-14 Connected and integrated communities
Facilitate the development of complete neighborhoods and subareas containing stores, restaurants, parks, and public facilities, and other amenities used by local residents.

CD-15 Public Health and the built environment
Promote improved public health through measures including but not limited to the following: (a) Develop integrated land use and street patterns, sidewalk and recreational facilities that encourage walking or biking; (b) Recruit and retain supermarkets and other stores serving fresh food in areas otherwise lacking them. Discourage supermarkets and fresh food stores that do relocate from using non-compete clauses that prevent timely replacement of similar uses. Encourage healthy rather than unhealthy food stores near schools.

CD-16 Sustainability
Facilitate sustainable land use development through measures including but not limited to the following: (a) Develop integrated land use patterns and transportation networks that foster reduced vehicle miles traveled and associated greenhouse gas emissions; (b) Develop individual buildings that minimize energy and resource consumption. Encourage home based efficiencies such as insulation retrofits, efficient water and air heating systems, and use of solar panels or other forms of energy capture; and (c) Implement recommendations of the Vancouver-Clark County *Sustainable Affordable Residential Development* Report.

CD-17 Aging Populations
Update policies, standards, and practices as necessary to accommodate anticipated aging of the local population through measures such as: (a) Develop integrated land use patterns and transportation networks that facilitate shorter vehicular trips, walking, or use of public transportation; (b) Review standards for specialty housing to ensure they are consistent with anticipated age-related housing needs; (c) Review standards and designations of conventional single and multi-family housing to ensure they are consistent with anticipated needs, including provisions for aging in place; (d) Review standards for roads and sidewalk design, signage, and lighting to address senior safety issues.

Clark County Public Health finds that all proposed policy changes will have positive impacts on health. Based on research findings, it is likely that all of these policies will contribute to neighborhoods that promote physical activity and increase access to healthy food.

CCPH finds that all proposed policy changes will have positive impacts on health.

Disparate Impacts of Policy Changes

CCPH finds that there are no negative disproportionate impacts on vulnerable populations as a result of these policy changes. On the contrary, there are several ways that new vision statements and policies will contribute to reducing disparities. The language and policies embrace a vision for Vancouver in which using active transportation to access local destinations is a viable option. They also promote improving access to healthy food and limiting access to unhealthy food where appropriate. These policies will improve health for the entire population, but will do so especially for the groups most at risk.

Age

Policies directed at improving conditions for the aging population will contribute to reducing disparities in health outcomes between older adults and the rest of the population. At the other end of the age spectrum, the proposal to limit fast food near schools would protect the health of youth.

SES, Racial and Ethnic minorities

The proposed policy to discourage non-compete clauses for healthy food retailers could help prevent reductions in access to healthy food for low SES populations and racial and ethnic minorities. The closure of a Fred Meyer store on Fourth Plain Boulevard is an example of how such clauses can be damaging to vulnerable subpopulations, as the direct vicinity of the shuttered store is home to the county's highest concentrations of low SES and minority populations. Similarly, policies in CD-16 and CD-17 that promote affordable housing protect the health of low SES populations.

Table 16 on the opposite page details the proposed planning direction changes, likely health impacts, strength of evidence, and disparities. Note that the determinants listed refer only to the focus of this rapid HIA. Several other determinants of health have potential for improvement as a result of these policies, including social cohesion, environmental quality, and housing.

Table 16. Impacts of planning direction changes

	Determinants	Nature of impact	Evidence	Differential Impact
Direction for future development changes				
Facilitate Connected Communities	Access to healthy food, physical activity	Positive	++++	None
Promote Public Health	Access to healthy food, physical activity	Positive	++++	None
Foster Sustainability	Physical activity	Positive	++++	None
Plan for an aging population	Physical activity	Positive	+++	Pos, Older
Land Use Description Changes				
Neighborhood Commercial	Access to healthy food, physical activity	Positive	++	Pos, Geog
Community Commercial	Access to healthy food, physical activity	Positive	++	Pos, Geog
General Commercial	Access to healthy food, physical activity	Positive	++	Pos, Geog
Policy Changes				
CD-14	Access to healthy food, physical activity	Positive	++++	Pos, Geog
CD-15	Access to healthy food, physical activity	Positive	++++	Pos, Geog, Youth
CD-16	Access to healthy food, physical activity	Positive	++++	None
CD-17	Physical activity	Positive	++	Pos, Older

Key: ++++: Strong evidence; +++: Moderate ; ++: Some evidence; +: Limited evidence; Pos: Positive impact; Geog: Geographically focused impact; Youth: Impact on youth; Older: Impact on older adults

CCPH finds that there will be minimal health impacts resulting from these zoning changes, but that if any, the impact is likely to be positive.

Impact of Zoning Changes

City-sponsored zoning changes are proposed for 24 properties, mostly to bring current non-conforming uses into compliance with the zoning code. The City's proposal is to change the zoning on these properties to reflect current uses. The majority of properties in question are currently zoned as residential uses, but are used as commercial properties.

Clark County Public Health finds that there will be minimal health impacts resulting from these zoning changes, but that if any, the impact is likely to be positive. Health-promoting effects could

come from creating a mix of land uses where there was none before. As most of these zoning changes will not change land uses, substantial impacts on health are unlikely. One exception is the rezoning of residential land to parks zoning, which can promote physical activity. These zoning changes will, however, reinforce existing mixed land uses, and in several cases will create the only land not zoned for residential or park use within 1/2 mile of the site.

Evidence is strong that a mix of land uses promotes physical activity through active transportation, although these studies do not specifically examine the role of re-zoning in this effect. Therefore, we have chosen to label the evidence supporting this conclusion as “moderate”.

In one case, a proposed zoning change affects an alcohol outlet, allowing the commercial retail use where it was previously non-conforming. This could be construed as reinforcing a land use that is harmful to health. However, the zoning change does not change the land use, and would allow many other commercial uses that could be health promoting in the future. It is unclear what the interaction of the effects of increased availability of alcohol has with increased walkable destinations, leaving us unable to determine a net health impact. Notably, the population around this site is demographically similar to Vancouver as a whole, diminishing concerns about disparate impacts.

Disparate Impacts of Zoning Changes

CCPH finds that there are no negative disproportionate impacts on vulnerable populations as a result of these policy changes. Working from the premise that increases in land use mix promote physical activity and are therefore beneficial, we analyzed the populations within 1/2 mile of each site with a proposed zoning change. Full results of this analysis can be found in appendix X, and are summarized below by subpopulation.

SES

For nearly all zoning changes, the percent of the population within 1/2 mile that is low SES is greater than the percent of low SES people in all of Vancouver. Vancouver as a whole had a 12.3% poverty rate, whereas the populations within 1/2 mile of

zoning changes mostly had higher rates. Of 30 proposed changes, 23 have populations with higher poverty rates, ranging from 12.7% to 27.8%. Therefore, low SES residents will disproportionately benefit from increased opportunities for physical activity accompanying a mix of land uses.

Race and ethnicity

In total, the proposed zoning changes benefit minority populations. The population within 1/2 mile of proposed zoning changes is mostly demographically similar to the city as a whole in terms of race and ethnicity. In only one case is the percent of non-White residents more than five percentage points lower than the city-wide value of 18.1%. In six cases it is more than five percentage points higher, resulting in a net benefit to minority populations.

Age

In terms of age, the population within 1/2 mile of proposed zoning changes looks very similar to that of Vancouver as a whole. In only one case is there a difference of more than five percentage points, and in this case the net impact is unclear. For one rezoning , increasing the density allowed for a residential use, there is a high youth population within 1/2 mile, but a low percent of the population age 65+. Since both are vulnerable populations, it is difficult to determine the net health impact. Generally, there are no disproportionate negative impacts to vulnerable age groups.

Table 17 on the following page summarizes the impact, evidence, and disparities of zoning changes. Note that because any potential impacts are expected to be beneficial, a negative disparity does not represent harm. Rather, it means that the group in question will not benefit to the same degree as the population as a whole. We report a disparate impact if the percent of residents who are part of a vulnerable population (low SES, race and ethnicity, age) is more than five percentage points different from the city's demographics. For example, if the population within a given 1/2 mile buffer is 19% low SES compared to the city wide rate of 12.3%, we report a disproportionate positive benefit to low SES populations as a result of the zoning change.

Table 17. Impacts of zoning changes

	Determinants	Nature of impact	Evidence	Differential Impact
Commercial/office uses in multifamily residential				
302 W 39TH ST (w 300)	Physical Activity	Improve	+++	Neg, Race, Youth
300 W 39TH ST (w 302)	Physical Activity	Improve	+++	Neg, Race, Youth
1500 E 4TH PLAIN BL	Physical Activity	Improve	+++	Pos, Low SES, Race
1700 E 4TH PLAIN BL	Physical Activity	Improve	+++	Pos, Low SES, Race
1912 GRAND BL	Physical Activity	Improve	+++	Pos, Low SES, Race
2705 E 20TH ST	Physical Activity	Improve	+++	Pos, Low SES, Race
3701 E 4TH PLAIN BL	Physical Activity	Improve	+++	Pos, Low SES, Race
4301 E 4TH PLAIN BL	Physical Activity	Improve	+++	Pos, Low SES, Race, Youth
4909 NE HAZEL DELL AV	Physical Activity	Mixed	+++	Unclear
7803 NE 4TH PLAIN BL	Physical Activity	Improve	+++	None
3303 NE 78TH	Physical Activity	Improve	+++	None
4400 NE 77TH AV	Physical Activity	Improve	+++	None
4610 NE 77TH AV	Physical Activity	Improve	+++	None
Commercial/office uses in single family residential zones				
2102 E MCLOUGHLIN BL	Physical Activity	Improve	+++	Pos, Low SES
NA (part of 2102 MCLOUGHLIN	Physical Activity	Improve	+++	Pos, Low SES
NA (part of 2102 MCLOUGHLIN	Physical Activity	Improve	+++	Pos, Low SES
NA (part of 2102 MCLOUGHLIN	Physical Activity	Improve	+++	Pos, Low SES
2404 E MILL PLAIN BL	Physical Activity	Improve	+++	Pos, Low SES, Neg, Youth
904 GRAND BL	Physical Activity	Improve	+++	Pos, Low SES, Neg, Youth
800 GRAND BL	Physical Activity	Improve	+++	Pos, Low SES, Neg, Youth
No address	Physical Activity	Improve	+++	Pos, Low SES, Neg, Youth
1102 BRANDT RD	Physical Activity	Improve	+++	Pos, Low SES
Medical uses in residential zones				
400 W 4TH PLAIN BL	Physical Activity	Improve	+++	Neg, Race, Youth
1415 GRAND BL	Physical Activity	Improve	+++	Pos, low SES
13200 MCGILLIVRAY	Physical Activity	Improve	+++	None
Other				
1019 SE 192ND	Physical Activity	Improve	+++	Neg, low SES, 65+, Pos Youth
1119 SE 192ND	Physical Activity	Improve	+++	Neg, low SES, 65+, Pos Youth
1201 SE 192ND	Physical Activity	Improve	+++	Neg, low SES, 65+, Pos Youth
18TH ST	Physical Activity	Improve	+++	None

Recommendations

While the proposed changes to the comprehensive plan are likely to benefit overall community health, it is critically important that they be implemented through development standards to be effective. CCPH recommends additional actions the city could take to further improve opportunities for physical activity and access to healthy food.

Physical Activity

1. Develop land uses and transportation networks that support physical activity.

1.1 Develop an integrated mix of land uses with the goal of all residential parcels being within ½ mile of daily retail needs and ¼ mile of transit stops.

1.2 Increase density in areas that have urban services, especially around transit stops.

1.3 Require site design and building form that is human-scale and pedestrian friendly.

1.4 Design for streetscapes and buildings with lots of windows, a sense of enclosure, and human scale.

1.5 Locate parks, trails, and recreation areas near residences and employment centers.

2. Enhance connectivity.

2.2 Connect existing cul-de-sacs with new streets or with bicycle and pedestrian paths. Limit new cul-de-sacs unless needed due to environment or topography.

2.3 Require high standards of connectivity in new developments, including short block sizes.

2.4 Where possible, establish “one-off” routes for cyclists and pedestrians that are parallel to major commercial streets or auto routes but with slower, lighter traffic.

3. Manage parking to encourage active transportation and efficient land use.

3.1 Reduce minimum parking requirements in densely populated areas, and near frequent service transit lines.

3.2 Set parking maximums.

3.3 Set a street parking occupancy target, such as 85%, that maximizes turn-over and availability, and minimizes the need for off-street parking.

3.4 Increase the reduction in parking requirements offered in exchange for providing bicycle parking.

4. Improve safety and comfort for pedestrians.

4.1 Retrofit existing streets with sidewalks and safe crossings, especially in areas with supportive land uses and limited parks and recreation space.

4.2 Implement a neighborhood traffic calming program.

4.3 Require continuous pedestrian connections between high-density residential and commercial parcels, including gates where appropriate.

4.5 Implement high-quality street design with furnishings, plantings, and lighting for pedestrians. This should include a buffer between pedestrians and automobile traffic.

4.6 Adopt a complete streets policy

4.7 Fill gaps in the pedestrian system by completing connections

4.8 Plan roads for the lowest number of vehicle traffic lanes practical.

5. Increase safety and comfort for bicyclists.

5.1 Retrofit existing streets with bicycle facilities and safe crossings.

5.2 Complete a network of off-street paths.

5.3 Offer incentives for the provision of end-of-trip facilities such as bike racks, lockers, and showers.

5.4 Fill gaps in the bikeway system by completing connections.

6. Increase the use of active transportation modes.

6.1 For all new streets, require complete streets that include facilities for walking, cycling, and transit in addition to other modes.

6.2 Implement a variety of facility types.

6.3 Support public transit expansions and integrate transit with the bicycling and walking network.

6.4 Continue to support and enhance Commute Trip Reduction efforts.

7. Reduce disparities in access to physical activity

and protect vulnerable populations.

7.1 Design facilities for all users, especially youth and aging adults.

7.2 Encourage and support active transportation to school among students.

7.3 Focus crime prevention and street lighting efforts in low-income areas.

7.4 Enhance connectivity to schools.

Access to Healthy Food

1. Recruit and retain healthy food retail

1.1 Discourage (disallow) restrictive covenants that preclude food stores from appropriately zoned land, especially those that keep new grocery stores from using vacant buildings.

1.2 Re-zone land in densely populated food deserts that lack appropriate zoning to allow for healthy food retail.

1.3 Provide permitting incentives for healthy food retail (fast-track permitting, etc.).

1.4 Allow temporary food retail in food deserts.

1.5 Exempt farmers' markets and produce stands from parking standards.

1.6 Identify and monitor areas lacking healthy food (i.e. food deserts) and define in city policy.

2. Promote opportunities to grow food in home and community gardens.

2.1 Support VCPR provisions for community gardening and work with partners to expand opportunities for community gardening.

2.2 Collaborate with VCPR to set a standard for community gardens, such as one garden per 2500 households.

2.3 Set aside land for community gardening and analyze opportunities for community gardening on publicly-owned land, including leasing land for growing food.

3. Reduce the availability of unhealthy food options relative to healthy food options.

3.1 Work with Clark County Public Health to encourage healthy options at all food establishments.

3.2 Limit new fast-food restaurants and convenience stores lacking healthy foods from areas with existing concentrations of these uses.

4. Promote food security

4.1 Support and promote existing farmers' markets.

4.2 Encourage the sale of locally-produced food at farmer's markets and produce stands.

4.3 Support urban agriculture.

5. Reduce disparities in food access and protect vulnerable populations.

5.1 Target incentives for healthy food retail in low-income neighborhoods.

5.2 Reduce the availability of fast food and convenience stores near schools.

5.3 Encourage healthy foods in facilities for children and aging adults.

5.5 Encourage healthy food retail near schools.

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Appendix

Potential zoning changes

	Low SES	Non -White	Youth	65+
Vancouver Demographics	**12.3%**	**18.1%**	**28.5%**	**11.0%**
	Difference from city demographics (pct point)			
Commercial/office uses in multi-family residential zones				
302 W 39TH ST (w 300)	-3.4%	-6.8%	-5.1%	2.8%
300 W 39TH ST (w 302)	-3.4%	-6.8%	-5.1%	2.8%
1500 E 4TH PLAIN BL	14.4%	6.0%	1.2%	-3.3%
1700 E 4TH PLAIN BL	13.0%	6.9%	1.0%	-3.0%
1912 GRAND BL	13.4%	6.8%	-1.2%	-0.7%
2705 E 20TH ST	13.5%	6.7%	-1.3%	-0.7%
3701 E 4TH PLAIN BL	13.0%	12.4%	4.2%	-1.1%
4301 E 4TH PLAIN BL	15.5%	13.4%	5.4%	-1.8%
4909 NE HAZEL DELL AV	0.4%	-1.6%	-2.4%	2.6%
7803 NE 4TH PLAIN BL	2.0%	1.0%	3.6%	-1.0%
3303 NE 78TH	1.7%	1.2%	3.8%	-1.1%
4400 NE 77TH AV	3.8%	-3.0%	0.4%	-0.7%
4610 NE 77TH AV	3.8%	-3.0%	0.4%	-0.7%
Commercial/office uses in single family residential zones				
2102 E MCLOUGHLIN BL	12.7%	-1.2%	-4.9%	-1.7%
NA (part of 2102 MCLOUGHLIN	12.7%	-1.2%	-4.9%	-1.7%
NA (part of 2102 MCLOUGHLIN	12.7%	-1.2%	-4.9%	-1.7%
NA (part of 2102 MCLOUGHLIN	12.7%	-1.2%	-4.9%	-1.7%
2404 E MILL PLAIN BL	9.9%	-1.3%	-6.5%	-0.5%
904 GRAND BL	8.5%	-0.9%	-5.2%	0.7%
800 GRAND BL	8.5%	-0.9%	-5.2%	0.7%
no address	8.2%	-1.2%	-5.4%	0.6%
1102 BRANDT RD	8.5%	2.0%	-3.8%	4.9%
Medical uses in residential zones				
400 W 4TH PLAIN BL	1.4%	-5.5%	-7.0%	2.5%
1415 GRAND BL	12.3%	1.8%	-3.5%	0.3%
13200 MCGILLIVRAY	-3.1%	3.2%	-3.9%	-1.1%
Other				
1019 SE 192nd	-9.2%	2.4%	11.2%	-7.9%
1119 SE 192nd	-9.2%	2.4%	11.2%	-7.9%
1201 SE 192nd	-9.2%	2.4%	11.2%	-7.9%
18TH ST	-3.1%	-2.6%	2.6%	-3.1%
72ND @ 45TH	1.3%	-2.4%	0.5%	-1.5%